

M. Phil Syllabus, 2020-2022

North Bengal University

Department of Geography and Applied Geography

SEMESTER I: 6 MONTHS DURATION ;TOTAL MARKS:250						
Course Code	Course Name	Type	Instruction Hours/week	Total Marks	Duration of Exam	Credits
MGAG101	Research Methodology	Theory	4	50	2 hours	2
MGAG102	Quantitative Techniques	Theory	4	50	2 hours	2
MGAG103	Methods and Applications of GIS	Theory	4	50	2 hours	2
MGAG104	Techniques and Application of Remote Sensing, Air Photo & GPS	Theory	4	50	2 hours	2
MGAG105	Research and Publication Ethics	Theory & Practice	30	50	-	2
TOTAL				250		10

SEMESTER II: 6 MONTHS DURATION ;TOTAL MARKS:200						
Course Code	Course Name	Type	Instruction Hours/week	Total Marks	Duration of Exam	Credits
OMGAG106	Environmental Geography	Elective (Optional) Theory	4	50	2 hours	2
OMGAG107	Urban Geography	Elective (Optional) Theory	4	50	2 hours	2
OMGAG108	Transport and Marketing Geography	Elective (Optional) Theory	4	50	2 hours	2
OMGAG109	Advanced Geomorphology	Elective (Optional) Theory	4	50	2 hours	2
OMGAG110	Agricultural Geography	Elective (Optional) Theory	4	50	2 hours	2
OMGAG111	Population Geography	Elective (Optional) Theory	4	50	2 hours	2
TOTAL				4 x 50=200*		08

***N.B: One candidate will be offered four Elective (Optional) Papers; Two Elective (Optional) papers out of three prescribed as OMGAG106-108 and another two out of three prescribed as OMGAG109-111**

SEMESTER III: 6 MONTHS DURATION ;TOTAL MARKS:200						
Course Code	Course Name	Type	Instruction Hours/week	Total Marks	Duration of Exam	Credits
AECGAG112	Seminar*	Ability Enhancement Course	2	50	-	2
AECGAG113	Group Discussion	Ability Enhancement Course	2	50	-	2
AECGAG114	Article Review#	Ability Enhancement Course	2	50	-	2
AECGAG115	Research Proposal Writing	Ability Enhancement Course	2	50	-	2
TOTAL				200		08

***Seminar Paper preparation: 25 Marks and Presentation 25 Marks, # 2 Nos. Research article review**

SEMESTER IV: 6 MONTHS DURATION ; TOTAL MARKS:200						
DGAG116	Dissertation Work* ¹	Choice based compulsory	8	200	-	08

***1 N.B: The choice of the Dissertation work will be decided in consultation with the respective supervisor and will be evaluated as follows: Preparation of the Dissertation 150 marks and Viva-voce: 50 marks.**

SEMESTER I
MGAG101: Research Methodology (Theory)
 Total Marks: 50, Total Credit: 2

Unit I	Introduction to Research Methodology: Scope, meanings, objectives, significance, Design. Research Problem: Definition, techniques of problem identification Data Inventory: Sources and Types, Length of Quotations, Direct and Short Direct Quotations, Long Quotations, Cross references, Quotation of Footnotes, Quotation in Quotation, Ellipse, Interpolation, Footnote, Endnote, Correction, Footnote Numbering, Cataloging, Citations
Unit II	Methods of Data Collection, Tables and Tabulation. Research Types: Normative, Experimental, Historical, Case-study based, Comparative, Empirical Definitions: Thesis, Dissertation, Term Paper, Project, Assignment, Periodicals, Memoires, Reference, Citation, Bibliography
Unit III	Sampling Techniques: Concepts, classifications, use. Hypothesis: Definition, testing and procedures. Thesis Organization and Arrangements, Sample Research Proposal and their features, Interrelationship of Aims and Objectives, Database and Methodology and Hypothesis formulation.
Unit IV	Different types of Questionnaires and Schedules, Field notes, Photographic and Video-graphic Survey, Pilot survey, Focus Group survey, Conventions, Interview, Sample Questionnaire for conducting Physical and Socio-economic Research. Report Writing: Meaning, Interpretation, Significance, Steps of writing. Sample Referencing by Oxford, APA and MLA 6 th Edition System (cases: Books, Article, Reports, one, two and multi authors, cases of similar surnames of authors)

MGAG102: Quantitative Techniques (Theory)
 Total Marks: 50, Total Credit: 2
MGAG103: Methods and Applications of GIS (Theory)

