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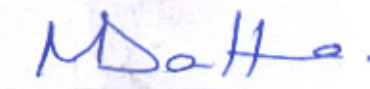
Approving Authority:



Principal & Chairperson of Academic Board

Dr. (Mrs) Ancy Jose

Signature of MR:



Dr. Moushumi Datta



UNIVERSITY OF MUMBAI
Syllabus for F.Y.B.A. course in the subject of Geography
 (With effect from the academic year 2016-17)

Paper – I:
Geomorphology
 Credits - 04
SEMESTER-I
COURSE CODE: UAGEO101

Unit I: Interior of the Earth

(12)

Definition & meaning of Geomorphology - Composition and Structure of the Interior of the Earth – Rocks and Minerals - Wegner's Continental Drift Theory – Theory of Plate Tectonics

Unit II: Endogenic Processes

(12)

Movements of the Earth's Crust - Diastrophic Movements: Folding and Faulting – Catastrophic Movements: Volcanoes and Earthquakes – Examples from the World and India

Unit III Exogenic Processes– I

(12)

Weathering, Erosion and Mass Wasting – Fluvial and Glacial Landforms (Erosional and Depositional)

Unit IV Exogenic Processes – II

(12)

Aeolian Landforms – Coastal Landforms – Karst Landforms (Erosional and Depositional)

Unit V Practicals

(12)

Concept of Contours – Calculation of gradient (with HE and VI) – Drawing of sections to depict Contour Landforms - Intervisibility



CreditBased Evaluation System

Scheme of Examination

The performance of the learners will be evaluated into two Components. One component will be the Internal Assessment component carrying 25% marks and the second component will be the Semester-wise End Examination component carrying 75% marks. The allocation of marks for the Internal Assessment and Semester End Examinations will be as shown below:-

a) Internal Assessment – 25%

25 Marks

For Courses without Practical

Sr. No.	Particulars	Marks
1	One class test*	20 Marks
2	Active participation in routine class instructional deliveries and overall conduct as a responsible learner, mannerism and articulation and exhibit of leadership qualities in organizing related academic activities	05 Marks

*Note:

Question Paper Pattern for Periodical Class Test for Courses at UG Programmes

Written Class Test (20 Marks)

1.	Match the Column / Fill in the Blanks/ Multiple Choice Questions (1 Marks each)	05 Marks
2.	Answer in One or Two Lines (Concept based Questions) (1 Mark each)	05 Marks
3.	Answer in Brief (Attempt Any Two of the Three) (5 Marks each)	10 Marks

b) Semester End Examinations – 75%

75 Marks

EXTERNAL ASSESSMENT-75 Marks

Time: 2 & 1/2 hours Marks: 75

All questions are compulsory

Q.1 Practical (Unit -V: 15 marks)

Q.2 Unit 1 (15 marks) or Q.2 Unit 1 (15 marks)

Q.3 Unit 2 (15 marks) or Q.3 Unit 2 (15 marks)

Q.4 Unit 3 (15 marks) or Q.4 Unit 3 (15 marks)

Q.5 Unit 4 (15 marks) or Q.5 Unit 4 (15 marks)

(Q.2 to Q.5 may be divided into two sub question - one sub question of 8 marks and another sub question will be of 7 marks OR Q.2 to Q.5 may be asked fully as a long answer question of 15 marks)

Passing Standard

The learner to pass a course shall have to obtain a minimum of 40% marks in aggregate for each course where the course consists of Internal Assessment and Semester End Examination. The learners shall obtain a minimum of 40% marks (i.e. 10 out of 25) in the Internal Assessment and 40% marks in Semester End Examination (i.e. 30 out of 75) separately, to pass the course and minimum of Grade E to pass a particular semester. A learner will be said to have passed the course if the learner passes the Internal Assessment and Semester End Examination together.



F.Y.B.A
Foundation Course – I & II
Marking Scheme (75:20:05)

Subject Name	Semester End Examination	Test	Class Participation	Total
Foundation Course I	75	20	05	100
Foundation Course II	75	20	05	100

Foundation Course – I for SEM – I of 2016 – 2017

Modules at a Glance
Foundation Course I

Sr. No.	Modules	No. of Lectures
1	Overview of Indian Society	05
2	Concept of Disparity- 1	10
3	Concept of Disparity-2	10
4	The Indian Constitution	10
5	Significant Aspects of Political Processes	10
Total		45



Sr. No.	Modules / Units
1	Overview of Indian Society
	Understand the multi-cultural diversity of Indian society through its demographic composition: population distribution according to religion, caste, and gender; Appreciate the concept of linguistic diversity in relation to the Indian situation; Understand regional variations according to rural, urban and tribal characteristics; Understanding the concept of diversity as difference
2	Concept of Disparity- 1
	Understand the concept of disparity as arising out of stratification and inequality; Explore the disparities arising out of gender with special reference to violence against women, female foeticide (declining sex ratio), and portrayal of women in media; Appreciate the inequalities faced by people with disabilities and understand the issues of people with physical and mental disabilities
3	Concept of Disparity-2
	Examine inequalities manifested due to the caste system and inter-group conflicts arising thereof; Understand inter-group conflicts arising out of communalism; Examine the causes and effects of conflicts arising out of regionalism and linguistic Differences
4	The Indian Constitution
	Philosophy of the Constitution as set out in the Preamble; The structure of the Constitution-the Preamble, Main Body and Schedules; Fundamental Duties of the Indian Citizen; tolerance, peace and communal harmony as crucial values in strengthening the social fabric of Indian society; Basic features of the Constitution
5	Significant Aspects of Political Processes
	The party system in Indian politics; Local self-government in urban and rural areas; the 73rd and 74th Amendments and their implications for inclusive politics; Role and significance of women in politics



