



Autonomous (2016-17)

Malad Kandivli Education Society's
NAGINDAS KHANDWALA COLLEGE
OF COMMERCE, ARTS & MANAGEMENT STUDIES
AND SHANTABEN NAGINDAS KHANDWALA COLLEGE OF SCIENCE
(Re-accredited (3rd cycle) by NAAC with 'A' Grade)
ISO 9001 : 2015 Certified
Educational Excellence Award By Indus Foundation, U.S.A.
IMC Ramkrishna Bajaj National Quality Commendation Certificate

Highlighted Syllabus


DR. (MRS.) ANCY JOSE
PRINCIPAL



Nagindas Khandwala College

(AUTONOMOUS)



Syllabus and Question Paper Pattern

Of

Courses of Master of Arts- Geography (M.A.) Programme

First Year

Semester I

101: Principles of Geomorphology

Under Academic Autonomy and Credit, Grading and Semester System
With effect from Academic Year 2018-19

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NAGINDAS KHANDWALA COLLEGE OF COMMERCE
ARTS & MANAGEMENT STUDIES AND SHANTIBEN
NAGINDAS KHANDWALA COLLEGE OF SCIENCE
(AUTONOMOUS)
MALAD (W), MUMBAI - 400 064

Syllabus of Course of M.A.- Geography Program at Semester I

Core Course
101: Principles of Geomorphology

Course Objectives:

1. To recognize the various landforms on the Earth
2. To explain the reasons behind the present shape of the planet
3. To apply the theory of landscape development to the present topographical conditions
4. To distinguish between the landform and processes responsible behind them
5. To develop an understanding about the geomorphological processes acting upon the earth and its impacts on mankind
6. To compare between theories of development and draw conclusions

Course Outcome:

1. **CO1:** Learners will be able to recognize the various landforms on the Earth
(Level: Knowledge)
2. **CO 2:** Learners will be able to explain the reasons behind the present shape of the planet (Level: Comprehension)
3. **CO 3:** Learners will be able to apply the theory of landscape development to the present topographical conditions (Level: Application)
4. **CO 4:** Learners will be able to distinguish between the landform and processes responsible behind them (Level: Analysis)
5. **CO 5:** Learners will be able to develop an understanding about the geomorphological processes acting upon the earth and its impacts on mankind (Level: Synthesis)
6. **CO 6:** Learners will be able to compare between theories of development and draw conclusions (Level: Evaluation)

Modules at a Glance

Sr. No.	Modules	No. of lectures
Module 1	Introduction to Geomorphology	15
Module 2	Structural Geomorphology	15
Module 3	Landscape Evolution -I	15
Module 4	Landscape Evolution -II	15
	Total	60


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Detailed Syllabus

Module	Topics	No. of Lectures
1	Introduction to Geomorphology	15
1.1 1.2 1.3 1.4	Evolution of Geomorphology Nature and scope of Geomorphology Development of geomorphic thoughts: Catastrophism, Uniformitarianism and Neocatastrophism Geological evolution of earth and geological time scale (Employability)	
2	Structural Geomorphology	15
2.1 2.2 2.3 2.4	Earth's interior: Structure and composition Continental Drift and Plate Tectonics (Case study – Himalayan formation) Geosynclines and mountain building: Geosyncline Theory of Kobber, Holmes' Convection Current Theory Isostasy different views and applications	
3	Landscape Evolution –I (Skill Development)	15
3.1 3.2 3.3 3.4	Weathering and mass movements Fluvial processes and resulting landforms Landscape evolution – Davisian and Penk's concepts Slope development and related theories	
4	Landscape Evolution –II (Skill Development)	15
4.1 4.2 4.3 4.4	Glacial processes and landforms Underground water and Karst landforms Aeolian processes and landforms Coastal processes and landforms	

Reference Books

1. Anhert, F., (1996), 'Introduction to Geomorphology', Arnold, London, Sydney, Aukland
2. Bloom, A. L. (2002), 'Geomorphology: A Systematic Analysis of Late Cenozoic Landforms', Pearson Education Pvt. Ltd., and Singapore.
3. Christopherson, R.W. (1994), 'Geosystems: An Introduction to Physical Geography', Macmillan College publishing Company, New York.
4. Dayal, P. (1990), 'A Textbook of Geomorphology', Shukla Book Depot, Patna.
5. Engeln, O. D. Von (1944), 'Geomorphology', The Macmillan Company, New York.
6. Fairbridge R. W. (1968) (ed.), 'Encyclopaedia of Geomorphology', Reinhold, New York.
7. Mitchell, C. E. (1973), 'Terrain Evaluation', Longmans, London.



PRINCIPAL 3

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8. Ritter, D.F., Kochel, R.C., Miller, J.R. (1995), 'Process Geomorphology', Wim. C. Brown Publishers, Chicago.
9. Sparks, B.W. (1988), 'An Introduction to Geomorphology', Longman, London.
10. Strahler A. (1996), 'Physical Geography: Science and System of the Human Environment', John Willey, New York.
11. Thornberry, W.D. (1998), 'Principles of Geomorphology', New Age International Press, New Delhi.
12. Steers, J.A. (2000), 'The Unstable Earth: some recent views in geomorphology', Methuen and co., London

Evaluation Pattern

The performance of the learners shall be evaluated through two components viz. Internal Assessment (IA) with 40 marks in the first component and by conducting the Semester End Examinations (SEE) with 60 marks as the second component. The allocation of marks for the Internal Assessment and Semester End Examinations are as shown below:

A) Internal Evaluation- 40 Marks

Sr. No.	Criteria	Marks
1	Class Test	20
2	Assignment	10
3	Active Participation	05
4	Attendance	05

B) Semester End Examinations - 60 Marks

Question Paper Pattern

Maximum Marks: 60

Questions to be set: 6

Answer any 4 out of 6 questions.

Q. 1.	Full Length Question (from first module only)	15 Marks
Q.2.	Full Length Question (from second module only)	15 Marks
Q.3.	Full Length Question (from third module only)	15 Marks
Q.4.	Full Length Question (from fourth module only)	15 Marks
Q.5.	Full Length Question (from any module)	15 Marks
Q.6.	Short Notes (4 short notes from each module)	15 Marks

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Syllabus and Question Paper Pattern

Of

Courses of Master of Arts- Geography (M.A.) Programme

First Year

Semester I

102: Principles of Climatology

Under Academic Autonomy and Credit, Grading and Semester System
With effect from Academic Year 2018-19

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ARTS & MANAGEMENT STUDIES AND SHANTABEN
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Syllabus of Course of M.A.- Geography Program at Semester I

Core Course

102: Principles of Climatology

Course Objectives:

1. To memorize the basic concepts in climatology
2. To classify the regions based on the spatial distribution of temperature
3. To apply their understanding on the distribution of atmospheric pressure and types of winds
4. To associate the origin of monsoon with climatic variations
5. To compare the concepts of air masses, fronts and cyclones
6. To assess the classification of climate by Thorntwaite and Koppen in depth

Course Outcome:

1. **CO 1:** Learners will be able to memorize the basic concepts in climatology in depth (Level : Knowledge)
2. **CO 2:** Learners will be able to classify the regions-based differences in temperature (Level : Comprehension)
3. **CO 3:** Learners will be able to apply their understanding on the distribution of atmospheric pressure and types of winds all over the globe (Level : Application)
4. **CO 4:** Learners will be able to associate the origin of monsoon with climatic variations and its impacts on mankind (Level : Analysis)
5. **CO 5:** Learners will be able to compare the concepts of air masses, fronts and cyclones and their prediction (Level : Synthesis)
6. **CO 6 :**Learners will be able to assess the classification of climate by Thorntwaite and Koppen in depth for better understanding of global climate (Level : Comprehension)

Modules at a Glance

Sr. No.	Modules	No. of lectures
Module 1	An Introduction to climatology and atmosphere	15
Module 2	Atmospheric Circulations	15
Module 3	Humidity phenomena and Stability	15
Module 4	Atmospheric Disturbances and Climatic Classifications	15
	Total	60


PRINCIPAL 2
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Detailed Syllabus

Module	Topics	No. of Lectures
1	An Introduction to climatology and atmosphere	15
1.1	Nature and Scope of Climatology	
1.2	Structure and Composition of Atmosphere	
1.3	Insolation, Processes of heat energy transfer and heat budget of the earth	
1.4	Temperature: Vertical, Horizontal and Seasonal Variation	
2	Atmospheric Circulations (Skill Development)	15
2.1	Atmospheric pressure – vertical and horizontal distribution	
2.2	General Circulation of atmosphere	
2.3	Types of winds – Geostrophic, Gradient and local winds	
2.4	Origin of Monsoon: Classical and Recent views and impacts (Regional development needs)	
3	Humidity phenomena and Stability (Skill Development)	15
3.1	Air masses: Origin, classification, types	
3.2	Fronts: frontogenesis and frontolysis – classification of fronts	
3.3	Tropical and Extra-tropical cyclones: formation and impact	
3.4	Climatic Classification: Koppen and Thornthwaite, concept of water balance Problems and prospects	
4	Atmospheric Disturbances and Climatic Classifications (Skill Development)	15
4.1	Air masses and fronts – Origin, classification and types	
4.2	Tropical and Extra tropical cyclones- Formation and impacts	
4.3	Koppen's Climatic classification	
4.4	Thornwaite's Climatic classification, concept of water balance	

Reference Books

1. Barry, R.S. & Chorley, R.J. (1971): Atmosphere, Weather and Climate, ELBS, Methuen & Co. Ltd., U.S.A.
2. Griffiths, J.F.(1966): Applied Climatology-An Introduction, Oxford University Press, London.
3. Lal, D.S.(1997):Climatology, Sharda Pustak Bhawan, Allahabad.
4. Mather, J. R.(1974): Climatology: Fundamentals and Applications, McGraw Hill Book Co. New York.
5. McBoyle, G.(1973): Climate in Review, Houghton Mifflin Co., Boston.
6. Subrahmanyam, V.P.(ed)(1983):Contribution to Indian Geography, Heritage Publishers, New Delhi , a) Vol. III - General Climatology b) Vol. IV- Applied Climatology
7. Harp, H.J. and Trinidade, O.D. (eds) (1990): Climate and Development, Springer Verlag, U.S.A.

8. Oliver, J.E. and Hidose, J.J. (1984): Climatology - An Introduction, Charles and Merrill, U.S.A.
9. Robinson, P.J. and Hendersen-Sellers, A.(1999): Contemporary Climatology, Pearson Education, London

Evaluation Pattern

The performance of the learners shall be evaluated through two components viz. Internal Assessment (IA) with 40 marks in the first component and by conducting the Semester End Examinations (SEE) with 60 marks as the second component. The allocation of marks for the Internal Assessment and Semester End Examinations are as shown below:

A) Internal Evaluation - 40 Marks

Sr. No.	Criteria	Marks
1	Class Test	20
2	Assignment	10
3	Active Participation	05
4	Attendance	05

B) Semester End Examinations - 60 Marks

Question Paper Pattern

Maximum Marks: 60

Questions to be set: 6

Answer any 4 out of 6 questions.

Q. 1.	Full Length Question (from first module only)	15 Marks
Q.2.	Full Length Question (from second module only)	15 Marks
Q.3.	Full Length Question (from third module only)	15 Marks
Q.4.	Full Length Question (from fourth module only)	15 Marks
Q.5.	Full Length Question (from any module)	15 Marks
Q.6.	Short Notes (4 short notes from each module)	15 Marks



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Syllabus and Question Paper Pattern

Of

Courses of Master of Arts- Geography (M.A.) Programme

First Year

Semester I

103: Perspectives in Human Geography

Under Academic Autonomy and Credit, Grading and Semester System
With effect from Academic Year 2018-19

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Syllabus of Course of M.A.- Geography Program at Semester I

Core Course

103: Perspectives in Human Geography

Course Objectives:

1. To recognize the different perspectives in human geography
2. To illustrate the evolution of human societies with respect to rural and urban dynamics
3. To predict how different societies interact and depend on each other for existence and affect landscapes
4. To estimate the factors responsible for growth and changes in structure of population
5. To develop an understanding of the global patterns of migration
6. To compare the different urban morphologies in the world

Course Outcome:

1. **CO1:** Learners will be able to recognize the different perspectives in human Geography and related aspects (**Level : Knowledge**)
2. **CO 2:** Learners will be able to illustrate the evolution of human societies with respect to rural and urban dynamics (**Level : Comprehension**)
3. **CO 3:** Learners will be able to predict how different societies interact and depend on each other for existence and affect landscapes (**Level : Application**)
4. **CO 4:** Learners will be able to estimate the factors responsible for growth and changes in structure of population (**Level : Analysis**)
5. **CO 5:** Learners will be able to develop an understanding of the global patterns of migration (**Level : Synthesis**)
6. **CO 6:** Learners will be able to compare the different urban morphologies in the world (**Level : Synthesis**)

Modules at a Glance

Sr. No.	Modules	No. of lectures
Module 1	Changing Perspectives in Human Geography	15
Module 2	Evolution of Human Societies: Dynamics of rural and urban societies	15
Module 3	Interaction of human societies-Socio-Cultural identities-patterns and landscapes	15
Module 4	Dynamics of Population Change: Patterns, Processes and spatial distribution	15
Total		60


