REPORT OF THE
CURRICULUM DEVELOPMENT COMMITTEE
IN GEOGRAPHY

UNIVERSITY GRANTS COMMISSION
NEW DELHI

2001

TABLE OF CONTENTS

PREFACE

The University Grants Commission constituted the Curriculum Development Committee in February 2001 for updating/reframing the curricula in geography at the undergraduate and post-graduate level.

In this era of vast expansion of information network, the basic purpose of updating and reframing the syllabi is to incorporate the new knowledge in the subject, into the teaching and research programme. The last couple of decades have witnessed a sudden expansion of knowledge, new multi-disciplinary frontiers and better access of knowledge through the network of information technology. It has further increased inter-subject competitiveness for the acquisition and utilisation of knowledge to gain theoretical and practical excellence.

New vistas have opened up in the field of physical geography as a result of researches being carried out by the environmental and space scientists, atmospheric scientists, conservators and managers, oceanographers and the researchers in the allied fields. Themes of global warming, sea-level rise, ozone depletion, ecodevelopment, conservation of Biodiversity, resources and sustainable development etc. have become issues of concern for the physical geographers.

Population indeed is a wonderful resource of our planet earth. However, increase in the global population size during the last five decades has put an extreme pressure on the fragile and limited natural resources of the earth. It calls for multi-disciplinary approach to the control of human population, improvement in the quality of life and modified approach to population environment relationship. This fact has to be repeatedly reminded upon and thus is being incorporated in all the branches of human geography & regional geography, where practically half of the themes are woven around traditional, 'man environment interaction'. Human Geography & its various branches and the regional geography cannot escape the responsibility to sensitize the students/community about the new challenges ahead in population-development-environment nexus.

In the process, the new technology has gained momentum. The application of computers has revolutionized application of methods and techniques in geography. New sophisticated and efficient methods of compiling, processing and presenting geographical information on maps and the analytical techniques are now easily available for teaching and research. There is a demand for acquiring skill in GIS, and the interpretation of aerial photographs, satellite imageries and information obtained through remote sensing and hence new courses are woven around these subjects.

'Geography is learnt by foot', was a popular expression of Professor VLS Prakasa Rao in the classroom, implying the importance and relevance of field work in geography. Now, field work is becoming popular in a number of subjects. Highly sophisticated methods of constructing questionnaires, sampling, collecting and coding information, processing data sets have been developed. The Geographers need to keep pace with the sophisticated techniques of fieldwork and also enhance their 'strong- point' of fieldwork, still further. Fieldwork has always been complementary to instrumental surveys, which also need to be upgraded to make use of the present high frequency/high precision instruments.

The upgradation and reframing of the syllabi, has been designed keeping in view the above dimensions of change in knowledge, attitude and technology. The contents of the basic courses have been upgraded and new courses introduced to acquire the expanded knowledge, which is of relevance to the modern society.

It is expected that the contents of the courses will also be useful for the students to compete in diverse fields of their future avocations.

I express my gratitude to the concerned authorities of universities, departments and colleges, who have supplied us the information to prepare this report. The heads of the Board of Studies who took part in the deliberations and provided useful suggestions, their efforts are greatly appreciated. I am really obliged to the convenor Prof. S.C. Gupte and members of the Panel of Geography constituted by the UGC, who prepared the groundwork for the task of reviewing course contents in geography. I place on record my thanks to the subject specialists who have contributed to the framing of the recommended syllabi. I am grateful to the following honorable members of the CDC Core Committee who have provided academic and moral support in completing this task:

1. Prof. Bireswar Banerjee
2. Prof. L.S. Bhat
3. Prof. S.C. Gupte
4. Prof. Swaranjit Mehta

The Committee expresses its appreciation for the assistance provided by the UGC Secretariat at Pune and its regional Director, Dr. N.K Jain. The Committee gratefully acknowledges the sincere

efforts and assistance provided by Shri Sharanjit Singh, Education Officer, UGC and Secretary to CDC in Geography and his Secretariat. Shri Sharanjit Singh not only provided the administrative support but also has been instrumental in providing academic support specially in designing the questionnaire, collecting information and analyzing the results.

Finally, the members of the Committee are grateful to the Chairman, UGC, Dr. Hari Gautam for giving them an opportunity to take up the challenging task of reviewing the curriculum programme and for providing the necessary infrastructure for completing the assignment.

(Sudesh Nangia)
Nodal Person
CDC in Geography

INTRODUCTION

Progress in geography from traditional to modern began in 1950s almost coinciding with the launching of the Five Year Plans of Economic Development and expansion in research and teaching activities under the UGC's programme of development of different fields of physical and social sciences. Establishment of many universities and starting of Geography Departments brought in new talent and awareness for improvement of geography. Notable developments involving geographers in national reconstruction started with late Prof. P.C.Mahalanobis, founder Director of the Indian Statistical Institute, taking initiative in holding a meeting of senior geographers of India and some from overseas (Prof. O.H.K. Spate was one among them) to identify important themes in geography and for application of statistics as a tool to analytical methods in geography. This was followed by setting up of a Regional Survey unit at the ISI to undertake studies in regional survey and planning with Professor A.T.A. Learmonth from Liverpool, U.K. and Professor V.L.S. Prakasa Rao as leaders of the team. The objectives and strategies of the national economic development formulated in the perspectives of development laid stress on minimization of regional imbalances in development and formation of macro-economic regions with strong agricultural and industrial base in those regions. Geographers played a key role in sharpening the tools and techniques of regional analysis and providing conceptional clarity to region or space as the fundamental viewpoint of geography.