Sr. No.	Modules	No. of Lectures
1	Globalisation and Indian Society	07
2	Human Rights	10
3	Ecology	10
4	Understanding Stress and Conflict	10
5	Managing Stress and Conflict in Contemporary Society	08
	Total	45

r. No	Modules /Units
1	Globalisation and Indian Society
	Understanding the concepts of liberalization, privatization and globalization; Growth of information technology and communication and its impact manifested in everyday life; Impact of globalization on industry: changes in employment and increasing migration; Changes in agrarian sector due to globalization; rise in corporate farming and increase in farmers' suicides.
2	Human Rights
	Concept of Human Rights; origin and evolution of the concept; The Universal Declaration of Human Rights; Human Rights constituents with special reference to Fundamental Rights stated in the Constitution
3	Ecology
	Importance of Environment Studies in the current developmental context; Understanding concepts of Environment, Ecology and their interconnectedness; Environment as natural capital and connection to quality of human life; Environmental Degradation- causes and impact on human life; Sustainable development- concept and components; poverty and environment
4	Understanding Stress and Conflict
	Causes of stress and conflict in individuals and society; Agents of socialization and the role played by them in developing the individual; Significance of values, ethics and prejudices in developing the individual; Stereotyping and prejudice as



	significant factors in causing conflicts in society. Aggression and violence as the public expression of conflict
5	Managing Stress and Conflict in Contemporary Society
	Types of conflicts and use of coping mechanisms for managing individual stress; Maslow's theory of self-actualisation; Different methods of responding to conflicts in society; Conflict-resolution and efforts towards building peace and harmony in Society

Recommended Reference Books

1. Social and Economic Problems in India, Naseem Azad, R Gupta Pub (2011)
2. Indian Society and Culture, Vinita Padey, Rawat Pub (2016)
3. Social Problems in India, Ram Ahuja, Rawat Pub (2014)
4. Faces of Feminine in Ancient , medivial and Modern India, Mandakranta Bose Oxford University Press
5. National Humana rights commission- disability Manual
6. Rural, Urban Migration : Trends, challenges & Strategies, S Rajagopalan, ICFAI- 2012
7. Regional Inequilities in India Bhat L S SSRD- New Delhi
8. Urbanisation in India: Challenges, Opportunities & the way forward, I J Ahluwalia, Ravi Kanbur, P K Mohanty, SAGE Pub (2014)
9. The Constitution of India, P M Bakshi 2011
10. The Problems of Linguistic States in India, Krishna Kodesia Sterling Pub
11. Politics in India: structure, Process and Policy Subrata Mitra, Routledge Pub
12. Politics in India, Rajani Kothari, Orient Blackswan
13. Problems of Communalism in india, Ravindra Kumar Mittal Pub
14. Combating communalism in India: Key to National Integration, Kawal Kishor Bhardwaj, Mittal Pub



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**Question Paper Pattern for Foundation Course I & II
Semesters I & II**

Maximum Marks: 75

Questions to be set: 05

Duration: 2½ Hrs.

Question No	Particular	Marks
Q-1	Full Length Question from Unit / Module I	15 Marks
	OR	
	Full Length Question from Unit / Module I	15 Marks
Q-2	Full Length Question from Unit / Module II	15 Marks
	OR	
Q-2	Full Length Question from Unit / Module II	15 Marks
Q-3	Full Length Question from Unit / Module III	15 Marks
	OR	
Q-3	Full Length Question from Unit / Module III	15 Marks
Q-4	Full Length Question from Unit / Module IV	15 Marks
	OR	
Q-4	Full Length Question from Unit / Module IV	15 Marks
Q-5	Full Length Question from Unit / Module V	15 Marks
	OR	
Q-5	Full Length Question from Unit / Module V	15 Marks

**Proposed Question Paper Format for the 20 Marks Component for Foundation Course I & II
(F.Y.B.A) for the Academic Year 2016 - 2017**

Maximum Marks: 20

Duration: 30 minutes

Questions to be set: 03

- I. Multiple Choice/ Fill in the Blanks/ Match the Columns – 1 x 5 (05 Marks)
II. Answer in One or Two Sentences – 1 x 5 (05 Marks)
III. Short Notes / Write answer in 5 or 6 sentences.
Attempt any 2 out of 3 – 2 x 5 (10 Marks)



I End Semester Question Paper in Theory -

1. Total Marks- 100 (to be converted to 60)

2. Total no. of questions to be framed are, 7 of 20 marks each.

- i) Of these 7 questions, **one is compulsory** and would be framed by drawing questions from all the major modules of the given syllabus.
- ii) Out of the remaining 6 questions, students are required to attempt **any four** questions of 20 marks each.
- iii) A student therefore, is expected to attempt total 5 questions of 20 marks each including one compulsory question.

Practical Paper: 100 marks

I End Semester Question Paper in Practicals-

A: External (to be converted to 60)

1. Total Marks- 100

- i) Students are expected to attempt **total four** questions of 20 marks each i.e. 80 marks
- ii) Marks for Journal – 10
- iii) Marks for Viva-voice - 10
- iv) **All questions are compulsory**
- v) No of questions would correspond with number of major modules in the respective practical course syllabus.

B: Internal: Total marks 40

- i) Marks for Field work and Report writing: 20 marks
 - ii) Marks of the Mid-semester: 20 marks
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Semester I

101: Principles of Geomorphology

No. of Credits: 4 Teaching Hours 60 + Notional Hours 60 = Total hours 120

1. **Unit - I** (15 hours)
 - 1.1 Nature, scope and content of Geomorphology
 - 1.2 Geological Evolution of Earth and Geological time scale
 - 1.3 Development of geomorphic thought, Catastrophism, Uniformitarianism, Neocatastrophism
2. **Unit - II** (15 hours)
 - 2.1 Earth's interior: Structure and composition.
 - 2.2 Continental Drift Theory - Sea floor spreading - Plate Tectonics
 - 2.3 Geosynclines: Geosynclinal Theory of Kober, Holmes' Convection Current Theory Theories of Isostasy
 - 2.4 Endogenetic movements- types, consequences (earthquakes and volcanoes) and landforms
3. **Unit - III** (15 hours)
 - 3.1 Fluvial Geomorphic system: processes and resulting landforms
 - 3.2 Glacial Geomorphic system: geomorphic processes and features
 - 3.3 Karst landscape: development and processes
 - 3.4 Aeolian Geomorphic system: processes and landforms
 - 3.5 Coastal Geomorphic system: processes and landforms
4. **Unit - IV** (15 hours)
 - 4.1 Landscape evolution – Davisian Model of Cycle of Erosion, Penck's Concept of Cycle of Erosion
 - 4.2 Slope development and related theories

References:

1. Anhert, F., (1996), 'Introduction to Geomorphology', Arnold, London, Sydney, Auckland
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.
8. Ritter, D.F., Kochel, R.C., Miller, J.R. (1995), 'Process Geomorphology', Wm. 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.