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Detailed Syllabus

Module	Topics	No. of Lectures
1	Changing Perspectives in Human Geography	15
1.1	Development of Human Geography in the world	
1.2	Branches of human geography	
1.3	Environmental Determinism, Possibilism and Neo Determinism	
1.4	Behaviouralism – Perception of environment- Humanistic Geography- Sense of place and space - Emergence of welfare approach and its social relevance	
1.5	Post 1980s trends - Radicalizing process in Geography- neo-Marxist interpretations and extensions- contemporary theorizations	
2	Evolution of Human Societies: Dynamics of rural and urban societies (Skill Development)	15
2.1	Evolution of Human Societies – Economic, Political and Cultural Transformation	
2.2	Rural society: segregation in rural settlement – rural social morphology –Contemporary Indian rural society, Application of Central Place theory and settlement hierarchy	
2.3	Urban morphology: Classical models-Burgess, Homer Hoyt, Harris and Ullman - Metropolitan concept, City-region and Conurbation - Functional classification of cities: Harris, Nelson and McKenzie	
2.4	Evolution tribal societies – characteristics – spatial distribution – Indian Examples	
3	Interaction of human societies-Socio-Cultural identities-patterns and landscapes	15
3.1	Emergence and development of early cultural hearth – cultural diffusion, isolation and segregation	
3.2	Racial groups- biological divergence-blending-process of assimilation – behavioural and structural- acculturation	
3.3	Evolution of language – diffusion over space – evolution of linguistic provinces, Relevant issues – language as basis of nation and states- Linguistic division in India	
3.4	Religion- contemporary dynamics – spatial pattern of major religions- Role of religion in the formation of nation-states	
3.5	Implications of race, religion, language and ethnicity- Contestation, conflicts and negotiations	
4	Dynamics of Population Change: Patterns, Processes and spatial distribution (Skill Development)	15
4.1	Components of Population Change – fertility, mortality and associated patterns - Demographic characteristics - developing and developed countries	
4.2	1. Population Growth – Theories of Population Growth - Malthusian,	


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	Neo-Malthusianism and Marxist viewpoint – Club of Rome Theory - Critical Understanding of Demographic transition theory – concept of Demographic dividend	
4.3	Population, Resources and Spatial Pattern of Development - Optimum population, over population and under population – Recent World Views - Population Resource Region	
4.4	Migration- early and subsequent migration – scales of migration – mechanism and laws – major theories - Typology of migration – Political, cultural and economic dimensions - Contemporary Trends in migration - Impact of Migration on population change and economy in source area and destination – Refugee problem in developed and developing world	

Reference Books

1. Aitken, S and Valentine, G. (2006), Approaches to Human geography, Sage.
2. Johnston, R.J., Gregory D. Pratt G. and Watts M., (2005, 5th ed.), the Dictionary of Human Geography, Blackwell.
3. Kitchin R., Thrift, N, (eds.) (2009), The International Encyclopedia of Human Geography, Elsevier.
4. Benko, G. and Strohmayer, U. (2004), Human Geography, a History for the 21st Century, Arnold, London.
5. Cloke, P., Crang, P., Goodwin, M., (2004), Envisioning Human Geographies, Arnold.
6. Cloke, P. and Johnston, R., (eds.), (2005), Spaces of Geographical Thought, Deconstructing Human Geography's Binaries, Sage.
7. Atkinson, D., Jackson, P., Sibley, D. and Washbourne, N. (eds.) (2005), Cultural Geography: A Critical Geography of Key Concepts, Tauris, I.B.
8. Norton William, (2002), Human Geography, Oxford, 4th edition
9. Barnes, T. and Gregory, D., 1997, Reading Human geography, Arnold.
10. Smith, D. M. (1977): Human Geography, A Welfare Approach, Arnold
11. Peet, R. (ed) (1987): Radical Geography, Maroufa Press, Rawat, New Delhi,
- 2003 12. Ambrose, P. G. (1969): Analytical Human Geography, Longman, London
13. De Blij, H. J. (1986): Human Geography, John Wiley & Sons, New York.
14. Vivello, F. R. (1978): Cultural Anthropology, McGraw Hill, USA.
15. Peet R. and Thrift, N. (eds) (1989): New Models in Geography, Vol. I & II, Unwin Hyman.
16. Ahmed, A. (1999). Social Geography, Rawat Publication, New Delhi.
17. Massey, D, Alien, J, P, Jarre, P (eds) (1999): Human Geography Today, Cambridge Polity Press.
18. Fellman, J (1997): Landscape of Human Activities, Brown and Benchmarkic Pub.
19. Coates, B.E., Johnston, R.J. Knox, (1977): Geography and Inequality, Oxford University Press



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Evaluation Pattern

The performance of the learners shall be evaluated through two components viz. Internal Assessment (IA) with 40 marks in the first component and by conducting the Semester End Examinations (SEE) with 60 marks as the second component. The allocation of marks for the Internal Assessment and Semester End Examinations are as shown below:

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2	Assignment	10
3	Active Participation	05
4	Attendance	05

B) Semester End Examinations – 60 Marks

Question Paper Pattern

Maximum Marks: 60

Questions to be set: 6

Answer any 4 out of 6 questions.

Q. 1.	Full Length Question (from first module only)	15 Marks
Q.2.	Full Length Question (from second module only)	15 Marks
Q.3.	Full Length Question (from third module only)	15 Marks
Q.4.	Full Length Question (from fourth module only)	15 Marks
Q.5.	Full Length Question (from any module)	15 Marks
Q.6.	Short Notes (4 short notes from each module)	15 Marks



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Syllabus and Question Paper Pattern

Of

Courses of Master of Arts- Geography (M.A.) Programme

First Year

Semester I

Paper 104: Spatial Organisation of Economic Activities

Under Academic Autonomy and Credit, Grading and Semester System
With effect from Academic Year 2018-19

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Syllabus of Course of M.A.- Geography Program at Semester I

Core Course

Paper 104: Spatial Organisation of Economic Activities

Course Objectives:

1. To identify different economic systems
2. To describe the spatial distribution of economic activities
3. To apply the various economic theories to the present economic organization
4. To determine the spatio social organization of production and patterns of trade
5. To compare the past and present changes in the process of industrialization
6. To assess the barriers to economic development and its impacts on spatial interactions

Course Outcome:

1. **CO 1:** Learners will be able to recall the definition, nature and scope of economic geography (Level : Knowledge)
2. **CO 2:** Learners will be able to illustrate the different perspectives of the subject (Level : Comprehension)
3. **CO 3:** Learners will be able to modify the patterns and reasons of the existing spatial distribution of labour and economic activities (Level : Application)
4. **CO 4:** Learners will be able to distinguish between the roles of different agencies like WTO, GATT, TRIPS, SAARC etc. in international trade (Level : Analysis)
5. **CO 5:** Learners will be able design locations for industrial establishments (Level : Synthesis)
6. **CO 6:** Learners will be able to compare the industrial location theories given by Losch, Myrdal, etc. (Level : Evaluation)

Modules at a Glance

Sr. No.	Modules	No. of lectures
Module 1	Organisation of an economy as a dynamic spatio-social system: Basic concepts	15
Module 2	Spatial Organisation of World Economy	15
Module 3	Organisation of Production: Agriculture and Industry - Global Patterns and Trends	15
Module 4	Spatio-social organization of production –Transport, Trade and Services: Global Patterns and trends	15
Total		60

Detailed Syllabus

Module	Topics	No. of Lectures
1	Organization of an economy as a dynamic spatio-social system: Basic concepts	15
1.1	Definition, Nature and scope; Fundamentals of economic geography; Approaches to the study of economic geography	
1.2	Organization of economic activities in global space- primary, secondary, tertiary, quaternary, Quinary	
1.3	Spatial distribution of labour- skilled and unskilled and their interdependence	
1.4	Geographic fixity and mobility- typology of distance-Spatial interaction and diffusion	
1.5	Time and space convergence- Production of economic space- absolute and relative	
2	Spatial Organisation of World Economy (Skill Development)	15
2.1	Economic organization of the pre-colonial world - Rise of the Core Economies - industrial revolution in Europe - Digital revolution of production	
2.2	Colonialism and Geographies of inequities and uneven development -neocolonialism and structuration of world economy as core, periphery and semi-periphery	
2.3	Role of international institutions like World Bank, IMF, UNCTAD	
2.4	Evolution and Growth of MNCs and TNCs; Patterns and Processes of Globalisation	
3	Organization of Production: Agriculture and Industry - Global Patterns and Trends	15
3.1	Agricultural Patterns-World Agricultural Regions - Theory of Agricultural Landuse and Critique - Technology, modernization and structuring of agrarian regions in colonial and post-colonial periods - Impacts of MNC on agriculture	
3.2	Crisis of agriculture- Aspects of Food security and world patterns of hunger - special reference to India	
3.3	World Industrial Regions - Factors and processes influencing location of industries - critical assessment and application of theories of industrial location Weber, Losch and Gunnar Myrdal	
3.4	Globalization and shifting location of industries - Development of EPZ and SEZ; Land reforms in India with special reference to Maharashtra. (Local development needs)	
4	Spatio-social organization of production -Transport, Trade and Services: Global Patterns and trends (Skill Development)	15
4.1	Organization of transport - Bases of Spatial Interaction - Theoretical Perspectives on Transport and inter-regional interactions - Role of	



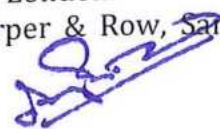
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	transport cost- nodes-places, networks, and flows- spatio-social accessibility – Indian Examples	
4.2	International trade theory- classical, neo-classical and Marxist Perspectives - Critical review – Globalization and changing structure (Global development needs) and composition of international trade	
4.3	- GATT, WTO and TRIPS	
4.4	Logic of Regional Integrations (Regional development needs)- Types and levels - Significance of regional integration as a strategy for the periphery - Case Studies - EU, OPEC, ASEAN, SAARC, BRICS	
	New Economic Activities and Globalization: Finance and Service Industry- The Forth Industrial Revolution	

Reference Books

1. Knox Paul, Agnew John and McCarthy Linda, (2008): The Geography of the World Economy, Hodder Education, UK.
2. Sheppard Eric and Barnes Trevor J., (eds.) (2000): A Companion to Economic Geography, Blackwell, Massachusetts.
3. Wood Andrew and Roberts Susan, (2011): Economic Geography- Places, network and flows, Routledge, London and New York.
- 4 Bryson John, Henry Nick, Keeble David and Martin Ron, (eds.) (1999): The Economic Geography Reader- Producing and Consuming Global Capitalism, John Wiley and Sons Ltd., New York.
5. Hartshorn A. Truman and Alexander W. John, Third edition, (2010): Economic Geography, PHI Learning Private Ltd., New Delhi
4. Liemt van Gijsbert, (eds.) (1992): Industry on the move- Causes and consequences of International Relocation in the Manufacturing Industry, International Labour Office, Geneva.
5. Harrington J.W. and Warf Barney, (1995): Industrial Location- Principle, Practice and Policy, Routledge, London and New York.
6. Rodrigue Jean-Paul, Comtois Claude and Slack Brian, (2006): The Geography of Transport System, Routledge, London and New York.
7. Harrington J.W. and Warf Barney, (1995): Industrial Location- Principle, Practice and Policy, Routledge, London and New York.
8. Berry, B. J. L. et. Al. (1976): Geography of Economic Systems, Prentice Hall, Englewood Cliff.
9. Boyce, R. D. (1974): Bases of Economic Geography, Holt, Rinehart and Winston, New York
10. Conkling, E. C. & Yeates, M. (1976): Man's Economic Environment, McGraw Hill, London.
11. Hodder, B. W. and Lee, R. (1974): Economic Geography, Field of Geography Series, Methuen & Co. Ltd, London.
12. HussainMajid (ed.), (1993): Perspectives in Economic Geography, Vols. 1-6, Anmol Publication, New Delhi.
13. Cole, J. P., (1983): Geography of World Affairs, Butterworths, London.
14. Lloyd, P. E. and Dicken, P. (1972): Location in Space, Harper & Row, San Francisco.



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15. Lowe Moryadas, (1975): The Geography of Movement, Haughton Mifflin & Co.
16. Smith, D. M (1971): Industrial Geography: An Economic Geographic Analysis, John Wiley & Sons.
17. Tarrant, J. R. (1974): Agricultural Geography, Problems in Modern Geography Series, John Wiley & Sons.
18. Willbanks, Thomas J (1980): Location and Well- Being, An Introduction to Economic Geography, Harper & Row San Fransisco.

Evaluation Pattern

The performance of the learners shall be evaluated through two components viz. Internal Assessment (IA) with 40 marks in the first component and by conducting the Semester End Examinations (SEE) with 60 marks as the second component. The allocation of marks for the Internal Assessment and Semester End Examinations are as shown below:

A) Internal Evaluation - 40 Marks

Sr. No.	Criteria	Marks
1	Class Test	20
2	Assignment	10
3	Active Participation	05
4	Attendance	05

B) Semester End Examinations - 60 Marks

Question Paper Pattern

Maximum Marks: 60

Questions to be set: 6

Answer any 4 out of 6 questions.