Unit I	Methods of making Indicators scale free, Introduction to Matrix, Probability, Skewness and Kurtosis, Basic-data input-plotting, Charting and descriptive statistics.
Unit II	Correlation and Bi-Variate analysis, Comparing means, t and F test, Co-efficient of Determination, Multiple Linear Regression, Analysis of Variance (One and two way ANOVA) and repeated measure of ANOVA analysis, Nearest Neighbor Analysis.
Unit III	Multivariate Analysis, Distance between Multivariate Population, Multivariate analysis of ANOVA (MANOVA), Mann-Whitney U Test, Weaver's crop Combination, Z-score, Residual Mapping, Chi-square Test, Principal Component Analysis (Less than 6 component case), Factor Analysis and F statistics.
Unit IV	Cluster Analysis, Canonical correlation, Correspondence Analysis, Categorical Data analysis (qualitative), Concepts of Logistic Regression, Time series Analysis and Analysis of Experimental Design, Data analysis by Online package sources Analog and Digital platform (Using suitable Software).

Total Marks: 50, Total Credit: 2

Unit I	Data Format and Types: Concepts, Components, types, and advantages Geo-referencing, Assigning, Projection, Re-projection, concepts of band combinations, CRS, Custom CRS definition
Unit II	R2V conversion, Creating shape-files, Points, Lines, Polygons, Handling Attribute Tables, Joining data layers, Preparation of Choropleth maps, Chorochromatic maps, Digital Cartographics, Attribute Tables and Layout of Thematic Mapping.
Unit III	Extraction and preparation of DEM from SRTM (Free sourced) and other soft data Semi-automatic digital image classification, Preparation of digital thematic maps, concepts of Supervised and Unsupervised Image Classification, NDVI.
Unit IV	Publishing Interactive Web maps, Mosaicing of Images, Working with point data.

MGAG104: Techniques and Application of Remote Sensing, Air-Photo & GPS (Theory)
Total Marks: 50, Total Credit: 2

Unit I	Remote Sensing: Energy sources and radiation principles, Energy interactions in the atmosphere, Energy interactions with Earth surface features, Data acquisition and interpretation, Multispectral, Thermal and Hyperspectral Sensing, Earth Resource Satellites and Optical Spectrum, Digital Image Processing, Image Rectification and Restoration, Spatial Image Manipulation. Multi-Image Manipulation, Image Classification, Data Merging, Microwave Sensing.
Unit II	Applications of Remote Sensing: Remote Sensing over Fishing Zones, Impact of Mining Activities on Environment, Remote Sensing and Biodiversity, Estimating and Monitoring Forest Cover and Digital Forest Management, Remote Sensing for Route Alignment, Remote Sensing for Flood Management, Monitoring Urban Growth using Remote Sensing, Mapping Wastelands through Remote Sensing, Preventing Natural Disasters, Remote Sensing for Managing Water Resources, Using land through Remote Sensing, Watersheds and Remote Sensing, Crop Forecast from Satellite Data, Remote Sensing to Help Boost Tourism, Managing Groundwater.
Unit III	Spectral Sensitivity of films, Film resolution, Electronic imaging, Photogrammetric activities, Basic Geometry and Scale of Aerial Photographs, Mapping with Aerial Photographs, Flight Planning, Basic Visual Image Interpretation Equipment, Land Use/Land Cover Mapping.
Unit IV	The Global Positioning System: Basic concept and fundamentals of GPS, Development of GPS System, User-Satellite Geometry, Structure and segments of GPS, Communication formats of GPS, Accuracy enhancement of GPS, Applications of GPS.

OMGAG105: Research and Publication Ethics (Theory and Practice)
Total Marks: 50, Total Credit: 2

PRE01	Philosophy and Ethics (Theory): <ol style="list-style-type: none"> 1. Introduction to philosophy: definition, nature and scope, concept, branches. 2. Ethics: Definition, moral philosophy, nature of moral judgments, and reactions.
RPE02	Scientific Conduct (Theory): <ol style="list-style-type: none"> 1. Ethics with respect to science and research. 2. Intellectual honesty and research integrity. 3. Scientific misconducts: Falsification, Fabrication, and Plagiarism (FFP). 4. Redundant publications: duplicate and overlapping publications, salami slicing. 5. Selective reporting and misrepresentation of data.
RPE03	Publication ethics (Theory): <ol style="list-style-type: none"> 1. Publication ethics: definition, introduction and importance. 2. Best practices/standards setting initiatives and guidelines: COPE, WAME, etc. 3. Conflicts of interest. 4. Publication misconducts: definition, concept, problems that lead to unethical behavior and vice versa, types. 5. Violation of publication ethics, authorship and contributorship. 6. Identification of publication misconduct, complaints and appeals. 7. Predatory publishers and journals.
RPE04	Open access publishing (Practice) <ol style="list-style-type: none"> 1. Open access publications and initiatives. 2. SHERPA/RoMEO online resource to check publisher copyright & self-archiving policies. 3. Software tool to identify predatory publications developed by SPPU. 4. Journal finder/journal suggestion tools viz. JANE, Elsevier Journal Finder, Springer Journal Suggester, etc.