Semester I

102: Principles of Climatology

No. of Credits: 4 Contact Hours 60 + Notional Hours 60 = Total hours 120

1. **Unit – I** (15 hours)
 - 1.1 Nature and scope of Climatology
 - 1.2 Relationship of Climatology with Meteorology
 - 1.3 Structure and composition of Atmosphere
 - 1.4 Weather elements and climatic controls
2. **Unit – II** (15 hours)
 - 2.1 Insolation and heat Budget of the Earth
 - 2.2 Temperature - Vertical, horizontal and seasonal variations
 - 2.3 Processes of heat energy transfer
 - 2.4 Inversion of temperature
3. **Unit – III** (15 hours)
 - 3.1 Atmospheric pressure – vertical and horizontal distribution
 - 3.2 General Circulation of atmosphere
 - 3.3 Types of winds – Geostrophic, Gradient and local winds
 - 3.4 Modern views about Extra terrestrial wind system, Tricellular meridional circulation, Jet stream
 - 3.5 Origin of Monsoon: Classical and Recent views
4. **Unit – IV** (15 hours)
 - 4.1 Air masses: Origin, classification, types
 - 4.2 Fronts: frontogenesis and frontolysis – classification of fronts
 - 4.3 Tropical and Extra-tropical cyclones: formation and impact
 - 4.4 Climatic Classification: Koppen and Thornthwaite, concept of water balance
Problems and prospects



References:

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 Trinidad, 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
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Semester I

103: Perspectives in Human Geography

No. of Credits: 4 Contact Hours 60 + Notional Hours 60 = Total hours 120

1. **Changing Perspectives in Human geography** (16 hours)
 - 1.1 Environmentalism- Possibilism-Neo-Possibilism - Areal differentiation
 - 1.2 Post-fifty conceptualisation of Geographic Space-Perception studies- Locational analysis- Quantification- General systems theory: appraisal and criticism
 - 1.3 Behaviouralism – Perception of environment- Humanistic Geography- Sense of place -Landscape studies - Emergence of welfare approach and its social relevance
 - 1.4 Post 1980s trends - Radicalizing process in Geography- neo-Marxist interpretations and extensions- Neohumanism and other contemporary theorisations

2. **Evolution of Human Societies :Dynamics of rural and urban societies (15 hours)**
 - 2.1 Evolution of Human Societies – Economic, Political and Cultural Transformation
 - 2.2 Rural society: caste hierarchy, segregation in rural settlement – rural social morphology – critical understanding of Agricultural Landuse theory - Contemporary Indian rural society
 - 2.3 Urban society – Various models of urban morphology - Hierarchy of urban settlements- Application of Central Place theory and settlement hierarchy - Indian examples – Contemporary urban society -stratification and occupational divergence- residential segregation-Urban Heterogeneity and cosmopolitanism
 - 2.4 Evolution tribal societies – characteristics – spatial distribution – Indian Examples

3. **Interaction of human societies-Socio-Cultural identities- patterns and landscapes (15 hours)**
 - 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
(14 hours)**

- 4.1 Components of Population Change – fertility, mortality and associated patterns - Demographic characteristics - developing and developed countries
- 4.2 Population Growth – Attitudes and Interpretations – Malthusian, Neo-Malthusianism and Marxist viewpoint – Club of Rome - 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
- 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

References:

- 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. Vivel, 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 Benchmark Pub.
- 19. Coates, B.E., Johnston, R.J. Knox, (1977): Geography and Inequality, Oxford University Press



Semester I

Paper 104: Spatial Organisation of Economic activities

Maximum No. of Credits: 4 Maximum no. of lectures including continuous assessment: 60

1. **Organisation of an economy as a dynamic spatio-social system: Basic concepts**
(15 hours)
 - 1.1 Economic organization and spatial change- Spatial division of labour and Interdependence
 - 1.2 Geographic fixity and mobility- typology of distance-Spatial interaction and diffusion
 - 1.3 Typology of Space - Absolute and Relative - Time and space convergence
Production of economic space
2. **Spatial Organisation of World Economy** (15 hours)
 - 2.1 Economic organization of the pre-colonial world - Rise of the Core Economies - industrial revolution in Europe
 - 2.2 Colonialism and Geographies of inequities and uneven development -neocolonialism and structuration of world economy as core, periphery and semi-periphery
 - 2.3 Flexibilisation of Production - Role of international Institutions like World Bank, IMF, UNCTAD
 - 2.4 Evolution and Growth of Multinational Companies - Patterns and Processes of Globalisation
3. **Organisation of Production: Agriculture and Industry - Global Patterns and Trends**
(15 hours)
 - 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
 - 3.2 Crisis of agriculture- Aspects of Food security and world patterns of hunger
 - 3.3 World Industrial Regions - Factors and processes Influencing Location of industries - critical assessment of theories of industrial location
 - 3.4 Globalisation and shifting location of industries - New Industrial Regions- EPZs and SEZs- South east and East Asian economies



4. Spatio-social organization of production –Transport, Trade and Services: Global Patterns and trends (15 hours)

4.1 Organisation of transport - Bases of Spatial Interaction – Theoretical Perspectives on Transport and inter-regional interactions - Role of 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 – Globalisation and changing structure and composition of International trade – GATT & WTO

4.3 Logic of Regional Integrations- Types and levels - Significance of regional integration as a strategy for the periphery - Case Studies - EU, OPEC, ASEAN, SAARC, BRICS

4.4 New Economic Activities and Globalisation : Finance and Service Industry- The Forth Industrial Revolution

References:

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 Gijbert, (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. Hussain Majid (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.
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 Francisco.