Q. 1.	Full Length Question (from first module only)	15 Marks
Q.2.	Full Length Question (from second module only)	15 Marks
Q.3.	Full Length Question (from third module only)	15 Marks
Q.4.	Full Length Question (from fourth module only)	15 Marks
Q.5.	Full Length Question (from any module)	15 Marks
Q.6.	Short Notes (4 short notes from each module)	15 Marks

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Syllabus and Question Paper Pattern

Of

Courses of Master of Arts- Geography (M.A.) Programme

First Year

Semester I

**105:Tools and Techniques of Spatial Analysis I
(Based on Theory Papers: 101 -102)**

Under Academic Autonomy and Credit, Grading and Semester System
With effect from Academic Year 2018-19

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Syllabus of Course of M.A.- Geography Program at Semester I

Core Course

**105:Tools and Techniques of Spatial Analysis I
(Based on Theory Papers: 101 -102)**

Course Objectives:

1. To identify geomorphic profiles of the given area
2. To illustrate the slopes of the area under study
3. To compute climate data of different regions
4. To differentiate between Indian and foreign toposheets
5. To construct diagrams to analyze climate data
6. To compare different methods of geographic data analysis

Course Outcome:

1. **CO 1:** Learners will be able to identify the techniques of drawing longitudinal and projected profiles (**Level: Knowledge**)
2. **CO 2:** Learners will be able to describe the methods of slope analysis like Wentworth's, Robinson's, and Smith's (**Level : Comprehension**)
3. **CO 3:** Learners will be able to apply the methods of altimetric analysis like ring contour method and highest grid cell elevation method (**Level : Application**)
4. **CO 4:** Learners will be able to differentiate between Indian and foreign topographical maps (**Level : Analysis**)
5. **CO 5:** Learners will be able to construct different climate graphs, maps and diagrams (**Level : Application**)
6. **CO 6:** Learners will be able to compare different methods of geographic data analysis (**Level : Evaluation**)

Modules at a Glance

Sr. No.	Modules	No. of lectures
Module 1	Techniques of Geomorphic Analysis	20
Module 2	Advance topographical Map Interpretation	20
Module 3	Techniques of Climatic Data Analysis	20
	Total	60



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Detailed Syllabus

Module	Topics	No. of Lectures
1	Techniques of Geomorphic Analysis (Skill Development)	20
1.1	Drawing Profiles:	
i	Longitudinal	
ii	Composite and Projected (Skill development)	
1.2	Methods of Slope Analysis:	
i	Wentworth's method of average slope determination	
ii	Robison's method of slope analysis'	
iii	G. H. Smith's method of slope analysis	
iv	Construction of Block Diagram	
1.3	Altimetric Analysis:	
i	Ring contour method	
ii	Highest grid-cell elevation method (Employability)	
2	Advance topographical Map Interpretation (Employability)	20
2.1	1. Interpretation of Indian and foreign topographical Maps : Aspects of Physical and Human Environment (OS, USGS and SOI)	
3	Techniques of Climatic Data Analysis (Skill Development)	20
3.1	Rainfall dispersion diagrams	
3.2	Wind roses	
3.3	Water surplus-deficiency graphs	
3.4	Climatograph	
3.5	Climograph: Hyther graph, Taylor's climograph	
3.6	Index of aridity and index of moisture	
3.7	Isopleth Maps	

Reference Books

1. King, C. A. M. (1978): Techniques in Geomorphology, Edward Arnold, London.
2. Miller, A.A. (1966): The Skin of the Earth, Methuen, London.
3. Monkhouse, F.J. and Wilkinson, H.R. (1971): Maps and Diagrams, Methuen, London.
4. Cole, J.R and King , C.A.M. (1968): Quantitative Geography, John Wiley And Sons, London.
5. Goudie, A. (1981): Geomorphological Techniques, George Alien And Unwin, London.
6. Hammond, R. And McCullagh, P.S. (1974): Quantitative Techniques in Geography: An Introduction, Oxford University Press, London.
- Mahmood Aslam (1977): Statistical Methods in Geographical Studies, Rejesh Publication, New Delhi.
7. Singh, Gopal (2001): Map Work and Practical Geography, Vikas Publishing House Pvt. Ltd.



PRINCIPAL 3

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8. Singh, L.R. (2011): Fundamentals of Practical Geography, Sharda Pustak Bhavan, Allahabad.
9. Singh, R.L. and Singh, R. B. (2004): Elements of Practical Geography, Kalyani Publishers, New Delhi – Ludhiana.

Evaluation Pattern

The performance of the learners shall be evaluated through the Semester End Examinations (SEE) with 100 marks.

A) Semester End Examinations – 100 Marks

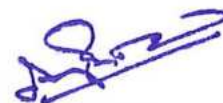
Question Paper Pattern

Maximum Marks: 100

Questions to be set: 6

All questions are compulsory.

Q. 1.	Full Length Question	20 Marks
Q.2.	Full Length Question	20 Marks
Q.3.	Full Length Question	20 Marks
Q.4.	Full Length Question	20 Marks
Q.5.	Viva-Voce	10 Marks
Q.6.	Journal	10 Marks



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Syllabus and Question Paper Pattern

Of

Courses of Master of Arts- Geography (M.A.) Programme

First Year

Semester I

**106: Tools and Techniques of Spatial Analysis II
(Based on Theory Papers: 103 -104)**

Under Academic Autonomy and Credit, Grading and Semester System
With effect from Academic Year 2018-19

Syllabus of Course of M.A.- Geography Program at Semester I

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Core Course

106: Tools and Techniques of Spatial Analysis II (Based on Theory Papers: 103 -104)

Course Objectives:

1. To learn measures of central tendency like weighted mean and median center
2. To illustrate network analysis through its associated mapping
3. To construct diagrams for spatial data representation
4. To analyze the socio-economic conditions through a properly designed questionnaire
5. To develop understanding of computer processing of geographic data
6. To assess the different sources of data

Course Outcome:

1. **CO 1:** Learners will be able to learn measures of central tendency like weighted mean and median center (**Level : Learn**)
2. **CO 2:** Learners will be able to illustrate network analysis through its associated mapping (**Level : Comprehension**)
3. **CO 3:** Learners will be able to construct diagrams for spatial data representation (**Level : Synthesis**)
4. **CO 4:** Learners will be able to analyze the socio-economic conditions through a properly designed questionnaire (**Level : Analysis**)
5. **CO 5:** Learners will be able to develop understanding of computer processing of geographic data (**Level : Synthesis**)
6. **CO 6:** Learners will be able to assess the different sources of data (**Level : Evaluation**)

Modules at a Glance

Sr. No.	Modules	No. of lectures
Module 1	Statistical Techniques	24
Module 2	Nature and application of spatial data	20
Module 3	Computer processing of geographical data	16
	Total	60


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Detailed Syllabus

Module	Topics	No. of Lectures
1	Statistical Techniques (Skill Development)	20
1.1	Measures of Central Tendency:	
i	Measures of central tendency: mean centre, weighted mean centre, median centre	
ii	Z score – different applications and interpretations.	
1.2	Network Analysis:	
i	Topological graphs -Connectivity- Calculations of Alpha, Beta and Gamma Indices.	
ii	Mapping of relative accessibility and connectivity – Matrices- point of minimum Aggregate travel distance (Skill development)	
2	Nature and application of spatial data (Skill Development)	20
2.1	Sources of data – Primary and secondary	
2.2	Data types – qualitative and quantitative Spatial data and Aspatial	
2.3	Scales of measurement of data: Nominal, Ordinal, Interval and Ratio – Symbolization and Representation – Interpretation and Relationships	
2.4	Designing a questionnaire	
3	Computer processing of geographical data (Employability)	20
3.1	Symbolisation, Preparation of matrix	
3.2	Diagrammatic Representation.	
3.3	Compilation of data	
3.4	Computation of data: qualitative and quantitative data based on descriptive statistical measures application of computer programmes (Employability)	

Reference Books

1. Robinson, A. H. and Others (1995): Elements of Cartography, VI Edition, John Wiley & Sons, New York.
2. Anson, R. W. and Ormeling, F. J., (Ed.) (1993): Basic Cartography for Students and Technicians, Vol.I, International Cartographic Association and Elsevier Applied Science Publishers, London.
3. Dickinson, G. C. (1977) Statistical Mapping and the Presentation of Statistics, Edward Arnold Ltd., London.
4. Monkhouse, F. J. and H. R. Wilkinson, (1971): Maps and Diagrams, Methuen & Co. Ltd., London.
5. Hodgkiss, A. G. (1970): Maps for Books and Theses, David and Charles Publishers Ltd., London.
6. Misra R. P. and A. Ramesh, (1969): Fundamentals of Cartography, Prasaranga, University of Mysore
7. Young, P. V. and Schmid, C. F. (1979) : Scientific Social Surveys and Research, ntice Hall, New Delhi.
- 8 .MahmoodAslam (1977), Statistical Methods in Geographical Studies, Rajesh Publication, New Delhi.

9. Hammond, R. and McCullagh, P.S. (1974), Quantitative Techniques in Geography: An Introduction, Oxford University Press, London.
10. Yeates, M (1974), An Introduction to Quantitative Analysis in Human Geography, McGraw Hill Book Co., New York.
11. Cole, J. P. and King, C. A. M., (1968), Quantitative Geography, John Wiley and Sons, London.
12. Fotheringham, A.S., Brunson, C., Charlton, M., (2000) Quantitative Geography: Perspectives on Spatial Data Analysis, Sage Publication Ltd, London,
13. Baily, T.C., and Gatrell, A. C, (1995), Interactive Spatial Data Analysis, Prentice Hall, London
14. Griffith, D. A., Layne, L.J., (2002) A Casebook for Spatial Statistical Data Analysis: A Compilation of Analyses of Different Thematic Data Sets, Amazon.com
15. Wicox, P.R. (2003), Applying Contemporary Statistical Techniques, Academic Press, Amsterdam
16. Crang M. and Cook, I. 2007, Doing Ethnographies, Sage.

Evaluation Pattern

The performance of the learners shall be evaluated through the Semester End Examinations (SEE) with 100 marks.

A) Semester End Examinations – 100 Marks

Question Paper Pattern
 Maximum Marks: 100
 Questions to be set: 6
 All questions are compulsory.

Q. 1.	Full Length Question	20 Marks
Q.2.	Full Length Question	20 Marks
Q.3.	Full Length Question	20 Marks
Q.4.	Full Length Question	20 Marks
Q.5.	Viva-Voce	10 Marks
Q.6.	Journal	10 Marks



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Syllabus and Question Paper Pattern

Of

Courses of Master of Arts- Geography (M.A.) Programme

First Year

Semester II

201: Oceanography and Hydrology

Under Academic Autonomy and Credit, Grading and Semester System
With effect from Academic Year 2018-19


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Syllabus of Course of M.A.- Geography Program at Semester II

Core Course

201: Oceanography and Hydrology

Course Objectives:

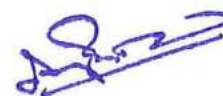
1. To define the basic concepts related to oceanography
2. To illustrate formation and role of ocean currents and ocean resources
3. To apply the understandings of concepts of hydrology to the real world
4. To associate the concepts of watershed with water scarcity in the present era
5. To construct salinity, ocean current and temperature distribution maps
6. To compare the marine conditions across various oceans in the world

Course Outcome:

1. **CO 1:** Learners will be able to define the basic concepts related to oceanography like definition, nature and scope (Level: Knowledge)
2. **CO 2:** Learners will be able to illustrate formation and role of ocean currents and ocean resources in influencing global temperature (Level : Comprehension)
3. **CO 3:** Learners will be able to apply the understandings of concepts related to the hydrological cycle to the real world (Level : Application)
4. **CO 4:** Learners will be able to associate the concepts of watershed with water scarcity in the present era with reference to one's own area (Level : Analysis)
5. **CO 5:** Learners will be able to construct salinity, ocean current and temperature distribution maps for better understanding of spatial distribution (Level : Synthesis)
6. **CO 6:** Learners will be able to compare the marine conditions across various oceans in the world (Level :Synthesis)

Modules at a Glance

Sr. No.	Modules	No. of lectures
Module 1	Fundamental Concepts in Oceanography	15
Module 2	Ocean Currents and Resources	15
Module 3	Introduction to Hydrology	15
Module 4	Watershed and its Characteristics and Evaporation Process	15
	Total	60



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Detailed Syllabus

Module	Topics	No. of Lectures
1	Fundamental Concepts in Oceanography	15
1.1	Evolution of oceanography	
1.2	Definition, nature and scope of oceanography	
1.3	Age and origin of oceans, and ocean morphology	
1.4	Distribution of temperature, salinity and density in oceans	
2	Ocean Currents and Resources	15
2.1	Ocean currents: Atlantic, Pacific and Indian Oceans and effects (regular and abnormal)	
2.2	Waves, tides and tsunamis	
2.3	Marine sediments and deposits	
2.4	Food and mineral resources of the sea	
3	Introduction to Hydrology	15
3.1	Evolution of Hydrology	
3.2	The hydrologic cycle	
3.3	Hydrological inputs and outputs	
3.4	Stream flow and ground water	
3.5	Global Freshwater Resources	
4	Watershed and its Characteristics and Evaporation Process (Employability)	15
4.1	Concept of watershed and its delineation	
4.2	Characteristics of a Watershed- Geometric & Drainage Network	
4.3	Watershed - Agro-Pedo Geological Characteristics - Soil Cover and types	
4.4	Watershed - Factors influencing Evaporation	
	<p>Suggestion: Assignments here can be given based on case studies.</p> <p>Following list shows few examples of case studies -</p> <p>(Case study - scientific study of India Ocean and Role of NIO)</p> <p>(Case study - 2004 Tsunami on Tamil Nadu coast)</p> <p>(Case study - India Ocean a source of food and minerals)</p> <p>(Case study – Water budget of India)</p> <p>(Case study – Hivre bazar or Ralegaon Sidhhi)</p>	


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Reference Books

1. Kale Vishwas and Gupta Avijit (2010), Introduction to Geomorphology, Universities Press, Hyderabad, Telangana
2. Andre Musy (2011) Hydrology a Science of Nature, Science Publishers, New Hampshire.
2. Centre for Science and Environment (2002), "Citizens Report", New Delhi.
3. Charlu, T.G.K. and Dutt, D. K. (1982), "Ground Water Development in India" Rural Electrification Corporation, New Delhi.
4. Chorley, R. J. (1967), "Water, Earth and Man", Methuen, London.
5. Chorley, R. J. (1969), "Introduction to Physical Hydrology", Methuen, London.
6. Elizabeth M. Shaw (1994) Hydrology in Practice, Taylor & Francis e-Library Publication, New Hampshire.
7. Jones, J. A. (1997), "Global Hydrology : Processes, Resources and Water Management", Longman, London.
8. Lvovich, M.I., (2010), Climatology, Hydrology, Glaciology, John Wiley and Sons, London
9. Mather, J. R. (1984), "Water Resources : Distribution, Use and Management", John Wiley, Maryland.
10. Singh, R. A. and Singh, S. R. (1972), "Water Management: Principles and Practices", Tara Publication, Varanasi.
11. Subramanya K (2014) Engineering Hydrology, Mc Graw Hill Publication, New Delhi.
12. Todd, D. K. ((1959), "Ground Water Hydrology", John Wiley, New York.
13. Stewart, R. H. (2008). Introduction to Physical Oceanography.
14. Garrison, T. (2012). Essentials of Oceanography (Sixth Edit). Brooks/Cole, Cengage Learning.
15. Singh, S. (2014). Oceanography. Allahabad: Pravalika Publications.
16. Rao, K. L. (1979), "India's Water Wealth", Orient Longman, New Delhi.



