

M. Phil. Geography (Full Time) Programme

(For the candidates admitted from the academic year 2008-2009 onwards)

Syllabus (Semester – I & II)

Semester - I	Title of the Course	Marks			Credits	Hours
		IA	UE	TOTAL		
Core - 1	Research Methodology	40	60	100	4	
Core - 2	Quantitative Techniques in Geography	40	60	100	4	
Core - 3	Professional Skills	40	60	100	4	

Semester - II	Title of the Course	Marks			Credits
		IA	UE	TOTAL	
Core - 5	Elective (Any one) i) <i>Water Resources</i> ii) <i>Disaster Management</i> iii) <i>Land Evaluation</i> iv) <i>Agro Climatology</i> v) <i>Urban Studies</i>	40	60	100	4
Dissertation	Dissertation and Viva-Voce Dissertation – 150 Viva-Voce – 50	200 (150 + 50)			8

Question Paper Pattern (Course I – IV)

The candidate has to answer **five** questions out of the **eight** questions (5 x 12= 60)

Grading of Dissertation: As done for other regular M.Phil. Courses offered in MTWU

Elective Subject: One from the elective papers list may be selected by the students depending on the area of their research

Teachers: Only teachers with Ph.D. or M.Phil. Qualification and having atleast two years of teaching PG courses can handle classes and guide the Dissertation work.

Pass Percentage: 50% of the marks in Subjects.

Eligibility of Admission: Candidates who have completed M.Sc (Geography) and having atleast 55% of marks in their PG course are eligible for admission.

Note: Only degrees obtained after 10+2+3+2 years for M.Sc will be considered.

Question Pattern

Title of the Paper

Time: 3Hrs

Max: 60 Marks

Answer any five Questions

- 1.
- 2.
- 3.
- 4.
- 5.
- 6.
- 7.
- 8.
- 9.
- 10.

M.Phil GEOGRAPHY

(2015-16 Onwards)

SEMESTER - I

CORE – I - RESEARCH METHODOLOGY

Unit 1: Meaning of Research: Need for scientific research – types of research – approach to geographical research: traditional and scientific – identification fields, sub fields and themes.

Unit 2: Logic in Research: Hypotheses, concepts and facts, principles, law, theory and their implications in geographical research – the science of geography – role of models – research trend in geography.

Unit 3: Research Design: Selection of the topic – statement of the problem – formulation of hypotheses, testing of hypotheses. – time schedule – literature survey and role of internet and bibliography.

Unit 4: Data Acquisition and Analysis: Collection of data – sources of data: primary and secondary – structuring the data – data transformation – sampling techniques – interpret the results - quantitative revolution in geography.

Unit 5: Thesis Writing: Organization of the thesis: the preliminaries, the text and the reference materials – drafting of thesis: first, second and final – final evaluation – language and presentation (form and style) – writing of abstract, research papers for seminar and journal publications.

References:

1. Anderson, J., Durston, B.H. and Poole, M., (1970). Thesis and Assignment Writing, Wiley Eastern Ltd., New Delhi.
2. Cooray, P.G., (1992). Guide to Scientific and Technical Writing, Hindagala, Srilanka.
3. Davis, J.C., (1986). Statistics and Data Analysis in Geology, John Wiley & Sons, New York.
4. Davis, W.K.D., (1972). The Conceptual Revolution in Geography, University of London Press Ltd., London.
5. Hammond, R. and McCullagh, P., (1978). Quantitative Techniques in Geography: An Introduction, Clarendon Press, Oxford.
6. Hanag, L.L., and Lounsbury, J.F., (1971). Research Methods in Geography, Brown Company Publishers, Iowa.
7. Kothari, C.R., (1990). Research Methodology: Methods and Techniques, Wishwa Prakash, New Delhi.
8. Misra, R.P., Research Methodology: A Hand book, Concept Publishing Company, New Delhi.

9. Norcliffe, G.B., (1982), *Inferential Statistics for Geographers: An Introduction*, Hutchinson, London.
10. Yeats, M.H., (1974). *An Introduction to Quantitative Analysis in Human Geography*, McGraw Hill, New York.

SEMESTER I

CORE - II QUANTITATIVE TECHNIQUES IN GEOGRAPHY

Unit 1: Development of Geographical Method: Science of geography – use of mathematics – transformation of space – perception and decision making in geography.