The first Review Committee in Geography was set up by the UGC in 1965, with 10 experts and Professor S.P. Chatterjee from Calcutta University as the Chairman.

The Committee took up an extensive exercise of tracing the history of the study of Geography in Indian universities and colleges; a critical analysis of geography syllabi taught in Indian Universities and Colleges at post-graduate and under-graduate levels and prepared a MODEL syllabus in Geography. The Committee delved with the issue of assessment of existing facilities for teaching and research in geography departments, FIELD training in Geography as part of the curriculum, improvement in examination system; existing geographical associations and their role in promoting the discipline of geography, providing a forum for interaction among the geographers and visualizing a future pattern of subject development. The committee circulated an exhaustive questionnaire to universities and colleges to obtain information on the progress of geography teaching and research and other details. It received responses from 20 universities and 18 colleges. It took the committee more than 2 years to complete its report, which was published by the UGC in 1968. The report of the Committee is the first and a classic piece of work giving an account of the state of the Art and future directions for geography. Many of the recommendations of the Committee still seem valid and fresh even after a lapse of thirty-three years.

The second Review Committee was appointed by the UGC in 1986, with Prof. G.S. Gosal from Punjab University as its Chairman. The UGC, this time, established Curriculum Development Centres in all subjects and for Geography the centre was established at Panjab University, Chandigarh. The goal of this Committee was to modernise and restructure the curriculum in the light of further developments in the knowledge and the need of the time. The Committee submitted its report in 1988 and it was published by the UGC in 1989.

The Committee examined in detail the course-contents of 11 universities, the Committee gave a set of recommendations related to contents, credits, evaluation method, core courses and the additional (optional) courses to be taught at UG and PG levels. This Committee recommended the semester system of teaching and credit system of evaluation and home assignments. The Committee also recommended some 52 books and 10 journals to be consulted in addition to regular references recommended for each course. It further provided a list of equipments for Geography-Labs. It further recommended 'refresher' courses for the teachers to upgrade and update their knowledge for effective teaching of new course-contents, as did the first Committee.

In 1999, the U.G.C. Panel on Geography with Prof.S.C. Gupte from Pune University, as the Convener and 12 member experts decided to review the existing curricula in Geography in various universities with a view to upgrade the geography syllabi. The panel intended to organize five regional workshops to facilitate the participation of heads of the Board of Studies in Geography in the workshops as a prelude to this task. The Panel organized two workshops, one in the north at Chandigarh and other in the west at Pune to obtain information on the prevailing course contents, methods of teaching and invite suggestions for content improvement from the departments in these regions. In March 2000, in a meeting of the Conveners of the Subject Panel with the Chairman UGC, a Curriculum Development Committee (CDC) with Prof. S.C. Gupte, as Convener, was constituted to undertake the job of updating/ reframing the syllabi. On health-grounds, Prof. S.C. Gupte expressed his inability to continue as the CDC Chairman. Prof. Sudesh Nangia was made the nodal person of the CDC in February 2001, with option to form a four members core Committee and the facility to invite subject experts, to complete the task. The Committee examined the course-contents of thirty universities; reviewed the academic and infrastructure details of university departments, under-graduate and post-graduate colleges; examined the implementation of the recommendations of the earlier two review committees; upgraded and reframed the courses and submitted its report with recommendations to the UGC in November, 2001.

BACKGROUND

The first Review Committee tried to provide a historical background to the study of Geography in Indian Universities. As per the Committee's observation, the undergraduate classes in Geography commenced in the earlier part of the 20th century. The colleges were then affiliated to Punjab (1920) and Patna (1927) Universities. Aligarh Muslim University was the first to have started an undergraduate department in 1927/1928, followed by Allahabad (1937) and Calcutta (1939). About seven universities started UG programme in the forties. In fiftees, only one University (Dr. H.S. Gaur, Sagar) started UG Department (in 1958). Since then, many colleges started imparting UG teaching in Geography.

The UG departments in the universities got upgraded to PG departments within a time gap of two years to twenty-two years. As per details given in the first Review Committee, the first university to start PG Department of Geography was Aligarh Muslim University (1936) followed by Calcutta University (1941), Banaras Hindu University and Allahabad Universities (1946), Punjab and Madras Universities (1948) and, Patna University (1949). **During the fifties**, the PG Departments started functioning in Karnataka University (1952), University of Pune (1954), Ranchi University (1954), Osmania University (1955), M.S. University of Baroda (1956), Dr. Hari Singh Gaur Vishwavidyalaya, Sagar (1956), Gauhati University (1958), Deen Dayal Upadhyay University, Gorakhpur (1959) and Mysore University (1959). **In the sixties, during the period 1960 to 1965**, the PG departments were opened in the university of Delhi (1960), North Bengal University (1962), Magadh University (1962), Jai Narayan Vyas University, Jodhpur(1962), M.L.Sukhadia University, Udaipur (1964) and Pandit Ravi Shankar Shukla University, Raipur (1965).

Based on the information received by the CDC in Geography in 2001, from 30 University Departments, in the prescribed questionnaire, it is further observed that **during the period 1966-1970**, the postgraduate departments in Geography started functioning in Shivaji University, Kolhapur (1968), Rajasthan University, Jaipur (1968), Viswa Bharati University (1968) and Burdwan University (1969). **During the seventies**, the following universities started their PG departments in Geography: Jawaharlal Nehru University, New Delhi (1970, in the Centre for the Study of Regional Development), Utkal University Bhubneshwar (1970), Jamia Millia Islamia, Delhi (1971), Madurai Kamraj University, Madurai (1971), Kumaon (1973) Srinagar, Uttaranchal, L.N. Mithila (1976) Darbhanga, North Eastern Hill University, Shillong (1976), Gujarat (1977) and Kashmir University, Srinagar (1979).