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Evaluation Pattern

The performance of the learners shall be evaluated through two components viz. Internal Assessment (IA) with 40 marks in the first component and by conducting the Semester End Examinations (SEE) with 60 marks as the second component. The allocation of marks for the Internal Assessment and Semester End Examinations are as shown below:

A) Internal Evaluation- 40 Marks

Sr. No.	Criteria	Marks
1	Class Test	20
2	Assignment	10
3	Active Participation	05
4	Attendance	05

B) Semester End Examinations - 60 Marks

Question Paper Pattern

Maximum Marks: 60

Questions to be set: 6

Answer any 4 out of 6 questions.

Q. 1.	Full Length Question (from first module only)	15 Marks
Q.2.	Full Length Question (from second module only)	15 Marks
Q.3.	Full Length Question (from third module only)	15 Marks
Q.4.	Full Length Question (from fourth module only)	15 Marks
Q.5.	Full Length Question (from any module)	15 Marks
Q.6.	Short Notes (4 short notes from each module)	15 Marks



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Syllabus and Question Paper Pattern

Of

Courses of Master of Arts- Geography (M.A.) Programme

First Year

Semester II

202: Geoinformatics

Under Academic Autonomy and Credit, Grading and Semester System
With effect from Academic Year 2018-19

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Syllabus of Course of M.A.- Geography Program at Semester II

Core Course

202: Geoinformatics

Course Objectives:

1. To define the fundamental concepts of remote sensing
2. To explain the various remote sensing platforms and sensors
3. To construct spatial data models in GIS
4. To associate GIS with GPS
5. To compare between satellite imageries, aerial photographs, and GIS outputs
6. To justify the reasons for the existing land uses from the imageries, photographs and other maps

Course Outcome:

1. **CO 1:** Learners will be able to define the fundamental concepts of remote sensing like electromagnetic spectrum, aerial photography, principles of photogrammetry, etc. **(Level : Knowledge)**
2. **CO 2:** Learners will be able to explain the various remote sensing platforms and sensors, basics of projections, datum and coordinate reference system **(Level : Comprehension)**
3. **CO 3:** Learners will be able to construct spatial data models in gis for solution modeling **(Level : Synthesis)**
4. **CO 4:** Learners will be able to associate gis with GPS and work with them together **(Level : Analysis)**
5. **CO 5:** Learners will be able to compare between satellite imageries, aerial photographs, and gis outputs for better results **(Level : Synthesis)**
6. **CO 6:** Learners will be able to justify the reasons for the existing land uses from the imageries, photographs and other maps **(Level : Evaluation)**

Modules at a Glance

Sr. No.	Modules	No. of lectures
Module 1	Fundamentals and Concepts of Remote Sensing	15
Module 2	Platforms and Sensors	15
Module 3	Fundamental of GIS, Spatial data models	15
Module 4	Global Navigation Satellite System	15
	Total	60


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Detailed Syllabus

Module	Topics	No. of Lectures
1	Fundamentals and Concepts of Remote Sensing	15
1.1	Fundamentals of Remote Sensing: Definition, Concept and Scope, Stages in Remote Sensing data acquisition, Development of remote sensing – Global and Indian, Advantages and limitations	
1.2	Electromagnetic Spectrum: Definition and Concept, EMR Bands, Interaction of EMR with atmosphere and Earth's surface features, Applications of different bands, Atmospheric window, Black body radiation	
1.3	Spectral Reflectance Curve: Concept, curves for land, water bodies/oceans, vegetation In Optical, IR, Thermal and Microwave bands, Application of Thermal and microwave data	
1.4	Fundamentals of aerial photography: Historical Development and Fundamentals of Aerial Photography, Vertical and Oblique aerial photography, Scale, Geometry and Ground Coverage of Aerial Photographs, Flight Planning, Stereoscopic image, Marginal information of the Aerial Photographs, Aerial Mosaics, Uses of Aerial Mosaics	
2	Platforms and Sensors	15
2.1	Platforms and Orbits: Types of Platforms, Types of Orbits	
2.2	Sensing of electromagnetic energy: Measurement of radiance, conversion of radiance to digital number	
2.3	Resolutions and Sensors: Types of resolutions, Types of sensors, Spatial, Spectral, Radiometric and Temporal -Overview of space borne sensors.	
2.4	Visual Image Interpretation: Image display and color composites, elements of visual image interpretation	
3	Fundamental of GIS, Spatial data models (Employability)	15
3.1	Fundamentals of Databases: Data storage, basic file structures, types of database, advantages of database, spatial and non-spatial databases, scales of measurement, Entity – Relationship Model, SQL,	
3.2	Geographic Information System: Definition, concept, components, Variables- points, lines, polygon, functions, applications, advantages and limitations of GIS	
3.3	Spatial Data Models: Raster, Vector data models, Attribute data model, FCC digital data, Concepts of arc, node, vertices and topology.	
3.4	Coordinate Reference Systems: Geographic and Projected, Map Projections and Datum for GIS data	



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4	Global Navigation Satellite System (Skill Development)	15
4.1	Vector-based spatial analysis: single layer operations (extraction and proximity) and multilayer operations (overlay operations),	
4.2	Raster-based spatial analysis: Georeferencing, Spatial Interpolation and raster generation, raster reclassification, arithmetic, relational and logical operations	
4.3	Global Positioning System: Concept, Development, GPS Satellite Navigation System (Skill development) and their Segments, Main Systems – NAVSTAR, GLONASS, Galileo and Indian GPS	
4.4	Principles of positioning: Positional Accuracies, Relative Positioning, errors and sources	

Reference Books

1. Agrawal, N.K.(2006), Essentials of GPS (Second Edition), Book Selection Centre, Hyderabad
2. American Society of Photogrammetry (1983): Manual of Remote Sensing, ASP PalisChurch,V.A.
3. Barrett, E.G. and Curtis, L.F. (1992): Fundamentals of Remote Sensing in Air Photointerpretation, McMillan, New York. 7.
4. Bernhardsen, Tor (2002): Geographical Information Systems: An Introduction, Third Edition, John Wiley & Sons, Inc., New York.
5. Burrough, Peter A and McDonnell, R.A. (1998): Principles of Geographical Information Systems, Oxford University Press, Mumbai.
6. Campbell. J. (1989): Introduction to Remote Sensing, Guilford, New York.
7. Clarke, Keith C. (1998): Getting Started with Geographic Information Systems, Prentice-Hall Series in Geogl. Info. Science, Prentice-Hall, Inc. N.J.
8. Curran, Paul, J, (1988): Principles of Remote Sensing, Longman, London.
9. Heywood, I. et al (2002): An Introduction to Geological Systems, Pearson Education Limited, New Delhi.
10. Iliffe, J.C (2006), Datums and Map Projections for Remote Sensing, GIS and Surveying, Whittles Publishing, New York.
11. Jonson. R. J. (2003): Remote Sensing of the Environment-An Earth Resources Perspective, Pearson Education Series in Geographical Information Science, Keith C. Clarke (Series editor) Pearson Educators Private Limited. (Singapore), New Delhi.
12. Joseph, G. (2009): Fundamentals of Remote Sensing, Universities Press (India) Pvt. Ltd., Hyderabad.
12. Lillesand ,Thomapson and RelphKiffer (1994). Remote Sensing and Image Interpretations, John Wiley and Sons, Inc., New York.
13. Parker, R, N. (2008),GIS and Spatial Analysis for the Social Sciences, Routledge, New York.
14. Paul Longley (2005), Geographic Information Systems and Science, John Wiley & Sons.
15. Pickles, John (2006), The Social Implications of geographic Information Systems, Rawat Publications, Jaipur.
16. Star, Jeffrey and John Estes (1996), Geographical Information Systems: An Introduction, Prentice-Hall, inc., N.J.



PRINCIPAL 4

17. Shekar, S and Chawla, S, (2009), Spatial Databases: A Tour, Pearson Education, Delhi. 18. Tempfli, T. K., Kerle, N., Huuremema, G.C., and Janssen, L.L.F (2009), Principles of Remote Sensing, ITC, Netherlands.

Evaluation Pattern

The performance of the learners shall be evaluated through two components viz. InternalAssessment (IA) with 40 marks in the first component and by conducting the Semester EndExaminations (SEE) with 60 marks as the second component. The allocation of marks for the InternalAssessment and Semester End Examinations are as shown below:

A) Internal Evaluation- 40 Marks

Sr. No.	Criteria	Marks
1	Class Test	20
2	Assignment	10
3	Active Participation	05
4	Attendance	05

B) Semester End Examinations - 60 Marks

Question Paper Pattern

Maximum Marks: 60

Questions to be set: 6

Answer any 4 out of 6 questions.

Q. 1.	Full Length Question (from first module only)	15 Marks
Q.2.	Full Length Question (from second module only)	15 Marks
Q.3.	Full Length Question (from third module only)	15 Marks
Q.4.	Full Length Question (from fourth module only)	15 Marks
Q.5.	Full Length Question (from any module)	15 Marks
Q.6.	Short Notes (4 short notes from each module)	15 Marks



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Syllabus and Question Paper Pattern

Of

Courses of Master of Arts- Geography (M.A.) Programme

First Year

Semester II

204: Urban Geography

Under Academic Autonomy and Credit, Grading and Semester System
With effect from Academic Year 2018-19

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Syllabus of Course of M.A.- Geography Program at Semester II

Core Course

204: Urban Geography

Course Objectives:

1. To name the process of urbanization and urban systems
2. To interpret interconnection between urbanization, capitalism, and development
3. To apply the various perspectives on urban planning
4. To associate urban transformation and changing socio-economic and environmental conditions
5. To develop a solution model to minimize the impacts
6. To compare the process of urbanization among different places on Earth

Course Outcome:

1. **CO 1:** Learners will be able to name the process of urbanization and urban systems (**Level : Knowledge**)
2. **CO 2:** Learners will be able to interpret interconnection between urbanization, capitalism, and development (**Level : Comprehension**)
3. **CO 3:** Learners will be able to apply the various perspectives on urban planning (**Level : Application**)
4. **CO 4:** Learners will be able to associate urban transformation and changing socio-economic and environmental conditions (**Level : Analysis**)
5. **CO 5:** Learners will be able to develop a solution model to minimize the impacts (**Level : Synthesis**)
6. **CO 6:** Learners will be able to compare the process of urbanization among different places on earth (**Level : Evaluation**)

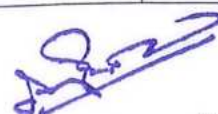
Modules at a Glance

Sr. No.	Modules	No. of lectures
Module 1	Process of Urbanization and Urban Systems	15
Module 2	Urbanization Process, Capitalism and development	15
Module 3	Perspectives on Urban Planning with Special Reference to India	15
Module 4	Understanding the Urban Transformation with Special Reference to Mumbai Metropolitan Region	15
	Total	60


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Detailed Syllabus

Module	Topics	No. of Lectures
1	Process of Urbanisation and Urban Systems	15
1.1	The bases of urbanisation- Demographic, economic and social aspects- Origins of the cities- Urbanisation Trends – urban fringe, urban sprawl and suburbanisation	
1.2	Urban Landuse – various approaches – Classical, Neo-classical approaches - Human Ecology, land economics, activity systems	
1.3	Urban location of economic activities – Urban morphology and landuse- Critical perspective	
1.4	Urban System- Evolution, growth and organisation - Primacy, hierarchy and balance – urban functions and Town classification	
2	Urbanisation Process, Capitalism and development	15
2.1	Capitalism and urban development - Urbanisation in the industrialised world -Political economy of urbanisation.	
2.2	Urbanisation in the Third World - Concept of peripheral urbanisation - Salient characteristics- slums and Urban poverty- Capitalism and urban development	
2.3	Colonial and post-colonial structure – Concepts of dualism and urban economic base in Third World Cities	
2.4	Theoretical Perspectives on role of Cities in regional and national development – cumulative Causation- Core and Periphery and growth pole theory - Top-down and bottom-up approach of urban and regional Planning	
3	Perspectives on Urban Planning with Special Reference to India	15
3.1	Indian experience of urban planning through 5 Year Plans – First Five Year Plan To Sixth Five Year Plan - Primate urban structure and associated problems – growth poles – policies of decongestion, decentralisation and planned towns – successes and failures , Indian Urban and Housing Policies Changing Perspective on city planning – Seventh, Eighth and Ninth Five Year Plan – Intersection of global processes – Flexibilised urban economy – Changing Economic Base and International Capital - Informalisation and Feminisation of urban economy	
3.2	Recentralisation – international capital and formation of global city -	
3.3	Processes and patterns of urban renewal- Crisis in urban space- Gentrification and other emerging issues.	
3.4	Global city and global city-region – new regionalism - transformation of the periurban regions examples from South Asia	