Semester I

Tools and Techniques of Spatial Analysis I

(Based on Theory Papers: 101 -102)

No. of Credits 4 Hours of Practical experience 60+ Notional Hours 60

1. Techniques of Geomorphic Analysis (20 hours)

A. Drawing Profiles:

- i. Longitudinal
- ii. Composite and Projected

B. 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

C. Altimetric Analysis:

- i. Ring contour method
- ii. Highest grid-cell elevation method

2. Advance topographical Map Interpretation: (20 hours)

Interpretation of Indian and foreign topographical Maps: Aspects of Physical and Human Environment(OS, USGS and SOI)

3. Techniques of Climatic Data Analysis (20 hours)

1. Rainfall dispersion diagrams
2. Wind roses
3. Water surplus-deficiency graphs
4. Climatograph
5. Climograph: Hyther graph, Taylor's climograph



6. Index of aridity and index of moisture
7. Isopleth Maps

References:

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 Allen 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.
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.



Semester I

Tools and Techniques of Spatial Analysis II

(Based on Theory Papers: 103 -104)

No. of Credits: 4 Practical Hours 60 + Notional Hours 60= Total hours 120

1. Statistical Techniques

1.1 Measures of Central Tendency

(24 hours)

- a) Measures of central tendency: mean centre, weighted mean centre, median centre
- b) Z score – different applications and interpretations.

1.2. Network Analysis:

- a) Topological graphs -Connectivity- Calculations of Alpha, Beta and Gamma Indices.
- b) Mapping of relative accessibility and connectivity – Matrices- point of minimum Aggregate travel distance

2. Nature and application of spatial data:

(20 hours)

- 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

(16 hours)

- 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.

References:

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.
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 - 8 . Mahmood Aslam (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.
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Semester II

201: Oceanography and Hydrology

No. of Credits: 4 Teaching Hours 60 + Notional Hours 60 = Total hours 120

1. **Fundamental Concepts in Oceanography** (15 hours)
 - 1.1 Definition, nature and scope of oceanography
 - 1.2 Age and origin of oceans, and ocean morphology.
 - 1.3 Distribution of temperature, salinity and density of oceans.
2. **Ocean Currents and Resources** (15 hours)
 - 2.1 Ocean currents: Atlantic, Pacific and Indian Oceans.
 - 2.2 waves and tsunamis, tides.
 - 2.3 Marine sediments and deposits
 - 2.4 Food and mineral resources of the sea.
3. **Introduction to Hydrology** (15 hours)
 - 3.1 Hydrological cycle, Factors affecting movement of water, Patterns of movement
 - 3.2 Water Budget, World water Resources,
 - 3.3 World Water Balance, Global Freshwater Resources,
 - 3.4 History of Hydrology
4. **Watershed, Its Characteristics and Evaporation Process** (15 hours)
 - 4.1 Topographic and Effective Watershed
 - 4.2 Physiographic characteristics of a Watershed- Geometric & Drainage Network
 - 4.3 Agro-Pedo Geological Characteristics – Soil Cover, Soil type, Geology
 - 4.4 Meteorological Factors influencing Evaporation- Physical Factors involved in Evaporation Process.

References:

1. Agarwal A. and Narain, S. (1997), "Dying Wisdom: Rise, Fall and Potential of India's Traditional Water Harvesting System", CSE, New Delhi.
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.



Semester II

202: Geoinformatics

No. of Credits: 4 Teaching Hours 60 + Notional Hours 60 = Total hours 120

1. Unit – I

(15 hours)

- 1.1 Fundamentals of Remote Sensing: Definition and Concept, Process of Remote Sensing, Development of remote sensing – Global and Indian
- 1.2 Electromagnetic Spectrum: Definition and Concept, interactions with atmosphere and earth's surface, Atmospheric window, Black body
- 1.3 Spectral Reflectance Curve: Concept, curves for land, water bodies/oceans, vegetation In Optical, IR, Thermal and Microwave bands
- 1.4 Fundamentals of aerial photography: Concept of stereoscopy and photogrammetry, geometric types of aerial photographs, photographic scale, measurements of distance, area and height, relief displacement, stereoscopic parallax, flight planning.

2. Unit – II

(15 hours)

- 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, Remote Sensors and types based on resolutions and sources of illumination, overview of space borne sensors.
- 2.4 Visual Image Interpretation: Image display and color composites, elements of visual image interpretation

3. Unit – III

(15 hours)

- 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, functions and applications.
- 3.3 Spatial Data Models: Vector and Raster, Vector representation (point, line, area and TIN), Concepts of arc, node, vertices and topology.
- 3.4 Coordinate Reference Systems: Geographic and Projected, Map Projections and Datum for GIS data.



4. Unit – IV

(15 hours)

- 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: Segments of satellite-based positioning systems, 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 Palis Church, V.A.
3. Barrett, E.G. and Curtis, L.F. (1992): Fundamentals of Remote Sensing in Air Photo-interpretation, 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 Relph Kiffer (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.
17. Shekar, S and Chawla, S. (2009), Spatial Databases: A Tour, Pearson Education, Delhi.
18. Tempfli, T. K., Kerle, N., Huurememan, G.C., and Janssen, L.L.F (2009), Principles of Remote Sensing, ITC, Netherlands.



Semester II

203: Socio-Cultural and Political Geography

No. of Credits: 4 Contact Hours 60 + Notional Hours 60 = Total hours 120

1. Social and cultural Geography – Major Perceptions (15 Hours)

- 1.1 Evolution and development of Social Geography – Major Trends and Approaches- Critical Perspective and Associated Theoretical Developments
- 1.2 Emergence of cultural Geography as a major branch - Traditional cultural geography – New cultural geography -linguistic and literary studies, Semiotic analysis and 'space' theories - critical social theory
- 1.3 Human activities and spatial patterns - Production of socio-cultural space – factors, forces and processes – Resultant socio-spatial structures - A temporal scale

2. Marginalisation and exclusion (15 Hours)

- 2.1 Social inequality and Social stratification - the 'difference' between 'self' and 'other' – social execution of 'difference' and exclusion – religious and ethnic identities
- 2.2 Imagining local, regional and national identities- multicultural spaces – cultural pluralism and identity politics in India.
- 2.3 Spaces of contestations and conflicts - Poverty and Living in Ghettos and slums in globalizing cities- Gentrification, displacement and right to city – SEZ s in India- Issues of right to livelihood.