During the eighties, PG departments were set up in Maharshi Dayanand University, Rohtak (1983) and Jammu University, Jammu (1988).

During the nineties, PG departments were set up in the following universities: Arunachal at Itanagar, Manipur, Imphal (1992), Vidyasagar, Midnapore (1995) and latest is in Nagaland at Kohima (1997).

However, the list of Postgraduate Departments set up in the universities during the period 1966-2000 as mentioned above is not complete as some universities did not provide the requisite information to the UGC in the prescribed format for use by the Curriculum Development Committee.

Along with the expansion of Geography in the University Departments, several national and regional Associations were formed to expand research and communication in Geography. The 21st Geographical Congress, organized under the aegis of **International Geographical Union** (IGU) was held in 1968 in Delhi under the President ship of Professor S.P. Chatterjee, with pre and post Congress symposia held in different parts of the country. At the initiative of the ICSSR, a National Association of Geographers, India (NAGI), was established in 1973 to facilitate interaction among the geographers across the regions, identify thrust areas of research and teaching, explore new dimensions of research with a view to make concerted efforts for the development of the subject. The NAGI headquarter was located at Indian Statistical Institute (ISI) Delhi with Prof. C.D. Deshpande as the first President of NAGI. One of the recent developments is the establishment of Bhoovigyan Vikas Foundation in 2000. The aim of the foundation is to associate Geography with other earth sciences, disseminate the geographical knowledge among researchers.

At present, based on available information, Geography is being taught in 96 universities. The institutions where extensive use of geographical knowledge is being made are, however, few specialized ones like **National Bureau of Soil Survey & Land Use Planning** (NBSS & LUP), **National Atlas and Thematic mapping organization** (NATMO), **Indian National Cartographic Organisation** (INCA), **Survey of India, Census of India, National Remote Sensing Association** (NRSA), **Indian Space Research Organisation** (ISRO), **Central Arid Zone Research Institute** (CAZRI), **Centre for Earth Science Studies** (CESS) etc. However, various voluntary agencies have used geographical knowledge for research, fieldwork, teaching and development programmes. Geography is specially popular with the candidates appearing in Civil Services and other competitive examinations. For instance, the data tabulated by UPSC (UPSC Annual Report 1998-99), on the number of candidates who appeared and qualified in each of the optional subjects prescribed in Civil Services examination 1997, indicated that geography was the 4th most preferred subject chosen by the candidates out of 52 optional subjects; after History, Public Administration and Anthropology. This has created a demand for geography teachers in private coaching centres for competitive examination.

The deliberations of the professional Associations at the Regional level and at the National level (NAGI), and their Journals, trend-reports (like the Survey of Research in Geography brought out by ICSSR) and periodic reports on the research conducted in various sub-fields of the subject, edited by experts, and submitted at the IGU conferences, are sources of significant contribution to the dissemination of geographical knowledge.

The committee considered the multi-disciplinary nature of the subject, the current revolution in information technology, the training in geography through workshops, refresher courses and orientation programmes and the contribution of contents from allied subjects to enhance competence in knowledge and its dissemination.

The Committee noted with concern that **at the post-graduate level**, geography is being taught only in **83 universities** out of more than 250 universities in the country. Even some of these 83 universities do not have independent postgraduate departments and in such cases, the postgraduate courses in geography are offered only in their affiliated colleges. The Committee felt that post-graduate Geography departments should function in all the universities and necessary academic infrastructure and financial support should be provided by the UGC to start new departments and strengthen the existing departments.

The Committee scrutinized the postgraduate and undergraduate syllabi of 30 Universities collected by the office of the UGC. Also, it circulated questionnaires to 96 universities which are conducting courses at different levels to collect information on the teaching and evaluation of the subject in the university departments and colleges. The observations based on the information received through the questionnaires are given in the text at the appropriate place.

During the last five decades, some obvious trends of development in geography have been witnessed. The subject moved from qualitative to quantitative approach. Quantitative revolution in geography initiated in U.K. and USA had its share in the creation of awareness among geographers about the need to minimize subjective and descriptive methods of analysis by application of quantitative techniques as complementary inputs to cartographic analysis.

Statistical and mathematical models were introduced in regional and systematic geography to make the subject more integrative conforming to the developments in sister disciplines. However, the quantitative revolution in the subject fell short of the level of integration of these analytical techniques aimed at enriching the analytical and spatial component. There has been a re-shift towards qualitative approach and towards selective use of quantitative techniques. The use of multiple/ sophisticated statistical/mathematical models became possible through the use of

computers. The computer technology also helped in quick map production & reproduction and hence better analysis of information mapped.

In regional geography, the subject has fast moved from the identification of regions to regional planning, micro-regional planning and development, enlarging the scope and content of regional geography.

The concepts of region and environment have been modified and expanded to widen their scope for application with contents of other disciplines like economics, sociology, political science and environmental science (e.g. economic space, social space, individual space, urban environment, social environment, political and cultural environment).