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4	Understanding the Urban Transformation with Special Reference to Mumbai Metropolitan Region (Skill Development)	15
4.1	Gentrification in the Mill-land of Mumbai and the plight of the textile workers	
4.2	Slum redevelopment in Mumbai- the case of Dharavi	
4.3	Issues of urban planning and environment in Vasai- Virar Subregion	
4.4	Mumbai a reclaimed city and challenges in urban planning.	
4.5	The Planned City of New Mumbai: A Critical Perspective	

Reference Books

1. Carter, H (1972): The Study of Urban Geography, Edward Arnold.
2. A. Latham, D. McCormack, K. McNamara, D. McNeill (2009): Key Concepts in Geography, Sage.
2. Knox, P.L. and Taylor. P.J.(1995): World Cities in a World System, Cambridge University Press, U.K.
3. Harvey, D.(1973): Social Justice and the City, Arnold
4. Abu-Lughod, J. and Hay, R. Jr. (1977): Third World Urbanisation, Maarouta Press.
5. Gugler. J. (ed.)(1988): The Urbanisation of the Third World, O.U.P
6. Sassen, S. (1991): The Global City, Princeton University Press.
7. Clarke, D. (1982): Urban Geography: An Introductory Guide, Groom Helm.
8. Marcuse, P. and Kempen, R.V. (eds.),(2000): Globalizing Cities: A New Spatial Order, Blackwell,
9. Short, J. R. (1996): The Urban Order, Basil Blackwell.
10. Smith, N. (1996): The New Urban Frontier, Rutledge
11. King A. D. (1990): Global Cities, Rutledge.
12. Simmonds, R. and Hack, G. (2000): Global City Regions, Spon Press.
13. Markusen, A.R., et al. (1991): Second Tier Cities- Rapid Growth beyond the Metropolis, University of Minnesota Press.
14. Allen J. Scott (ed.), (2001): Global City Regions, Trends, Theory & Policy, Oxford University Press.
15. David Harvey (1985): The Urbanization of Capital, John Hopkins University Press.
16. Edward Soja (2000): Postmetropolis, Critical Studies of cities and Regions, Blackwell Publisher Ltd.
17. G. P. Chapman, A.K. Dutt and R.W. Bradnock (ed.) (1999): Urban growth & Development in Asia, Vol.2: Living in the Cities, Ashgate Publishing Ltd.
18. G. P. Chapman, A.K. Dutt and R.W. Bradnock (ed.) (1999): Urban growth & Development in Asia, Vol.1: Making the Cities, Ashgate Publishing Ltd.
19. Edgar Pieterse, (2008), City Futures- Confronting the Crisis of Urban development, Zed Books, London.


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Evaluation Pattern

The performance of the learners shall be evaluated through two components viz. Internal Assessment (IA) with 40 marks in the first component and by conducting the Semester End Examinations (SEE) with 60 marks as the second component.

The allocation of marks for the Internal Assessment and Semester End Examinations are as shown below:

A) Internal Evaluation – 40 Marks

Sr. No.	Criteria	Marks
1	Class Test	20
2	Assignment	10
3	Active Participation	05
4	Attendance	05

B) Semester End Examinations – 60 Marks

Question Paper Pattern

Maximum Marks: 60

Questions to be set: 6

Answer any 4 out of 6 questions.

Q. 1.	Full Length Question (from first module only)	15 Marks
Q.2.	Full Length Question (from second module only)	15 Marks
Q.3.	Full Length Question (from third module only)	15 Marks
Q.4.	Full Length Question (from fourth module only)	15 Marks
Q.5.	Full Length Question (from any module)	15 Marks
Q.6.	Short Notes (4 short notes from each module)	15 Marks

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Syllabus and Question Paper Pattern

Of

Courses of Master of Arts- Geography (M.A.) Programme

First Year

Semester II

205: Tools and Techniques of Spatial Analysis III

Under Academic Autonomy and Credit, Grading and Semester System
With effect from Academic Year 2018-19

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Syllabus of Course of M.A.- Geography Program at Semester II

Core Course

205: Tools and Techniques of Spatial Analysis III

Course Objectives:

1. To memorize the essentials of image processing
2. To illustrate the various techniques of map making
3. To prepare a perfect map layout
4. To analyze spatial database by overlaying several layers
5. To create various vector layers in the GIS software
6. To compare between the map and the real world

Course Outcome:

1. **CO 1:** Learners will be able to memorize the essentials of image processing like identifying the objects, stereo vision, etc. (Level : Knowledge)
2. **CO 2:** Learners will be able to illustrate the various techniques of map making like tracing and digitization from the imagery/ photograph (Level : Comprehension)
3. **CO 3:** Learners will be able to prepare a perfect map layout in the GIS software (Level : Application)
4. **CO 4:** Learners will be able to analyze spatial database by overlaying several layers (Level : Analysis)
5. **CO 5:** Learners will be able to create various vector layers in the GIS software point, line, polygon (Level : Synthesis)
6. **CO 6:** Learners will be able to compare between the map and the real world with the help of area and distance calculation (Level : Evaluation)

Modules at a Glance

Sr. No.	Modules	No. of lectures
Module 1	Introduction to Image Processing	20
Module 2	Map Layout and Design	20
Module 3	Image Application and GPS	20
	Total	60



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Detailed Syllabus

Module	Topics	No. of Lectures
1	Introduction to Image Processing (Skill Development)	20
1.1	Aerial Photography: Construction of stereo vision, Photo Interpretation and preparation of photo map, Determination and application of scale for distance, area and Determination height. Image Interpretation, Conjunctive use of Map, Aerial Photographs and Satellite Imagery	
1.2	Georeferencing: Map to map, image to map and assigning projection and choosing datum	
1.3	Digitization: preparation of vector layers, vector editing, linking of spatial and attribute data.	
1.4	Thematic mapping techniques: symbolization, labelling, representation of quantitative data, vector layer classification.	
2	Map Layout and Design (Skill Development)	20
2.1	Vector overlay, buffer, extraction	
2.2	Point in polygon, line in polygon,	
2.3	Data retrieval – Attribute and Spatial query	
2.4	Map Layout and Design	
3	Image Application and GPS (Skill Development)	20
3.1	Spatial Interpolation and raster reclassification	
3.2	Application of Raster calculator	
3.3	Drainage Network Analysis	
3.4	GPS Survey (Employability)	

Reference Books

1. Bhatta, Basudeb, (2008), Remote Sensing and GIS, Oxford University Press.
2. Jones, C. B., (1997), Geographical Information Systems and Computer Cartography, Addison, Wesley Longman Ltd., U.K.
3. Albrecht J. (2007), Key Concepts and Techniques in GIS, Sage.
4. Kemp Karen (ed.), (2008), Encyclopedia in Geographical Information Science, Sage.
5. Huxhold, W.E., (1991), An Introduction to Urban Geographical Information systems, Oxford University Press, New York.
6. Pickles, J., (1995), Ground Truth: The social Implications of Geographical Information Systems, The Guilford Press, New York.
7. Martin D., (1996), Geographical Information Systems: Socio-economic Applications, 2nd edition, Routledge, London, New York.
8. Morraine S. (1998), GIS Solutions in Natural Resource Management: Balancing The Technical-Political Equations, Onward Press, London.
9. FazalSahab, (2008), GIS Basics, New Age International Publishers Ltd, New Delhi



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10. Petersen, G.N., (2009), GIS Cartography- A Guide to Effective Map Design, Taylor and Francis Group.
11. Vallentine G. Clifford N. (2010), Key Methods in Geography, Sage. 10
12. Birkin, Mark et al (1996). Intelligent GIS Geo Information International, Cambridge.
13. Chrisman, Nicholas (1997), Exploring Geographic Information Systems, John Wiley and Sons Inc, New York
14. Hard, R.M. (1989): Digital Image Processing of Remotely Sensed data, Academic Press, New York.
15. Lo, C.P (1986): Applied Remote Sensing, Longman, Scientific and Technical, Harlow, Essex.
16. Lunder, D. (1959): Aerial Photography Interpretation: Principles and Applications, McGrawHill, New York.
17. McCoy, Roger M. (2006), Field methods in Remote Sensing, Rawat Publications, Jaipur.
18. Prater, W.K. (1978): Digital image Processing, John Wiley, New York.
19. Rao, D.P. (eds.)(1988): Remote Sensing for Earth Resources, Association of Exploration Geologist, Hyderabad.
20. Sabins, F. (1982): Remote Sensing: Principles and Applications, Freeman and Co., New York.
21. Spencer, John (2003) Global Positioning System: A Field Guide for the Social Scientists, Blackwell Publishing, Malden, USA.
22. Verrtappen, H. Th., (1977): Remote Sensing in Geomorphology, Elsevier Scientific Publication Company, Amsterdam.
23. Warrin, R. Philipson (1997): Manual of Photographic



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Evaluation Pattern

The performance of the learners shall be evaluated through the Semester End Examinations (SEE) with 100 marks.

A) Semester End Examinations - 100 Marks

Question Paper Pattern

Maximum Marks: 100

Questions to be set: 6

All questions are compulsory.

Q. 1.	Full Length Question	20 Marks
Q.2.	Full Length Question	20 Marks
Q.3.	Full Length Question	20 Marks
Q.4.	Full Length Question	20 Marks
Q.5.	Viva-Voce	10 Marks
Q.6.	Journal	10 Marks



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Syllabus and Question Paper Pattern

Of

Courses of Master of Arts- Geography (M.A.) Programme

First Year

Semester II

**206: Tools and Techniques of Spatial Analysis IV Based on Theory
Papers: (203-204)**

Under Academic Autonomy and Credit, Grading and Semester System
With effect from Academic Year 2018-19

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Syllabus of Course of M.A.- Geography Program at Semester II

Core Course

**206: Tools and Techniques of Spatial Analysis IV
Based on Theory Papers: (203-204)**

Course Objectives:

1. To memorize the various techniques of map making
2. To describe the techniques of population hierarchy and population
3. To demonstrate the art of making mental maps and diagrams
4. To analyze the statistical techniques to analyze spatial pattern
5. To compute spatial concentration indices
6. To justify the existing spatial patterns in the world

Course Outcome:

1. **CO 1:** Learners will be able to memorize the various techniques of map making (Level : Knowledge)
2. **CO 2 :**Learners will be able to describe the techniques of population hierarchy and population (Level : Comprehension)
3. **CO 3:** Learners will be able to demonstrate the art of making mental maps and diagrams (Level : Application)
4. **CO 4:** Learners will be able to analyze the statistical techniques to analyze spatial pattern (Level : Synthesis)
5. **CO 5:** Learners will be able to compute spatial concentration indices (Level : Application)
6. **CO 6:** Learners will be able to justify the existing spatial patterns in the world (Level : Evaluation)

Modules at a Glance

Sr. No.	Modules	No. of lectures
Module 1	Settlement Hierarchy and population studies	25
Module 2	Mental Maps and diagrams	15
Module 3	Statistical Techniques to understand the spatial pattern	20
	Total	60



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Detailed Syllabus

Module	Topics	No. of Lectures
1	Settlement Hierarchy and population studies (Skill Development)	25
1.1	Settlement Hierarchy	
a.	Nearest Neighbour analysis	
b.	Population and functional – rank- size rule – application and interpretation - degree of primacy - Construction- Interpretation – application of triangular graph	
1.2	Application of Statistical and Cartographic Techniques	
a.	Choropleth, Isopleths, Dot map and Population Pyramids	
b.	Diagrammatic Representation: One, Two and Three Dimensional- Construction and Interpretation	
2	Mental Maps and diagrams	15
2.1	Typology of distance and direction of space- Construction of Maps	
2.2	Imagining Place and space: Perception – mapping and interpretation. (Employability)	
2.3	Interpreting political context of maps, cartographic techniques, diagrams, pictures and cartoons.	
3	Statistical Techniques to understand the spatial pattern (Skill Development)	20
3.1	Index of concentration: location quotient and concentration.	
3.2	Index of similarity and dissimilarity and inequality- Construction and applicability of Lorenz curve- Interpretations	
3.3	Calculation of Ginni's co-efficient of concentration	

Reference Books

1. Gregory, S. (1971): Statistical Methods and Geographer, Longman, London.
2. King, C. A. M. (1978): Techniques in Geomorphology, Edward Arnold, London.
3. Taylor, Peter J. (1977): Quantitative Methods in Geography, Houghton and Mifflin co., Boston
4. Monkhouse. F.J. and Wilkinson, H.R. (1971): Maps and Diagrams, Methuen, London
5. Cole, J.R and King , C.A.M. (1968): Quantitative Geography, John Wiley And Sons, London.
6. Goudie, A. (1981): Geomorphological Techniques, George Alien And Unwin, London.
8. Hammond, R. And McCullagh, P.S., (1974): Quantitative Techniques in Geography: An Introduction, Oxford University Press, London.
9. Yeates, M, (1974): An Introduction to Quantitative Analysis in Human Geography, McGraw Hill Book Co., New York.