Unit 2: Data Collection: Sources of data - approaching a geographical problem – Sampling – Data collection methods - geographical research projects – aim, method and implications – sources and problems in collecting data.

Unit 3: Data Description and Presentation: Nature of geographical data - describing numerical distribution – point, line and shapes - classifying data – mapping distributions – mapping flows - symbols and graphs.

Unit 4: Data Use and Interpretation: Probability - hypothesis testing – inferential tests - estimates from samples – correlation – regression

Unit 5: Data Processing: Geographical data explosion – use of computers in data processing – spatial and non-spatial data – modern methods in spatial data collection, correction and verification – image processing – information extraction – GIS layers – multi criteria approach - information synthesis

References:

1. FitzGerald Brain P (1974) Development in Geographical method, Science in Geography – 1, Oxford University Press, Oxford.
2. Doagherty Richard (1974) Data Collection, Science in Geography – 2, Oxford University Press, Oxford.
3. Davis Peter (1974) Data Description and Presentation, Science in Geography - 3, Oxford University Press, Oxford.
4. McCullagh Patrick (1974) Data Use and Interpretation, Science in Geography – 4, Oxford University Press, Oxford.
5. Kumaraswamy. K (2005) Remote Sensing for Environmental Studies, Department of Geography, Bharathidasan University, Tiruchirappalli
6. Lillesand T. M and R. Kiefer, (1987) Remote Sensing and Image Interpretation, Third Edition, John Wiley and Sons, New York.
7. Burrough P A and P A McDonnell (2000) Principles of Geographical Information systems, Oxford University Press, London.

SEMESTER – I

CORE - III REMOTE SENSING AND GEOGRAPHICAL INFORMATION SYSTEM

Unit 1: Geoinformatics: Meaning – components – quantitative revolution – geographic data matrix – developments – application trends.

Unit 2: Remote Sensing: Meaning – definition – remote sensing system – development of aerial and satellite remote sensing – photogrammetry – types of satellites – resolution aspects – applications.

Unit 3: Digital Image Processing: Pixel – DN values – spectral reflectance curve – preprocessing – geometric correction and radiometric correction – classification – unsupervised – supervised – ground truth data collection – applications.

Unit 4: Geographical Information System: Definition – components – developments – projection system – raster and vector data format – GIS analysis – Single and multilayer – network – Digital Elevation Model (DEM) – virtual GIS – applications.

Unit 5: Global Positioning System: Definition – development – segments – space, control and user – positioning methods – advantages and limitations – applications

References:

1. Sobins F. F. Jr (1987) Remote Sensing: Principles and Interpretation, Second Edition, W. H. Freeman and Company, New York.
2. Kumaraswamy. K (2005) Remote Sensing for Environmental Studies, Department of Geography, Bharathidasan University, Tiruchirappalli.
3. Lillesand T. M and R. Kiefer, (1987) Remote Sensing and Image Interpretation, Third Edition, John Wiley and Sons, New York.
4. Burrough P A and P A McDonnell (2000) Principles of Geographical Information systems, Oxford University Press, London.
5. Haywood.L, Comelius.S and S. Carver (1988) An Introduction to Geographical Information Systems, Addison Wiley Longmont, New York.
6. Agarwal N.K (2006) Essentials of GPS, Second Edition, Geodesy and GPS Publishers, Hyderabad.
7. Ganesh A., and R. Narayanakumar (2006) GPS Principles and Applications, Satish Serial Publishing House, New Delhi.

SEMESTER II

AREA PAPER – I POPULATION GEOGRAPHY (Optional)

Unit 1: Nature, scope and significance of population geography – Source of population data – Reliability of population data. Distribution and density of world population – Factors and pattern distribution

Unit 2: Dynamics of population – Fertility – Its measures and determinants and world pattern – Mortality – Its measures and determinants and world trend – world population growth and its trend – Theories of population growth – Malthus, Ricardo and Marx – Migration types – Determinants– Consequences of migration – Laws of migration – Policies of migration

Unit 3: Population composition characteristics – Age, Sex, Rural, Urban, Occupation Education – Population resources relationship – Population resources region, Population policies.

Unit 4: Population – Development – Environment Interrelations – A Geographical Overview of World population – Population of India – Features and Trends – The Working population – The main occupation types and their Evolution.

Unit 5: Population – Impacts of development and disaster – Issues and Strategies – Disaster reduction strategies.