A review of the course contents, syllabi and the themes for the conferences reveal that some subjects in the discipline of geography have moved faster than the others, for example; Regional Planning, Population Geography, Settlement Geography (Urban and Rural), Cartographic Techniques (GIS/ Remote Sensing, Computer Mapping, Field-Work), and Geomorphology. The inputs from Disciplines other than geography in terms of data availability, methodology and research design have enabled above branches in geography to grow faster than the others. Besides, new branches of geography appeared with interest shown by some scholars (like administrative geography, electoral geography, geography of central places, gender geography, geography of social well-being, environmental management, medical geography, population geography of special groups), human ecology), as off shoots of several branches in geography. Taking note of this trend, CDC tried to integrate some of the courses to make them more cohesive e.g. the course on Regional Planning, the scope of its application has been widened by adding to it the block/district Level Planning under the theme 'decentralized Planning'. Similarly, migration has been important component of Population Geography. Anthropogeography has been covered in Social & Cultural Geography.

GENESIS OF CURRICULUM REVIEW

Preliminary Report

On 1st March, 2000, a meeting of all the Subject Panels was convened by the Chairman, UGC., Dr. Hari Gautam. There it was decided to form Curriculum Development Committee (CDC) in each subject to undertake the job of updating/reframing the syllabi. Accordingly, a Curriculum Development Committee in Geography was constituted. In February 2001, the CDC took up the task with the following core members of the Committee:

CORE MEMBERS

1. Prof. Bireswar Banerjee
   Former Professor
   Calcutta University , Calcutta
2. Prof. L.S.Bhat
   Former Professor
   Indian Statistical Institute, Delhi
3. Prof. S.C. Gupte,
   Former Vice Chancellor,
   University of Pune , Pune
4. Prof. Swaranjit Mehta
   Panjab University, Chandigarh
5. Prof. Sudesh Nangia **Nodal Person**
   Centre for the Study of Regional Development,
   Jawaharlal Nehru University, New Delhi

In addition the following Subject experts were invited for their contribution to the course-contents:

Subject Experts

1. Prof. S.K. Agarwal
   University of Delhi, Delhi
2. Prof. K.S.Gopal Krishnan
   Madurai Kamraj University, Madurai
3. Prof. S. Padmaja
   Osmania University, Hyderabad

4. Prof. H.S. Sharma
   Rajasthan University
   Jaipur

5. Prof. V.K. Sharma
   Kurukshetra University,
   Kurukshetra

6. Prof. Abha Lakshmi Singh
   Aligarh Muslim University, Aligarh.

7. Prof. K.S. Sivasami
   Jawaharlal Nehru University,
   New Delhi

8. Prof. S. Subbaiah
   University of Madras, Chennai

The CDC was advised to address the following issues:

(a) Incorporate multidisciplinary skills required in the teaching and learning of the subject.

(b) Link the general courses with the professional courses.

(c) Introduce modular system to enable specialisation keeping in view the multidisciplinary approach to knowledge in the present day scenario.

(d) Promote flexibility in the evaluation system like the introduction of credit based system.

(e) Introduce bridge courses allowing for vertical as well as horizontal academic mobility.

It was further suggested that the proposed exercise should reflect the Indian Contributions to the subject.

The CDC in Geography met 8 times during April 2001 to September 2001. One such meeting was held at Pune to hold discussions with Prof. S.C. Gupte. The Committee scrutinized the undergraduate and post-graduate syllabi in Geography of 29 universities (The List of Universities for which the syllabi in geography were made available to the committee is given in Annexure -6). After a critical review of the contents, structure and orientation of the existing curriculum in geography, the Committee divided the whole spectrum of geography discipline into the following groups and sub-groups:

A Physical Geography

1. Geomorphology:
    - 1a Arid land Geomorphology
    - 1b Coastal Geomorphology
    - 1c Fluvial Geomorphology
    - 1d Glacial Geomorphology
    - 1e Tropical Geomorphology
2. Soil Geography
3. Climatology
4. Oceanography
5. Biogeography
6. Environmental Studies
7. Ecology &Ecosystems.

B. Human Geography

1. Settlement Geography
    - 1a Rural Settlements Geography
    - 1b Urban Geography
2. Population Geography
    - 2a. Social Geography
    - 2b. Cultural Geography
    - 2c Geography of Health
3. Economic Geography
    - 3a. Agricultural Geography
    - 3b. Commercial Geography
    - 3c. Geography of Energy
    - 3d. Geography of Tourism

3e. Industrial Geography

3f. Transport Geography

4. Historical Geography

5. Political Geography

6. Development of Geography/History of Geographical Thought

C. Regional Geography

1. Regional Geography of the world

   Macro/Meso/Micro Level

2. Regional Geography of India

   Macro/Meso/Micro Level

3. Regional Planning & Development

D. Analytical Techniques in Geography

1. Cartography
2. GIS and Computer mapping
3. Remote Sensing Techniques
4. Quantitative Techniques
5. Field work

   5a. Field Work (Instrumental Survey)

   5b. Field Work (Physical Survey)

   5c. Field Work (Socio economic Survey)

In addition to identifying the above sub-fields of knowledge in geography, keeping with UGC guidelines, the CDC identified further thrust areas. Here the Committee decided that though the study of environment is an integral part of geography, as per the UGC guidelines, the environmental education should form part of the contents of the syllabus of each paper reviewed. Here, geographers have a challenging opportunity to integrate environmental education and awareness through the teaching of geography in all its sub fields. Geographers can play a leading role in assisting the allied disciplines in environmental assessment, awareness and education.

The members of the CDC impressed that the course-content of each sub-field should be sufficiently rich in quantitative and cartographic techniques and field methodology, taking advantage of the latest developments in information technology (GIS, remote sensing etc.). Besides, the multidisciplinary nature of geography also demands that the multi-disciplinary content of the subject be strengthened.