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10. MahmoodAslam, (1977): Statistical Methods in Geographical Studies, Rejesh Publication, New Delhi.
11. Rogerson P.A. (2010), 3rd Ed. Statistical Methods for Geography, a Students Guide, Sage.
12. Ebdon, David, (1985): Statistics in Geography: A Practical Approach , Wiley-Blackwell, New York.
13. Fotheringham, A.S., Brunsdon, C., Charlton, M : (2000) Quantitative Geography: Perspectives on Spatial Data Analysis, Sage Publication Ltd, London,
14. Baily, T.C., and Gatrell, A. C, (1995): Interactive Spatial Data Analysis, Prentice Hall, London
15. Griffith , D. A. , Layne, L.J.,(2002): A Casebook for Spatial Statistical Data Analysis: A Compilation of Analyses of Different Thematic Data Sets , Amazon.com
16. Chen, Y.Q. and Lee Y.C., (ed.) (2003): Geographical Data Acquisition , New York
17. Vallentine G. Clifford N. (2010), Key Methods in Geography, Sage.
18. Delyser D., Herbert S., Aitken S. (eds.) (2010), The Sage Handbook of Qualitative Research, Sage.
19. Cloke, P., Cook, I, Crang, P., et.al. (2004), Practising Human Geography, Sage.

Evaluation Pattern

The performance of the learners shall be evaluated through the Semester End Examinations (SEE) with 100 marks.

A) Semester End Examinations – 100 Marks

Question Paper Pattern

Maximum Marks: 100

Questions to be set: 6

All questions are compulsory.

Q. 1.	Full Length Question	20 Marks
Q.2.	Full Length Question	20 Marks
Q.3.	Full Length Question	20 Marks
Q.4.	Full Length Question	20 Marks
Q.5.	Viva-Voce	10 Marks
Q.6.	Journal	10 Marks



PRINCIPAL 4

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Syllabus and Question Paper Pattern

Of

Courses of Master of Arts- Geography (M.A.) Programme

First Year

Semester III

301: Research Methodology in Geography

Under Academic Autonomy and Credit, Grading and Semester System
With effect from Academic Year 2019-20

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Syllabus of Course of M.A.- Geography Program at Semester III

Core Course

301: Research Methodology in Geography

Course Objectives:

1. To acknowledge students with the basics of research and its methodology
2. To interpret the results with the help of research hypothesis and its testing
3. To compute and analyze geographic data
4. To distinguish between the different levels of measurement
5. To compile a research report
6. To justify the research with the help of statistical measures

Course Outcome:

1. **CO 1:** Learners will be able to acknowledge students with the basics of research and its methodology (**Level : Knowledge**)
2. **CO 2:** Learners will be able to interpret the results with the help of research hypothesis and its testing (**Level : Comprehension**)
3. **CO 3:** Learners will be able to compute and analyze geographic data (**Level : Application**)
4. **CO 4:** Learners will be able to distinguish between the different levels of measurement (**Level : Analysis**) (**Local development skills**)
5. **CO 5:** Learners will be able to compile a research report (**Level : Synthesis**)
6. **CO 6:** Learners will be able to justify the research with the help of statistical measures (**Level : Evaluation**)

Modules at a Glance

Sr. No.	Modules	No. of lectures
Module 1	Introduction to Research Methodology	15
Module 2	Research Hypothesis and Sampling	15
Module 3	Nature and Analysis of Geographical Data	15
Module 4	Scientific Report Writing	15
Total		60



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Detailed Syllabus

Module	Topics	No. of Lectures
1	Introduction to Research Methodology	15
1.1	Defining research- Methods of research types, significance of geographical research, research ethics	
1.2	Scientific method in geographical studies, inductive and deductive, basic elements, and attributes Scale of research: Macro, Meso, Micro. with examples	
1.3	Review of Literature: Significance and sources of literature review	
1.4	Research Design: meaning, stages, characteristics and significance of research design (Skill Development)	
2	Research Hypothesis and Sampling	15
2.1	Meaning of Hypothesis, relevance and types of hypothesis	
2.2	Identification of problem and hypothesis: Problem identification, formulation, statement of hypothesis, testing of hypothesis (Skill Development) , generalization.	
2.3		
2.4	Sampling: Meaning and importance, types of sampling with examples Selection of sample, size of sample and errors in sampling (Local development skills)	
3	Nature and Analysis of Geographical Data	15
3.1	Nature and type of Geographical data, significance of spatial and temporal data in geographical studies	
3.2	Levels of measurements: Nominal, Ordinal, Ratio and Interval with examples	
3.3	Methods and sources of geographical data collection : conventional and modern; limitations of secondary data and need for data generation, collection of primary data: types of questionnaires and schedules, field work, tabulation, sample surveys and their significance	
3.4	Geographic Data analysis: Qualitative, Quantitative and Advanced techniques of geographic data processing and analysis, geographical matrix and its significance in analysis of geographic data (Skill Development)	
4	Scientific Report Writing (Employability)	15
4.1	Introduction- aim and objectives, data and methodology	
4.2	Data analysis, result, conclusion	
4.3	Referencing system, webography and bibliography.	
4.4	Plagiarism, design, concept of impact factor, citation, DOI	

Reference Books

1. Karlekar Shrikant and Kale Mohan (2005): Statistical analysis of Geographical data, Dimond publication

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(AUTONOMOUS)
MALAD (W), MUMBAI - 400 084

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- 14)Monmonier, Mark S.(1982): Computer Assisted Cartography: Principals & prospects, Pprentice Hall, Inc, London.
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- 17)P. A. Burrough and R.A. McDonnell (2000): Principle of Geographical Information System, Oxford
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- 19)Robinson, A.H.et al.(1985): Elements of Cartography, Vol.VI, John Wiley and Sons, New York.
- 20)Rogerson P. A. (2001): Statistics for Geography (SAGE pub., London, New Delhi}
- 21) Shaw G and Wheller D. (1985): Statistical techniques in geographical analysis. John Wiley and sons,
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- 23)Sumner G J (1978): Mathematics for physical geographers. Edward Arnols
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- 27)Yeates, M. (1974). An Introduction to Quantitative Analysis in Human Geography, McGraw Hill, New York.



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- 30) Wicox, R.R. (2003) : Applying Contemporary Statistical Techniques Academic press, Amsterdam.
- 31) Wilsons, A.G. & Bennet, R.J. (1985): Mathematical Methods In Human Geography And Planning, John Wiley & Sons, New York.

Evaluation Pattern

The performance of the learners shall be evaluated through two components viz. Internal Assessment (IA) with 40 marks in the first component and by conducting the Semester End Examinations (SEE) with 60 marks as the second component. The allocation of marks for the Internal Assessment and Semester End Examinations are as shown below:

A) Internal Evaluation- 40 Marks

Sr. No.	Criteria	Marks
1	Class Test	20
2	Assignment	10
3	Active Participation	05
4	Attendance	05

B) Semester End Examinations - 60 Marks

Question Paper Pattern

Maximum Marks: 60

Questions to be set: 6

Answer any 4 out of 6 questions.

Q. 1.	Full Length Question (from first module only)	15 Marks
Q.2.	Full Length Question (from second module only)	15 Marks
Q.3.	Full Length Question (from third module only)	15 Marks
Q.4.	Full Length Question (from fourth module only)	15 Marks
Q.5.	Full Length Question (from any module)	15 Marks
Q.6.	Short Notes (4 short notes from each module)	15 Marks


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Syllabus and Question Paper Pattern

Of

Courses of Master of Arts- Geography (M.A.) Programme

Semester III

302 – Climatology of the Tropics

Under Academic Autonomy and Credit, Grading and Semester System

With effect from Academic Year 2019-20

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MALAD (W), MUMBAI - 400 084**

302 - Climatology of the Tropics

Course Objectives:

1. To identify the basics of climatology of tropics
2. To summarize the atmospheric conditions of tropics
3. To compute the indices of climate of tropics
4. To determine the reasons behind tropical disturbances
5. To develop a heat budget of an area
6. To appraise the reasons behind cyclones all over the globe

Course Outcome:

1. **CO 1:** Learners will be able to identify the basics of climatology of tropics like El Nino, and heat budget (**Level : Knowledge**)
2. **CO 2:** Learners will be able to summarize the atmospheric conditions of tropics like stability, instability, air masses, fronts and their impacts on weather (**Level : Comprehension**)
3. **CO 3:** Learners will be able to compute the indices of climate of tropics (**Level: Application**)
4. **CO 4:** Learners will be able to determine the reasons behind tropical disturbances (**Level : Analysis**)
5. **CO 5:** Learners will be able to develop a heat budget of an area (**Level : Synthesis**)
6. **CO 6:** Learners will be able to appraise the reasons behind cyclones all over the globe (**Level : Evaluation**)

Sr. No.	Modules	No. of lectures
Module 1	Introduction	15
Module 2	Atmospheric conditions of Tropics	15
Module 3	Indices of climate in Tropics	15
Module 4	Tropical Disturbances	15
Total		60

Modules at a Glance



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Detailed Syllabus

Module	Topics	No. of Lectures
1	Introduction	15
1.1	Concept of Tropical Climate and tropical boundaries	
1.2	Importance of tropical climate –Economic importance	
1.3	Role of tropics in the general circulation of atmosphere-jet streams, planetary winds, El Nino and ocean currents	
1.4	Heat budget of the tropics - a study of Mumbai	
2	Atmospheric conditions of Tropics	15
2.1	Atmospheric stability & instability and its impact on weather – case study of Delhi smog	
2.2	Airmasses and fronts	
2.3	Classification and characteristics of airmasses	
2.4	Airmasses over tropical region and its impact on weather- case study winter rainfall due to western disturbances	
3	Indices of climate in Tropics	15
3.1	Atmospheric and oceanic oscillations on various time scales	
3.2	Classification of tropical climate- climatic types in tropics based on schemes of Koppen and Thornthwaite (Skill Development)	
3.3	Genesis of monsoon-and variability of monsoon	
3.4	Impact of land and sea breeze on weather of Mumbai	
4	Tropical Disturbances	15
4.1	Cyclones and thunderstorms their characteristics	
4.2	Climate change and frequencies of cyclone	
4.3	A comparison of cyclones in Bay of Bengal and Arabian Sea	
4.4	Study of recent coastal cyclone in last 5 years (Skill Development)	

References:

- 1) Garbell, M.A. (1947): Tropical and Equatorial Meteorology, Sir Isaac Pitman and Sons Ltd, U.S.
- 2) Lockwood, J.G. (1974): World Climatology, an Environmental Approach, Edward Arnold, U.K.
- 3) Nieuwolt, S. (1977): Tropical Climatology, John Wiley and Sons Ltd, U.S.A
- 4) Riehl, H. (1954): Tropical Meteorology, McGraw Hill Co, U.K.
- 5) Trewartha, G.T. (1962): The Earth's Problem Climates, Methuen & Co. Ltd, London
- 6) Barrett, E.G. (1974): Climatology from Satellite, Methuen & Co. Ltd, U.K.
- 8) Ramage, C.S. (1971): Monsoon Meteorology, Academic Press, U.K.
- 9) Subrahmanyam, V.P. (1983): Contribution to Indian Geography, Part III General Climatology, Heritage Publications, New Delhi
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12) Thornthwaite, C.W. (1948): An approach towards a Rational Classification of Climate, Geographical Review, 38, 55-94.

13) Yoshino, M.M. (ed) (1971): Water Balance of Monsoon Asia, University of Hawaii Press

Assignments:

- IMD related study on weather for particular phenomenon
- Finding out satellites and its data through GIS technology – satellites TRMM (rainfall data)
- Ocean related phenomenon study in today's world which includes most importantly climate changes impact on El Nino and La Nino phenomenon

Evaluation Pattern

The performance of the learners shall be evaluated through two components viz. Internal Assessment (IA) with 40 marks in the first component and by conducting the Semester End Examinations (SEE) with 60 marks as the second component.

The allocation of marks for the Internal Assessment and Semester End Examinations are as shown below:

A) Internal Evaluation – 40 Marks

Sr. No.	Criteria	Marks
1	Class Test	20
2	Assignment	10
3	Active Participation/Presentation	05
4	Attendance	05

B) Semester End Examinations – 60 Marks

Question Paper Pattern

Maximum Marks: 60,

Duration 2 hrs. and 30 minutes

Questions to be set: 6

Answer any 4 out of 6 questions.