RPE05	<p>Publication Misconduct</p> <p>A. Group Discussions</p> <ol style="list-style-type: none"> 1. Subject specific ethical issues, FFP, authorship. 2. Conflicts of interest. 3. Complaints and appeals: examples and fraud from India and abroad. <p>B. Software tools: Use of plagiarism software like Turnitin, Urkund and other open source software tools.</p>
RPE06	<p>Databases and Research Metrics</p> <p>A. Databases</p> <ol style="list-style-type: none"> 1. Indexing databases 2. Citation databases: Web of Science, Scopus, etc. <p>B. Research Metrics</p> <ol style="list-style-type: none"> 1. Impact Factor of journal as per Journal Citation Report, SNIP, SJR, IPP, Cite Score. 2. Metrics: h-index, i10 index, altmetrics.

SEMESTER II

OMGAG106: Environmental Geography (Theory)

Total Marks: 50, Total Credit: 2

Unit I	Scope, Content and Recent dimensions of Environment studies in Geography, Environmental Ethics and their application in environmental management, Symbiosis between man and environment, Effects of environment on man: Bio-physical, Perceptual, Behavioral, Resource development and Management, Environmental movements, Perspectives and Concept of Non-formal Resource Conservation, Concept of Physical, Ecological and Human ecological issues, Holistic and Reductionist approaches to environment.
Unit II	Climatic factor shaping the geographical zoning and its periodicity, Changing Climate of the World, Climatic Hazards and Management, Social response to Climate hazard, Biomass and their relationships to Climate and Hydrological Cycle.
Unit III	Eco-system approach in Environmental studies, Bio-geochemical Cycles, and their significance, Flow, Fixation and Balance of Energy in the biosphere, Energy and Biomass Pyramid, Exchanges among ecosystem and changes of Ecosystem.
Unit IV	Water, Air and Noise problems in urban-industrial environment, water and soil pollution in rural landscape, Problems of solid waste and nuclear fall-out, Flood, Landslide and Riverbank erosion, Earthquake and Cyclones and their Management, Disaster and Environmental Management: Environmental Laws, EIA (Environmental Impact Assessment) and EMP (Environmental Management Plan) procedure.

OMGAG107: Urban Geography (Theory)

Total Marks: 50, Total Credit: 2

Unit I	Emergence of Urban Geography as a discipline: Changing approaches and methodological functions, Behavioral, Structural and demographic concept of Urbanization, Urbanization and Industrialization, Slums and Urban Poverty: Salient Characteristics, Globalization and Third World Urbanization
Unit II	Urban Morphology: Land Use and the Economy of LULC, Urban Explosion in Developing Countries, Age, Sex and Occupational structure in cities, Process of Sub-Urbanization, Peri-Urban Interface, Sprawl vs. compact city, Urban renewal-gentrification.
Unit III	Model of Spatial structures: Pre-industrial (Sjoberg) and industrial city (Marx, Fordist), Urban-Social Space and Polarization, Concept of Urban space differentiation, Congestion and Segregation, Social Justice and the City.
Unit IV	The Physical Environment: Pollution and Degradation, The Social Environment: Poverty and Crime, Urban Land Price, Horizontal and Vertical growth of Cities, Scarcity of Housing, Problems of Civic Amenities and Transport. Urban Ecology: Concept and Implications, Sustainable Urban Planning: Policy and Practice.

OMGAG108: Transport and Marketing Geography (Theory)
Total Marks: 50, Total Credit: 2

Unit I	An introduction to the Transport Geography, Historical Development of Transport systems, Structural Analysis of Transport Network, Measurement of Transport Connectivity, Accessibility, Congestion Index, Centrality pattern, Nodality Index, Transport Economies.
Unit II	Transport and Environmental Degradation, Role of Transport in Regional Development, International and National Transport Policy Planning, Hierarchical pattern of Transport network in India
Unit III	Marketing Geography: Definition, scope and significance, Growth and development Approaches of study: Commodity, Spatial, Social, Economic, Behavioural, Application of Planning: Market, Urban, Agriculture
Unit IV	Classification of Market, structure and hierarchy of Markets participants, Market Channel and Trade Area of Market, Market Centres: Christaller's and Losch's Model of Location, B.J. Berry's Model and Reilly's Models of interaction and delimitation of trade area, Periodic Markets and Fairs, Profile of Industrial and Agricultural Markets in India