References

1. Chandna R.S – Geography of population concepts, Determinants and pattern, Kalyani Publishers, New Delhi, 1980.
2. Clark John. I. – Population Geography, Pergamon Press Ltd. Oxford, 1981
3. Gosh, B.N – Population Geography, Sterling Publication, 1987
4. Beauji – Garneir.J. – Geography of population, Longman group Ltd, 1978
5. Mohammad Izhar Hassan – Population Geography, Rawat Publications, New Delhi, 2009.
6. Kayastha, S.L. – Geography of Population, Rawat Publications, New Delhi, 2007
7. Siya Ram Sharma – Population Geography, Murari Lal & Sons, New Delhi, 2008.
8. Asha.A.Bhende & Tara Kanitkar – Principles of Population Studies, Himalaya Publishing House, 1978

SEMESTER II

AREA PAPER – II URBAN GIS (Optional)

Unit 1: Basis Concept: Urban– Urban morphology – Urban hierarchy– Urbanization process conceptual modeling of urban process –Urban indicators and monitoring – Urban information system.

Unit 2: Data Source and Collection: Platforms- scale and resolution – Scope and limitations – Interpretation from Areal and satellite images–GPS survey for urban data collection – Cadastral data – Mobile mapping lidar, digital image processing technique; Image classification– Image fusion – Feature extraction.

Unit 3: Urban Mapping: Urban infrastructure – Utility mapping – Change analysis – 2D and 3D – CBD – Fringe dynamics – Slums – Urban Sprawl.

Unit 4: Urban administration : Municipal and local administration – Electoral application – Solid waste management – Water supply and sanitation – Recreation site identification – Network analysis – Optimum route / Shortest route – Traffic and parking studies – Accident analysis – Vehicle tracking – Case studies.

Unit 5: Urban Management : Community based planning – Social service delivery – Environmental quality – Healthcare services – Homeland security – Emergency management and disaster response – Archaeology – location based services (LBS) – Virtual 3D city modeling and applications.

References:

1. Jean – Paul Donnay, Mike J Barnsely and paul A Longley., (2001) Remote sensing and urban anlaysis, Taylor and Francis, London.
2. Harold Carter., (1995) The Study of urban Geography, Arnold, A Division of HodderHeadline, PLC, London.
3. Sokhi BS and Rashid S M., (1999) Remote sensing of Urban Environment. Manak publication Private Limited.
4. William E Huxhold., (1991) an Introduction to Urban Geographic Information Systems. Oxford University Press.
5. Timothy.L.N and Piotr Jankowski (2010) Regional and Urban GIS A Decision Support Approach, The Guilford press, Newyork.
6. Julina and John Ziegler (2006) GIS for the Urban Environment, ESRI Press, Redlands, USA.
7. Cory Fleming Ed. (2005) the GIS Guide for Local Government Officials, ESRI Press, Redlands, USA.
8. Ayse Pamuk (2006) Mapping Global Cities, GIS Methods in Urban Anlaysis, ESRI Press, Redlands, USA.

SEMESTER II

AREA PAPER – III LAND EVALUATION (Optional)

- Unit I** The nature and principles and process of land evaluation: LE definition, Actors, need, aim, objectives land evaluation and land use planning, principles, land evaluation process, approaches , levels of detail: frame work, guidelines evaluations.
- Unit II** Concepts : Land use and land utilization Types, land resources survey: Physical, economical and social, levels of intensity , selection of land units (genetic and Parametric) Land qualities and land characteristics , land use requirements : crop requirements, management requirements and conservation requirements , land qualities and their assessment, matching of LUR and LQ land evaluation table, comparison of land use with land , land improvements , structure of the suitability classification.
- Unit III** GIS and Land Resource Survey: Land capability, physical land suitability, soil erosion and model, groundwater suitability, watershed and land use planning: database – thematic layers – weightage , ranking and rating scale – integration – suitability classification, decision making.
- Unit IV** GIS and Agricultural land use: Crop suitability for irrigated and rain fed agriculture (Rice, Banana, Groundnut and cotton) agro climatic land suitability, forestry and grazing: database – thematic layers – weightage , ranking and rating scale – integration – suitability classification, decision making.
- Unit V** GIS and Non – agricultural land use : wildlife conservation, tourism development urban fringe development : database - thematic layers – weightage , ranking and rating scale – integration – suitability classification, decision making.