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Q. 1.	Full Length Question (from first module only)	15 Marks
Q.2.	Full Length Question (from second module only)	15 Marks
Q.3.	Full Length Question (from third module only)	15 Marks
Q.4.	Full Length Question (from fourth module only)	15 Marks
Q.5.	Full Length Question (from any module)	15 Marks
Q.6.	Short Notes (4 short notes from each module)	15 Marks



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Nagindas Khandwala College

(AUTONOMOUS)



Syllabus and Question Paper Pattern

Of

Courses of Master of Arts- Geography (M.A.) Programme

Semester III

303 - Geography of South Asia with Special Reference to India

Under Academic Autonomy and Credit, Grading and Semester System
With effect from Academic Year 2019-20

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Syllabus of Course of M.A.- Geography Program at Semester III

Core Course

303 - Geography of South Asia with Special Reference to India

Course Objectives:

1. To recognize the physiographic aspects of South Asia
2. To describe the historical context which led to organization of society
3. To produce difference between pre-colonial, colonial and post-colonial economic ideologies
4. To analyze the organization of economy in South Asia
5. To compare the geopolitical and intra-regional relations and development in different countries
6. To assess the existing trade patterns and its impact on mankind and economy

Course Outcome:

1. **CO 1:** Learners will be able to recognize the physiographic aspects of South Asia like geology, drainage, climate and soil (**Level : Knowledge**)
2. **CO 2:** Learners will be able to describe the historical context which led to organization of society (**Level : Comprehension**)
3. **CO 3:** Learners will be able to produce difference between pre-colonial, colonial and post-colonial economic ideologies (**Level : Application**)
4. **CO 4:** Learners will be able to analyze the organization of economy in South Asia (**Level : Analysis**)
5. **CO 5:** Learners will be able to compare the geopolitical and intra-regional relations and development in different countries (**Level : Synthesis**)
6. **CO 6:** Learners will be able to assess the existing trade patterns and its impact on mankind and economy (**Level : Evaluation**)

Modules at a Glance

Sr. No.	Modules	No. of lectures
Module 1	Physiography of South Asia	15
Module 2	Historical Context- Organisation of Society	15
Module 3	Organisation of Economy	15
Module 4	Geo-politics, intra-regional relations and Development	15
	Total	60



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Detailed Syllabus

Module	Topics	No. of Lectures
1	Physiography of South Asia	15
1.1	Geological Evolution-Relief, topographic characteristic features	
1.2	Drainage - major river systems spatial pattern of water distribution	
1.3	Climate - regional variations of climate- factors and processes	
1.4	Soil and Vegetation - Types and regional variations	
2	Historical Context- Organisation of Society	15
2.1	Pre-colonial and Colonial societies and cultural evolution - Historical Background of Colonisation: Impact on social, cultural and political organisation of society	
2.2	Partition and emergence of independent nation state- Consequences, conflicts and identity politics - Regional Dynamics- Differences and Shared Characteristics	
2.3	Demographic characteristics language, religion, race - Patterns of Migration assimilation and segregation -contestations and cultural politics with examples	
2.4	Social, cultural and political institutions - identity politics with examples	
3	Organisation of Economy	15
3.1	Agricultural development in South Asia- Colonial and post-colonial trends- Globalisation and status of agriculture status of small and marginal farmers - issues of corporatization Industrialization-	
3.2	Genesis and trends New economic policy- Globalisation - Role of the MNCs - Growth of services and finance change in economic opportunities	
3.3	Urbanisation and economic growth- Contemporary urban systems- Globalising cities- Global capital regions and the urban crisis	
3.4	Trade relations-intra-regional patterns and associations, SAPTA - success and failure	
4	Geo-politics, intra-regional relations and Development (Skill Development)	15
4.1	The Challenge of regionalism: Intra and Inter-regional interaction conflicting Frontiers and border states - Geopolitics of resources like water , land and maritime resources, Issues of Terrorism – frontiers (case study – POK, North East borders)	
4.2	Regional cooperation – SAARC: prospects and challenges, Critical assessment of role of India	



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4.3	New inter-regional coalitions and its impact on South Asian Intra-regional interaction AIDB / CPEC / BRICS	
4.4	Politics of development and resources - Status of development - contemporary modes of governance - Quality of life and index of socio-economic well-being - Regional variations	

Reference Books

- 1) Karlekar Shrikant and Kale Mohan (2005): Statistical analysis of Geographical data, Dimond publication
- 2) Burt, J.E. and Barber, G.M.(1996): Elementary statistics for Geographers, The Guilford press, New York.
- 3) Clark, W.A.V. and Hosking, P.C(1986): Statistical Methods for Geographers, John Wiley & Sons, New York.
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- 5) Ebdon David (1989): Statistical for Geographers
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- 14)Monmonier, Mark S.(1982): Computer Assisted Cartography: Principals & prospects, Pprentice Hall, Inc, London.
- 15)Norcliff, G.B.(1982) Inferential Statistics for Geographers Hutchinson, London.
- 16)Norcliffe G. B. (1977): Inferential statistics for Geographers (Hutchinson, London)
- 17)P. A. Burrough and R.A. McDonnell (2000): Principle of Geographical Information System, Oxford
- 18)Richardus P., Adler Ron K (1972) : Map projections, North Holland publ. Co. Amsterdam
- 19)Robinson, A.H.et al.(1985): Elements of Cartography, Vol.VI, John Wiley and Sons, New York.
- 20)Rogerson P. A. (2001): Statistics for Geography (SAGE pub., London, New Delhi)
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PRINCIPAL 4

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- 22) Singh & Kanauja : Map work and Practical Geography.
 23) Sumner G J (1978): Mathematics for physical geographers. Edward Arnolds
 24) Taylor, P.J.(1977): Quantitative Methods in Geography. Houghton Mifflin Company, Boston University Press.
 25) V. Natarajan P., Adler Ron K.: Advanced Surveying, B. 1 Publ. Bombay
 26) Watson, G. and McGraw, D.(1980): Statistical Inquiry, John Wiley and sons, New York.
 27) Yeates, M. (1974). An Introduction to Quantitative Analysis in Human Geography, McGraw Hill, New York.
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 30) Wicox, R.R.(2003) : Applying Contemporary Statistical Techniques Academic press, Amsterdam.
 31) Wilsons, A.G. & Bennet, R.J.(1985): Mathematical Methods In Human Geography And Planning, John Wiley & Sons, New York.

Evaluation Pattern

The performance of the learners shall be evaluated through two components viz. Internal Assessment (IA) with 40 marks in the first component and by conducting the Semester End Examinations (SEE) with 60 marks as the second component. The allocation of marks for the Internal Assessment and Semester End Examinations are as shown below:

A) Internal Evaluation- 40 Marks

Sr. No.	Criteria	Marks
1	Class Test	20
2	Assignment	10
3	Active Participation	05
4	Attendance	05

B) Semester End Examinations - 60 Marks

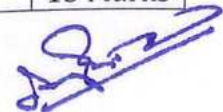
Question Paper Pattern

Maximum Marks: 60

Questions to be set: 6

Answer any 4 out of 6 questions.

Q. 1.	Full Length Question (from first module only)	15 Marks
Q.2.	Full Length Question (from second module only)	15 Marks
Q.3.	Full Length Question (from third module only)	15 Marks
Q.4.	Full Length Question (from fourth module only)	15 Marks
Q.5.	Full Length Question (from any module)	15 Marks
Q.6.	Short Notes (4 short notes from each module)	15 Marks



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Syllabus and Question Paper Pattern

Of

Courses of Master of Arts- Geography (M.A.) Programme

Semester III

304: Tools and Techniques of Spatial Analysis V

Under Academic Autonomy and Credit, Grading and Semester System
With effect from Academic Year 2019-20

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Core Course

304: Tools and Techniques of Spatial Analysis V

Course Objectives:

1. To select the appropriate quantitative analysis technique using SPSS
2. To classify environmental indicators and understand their importance
3. To compute environmental data collected from a field survey
4. To differentiate between the statistical techniques like chi-square, ANOVA, correlation and regression
5. To compile a field study report
6. To justify the results obtained from environmental research

Course Outcome:

1. **CO 1:** Learners will be able to select the appropriate quantitative analysis technique using SPSS to test the data **(Level : Knowledge)**
2. **CO 2:** Learners will be able to classify environmental indicators and understand their importance in real world **(Level : Comprehension)**
3. **CO 3:** Learners will be able to compute environmental data collected from a field survey and process it **(Level : Application)**
4. **CO 4:** Learners will be able to differentiate between the statistical techniques like chi-square, ANOVA, correlation and regression used for testing hypothesis **(Level : Analysis)**
5. **CO 5:** Learners will be able to compile a field study report **(Level : Synthesis)**
6. **CO 6:** Learners will be able to justify the results obtained from environmental research **(Level : Evaluation)**

Modules at a Glance

Sr. No.	Modules	No. of lectures
Module 1	Quantitative Techniques for Spatial Analysis using SPSS	20
Module 2	Quantitative Techniques for Spatial Analysis using SPSS	20
Module 3	Environmental Indicators	15
Module 4	Study Tour, Field Survey and Field Report	05
	Total	60



PRINCIPAL 2

Detailed Syllabus

Module	Topics	No. of Lectures
1	Quantitative Techniques for Spatial Analysis using SPSS-I (Skill Development)	20
1.1	Inferential statistics: Introduction; Hypothesis Testing (Employability) - Chi square test, T-test applications; Analysis of variance (ANOVA)- Normality Test	
1.2	Time Series Analysis- trend line by least square method – Autogression Models	
2	Quantitative Techniques for Spatial Analysis using SPSS-II (Skill Development)	20
2.1	Correlation: Types of correlation; Methods of correlation- Spearman's rank correlation and Karl Pearson's coefficient of correlation; Partial Correlation.	
2.2	Regression: Introduction; Dependent and independent variables; scatter-gram -regression lines and residuals; construction of regression lines; least square method, Regression residuals: mapping and interpretation- Multocollineantry	
3	Environmental Indicators (Skill Development)	15
3.1	Noise Pollution: Introduction; Use of sound measuring device; temporal and spatial variation mapping based on primary data.	
3.2	Water Pollution: Introduction; identification, techniques used, temporal and spatial variation thematic mapping based on primary data.	
4	Study Tour, Field Survey and Field Report (Employability)	05

Reference Books

1. Hilton, P. et.al (2012): SPSS Explained, Rutledge, London.
2. Berry, B.J.L. and Marble, D.F. (1968): Spatial Analysis A Reader in Statistical Geography, Prentice Hall, Englewood Cliffs, New Jersey.
3. Levin, J. (1973): Elementary Statistics in Social Research, Harper and Row, New York
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PRINCIPAL 3
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25. Dodge, M. et.al.(2011): Rethinking Maps, New Frontiers in Cartographic Theory, Routledge, London
26. Coates, B.E.et.al.(1977): Geography and inequality, Oxford University Press
27. Wong, Cecilia, (2006): Indicators for Urban and Regional Planning, Rourtledge
28. Berry, B.J.L.(1968): Spatial Analysis- A reader in statistical Geography, Prentice Hall, New Jersey
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31. Hammond, R. and McCullagh, P.S.(1974): Quantitative Techniques in Geography: AnIntroduction, Oxford University Press London
32. Crang, M. and Cook, I.(2007): Doing Ethographies, Sage
33. Cope, M. and Elwood, S.(2009): Quantitative GIS, Sage
34. Vallentine G., Clifford N. (2010): Key Methods in Geography, Sage
35. Robinson, A.H. (1984): Elements of Cartography, 5th Edition, John Wiley and Sons, New York
36. Anson, R.W. and Ormeling, F.J.(ed)(1993): Basic Cartography for Students and Technicians, Vol.I, International Cartographic Association and Elsevier Applied Science Publishers, London.
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38. Ramamurthy, K. (1982): Map Interpretation: Indian Landscapes through S.O.I.Topographical Maps, Madras



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44. Monkhouse, F.J. and Wilkinson, H.R.(1971): Maps and Diagrams, Mutheun, London
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47. Yeates, M. (1974): An Introduction to Quantitative Analysis in Economic Geography, McGraw Hill Book Co., New York
48. Yeates, M. (1974): An Introduction to Quantitative Analysis in Human Geography, McGraw Hill Book Co., New York
49. Mahmood Aslam.(1977): Statistical Methods in Geographical Studies, Rajesh Publications, New Delhi

Evaluation Pattern

The performance of the learners shall be evaluated through the Semester End Examinations (SEE) with 100 marks.

A) Semester End Examinations - 100 Marks

Question Paper Pattern

Maximum Marks: 100

Questions to be set: 6

All questions are compulsory.

Q. 1.	Full Length Question	20 Marks
Q.2.	Full Length Question	20 Marks
Q.3.	Full Length Question	20 Marks
Q.4.	Full Length Question	20 Marks
Q.5.	Viva-Voce	10 Marks
Q.6.	Journal	10 Marks

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Syllabus and Question Paper Pattern

Of

Courses of Master of Arts- Geography (M.A.) Programme

Semester III

305: Tools and Techniques of Spatial Analysis VI

Under Academic Autonomy and Credit, Grading and Semester System
With effect from Academic Year 2019-20

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Syllabus of Course of M.A.- Geography Program at Semester III

Core Course

305: Tools and Techniques of Spatial Analysis VI

Course Objectives:

1. To recall the techniques interpreting O.S. sheets and topographical maps
2. To illustrate their observations in the toposheets and thematic maps
3. To apply statistical measures in spatial analysis in development studies
4. To estimate levels of development through Rank, Quartile and Z score methods
5. To development maps with the help of geographic data related to indicators of development
6. To assess the reasons behind the different levels of development

Course Outcome:

1. **CO 1:** Learners will be able to recall the techniques interpreting O.S. sheets and topographical maps to understand the landscape (Level : Knowledge)
2. **CO 2:** Learners will be able to illustrate their observations in the top sheets and thematic maps with the help of sketches and interpretation (Level : Comprehension)
3. **CO 3:** Learners will be able to apply statistical measures in spatial analysis in development studies (Level : Application)
4. **CO 4:** Learners will be able to estimate levels of development through rank, quartile and z score methods (Level : Analysis)
5. **CO 5:** Learners will be able to development maps with the help of geographic data related to indicators of development (Level : Synthesis)
6. **CO 6:** Learners will be able to assess the reasons behind the different levels of development (Level : Evaluation)

Modules at a Glance

Sr. No.	Modules	No. of lectures
Module 1	S.O.I. Topographical maps	25
Module 2	Thematic Maps	15
Module 3	Spatial Analysis in Development Studies	20
	Total	60