OMGAG109: Advanced Geomorphology (Theory)
Total Marks: 50, Total Credit: 2

Unit I	Mechanics within the Fluid (Open Channel), Forces acting in the Open Channel, Types of Flow, Channel Competency and Capacity, Continuity equation of the channel, Velocity distribution within the Channel
Unit II	Longitudinal and cross profiles within the channel, Channel Hydraulics and pair-wise relations, Progressive change detection of channel hydraulics and Bar morphology, Types of load and their distribution, Channel aggradation and degradation, Wolman's method of load classification on open channel beds.
Unit III	Channel Characteristics: Cases of Tidal Channels, Braided, Meandering Channels, Decaying and degenerating channels. Utility of GIS and Remote Sensing in open Channel studies. Hydrographs in relation to channel regime,
Unit IV	Slope development processes, Geomorphic Threshold and Extreme events, Geochronological methods in Geomorphology, Drainage basin Morphometry: Conventional and advanced techniques.

OMGAG110: Agricultural Geography (Theory)
Total Marks: 50, Total Credit: 2

Unit I	Agricultural Geography: Aims, objectives and scope, Historical Perspectives, Development and recent trends of World and Indian Agriculture. Approaches for agricultural geography: Regional and Systematic approach, Ecological and Commodity approach, Empirical and Normative, Origin of World Agriculture: Major Gene centres. Diffusion of Crop practice: Prehistoric, Medieval and Modern period, Introduction to major agricultural systems of the world (Whittlessey's Scheme).
Unit II	Problems and prospects of Indian Agriculture, Delimitation of Agricultural Regions: Empirical, Single Element, Multi-Element, Statistical Techniques, Quantitative cum Qualitative Techniques
Unit III	Land use Land Cover: Concept and techniques of measurement, Land Capability, Land suitability and land use planning as indicator of Agricultural development. Agricultural Regionalization Theory: Von Thunen's and Jonasson's Model : Conventional and Modified, Location Quotient Method of Crop Concentration, Crop Combination: Weaver's and Doi's Siddiqui's scheme, Crop Diversification of Bhatia's scheme, Agricultural Efficiency: Ranking Co-efficient Method

Unit IV	Green Revolution: Background, performance, problems and prospects in India, Green Revolution and regional imbalances. Problems of Indian Agriculture, Indian Agriculture and Rural Development Programmes, Agricultural Regions of India: NSSO's scheme
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OMGAG111: Population Geography (Theory)

Unit I	Factors affecting Population Density and Distribution, Sources of Population data, Geographic distribution of population, Contemporary factors of Population Growth and Distribution
Unit II	Demographic Transition and population dynamics, Fertility, Mortality and Migration differentials, theories of population growth, theories of migration.
Unit III	Population displacement, Identity crisis, Types and Factors affecting Sex Ratio, Analysis of age-structure and Dependency Ratio, Marital status, Literacy and Educational attainment
Unit IV	Population problems of the third world: Backwardness, Poverty, Unemployment problems, Infant and Maternal Mortality, Quality of Human Resource in India, UNO's World Population plan of action

Total Marks: 50, Total Credit: 2

SEMESTER III: 6 MONTHS DURATION

TOTAL MARKS: 200, Total Credit: 8

Note :

AECGAG 112 - Seminar

The Candidate in consultation with the supervisor will prepare a seminar paper following the standard practice. Word Limit: Less than 5000, Presentation time: 15 minutes, Interaction: 10 minutes, No. of slides:15, prior submission of the pdf./docx. format of the presentation may be done.

AECGAG113 - Group Discussion

Groups will be formed by lottery. Under supervision of faculty members three topics will be given and final topic will be selected by lottery. Time allocation for each group shall be 20 minutes.

AECGAG114 - Article Review

2 Nos. of Research articles will be reviewed by each student.

AECGAG115 - Research Proposal Writing

With consultation of the supervisor the candidate will prepare 'A Research Proposal' in view of her/his upcoming Research Interest.

SEMESTER IV: 6 MONTHS DURATION
TOTAL MARKS: 200, Total Credit: 8

Note:

DGAG 116 – Dissertation Work

The candidate in consultation with their respective supervisor will choose their topic of dissertation and prepare accordingly.

Arindam Basu
18/5/2020