For emerging thrust areas, it was suggested that while framing the syllabus, the subject matter of geography should be made innovative, skill oriented and employment oriented to attract bright students to geography. The CDC suggested that the requirements of local, regional and national level issues be taken into consideration to adapt syllabi to regional and local environment/issues.

After careful deliberations, the members of the Committee recommended the following programs in Geography.

1. B.A/B.Sc. (General) Geography
2. B.A/B.Sc. (Honours) Geography
3. M.A./M.Sc. Geography

Highlights of the Programs:

In all the above programmes, there are core courses and elective/optional courses. The topics given in the syllabus are to be covered in one academic year at the UG Level and in one semester at the PG Level. However, if a University decides to follow the semester at the UG Level and the annual system at the PG level, the courses may accordingly be split and expanded to the needs of the time.

The teaching programme, is expected to be supplemented by tutorials, short assignments, mid-term tests, seminars, group-discussions and field-visits.

Course content of each paper is divided into five units. Unit one is the general introduction about the course content, database and methodology etc. Unit II, III and IV, deal with course-contents intensively. Unit V deals in general with the interface of the theme with issues of environment and sustainable development.

The students doing Honours Courses in Geography, shall be advised one additional course along with pass course papers in 1st & 2nd year and 2 courses in the 3rd year.

The Committee recommends the upgradation of instruction and education procedure, upgradation and improvement of labs, orientation of teachers to the updated course-contents.

The Committee further recommends that each course should have an objective and should be followed by pedagogy.

The Committee suggested the following structure for courses in Geography at different levels of study.

B.A/B.Sc. (General)Geography (Duration Six Semesters/Three years)

B.A./B.Sc(General) Geography 1st year

(Duration two semesters/one year)

C101 Introduction to Geography

C102 Physical Geography I (Elements of Geomorphology)

C103 Cartography I

2nd year

(Duration two semesters/one year)

C 201 Physical Geography II (Climatology & Oceanography)

C 202 Human Geography

C 203 Cartography II

3rd Year

(Duration two semesters/one year)

C 301 Geography of India

C 302 World Regional Geography

C 303 Resources & Environment

B.A./B.Sc.(Honours) Geography

The Committee suggested four courses in addition to the courses at B.A./B.Sc. general level, to be taught at the Honours level, with one course each in the first two years and two courses during the 3rd year. This arrangement of 4 courses during the 3 years remains flexible.

Additional courses for B.A./B.Sc. Honours Level are as under:

B.A./B.Sc. Honours 1st year

CH104 Applied Geography

B.A./B.Sc. Honours 2nd year

CH 204 **Any one of the following courses**

- E01 Biogeography
- E02 Economic Geography
- E03 Political Geography
- E04 Population Geography
- E05 Settlement Geography
- E06 Any other course as approved by the Board of Studies

B.A./B.Sc. Honours 3rd Year

CH 304 Advanced Cartography

CH 305 Regional Geography of the World (Natural and Cultural Regions)

The Curriculum contents of these courses is given in Annexure- 3

M.A./ M.Sc. in Geography: (Duration 4 Semesters)

COURSE CODE	GROUP/COURSE (CORE)	COURSE NO.	COURSE(ELECTIVE)
	A. Physical Geography	**E.**	
C 401	Geomorphology	501.	Administrative Geography
C 405	Climatology	502.	Aeolian Geomorphology
C 409	Oceanography	503.	Agricultural Geography
	B. Human Geography	504.	Bio Geography
C 402	Economic Geography	505.	Coastal Geomorphology
C 406	Population Geography	506.	Commercial Geography
C 410	Settlement Geography	507.	Cultural Geography

C. Regional Geography

C 403 Regional Geography of India

C 407 Regional Planning & development

C 411 Regional Geography of aMeso Region of the World

D. Philosophy, Methods & Techniques

C 404 Advanced Cartography

C 408 Quantitative Techniques in Geography

C 412 History of Geographical Thought

C 413 Field Work - Physical Survey

C 414 Field Work-Socio Economic Survey

508. Field work - Instrumental survey

509. Fluvial Geomorphology

510. Gender Geography

511. Geographical Information System and Computer Mapping

512. Geography and Eco-System

513. Geography of Central Places

514. Geography of Energy

515. Geography of Health

516. Geography of manufacturing

517. Geography of Rural Settlements

518. Geography of Tourism

519. Geography of Transport

520. Geography of Water Resources

521. Glacial & Periglacial Geomorphology

522. Historical Geography

523. Hydrology

524. Natural Resource Management

525. Political Geography

526. Regional Geography of India Meso & Micro level

527. Regional Geography of the World Meso & Micro level

528. Remote Sensing Techniques

529. Social Geography

530. Soil Geography

531. Tropical Geomorphology

532. Urban Geography

555. Dissertation

Course Contents of these courses are given in Annexure - 4

The M.A.,M.Sc. programme is worked out on semester system basis. It is suggested that in each semester during the 3 semesters there should be 4 courses, comprising 1 course each from the 4 groups namely (a) Physical Geography (b) Human Geography (c) Regional Geography and (d) Philosophy, Methods and Techniques. During 4th Semester, elective courses should be provided out of the list of subjects given on pre page. Beside, two sets of field works are also to be undertaken by all the students during their study of two years at the Master's level.

For the final semester, the Departments may also choose to develop their own course contents for various specialisations. The list of some possible specialisations is given on the following pages. The departments may also like to consider Dissertation in the final semester in lieu of one elective course.