References:

Christian, C.S., (1957).The conclpt of land uints and land system, Proc. 9th pacific science congress, 20: 74 -81

SEMESTER II

AREA PAPER – IV DISASTER STUDIES (Optional)

Unit 1

Disaster and GIS: Meaning and types of hazards, disasters and catastrophes- Disaster management; Earthquakes: causes and effects-measurements-earthquake zones of the world and in India-vulnerability and microzonation; Volcanoes: Causes and effects- Volcanic zones of the world and in india-Volcanic hazards; landslides: Causes and effects- landslide prone zones in India- Gis case studies for earthquake, Volcano and landslide.

Unit 2: Cyclone and Flooding: Cyclone: Origin and types- effect on land and sea-damage assessment; Flooding: Topography, land use and flooding – space-time integration –GIS based parameters and layers – flood prone area analysis and management – risk assessment – GIS case studies for cyclones and floods.

Unit 3: Drought and Desertification : Drought : Types – factors influencing drought – variable identification – vegetation index – land use / ground water level changes – soil erosion – delimiting drought prone areas – short term and long term effects – Desertification : processes – over utilization of water and land resources – GIS based management strategies–GIS case studies for drought and desertification.

Unit 4: Anthropogenic Disasters: Atmospheric disasters : ozone layer depletion – green house / global warming– acid rain – snow melt – sea level rise – related problems ; Nuclear, Chemical / Industrial and Mining disasters: Types – consequences – major disaster of the world and India ; marine Disasters : Oil spill and chemical pollution – coastal erosion and deposition – coastal Zone management strategies – GIS case studies for anthropogenic disasters.

Unit 5: Biological Disasters and Disaster Management Issues: Diseases and human health: Epidemics– disease spread– GIS analysis; ecological degradation– bio-diversity loss– population extinction– conservation; Biodiversity Gap Analysis; Coral / mangrove depletion– forest fire impacts– overlay analysis– GIS in environmental modeling– GIS case studies; Disaster Management: United Nations, Central and state Governments of India in Disaster Management – Institutional and Policy Framework- Disaster Prevention and Mitigation- Preparedness.

References:

1. National Disaster Management Division(2004) Disaster Management in India- A Status Report, Ministry of Home Affairs, Government of India, New Delhi
2. Matthews, J.A., (2002) Natural Hazards and Environmental Change, Bill McGuire, Ian Mason.

3. Skeil, A (2002) Environmental Modeling with GIS and Remote sensing, John wiley and sons, New York.
4. Singh, R.B (Ed.) (1996) Disasters, Environment and Development, Oxford & IBH, New Delhi.
5. Barrett E.C., and L.F.Curtis,(1992)Introduction to Environment Remote sensing, Chapman and Hall, London.
6. UNDRO(1995) Guidelines for Hazard Evaluation Procedures, Unites Nations Disaster Relief Organization , Vienna.
7. Nagarajan,R,. (2004) Landslide Disaster Assessment and Monitoring, Anmol Publication, New Delhi
8. RamKumar, Mu., (2009) Geological Hazards; Causes, Consequences and Methods of Containment, New India Publishing Agency, New Delhi.

SEMESTER II

AREA PAPER –V WATER RESOURCES (Optional)

UNIT – I

Introduction: Hydrology – development of scientific of hydrology - importance of water – occurrence of water – hydrological cycle, precipitation – variation in precipitation distribution - analysis and interpretation of precipitation data - areal assessment of precipitation.

UNIT – II

Evaporation and Evapotranspiration: Concept of potential evapotranspiration – factors controlling evapotranspiration - measurements of evaporation and evapotranspiration – computation – relationship between actual and potential evapotranspiration – spatial variation – interception process – determination of interception – variations.

UNIT – III

Groundwater: Infiltration process – methods of determining infiltration rate – soil moisture – measurement – variations – groundwater – origin and occurrence – storage – types of aquifers – groundwater movement – groundwater level – groundwater quality – Mapping methods.

UNIT – IV

Water Resources Management: Approaches to planning and development of water resources – evaluation of surface water resources and groundwater – assessment of water quality for various uses – water supplies and utilization – problems – policies and management.

UNIT – V

Application of GIS in Water Resources: GIS for surface water modeling – groundwater modeling - flood plain mapping – water quality monitoring – water resource planning and management – Hydrologic Information System.