3. Gender and Geography (15 Hours)

- 3.1 Body as place- private and public domains- Role of Patriarchy – State – Capitalist production.
- 3.2 Space-society perspective- Structuring of sexuality and construction of gender identity – role of socio-cultural forces and processes- stigmas and taboos – resultant gendered spaces-Indian examples – globalization and repositioning of gender
- 3.3 Spatiality of sex ratios – intra-regional and inter-regional – specific examples of India and China - feminization of labour and status of women workers – experiences from the global periphery.
- 3.4 Women and human development status – Human rights and legal space for women, Glass Ceiling- Indian context.

4. Spatial Dynamics of Political Processes (15 Hours)

- 4.1 Concepts and images of territoriality, state, nation and nation- state - colonialism and post-colonial context
- 4.2 Theoretical perspectives on global political structure- critical analysis of heart land and rim land theories - Relevance of World Systems approach- Core-periphery structure
- 4.3 Boundary and Frontier concepts- Terrestrial and maritime context- Processes of boundary formation- cultural and ethnic identities.
- 4.4 Dynamics of electoral politics- Indian context - Globalisation and contemporary geopolitics - Politics of resources – oil resources and West Asia – water Resources and South Asia



References:

1. Peet, R. (1998), *Modern Geographical Thought*, Blackwell
2. Peet, R. and Thrift, N. (eds.) (2002), *New Models in Geography*, Unwin Hyman.
3. Barnes Trevor and Gregory Derek, (eds.) (1997): *Reading Human Geography- The Poetic and Politics of Inquiry*, Arnold, London.
4. Daniels Stephen and Lee Roger, (eds.) (1996): *Exploring Human Geography- A Reader*, Arnold, London.
5. Cloke, P. and Johnston, R., (eds.), (2005), *Spaces of Geographical Thought, Deconstructing Human Geography's Binaries*, Sage.
5. Aitken, S and Valentine, G. (2006), *Approaches to Human geography*, Sage.
6. Soja E., (1997), *Postmodern Geographies- The Reassertion in Critical Theory*, Rawat, New Delhi.
7. Johnston, R.J., Gregory D. Pratt G. and Watts M., (2005, 5th ed.), *the Dictionary of Human Geography*, Blackwell.
8. Kitchin R., Thrift, N, (eds.) (2009), *The International Encyclopedia of Human Geography*, Elsevier,
10. Dear J. Michael and Flusty Steven, (eds.) (2002): *The Spaces of Post Modernity*, Blackwell, Massachusetts.
11. Benko Georges and Strohmayr Ulf, (eds.) (2004): *Human Geography- A History for the 21st Century*, Arnold, London.
12. Atkinson, D., Jackson, P., Sibley, D. and Washbourne, N. (eds.) (2005), *Cultural Geography, A Critical Geography of Key Concepts*, Tauris, I.B.
13. Cloke, P., Crang, P., Goodwin, M., (2004), *Envisioning Human Geographies*, Arnold.
14. Cloke Paul, Crang Philip and Goodwin Mark, (eds.) (1999): *Introducing Human Geographies*, Arnold, London.
15. Banerjee-Guha, S. (2004), *Space, Society and Geography*, Rawat, New Delhi.
16. Banerjee- Guha Swapna: *Space, Spatiality, Human Geography and Social Science: Politics of the production of Space*, Published in *Transaction Institute of Indian Geographers*, Vol.33, No.1, Winter 2011, pp 3-22, Pune.
17. Cloke Paul, Cook Ian, Crang Philp, Goodwin Mark, Painter Joe and Philo Chris, (2004): *Practising Human Geography*, Sage, London.
18. Glassner, M L, De Blij, H, J, Yacher, L. (1980): *Systematic Political Geography*, John Wiley.



Semester II

Paper 204: Urban Geography

No. of Credits: 4 Teaching Hours 60 + Notional Hours 60 = Total hours 120

1. **Urbanisation Process and Urban Systems (15 Hours)**
 - 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 Hours)**
 - 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 - Urbanisation in the industrialised world
 - 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 Hours)**
 - 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
 - 3.2 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
 - 3.3 Recentralisation – international capital and formation of global city - 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 peri-urban regions of the Global South



4 Understanding the Urban Transformation with Special Reference to Mumbai Metropolitan Region (15 Hours)

- 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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Semester II

Tools and Techniques of Spatial Analysis III

(Based on Theory Papers: 201-202)

No. of Credits: 4 (Practical Hours 60+ Notional Hours 60)

1. Unit – I (Hours 25)
 - 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. Unit – II (Hours 15)
 - 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. Unit – III (Hours 20)
 - 3.1 Spatial Interpolation and raster reclassification
 - 3.2 Application of Raster calculator
 - 3.3 Drainage Network Analysis
 - 3.4 GPS Survey

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. Moraine S. (1998), GIS Solutions in Natural Resource Management: Balancing The Technical-Political Equations, Onward Press, London.
9. Fazal Sahab, (2008), GIS Basics, New Age International Publishers Ltd, New Delhi
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 Interpretations, American Society for Photogrammetry and Remote Sensing, Maryland, U.S.A.

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Semester II

Tools and Techniques of Spatial Analysis IV

Based on Theory Papers: (203-204)

No. of Credits: 4 (Hours of doing Practicals 60+ Notional Hours 60)

1. **Settlement Hierarchy and population studies:** (25 Hours)
 - 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 Hours)
 - 2.1 Typology of distance and direction of space- Construction of Maps
 - 2.2 Imagining Place and space: Perception – mapping and interpretation.
 - 2.3 Interpreting political context of maps, cartographic techniques, diagrams, pictures and cartoons.
3. **Statistical Techniques to understand the spatial pattern** (20 Hours)
 - 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

References:

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 Allen 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.
10. Mahmood Aslam, (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., Brunson, 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.