As a second alternative, the university may offer 3 core subjects and one elective subject in each of the 4 semesters supplemented by two courses of field work with dissertation in the final semester in lieu of one elective course.

However the universities may have the flexibility of arranging the papers according to their convenience in different semesters keeping in view that all the core papers suggested in the CDC Report are covered during two years duration of the post graduate programme.

Some Suggested Specialization groups in Geography

I. Climatology

1. Climate and Man
2. Micro Climatology: Urban/Agriculture
3. Paleo Climatology
4. Tropical Climatology

II. Environmental Geography

1. Disaster Management
2. Environment and Health
3. Environment and Population
4. Environmental Degradation (Deforestation, Desertification, Pollution, air, water, noise, solid waste)
5. Environmental Impact Assessment and Management

III. Geographical Methodology

1. Advanced Techniques of spatial Analysis: Cartographic and Quantitative
2. Digital cartography
3. Field Survey Techniques
4. Geographical Information System
5. Remote Sensing

IV. Human Settlements

1. Application of Geographic Information System (GIS) to Human Settlements
2. Geography of Central Places
3. Geography of Rural Settlements
4. Geography of Urban Settlements

V. Medical Geography

1. Disease Ecology
2. Geography of Health
3. Geography of Hunger
4. Health care delivery system
5. Reproductive and Child Health

VI. Physical Geography

1. Applied Geomorphology
2. Geophysics
3. Process Geomorphology
4. Tropical Climatology

VII. Population and Settlements

1. Demography and Population Geography
2. Geography of Central Places
3. Geography of rural settlements

4. Populations and Environment
5. Urbanization and Migration

VIII. Population Geography

1. Introduction to Demography Demographic Techniques
2. Population Geography of Special Groups (SC/ST, aged, adolescents, women, children, disabled etc.)
3. Population, Environment and Development
4. Social and Cultural Geography.
5. Urbanization and Migration

IX. Regional Development & Planning

1. Infrastructure and regional development
2. Micro Level Planning
3. Physical and Socio-Economic Dimensions of Regionalization
4. Regional Development & Planning

X. Resource Geography

1. Conservations and Management of Resources.
2. Geography of Poverty and Under-development
3. Human Resources (Population, quality vs. Quantity)
4. Natural Resources (land, water, energy, forest)

XI. Rural Development

1. Rural - Urban Fringe Development
2. Rural Housing & Infrastructure
3. Rural Resource Management
4. Rural Social Network

XII. Social & Cultural Geography

1. Gender Geography
2. Geography of Health and Education

3. Social Inequality & Equity
4. Social Transformation & Cultural Change

XIII. Urban Geography

1. Sustainable Cities
2. Urban Finance Management
3. Urban Housing & Household Amenities
4. Urban Infrastructure
5. Urban Social Problems

Recommendations:

Keeping in view the UGC priorities, the thrust areas identified by the CDC and the broad identification of specialisations in geography, the following recommendations are put forth for Undergraduate/ Post Graduate teaching:

Course Coverage and Content

Since the subject of geography filters from a wide spectrum of knowledge, a student should be exposed to all types of major branches in geography: Physical, Human, Regional and Philosophy, methods and techniques.

The undergraduate (pass-course) students are required to do courses in 3 years covering the four major branches of the discipline as identified above. New courses in the sub- fields could also be evolved and introduced and may replace any one course in the final year. Students may also be encouraged to take at least one vocational course like Introduction to Computers, Application of statistics/statistical methods, Remote Sensing, Geographical Information system in lieu of one paper in the final year. The Undergraduate (Honours) students are required to do all courses, which are studied by the pass-course students and additional courses as listed in the following pages. The courses are so distributed that student clears one Honours course in each of the first two years and opts for two Honours Level courses in the III year.

Vocational Courses

The Committee recommends the inclusion of some vocation - oriented courses for the students who terminate their studies at the undergraduate level. Computer Application, Introduction to

statistical and mathematical methods in geography, Field work- Practices and Application, and others mentioned in the course contents can prepare a student for employment in the relevant fields.

Infrastructure

The Committee notes with concern the inadequate and poor laboratory infrastructure with the Departments specially at the Undergraduate (UG) level. The Committee recommends that sufficient financial support to Geography Departments be made available to upgrade their Cartographic labs; for the introduction of computer aided cartography and for field- work.

Faculty improvement programme

The success of the revised syllabus would depend largely on the upgradation of the knowledge of the teaching community in the field of geography and allied disciplines, with which geography has its interface within earth sciences, bio-sciences or social sciences. There is a need to prepare different training modules appropriate to different levels of education for the teachers.

As a first step, it is necessary to prepare an inventory of institutions, which impart training in the latest technology and its application to the problems of live interest. Secondly, it would be necessary to take stock of the existing training programmes and infrastructure in various Departments of Geography with a view to upgrade/build the infrastructure to meet the requirements of the Discipline.

Teaching Hours and Credits

The Committee suggests that the unitization and the number of hours of teaching and practical per unit have to be decided by the academic bodies/ boards of Studies of the respective universities.

Combining Courses

At the post-graduate level, the departments may like to combine some of the courses from core disciplines at the Post-graduate level, (like Climatology & Oceanography, Climatology & Biogeography) or from elective areas (like Social & Cultural Geography, Population and Settlement Geography). In such cases, they may suitably reorganise their course-contents and the intensity of teaching of the courses thus combined.