References:

1. Ayodade, J. O., (1988) Tropical Hydrology and Water Resources, Macmillan Publishers, London.
2. Olson, R.E., (1970) A Geography of Water Resources, WMC Brown Company Publishers, Iowa.

3. Rao, K. L., (1975) India's Water Wealth: Its Assessment, Uses and Projections, Orient Longman, New Delhi.
4. Sewell, W.R.D., (1975) Geography of Water Resources, Prentice Hall, New York.
5. Todd, D.K., (1959) Groundwater Hydrology, McGraw Hill Book Company, New York.
6. UNESCO (1978) World Water Balance and Water Resources of the Earth, UNESCO, Leningrad.
7. Ward, R.C., (1970) Principles of Hydrology, McGraw- Hill Book Company, London.
8. Lyon, J.C., (2003) GIS for Water Resource and Watershed Management, Taylor and Francis, New York.

SEMESTER II

AREA PAPER –VI AGRO CLIMATOLOGY (Optional)

Unit1: Remote sensing in Meteorology – Meteorological satellite characteristics – TIROS, NIMBUS, NOAA – TIROS N, SEASAT, GOES, METEOSAT, INSAT- Role of LANDSAT, SPOT and IRS – In collecting meteorological – Agricultural data – Atmospheric temperature retrieval techniques and surface radiation studies – Wind measuring techniques from satellite data.

Unit2: Satellite Remote Sensing System in Cloud classification– Rainfall monitoring methods: Cloud indexing method, Life –history method and Bio-spectral methods – Interpretation of Satellite meteorological images for weather and cyclones – Rainfall forecasting.

Unit 3: Remote Sensing in drought analysis and mapping: Aridity and drought measurement methods – Estimation of soil moisture and evapotranspiration – Spectral behavior of different crops and vegetation in VIS, NIR, MIR, TIR and Microwave regions – Vegetation indices.

Unit4: Remote sensing in crop identification and area estimation – Sampling techniques – Vegetation indices and crop yield modeling – Monitoring – Assessing crop water availability – Crop stress assessment and monitoring – Nutrient estimation and management strategies.

Unit 5: Water management – Demand and utilization pattern – Water shed – Command area – Precision agriculture – Crop calendar and crop suitability analysis – Suitable land use practices – Integration field and remote sensing data.

References

1. Applied Remote Sensing C.P.L.O., Longman scientific and Technical Publications.
2. E.C. Barrett & L.F. Curtis, Introduction to Environment Remote Sensing, Chapman and Hall, London.
3. Engman, E.T. And Gurney, R.J. Remote Sensing in Hydrology.
4. Govardhan, V. Remote Sensing in water management in command areas.
5. M.D. Steven and J.A. Clark, Applications of Remote sensing in Agriculture.
6. Bramdi, Henoy Willnois; Air Weather service, 1976. Satellite metrology
7. Stanley Q. Kidder and Thomas, H. Vonder Haar satellite Meterology –An Introduction, – oxlando, Academic Press, 1995.
8. The use of satellite data in rainfall monitoring, E.C. Barrett and D.W Martin, Academic Press, New York.

SEMINAR: 5 MARKS (EACH 1 MARK)

- SUBJECT MATTER
 - COMMUNICATION SKILL
 - LOGICAL PRESENTATION
 - RESPONDING TO QUESTIONS
 - USAGE OF TEACHING AIDS
-
- To finalize the marks for test, three internal examinations will be conducted and average of best two internal marks will be computed. The internals shall be conducted for 50 marks and shall be converted to 15.
 - The final marks will be computed by adding up the marks for test with the assignment, seminar and attendance. The marks in fraction will be rounded off.
 - Dissertation viva voce examination will be held along with university practical examination to ascertain the knowledge of the candidate in their research work.
 - The semester exam will be conducted at the end of semester.

INTERNAL EXAMS QUESTION PATTERN (M.PHIL)

2 Questions * 15 marks = 30 MARKS

UNIVERSITY EXAMS QUESTION PATTERN (M.PHIL)

5 (Either or) Questions * 12 marks = 60 MARKS

DISSERTATION EVALUATION CRITERIA

Dissertation Evaluation	-	100 Marks
Internal	-	100 Marks
External	-	100 Marks

Average of Internal and External will be taken for Evaluation

Split Up for Internal	- 100 Marks
Topic Approval	- 100
Synopsis	- 10
Review I	- 20
Review II	- 20
Review III	- 20
Final Review	- 20