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Nagindas Khandwala College
Autonomous From 2016-17
PG Programme-----Geography

1. Conceptual Framework
2. Question Paper Pattern
3. Syllabus-Semester 1 & 2



NAGINDAS KHANDWALA COLLEGE

AUTONOMOUS FROM 2016-2017

CONCEPTUAL FRAMEWORK OF CURRICULUM OF PG PROGRAMMES

FOR STUDENTS ADMITTED FROM 2016-2017B& ONWARDS

S. No.	Semester	Course/Component	InstHrs/week	No. of Courses	Credit/Course	Total Credits
		Core:				
	1-2	• Core Theory	3-5 Hrs	8 - 10	3-5	24 - 50
	3-4	• Core Theory	3-5 Hrs	2 - 4	3-5	6 - 20
		Practical:				
	1-2	• Core Practical	3-6 Hrs	4 - 8	1-3	4 - 24
	3-4	• Core Practical	3-6Hrs	2 - 4	1-3	2 - 12
		DSE Core:				
	3-4	• DSE Theory	3-6 Hrs	2 - 4	3 - 5	6 - 20
	3-4	• DSE Practical	3 - 6Hrs	2 - 4	3-5	6 - 20
	3 and 4	Project	2 - 4 Hrs /semester	1	4 - 8	4 - 8
	3	GE	2 Hrs	1	2	2

Total Credits: 96



Sem	Geo.	
	Course	Credits (c x cr) = total
I	4 Core Theo	4 x 4
	4 Core Pract	4 x 2
II	4 Core Theo	4 x 4
	4 Core Pract	4 x 2
III	2 Core Theo	2 x 4
	2 Core Pract	2 x 2
	2 DSE Theo	2 x 3
	2 DSE Pract	2 x 1
	GE	2
IV	2 Core Theo	2 x 4
	2 Core Pract	2 x 2
	2 DSE Theo	2 x 3
	2 DSE Pract	2 x 2
	Project	4
	Total	96



UNIVERSITY OF MUMBAI
Syllabus for F.Y.B.A. course in the subject of Geography
(With effect from the academic year 2016-17)

Paper – I:
Geomorphology
Credits - 03
SEMESTER-I
COURSE CODE: UAGEO101

Unit I: Interior of the Earth

(12)

Definition & meaning of Geomorphology - Composition and Structure of the Interior of the Earth - Rocks and Minerals - Wegner's Continental Drift Theory - Theory of Plate Tectonics

Unit II: Endogenic Processes

(12)

Movements of the Earth's Crust - Diastrophic Movements: Folding and Faulting - Catastrophic Movements: Volcanoes and Earthquakes - Examples from the World and India

Unit III Exogenic Processes- I

(12)

Weathering, Erosion and Mass Wasting - Fluvial and Glacial Landforms (Erosional and Depositional)

Unit IV Exogenic Processes - II

(12)

Aeolian Landforms - Coastal Landforms - Karst Landforms (Erosional and Depositional)

Unit V Practicals

(12)

Concept of Contours - Calculation of gradient (with HE and VI) - Drawing of sections to depict Contour Landforms - Inter-visibility



CreditBased Evaluation System

Scheme of Examination

The performance of the learners will be evaluated into two Components. One component will be the Internal Assessment component carrying 25% marks and the second component will be the Semester-wise End Examination component carrying 75% marks. The allocation of marks for the Internal Assessment and Semester End Examinations will be as shown below:-

a) Internal Assessment – 25%

25 Marks

For Courses without Practical

Sr. No.	Particulars	Marks
1	One class test*	20 Marks
2	Active participation in routine class instructional deliveries and overall conduct as a responsible learner, mannerism and articulation and exhibit of leadership qualities in organizing related academic activities	05 Marks

*Note:

Question Paper Pattern for Periodical Class Test for Courses at UG Programmes Written Class Test (20 Marks)

1.	Match the Column / Fill in the Blanks/ Multiple Choice Questions (1 Marks each)	05 Marks
2.	Answer in One or Two Lines (Concept based Questions) (1 Mark each)	05 Marks
3.	Answer in Brief (Attempt Any Two of the Three) (5 Marks each)	10 Marks

b) Semester End Examinations – 75%

75 Marks

EXTERNAL ASSESSMENT-75 Marks

Time: 2 & 1/2 hours Marks: 75

All questions are compulsory

Q.1 Practical (Unit -V:15 marks)

Q.2 Unit 1 (15 marks) or Q.2 Unit 1 (15 marks)

Q.3 Unit 2 (15 marks) or Q.3 Unit 2 (15 marks)

Q.4 Unit 3 (15 marks) or Q.4 Unit 3 (15 marks)

Q.5 Unit 4 (15 marks) or Q.5 Unit 4 (15 marks)

(Q.2 to Q.5 may be divided into two sub question - one sub question of 8 marks and another sub question will be of 7 marks OR Q.2 to Q.5 may be asked fully as a long answer question of 15 marks)

Passing Standard

The learners to pass a course shall have to obtain a minimum of 40% marks in aggregate for each course where the course consists of Internal Assessment and Semester End Examination. The learners shall obtain minimum of 40% marks (i.e. 10 out of 25) in the Internal Assessment and 40% marks in Semester End Examination (i.e. 30 Out of 75) separately, to pass the course and minimum of Grade E to pass a particular semester. A learner will be said to have passed the course if the learner passes the Internal Assessment and Semester End Examination together.



UNIVERSITY OF MUMBAI

Syllabus for F.Y.B.A. course in the subject of Geography
(With effect from the academic year 2016-17)

Paper -II: Human Geography

Credits - 03

SEMESTER-II**COURSE CODE: UAGEO201****Unit I: Introduction to Human Geography****(12)**

Meaning, Nature and Scope of Human Geography - Branches of Human Geography - Different approaches to Human Geography - Man-Environment relationship: Determinism, Possibilism, Probablism

Unit II: Settlements**(12)**

Concept of Urban and Rural Settlements - Types & Patterns of Settlements - Site and Situation - Functional classification of Urban Settlements

Unit III Population**(12)**

Trends and Patterns of World population change - Demographic Transition Model - Population Distribution: Factors and Patterns - Concept and Problems of Under-population, over-population and optimum population