Choice of Courses from other Departments/Universities

In the post-graduate programme, the students may be allowed to opt for some courses in lieu of elective courses from other departments/universities as from the departments of Sociology, Geology,

Economics, Demography, Statistics, Environmental Sciences, Computer Science, Information Technology and others. The total number of such courses could be up to 20% of the total course-work.

Professional Courses

Geography, by virtue of its multidisciplinary nature, and its practical value, can easily imbibe professional qualities. The Departments of Geography may like to start professional courses of short duration for in-service/post-graduate students leading to certificate or Diplomas in areas like:

- Geographical Information System (GIS)
- Computer aided cartography
- Population, Education & Development
- Geo-Informatics
- Remote Sensing
- Digital Image Processing

In such cases, while preparing the course-content, input may also be sought from experts working in research & development units, in industry, in specialist organisations (like NATMO, ISRO) and experts from the allied disciplines. The courses may then be approved as per the UGC guidelines and academic bodies of the universities.

Distance Education

While several subjects are being taught in Open Universities, Geography has not yet entered the distance mode of education. It is recommended that Geography should also be included in the distance mode of education. The Committee suggests a separate module of courses to be framed at appropriate opportunity.

Academic Staff Colleges

To orient and sensitize the teachers to the new needs and demands of the subject, there is a need to organise orientation courses for the teachers through academic staff colleges.

Workshops

The Committee felt the need to organize regional workshops to disseminate and critically review the trends in development of knowledge pertinent to geography to be incorporated in the subject matter.

Field Work

The Committee further recommends strengthening of fieldwork components at the post-graduate and undergraduate Level. In fact, requests for fieldwork at undergraduate pass and honours level have come from various quarters. It is suggested that the theoretical work should precede the fieldwork being undertaken by the class; be of short duration (say a week or so) and be arranged in a nearby locality/ area. Budgetary allocations must be made available for such field -work.

Laboratories' Upgradation

The laboratories including GIS and Remote sensing Labs in most of the departments are ill equipped with obsolete material and instruments. The GIS Labs are often equipped with pirated software. There should be provision for one time block grant to upgrade and modernise the laboratories. The financial assistance to laboratories should commensurate with the changing needs of the departments.

Library

The Committee recommends sufficient funds to be made available for maintaining a well-equipped departmental library.

Bridge Courses

The Committee recommends admission to UG/PG geography programme of the non-geography students as well; and for them suggests bridge-courses to be designed by the local departments where students want to get admission.

Thrust Areas

Priority areas imperative to the development of geography as an inter-disciplinary subject and its foundation rooted to environment in the phrase " study of earth as the home of man" need urgent attention in the coming years. These are enumerated below:

I. Preparation and implementation of bridge courses jointly by geographers, economists, sociologists and computer scientists at the M.A./ M.Sc. programme.

II. Focus on Environment, land and water resources and sustainable development. At the UGC level, research projects should be sponsored for implementing by selected universities to cover broadly the agro-climatic regions of the country (Coastal region,

Forested hill regions, flood prone and drought prone regions, ecologically fragile regions of the Himalayas, Indo-Gangetic plain, tribal regions and so on). Research Project modules may be centrally prepared by experts to provide specific guidelines for inviting research proposals for funding by the UGC.

III. Research Methodology courses provided currently by universities need sharper focus on themes of current interest both in theory and application.

IV. Identification and analysis of poverty as a region specific problem, indicators of human resource and economic development have to be identified and methodology developed for testing for their replicablity.

V. Study of Human settlements with special reference to availability of minimum levels of facilities and amenities, identification of spatial gaps and formulation of area and location specific programmes for implementation under decentralized planning.

VI. Decentralized Planning. There are serious gaps in knowledge about areas for which development plans are to be prepared according to ground reality. Efforts are needed to build up spatial profile for all the districts as part of "regional survey for micro-level planning". Regional survey reports/monographs for larger regions comprising broadly groups of Districts have to be simultaneously attempted. Regional framework and broad guidelines can be arrived at using the existing literature on the subject. Formulation and monitoring these programmes should become part of the Geography Panel at the UGC level.

VII. Setting up research and training centres in four or five regions of the country is a priority for up gradation of skills in the GIS, computer cartography and remote sensing. This would serve to fill the serious gaps in the growth and application of these technologies, rather mechanically, without developing analytical capability and interpretation of the results.

The CDC in Geography took upon itself the task of upgrading/reframing courses in various branches of geography and present to the geo-teaching community at large to accept them fully, accept them partially, modify them as per their regional and local requirements or add new dimensions to the existing syllabi. The Committee feels that the CDC recommendations are suggestive. The universities have the autonomy to frame and finalize the Curriculum structure, contents and mode of operation. The CDC efforts could serve them as guidelines to maintain uniformity in content & coverage.

ANNEXURE-1

MEETINGS OF THE CDC IN GEOGRAPHY

Following meetings were held for preparation of syllabi for the undergraduate and Postgraduate levels in Geography.

Meeting no.	Dates of the meeting	No. of members present in the meeting	Remarks
Preliminary meetings			
1.	10th April, 2001	2	Local members
2.	20-21 April, 2001	3	Discussion with Prof. S.C.Gupte at Pune
3.	8th May, 2001	2	Local members
Main meetings			
1.	23-25 May, 2001	7	Meeting held in UGC, New Delhi
2.	6-8 June, 2001	7	-do-
3.	20-22 June, 2001	4	-do-
4.	27th July, 2001	2	-do- (Local members)
5.	3-5 Sept. 2001	4	Meeting held in UGC, New Delhi

ANNEXURE-2

STATUS OF GEOGRAPHY AT THE POSTGRADUATE LEVEL IN THE UNIVERSITY DEPARTMENTS

This note is prepared on the basis of responses received from 38 universities and 15 colleges. Two sets of questionnaires were sent to 96 universities offering courses in Geography at the Undergraduate and Postgraduate level. A specimen of the questionnaires is appended at Annexure -5.