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Detailed Syllabus

Module	Topics	No. of Lectures
1	S.O.I. Topographical Maps	25
1.1	Introduction: Index to sheet- Scales- Conventional signs and symbols	
1.2	Study and interpretation of topographical maps with reference to: Glacial; Fluvial, Aeolian and Coastal landforms, Cultural features, relationship between physical and cultural aspects	
1.3	Study and interpretation of O.S sheets and USGS maps -physical and cultural aspects	
2	Thematic Maps	15
2.1	Thematic maps: Physical –Techniques and Interpretation of NATMO thematic maps.	
2.2	Thematic maps: Socio-Cultural - Techniques and Interpretation of NATMO thematic maps.	
2.3	Thematic maps: Economic - Techniques and Interpretation of NATMO thematic maps. (Employability)	
3	Spatial Analysis in Development Studies	20
3.1	Measuring Development- Indicators of development	
3.2	Methods of measurement- Rank, Quartile and Z score methods.	
3.3	Identification of levels of Development- Mapping and interpretation of Levels of development. (Skill Development)	

Reference Books

1. Mitra, A.(1961):Levels of Regional Development, Census of India 1961
2. Kundu, A.(1975): Construction of Composite Indices for Regionalisation: An enquiry into the Methods of Analysis, Geographical Review of India, Vol. 37, No.1, March 1975
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4. M.C.G.M.(2010): Mumbai Human Development Report, 2009, Oxford
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7. Wong, Cecilia, (2006): Indicators for Urban and Regional Planning, Rourtledge
8. Berry, B.J.L.(1968): Spatial Analysis- A reader in statistical Geography, Prentice Hall, New Jersey
9. Levin, J.(1973): Elementary Statistics in Social Research, Harper and Row, New York
10. Yeates, W.M.(1974): An Introduction to Quantitative Analysis in Human Geography, McGraw Hill, New York


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11. Hammond, R. and McCullagh, P.S.(1974): Quantitative Techniques in Geography: An Introduction, Oxford University Press, London.
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14. Ramamurthy, K. (1982): Map Interpretation: Indian Landscapes through S.O.I.Topographical Maps, Madras
15. Brown, M.F. and Thompson, R.Y. (1970): Map Reading and Interpretation, Longman, London
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17. Monkhouse, F.J. and Wilkinson, H.R.(1971): Maps and Diagrams, Mutheun, London
18. Hammond, R. and McCullagh, P.S.(1974): Quantitative Techniques in Geography: An Introduction, Oxford University Press, London
19. Yeates, M. (1974): An Introduction to Quantitative Analysis in Economic Geography, McGraw Hill Book Co., New York
20. Yeates, M. (1974): An Introduction to Quantitative Analysis in Human Geography, McGraw Hill Book Co., New York

Evaluation Pattern

The performance of the learners shall be evaluated through the Semester End Examinations (SEE) with 100 marks.

A) Semester End Examinations - 100 Marks

Question Paper Pattern

Maximum Marks: 100

Questions to be set: 6

All questions are compulsory.

Q. 1.	Full Length Question	20 Marks
Q.2.	Full Length Question	20 Marks
Q.3.	Full Length Question	20 Marks
Q.4.	Full Length Question	20 Marks
Q.5.	Viva-Voce	10 Marks
Q.6.	Journal	10 Marks



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Syllabus and Question Paper Pattern
Of

Courses of Master of Arts- Geography (M.A.) Programme

First Year

Semester IV

401 - Geo-informatics and Health Care

Under Academic Autonomy and Credit, Grading and Semester System
With effect from Academic Year 2019-20

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Core Course

401 - Geo-informatics and Health Care

Course Objectives:

1. To recognize the relationship between healthcare and Geoinformatics
2. To explain the importance of healthcare database for Geoinformatics
3. To apply the GIS technologies for healthcare
4. To analyze spatial and non-spatial data for health care
5. To develop a model for storing spatial data related to healthcare
6. To assess the healthcare models in GIS

Course Outcome:

1. **CO 1:** Learners will be able to recognize the relationship between healthcare and Geoinformatics (Level :Knowledge)
2. **CO 2:** Learners will be able to illustrate the importance of healthcare database for Geoinformatics (Level : Comprehension)
3. **CO 3:** Learners will be able to apply the GIS technologies for healthcare (Level : Application)
4. **CO 4:** Learners will be able to compute spatial and non-spatial data for health care (Level : Application)
5. **CO 5:** Learners will be able to develop a model for storing spatial data related to healthcare (Level : Synthesis)
6. **CO 6:** Learners will be able to assess the healthcare models in GIS- the plume model and the star model (Level : Evaluation)

Modules at a Glance

Sr. No.	Modules	No. of lectures
Module 1	Health care and Geoinformatics	15
Module 2	Geoinformatics and database for health care	15
Module 3	GIS, healthcare, technologies and surveillance	15
Module 4	GIS applications for health care	15
	Total	60



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Detailed Syllabus

Module	Topics	No. of Lectures
1	Health care and Geoinformatics	15
1.1	Insight and scope of healthcare in Geoinformatics environment- Significance of geographical analysis	
1.2	Implications of epidemiological transition in health care perspective – Health care planning and Geo-Information - Role of GIS and Remote Sensing for health care planners	
1.3	Global health policy –Changing pattern of healthcare- examples Spatial pattern of health indicators - Spatial and non-spatial factors GIS data base for diseases- spatial and non-spatial	
1.4	Spatial and non-spatial data for health care -Health care and GIS and GPS- applicability	
2	Geoinformatics and database for health care	15
2.1	Ecology of diseases - Environmental and other associated factors	
2.2	Spatial pattern of cholera and gastro-enteric diseases - Malaria, leprosy, tuberculosis- Heart diseases and cancer.	
2.3	Environmental Pollution and related impact on health-Geospatial techniques for healthcare analysis (Employability)	
2.4	GIS model for healthcare accessibility plume model , star model- examples	
3	GIS, healthcare, technologies and surveillance	15
3.1	Welfare Approach and its relevance to Health care delivery- technological advancement in healthcare services – examples	
3.2	Socio-demographic determinants and GIS initiatives GIS and spatial Epidemiology	
3.3	Health care system in India - Socio-political context – Sources of health care – Demand and supply- geoinformatics and healthcare	


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3.4	system in India Significance of primary health care – Planning of health care –recent development.	
4	GIS applications for health care (Employability)	15
4.1	GIS and environmental risk factor analysis - Spatio-temporal approach	
4.2	Geoinformatics as a decision support system for prevention of epidemic disease Web-based GIS for control of communicable	
4.3	diseases	
4.4	Occupational health hazards- tribal health problems- customs and diseases- relevant examples	

Reference Books

- 1.Bracken, I, and Webster, C,(1990):Information Technology, Geography and Planning, Routledge, London and New York
- 2.Pickles, John (Ed.) (1995): Ground Truth : The Social Implications of Geographical Information Systems, The Guilford Press, New York.
- 3.Ahmad,S, Sais.S, and Muddassir, S.M. (2011):Remote sensing and GIS for Environmental Management, World Education, Delhi
- 4.Birkin,M et al,(1996): Intelligent GIS: Location Decisions and Strategic Planning, Geoinformation International, Cambridge, UK.
5. Dantas,Anandi,(2011): Mapping of urban Health Facilities in Maharashtra, Centre for Enquiry into Health and Allied Themes(CEHAT), Mumbai
- 6.Masser, Ian (1998): Government and Geographical Information Systems, Taylor & Francis Group, London.
- 7.Steinberg, S.J., and Steinberg, S.L.,(2006): Geographic Information Systems for Social Sciences: Investigating Space and Place, Sage Publications, California.

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Evaluation Pattern

The performance of the learners shall be evaluated through two components viz. Internal Assessment (IA) with 40 marks in the first component and by conducting the Semester End Examinations (SEE) with 60 marks as the second component. The allocation of marks for the Internal Assessment and Semester End Examinations are as shown below:

A) Internal Evaluation- 40 Marks

Sr. No.	Criteria	Marks
1	Class Test	20
2	Assignment	10
3	Active Participation	05
4	Attendance	05

B) Semester End Examinations - 60 Marks

Question Paper Pattern

Maximum Marks: 60

Questions to be set: 6

Answer any 4 out of 6 questions.

Q. 1.	Full Length Question (from first module only)	15 Marks
Q.2.	Full Length Question (from second module only)	15 Marks
Q.3.	Full Length Question (from third module only)	15 Marks
Q.4.	Full Length Question (from fourth module only)	15 Marks
Q.5.	Full Length Question (from any module)	15 Marks
Q.6.	Short Notes (4 short notes from each module)	15 Marks


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Syllabus and Question Paper Pattern

Of

Courses of Master of Arts- Geography (M.A.) Programme

Semester III

402 – Ecology and Environment

Under Academic Autonomy and Credit, Grading and Semester System

With effect from Academic Year 2019-20

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Syllabus of Course of M.A.- Geography Program at Semester IV

Core Course

402- Ecology and Environment

Course Objectives:

1. To recognize the basic concepts of ecology
2. To interpret environmental degradation
3. To discover methods of environmental conservation and sustainability
4. To estimate environmental problems through research
5. To compare between various environmental issues
6. To justify the environmental problems obtained in the research

Course Outcome:

1. **CO 1:** Learners will be able to recognize the basic concepts of ecology like ecosystem, energy flow, food chain and major ecosystems (**Level : Knowledge**)
2. **CO 2:** Learners will be able to interpret environmental degradation (**Level : Comprehension**)
3. **CO 3:** Learners will be able to discover methods of environmental conservation and sustainability (**Level : Application**)
4. **CO 4:** Learners will be able to estimate environmental problems through research like in the case of Mumbai Metropolitan Region (**Level : Analysis**)
5. **CO 5:** Learners will be able to compare between various environmental issues (**Level : Synthesis**)
6. **CO 6:** Learners will be able to justify the environmental problems obtained in the research (**Level : Evaluation**)

Modules at a Glance

Sr. No.	Modules	No. of lectures
Module 1	Ecology: Concepts and Applications	15
Module 2	Environmental degradation	15
Module 3	Environmental Conservation and Sustainability	15
Module 4	Environmental Research	15
	Total	60

Detailed Syllabus

Module	Topics	No. of Lectures
1	Ecology: Concepts and Applications	15
1.1	Introduction to ecology: overview	
1.2	Concept of ecosystem – Energy flow - Food chain & web, Ecological pyramids	
1.3	Role of bio-geo chemical cycles in ecosystems	
1.4	Major Terrestrial and aquatic ecosystem of tropical/temperate/polar/hot desert tropical/temperate/polar Ocean/lakes and ponds(anyone from land and water each)	
2	Environmental degradation	15
2.1	Meaning and processes of environmental degradation- natural and anthropogenic	
2.2	Causes of environmental degradation – anthropogenic,	
2.3	examples	
2.4	Global environmental problems – greenhouse effect, acid rains, ozone depletion and loss of bio diversity Environmental problems with special reference to Mumbai Metropolitan Region	
3	Environmental Conservation and Sustainability	15
3.1	Concept of ecological equilibrium-stability-environmental sustainability- J curve, K curve concepts	
3.2	Principles of environmental conservation	
3.3	Concept of conservation and efforts made by UN for natural resources conservation/environmental protection	
3.4	Efforts made by Indian government towards environmental protection	
4	Environmental Research (Employability)	15
4.1	Concept, objectives and scope	
4.2	Review of literature and research methodology	
4.3	Findings, limitations, suggestions. Example - Research: Conduct pilot research on that with respect to all environmental factors and its degradation point. For e.g. study on island like (Gorai , Manori or Aksa beach, Study National Park – Borivali, Vasai Creek or Thane creek)	

References:


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2. Basu, D.(ed.)(1995): Environment and Ecology – The Global Challenge, Printwell, Jaipur.
3. Calvert P.S.(1999): The South, the North, and the Environment, Printer, London and New York.
4. Odum, E.P.(1971): Fundamentals of Ecology, Third ed. W.B. Saunders Company,
5. United Nations (1971): ECSS Symposium on Problems relating to Environment
6. Mather, A.S. and Chapman, K.(1995): Environmental Resources, Longman group Limited, U.K.
7. Molles (2013): Ecology - Concepts and applications, McGraw Hill Publications, 6th Edition.
8. Paul cloke, et. al.(2005): Introducing Human Geographies Hodder and Arnold Publications, 2nd ed
9. UNFPA (1992): Population, Resources and Environment - The Critical Challenges, United Population Fund, London.
10. United Nations (1971): ECSS Symposium on problems relating to Environment, U.N., New York.

Evaluation Pattern

The performance of the learners shall be evaluated through two components viz. Internal Assessment (IA) with 40 marks in the first component and by conducting the Semester End Examinations (SEE) with 60 marks as the second component.

The allocation of marks for the Internal Assessment and Semester End Examinations are as shown below:

A) Internal Evaluation – 40 Marks

Sr. No.	Criteria	Marks
1	Class Test	20
2	Assignment	10
3	Active Participation/Presentation	05
4	Attendance	05

B) Semester End Examinations – 60 Marks

Question Paper Pattern

Maximum Marks: 60 Duration – 2 hrs and 30 minutes

Questions to be set: 6

Answer any 4 out of 6 questions.

Q. 1.	Full Length Question (from first module only)	15 Marks
Q.2.	Full Length Question (from second module only)	15 Marks
Q.3.	Full Length Question (from third module only)	15 Marks
Q.4.	Full Length Question (from fourth module only)	15 Marks
Q.5.	Full Length Question (from any module)	15 Marks
Q.6.	Short Notes (4 short notes from each module)	15 Marks



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