Unit IV Migration**(12)**

Concept and Types of Migration - Causes of Migration: Push and Pull Factors - Consequences of Migration: Source and Destination Areas - Recent Trends in International Migration - Migration Theories: Lee's Theory of Migration & Reilly's Gravity Model

Unit V Practicals**(12)**

Nearest Neighbour Analysis - Construction and Interpretation of Age-Sex Pyramids - Construction and interpretation of Flow Diagrams



CreditBased Evaluation System

Scheme of Examination

The performance of the learners will be evaluated into two Components. One component will be the Internal Assessment component carrying 25% marks and the second component will be the Semester-wise End Examination component carrying 75% marks. The allocation of marks for the Internal Assessment and Semester End Examinations will be as shown below:-

a) Internal Assessment – 25%

25 Marks

For Courses without Practical

Sr. No.	Particulars	Marks
1	One class test*	20 Marks
2	Active participation in routine class instructional deliveries and overall conduct as a responsible learner, mannerism and articulation and exhibit of leadership qualities in organizing related academic activities	05 Marks

*Note:

Question Paper Pattern for Periodical Class Test for Courses at UG Programmes

Written Class Test (20 Marks)

1.	Match the Column / Fill in the Blanks/ Multiple Choice Questions (1 Marks each)	05 Marks
2.	Answer in One or Two Lines (Concept based Questions) (1 Mark each)	05 Marks
3.	Answer in Brief (Attempt Any Two of the Three) (5 Marks each)	10 Marks

b) Semester End Examinations – 75%

75 Marks

EXTERNAL ASSESSMENT-75 Marks

Time: 2 & 1/2 hours Marks: 75

All questions are compulsory

Q.1 Practical (Unit -V:15 marks)

Q.2 Unit 1 (15 marks) or Q.2 Unit 1 (15 marks)

Q.3 Unit 2 (15 marks) or Q.3 Unit 2 (15 marks)

Q.4 Unit 3 (15 marks) or Q.4 Unit 3 (15 marks)

Q.5 Unit 4 (15 marks) or Q.5 Unit 4 (15 marks)

(Q.2 to Q.5 may be divided into two sub question - one sub question of 8 marks and another sub question will be of 7 marks OR Q.2 to Q.5 may be asked fully as a long answer question of 15 marks)

Passing Standard

The learners to pass a course shall have to obtain a minimum of 40% marks in aggregate for each course where the course consists of Internal Assessment and Semester End Examination. The learners shall obtain minimum of 40% marks (i.e. 10 out of 25) in the Internal Assessment and 40% marks in Semester End Examination (i.e. 30 Out of 75) separately, to pass the course and minimum of Grade E to pass a particular semester. A learner will be said to have passed the course if the learner passes the Internal Assessment and Semester End Examination together.



UNIVERSITY OF MUMBAI
Syllabus for F.Y.B.COM. course in the subject of Environmental Studies
 (With effect from the academic year 2016-17)
Environmental Studies
 Credits - 03
SEMESTER-I

Sr. No.	Modules / Units
1	Environment and Ecosystem
	Environment: Meaning, definition, scope and its components; concept of an ecosystem: definition, Characteristics, components and types, functioning and structure; Food Chain and Food Web- Ecological Pyramids - Man and environment relationship; Importance and scope of Environmental Studies.
2	Natural Resources and Sustainable Development
	Meaning and definitions ; Classification and types of resources,factors influencing resource utilisation; Resource conservation- meaning and methods-conventional and non-conventional resources , problems associated with and management of water, forest and energy resources- resource utilization and sustainable development
3	Populations and Emerging Issues of Development
	Population explosion in the world and in India and arising concerns- Demographic Transition Theory - pattern of population growth in the world and in India and associated problems - Measures taken to control population growth in India; Human population and environment- Environment and Human Health – Human Development Index – The World Happiness Index
4	Urbanisation and Environment
	Concept of Urbanisation – Problems of migration and urban environment- changing land use, crowding and stress on urban resources, degradation of air and water, loss of soil cover impact on biodiversity, Urban heat islands – Emerging Smart Cities and safe cities in India - Sustainable Cities
5	Reading of Thematic Maps and Map Filling
	Reading of Thematic Maps(4 Lectures) Located bars, Circles, Pie charts, Isopleths, Choropleth, and Flow map, Pictograms - Only reading and interpretation. Map Filling: (4 Lectures) Map filling of World (Environmentally significant features) using point, line and polygon segment.



CreditBased Evaluation System

Scheme of Examination

The performance of the learners will be evaluated into two Components. One component will be the Internal Assessment component carrying 25% marks and the second component will be the Semester-wise End Examination component carrying 75% marks. The allocation of marks for the Internal Assessment and Semester End Examinations will be as shown below:-

a) Internal Assessment-25%

25 Marks

For Courses without Practical

Sr. No.	Particulars	Marks
1	One class test*	20 Marks
2	Active participation in routine class instructional deliveries and overall conduct as a responsible learner, mannerism and articulation and exhibit of leadership qualities in organizing related academic activities	05 Marks

*Note:

Question Paper Pattern for Periodical Class Test for Courses at UG Programmes Written Class Test (20 Marks)

1.	Match the Column / Fill in the Blanks/ Multiple Choice Questions (1 Marks each)	05 Marks
2.	Answer in One or Two Lines (Concept based Questions) (1 Mark each)	05 Marks
3.	Answer in Brief (Attempt Any Two of the Three) (5 Marks each)	10 Marks

b) Semester End Examinations - 75%

75 Marks

EXTERNAL ASSESSMENT-75 Marks

Time: 2 & 1/2 hours Marks: 75

All questions are compulsory

Q.1 Practical (Unit -V: Thematic maps-5 marks, Map filling -World map -5marks, objectives-5marks)

Q.2 Unit 1 (15 marks) or Q.2 Unit 1 (15 marks)

Q.3 Unit 2 (15 marks) or Q.3 Unit 2 (15 marks)

Q.4 Unit 3 (15 marks) or Q.4 Unit 3 (15 marks)

Q.5 Unit 4 (15 marks) or Q.5 Unit 4 (15 marks)

(Q.2 to Q.5 may be divided into two sub question - one sub question of 8 marks and another sub question will be of 7 marks OR Q.2 to Q.5 may be asked fully as a long answer question of 15 marks)

Passing Standard

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UNIVERSITY OF MUMBAI
Syllabus for F.Y.B.COM. course in the subject of Environmental Studies
 (With effect from the academic year 2016-17)

Environmental Studies

Credits - 03

SEMESTER-II

Sr. No.	Modules / Units
1	Solid Waste Management for Sustainable Society
	Classification of solid wastes – Types and Sources of Solid Waste ; Effects of Solid Waste Pollution- Health hazards, Environmental Impacts; Solid Waste Management – solid waste management in Mumbai- Schemes and initiatives run by MCGM – role of citizens in waste management in urban and rural areas.
2	Agriculture and Industrial Development
	Environmental Problems Associated with Agriculture: Loss of Productivity, Land Degradation, desertification - Uneven Food Production – Hunger, Malnutrition and Food Security – Sustainable Agricultural practices Environmental Problems Associated with Industries – pollution -Global warming, Ozone Layer Depletion , Acid rain, - Sustainable Industrial practices – Green Business and Green Consumerism, Corporate Social Responsibility towards environment
3	Tourism and Environment
	Tourism: Meaning, Nature, Scope and importance –Typology of tourism-classification; Tourism potentials in India and challenges before India; New Tourism Policy of India; Consequences of tourism : Positive and Negative Impacts on Economy, Culture and environment- Ecotourism
4	Environmental Movements and Management
	Environmental movements in India: Save Narmada Movement, Chipko Movement, Appiko Movement, Save Western Ghats movement; Environmental Management: Concept, need and relevance; Concept of ISO 14000 and 16000; Concept of Carbon Bank and Carbon Credit , EIA , ecological footprint; Environment Protection Acts; Concept and components of Geospatial Technology- Applications of GST in Environmental Management
5	Map Filling
	Map filling of Konkan and Mumbai (Environmentally significant features)



CreditBased Evaluation System

Scheme of Examination

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a) Internal Assessment-25%

25 Marks

For Courses without Practical

Sr. No.	Particulars	Marks
1	One class test*	20 Marks
2	Active participation in routine class instructional deliveries and overall conduct as a responsible learner, mannerism and articulation and exhibit of leadership qualities in organizing related academic activities	05 Marks

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2.	Answer in One or Two Lines (Concept based Questions) (1 Mark each)	05 Marks
3.	Answer in Brief (Attempt Any Two of the Three) (5 Marks each)	10 Marks

b) Semester End Examinations - 75%

75 Marks

EXTERNAL ASSESSMENT-75 Marks

Time: 2 & 1/2 hours Marks: 75

All questions are compulsory

Q.1 Practical (Unit -5: Map filling - Konkan map - 5 marks, Map filling - Mumbai map - 5 marks, objectives - 5 marks)

Q.2 Unit 1 (15 marks) or Q.2 Unit 1 (15 marks)

Q.3 Unit 2 (15 marks) or Q.3 Unit 2 (15 marks)

Q.4 Unit 3 (15 marks) or Q.4 Unit 3 (15 marks)

Q.5 Unit 4 (15 marks) or Q.5 Unit 4 (15 marks)

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List of Board of Studies Members of Geography

1. Prof. Suresh Shetkar (Chair, Head of the Department)
2. Dr. Ambadas Jadhav (Head of the Department- University of Mumbai)
3. Dr. Vinayak Phadke (Invited Expert)
4. Mr. Mrudank Jardosh (Professional Expert)
5. Mr. Pranav Raut (Professional Expert)
6. Dr. Hemant Pednekar (Academic Expert)
7. Prof. Bharati Unni (Academic Expert)
8. Dr. Haider-E-Karrar (Academic Expert)
9. Dr. Prakash Dongre (Member)
10. Dr. Moushumi Datta (Member)
11. Ms. Niddhi Chawhan (Alumni)
12. Ms. Hemali Mitalia (Student)



List of Department Members

1. Prof. Suresh Shetkar (Chair, Head of the Department)
2. Dr. Prakash Dongre (Member)
3. Dr. Moushumi Datta (Member)



Minutes of the meeting of Board of Studies in Geography held on 13th August 2016 (Saturday) at 11.00 am at Nagindas Khandwala College

Members Present

1. Prof. Suresh Shetkar (Chair, Head of the Department)
2. Dr. Ambadas Jadhav (Head of the Department- University of Mumbai)
3. Dr. Vinayak Phadke (Invited Expert)
4. Mr. Mrudank Jardosh (Professional Expert)
5. Prof. Bharati Unni (Academic Expert)
6. Dr. Prakash Dongre (Member)
7. Dr. Moushumi Datta (Member)
8. Ms. Niddhi Chawhan (Alumni)
9. Ms. Hemali Mitalia (Student)

The Following Resolutions were unanimously passed at the meeting

- Syllabus presented at the meeting was discussed and after deliberations it was resolved that syllabus for **Environmental Studies** subject at Semester I and Semester II, presented at the meeting should be adopted for the academic year 2016-17 at F.Y. level.
- Syllabus presented at the meeting was discussed and after deliberations it was resolved that syllabus for **Geography Paper - I** subject at Semester I and Semester II, presented at the meeting should be adopted for the academic year 2016-17 at F.Y. level
- Syllabus presented at the meeting was discussed and after deliberations it was resolved that syllabus for **MA Part I- Geography** subject at Semester I and Semester II, presented at the meeting should be adopted for the academic year 2016-17.



- Scheme of Continuous Internal Evaluation as well as the Semester End Examination was discussed and it was resolved that the proposed scheme of Continuous Internal Evaluation and Semester End Examination be accepted.
- Question paper pattern for Mid Term and Semester End examination was discussed and it was resolved to adopt the proposed paper pattern.
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- Eligibility to admit the students to this course was discussed and it was resolved to adopt the same admission policy.
- Resolved that Head of Department be authorized to finalise the panel for the paper setters, examiners and the moderators. HOD was authorised to frame the guidelines for the internal evaluation system, and take appropriate steps fair conduct of the course, examination.
- BOS gave sanction to mailing the minutes of the meeting within a weeks' time to the members of BOS.



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