The first questionnaire was for the universities, asking for the basic information about the university; and number of colleges offering courses in Geography at the UG and PG levels; enrolment and teachers in Geography. The other questionnaire was for the teaching departments imparting courses in Geography, for supply of detailed academic and infrastructure information.

As per information compiled from the Handbook of universities published by Association of Indian Universities during the year 2000, 96 universities are offering geography courses at the level of B.A./ B.Sc. pass and honours, M.A./ M.Sc., and Diploma. University wise distribution of courses at different levels has been tabulated in Annexure-8

Information in the questionnaire 1 has been furnished by 30 universities listed below:

S. No.	University
1.	Aligarh Muslim
2.	Arunachal
3.	Assam
4.	Banaras Hindu
5.	Burdwan
6.	Calcutta
7.	Deen Dayal Upadhyay Gorakhpur
8.	Dr. Babasahen Ambedkar Marathwada
9.	Goa
10.	Guru Nanak Dev
11.	Jai Narayan Vyas
12.	Jamia Millia Islamia

13. Jammu
14. Kashmir
15. Kumaun
16. Kurukshetra
17. Madurai Kamraj
18. Maharshi Dayanand
19. Manipur
20. Nagaland
21. North Bengal
22. North Maharashtra
23. Panjab
24. Periyar
25. Pondycherry
26. Poona
27. Pt. Ravi Shankar Shukla
28. Ranchi
29. Swami Ramanand Teerath
30. Utkal

Information in the questionnaire 2 has been furnished by 27 University departments of Geography listed below:

S.N.	University	No. of Students admitted during1999-2000								
		UG		PG		M.Phil		Ph.D.		Total
		M	F	M	F	M	F	M	F	
1.	Aligarh Muslim	125	75	30	20	5	5	5	5	270
2.	Arunachal			16	4			5	1	26
3.	Banaras Hindu	423	140	25	61			2	4	655
4.	Burdwan			11	27			1	3	42
5.	Deen Dayal Upadhyay	300	60	48	12					420

6.	Gujarat	432	288	17	13			1	2	753
7.	Jai Narayan Vyas			22	19					41
8.	Jamia Millia Islamia	14	4	18	7			11	3	57
9.	Jammu			9	40			7	3	59
10.	Kashmir			24	2	1	1			28
11.	Kumaon	70	80	20	30			17	18	235
12.	Kurukshetra			26	14			1		41
13.	L. N.Mithila			6	2					8
14.	Madurai Kamraj			8	10	2	6	2	1	29
15.	Maharshi Dayanand			24	6	6	4	5	8	53
16.	Manipur			9	11					20
17.	Nagaland	29	11	6	2				1	49
18.	North Bengal		Not		Av	ila	ble			
19.	North Eastern Hill	NA		N	A		N	A		
20.	Pt. Ravi Shankar Shukla			15	10	28	17			70
21.	Poona			25	26					51
22.	Panjab			24	16					48
23.	Rajasthan	1150	180	32	12	13	2			1389
24.	Ranchi			70						70
25.	Utkal			21	27	4	6	8	12	78
26.	Vidyasagar			21	19				2	42
27.	Viswa- Bharati	12	19	11	21			16	9	88
	Total	**2555**	**857**	**538**	**411**	**59**	**44**	**85**	**73**	**4622**

It indicates that 58 universities have not submitted the required information in questionnaire 1 and 2. It is a matter of concern to note that none of the universities from some of the States, particularly Southern States, namely - Andhra Pradesh, Karnataka, Kerala, Tamilnadu(except Madurai Kamraj) , have submitted the required information to the UGC.

Some of the prestigious universities like Allahabad, Delhi, Jawaharlal Nehru, Madras, Patna have also not furnished the information.

Information received in both the questionnaires has been analysed and its findings are as under:

The year of establishment of the Departments in various universities varies from 1924(Aligarh Muslim University, Aligarh) to 1997(Nagaland University, Kohima).

Apart from 25 universities, which have separate Post Graduate Departments of Geography, following 5 universities are imparting courses at the M.A./M.Sc. level through their colleges:

1. Dr. Babasaheb Ambedkar Marathwada (Aurangabad)
2. Guru Nanak Dev, (Amritsar)
3. North Maharashtra,(Jalgaon)
4. Swami Ramanand Teerath(Nanded, Maharashtra)
5. Pondicherry (Pondycherry)

Dean Dayal Upadhyay University, Gorakhpur and Manipur University do not have separate Postgraduate departments and they run M.A./M.Sc. courses in Geography through Arts Faculty and Social Science Faculty respectively.

Following universities have only B.A./B.Sc. courses in Geography in the colleges and the universities are not conducting M.A./M.Sc. courses in Geography:

1. Assam (Silchar)
2. Bhavnagar
3. Goa (Panaji)
4. Periyar (Salem)
5. Tripura (Agartala)

The Semester system is followed in 6 universities viz. Arunachal, Jammu, Madurai Kamraj, Nagaland, NEHU and Poona. Others follow annual system of instruction and examination.

The credit system has been introduced in 5 universities: Arunachal, Jammu, Madurai Kamraj, Nagaland and Panjab.

System of Evaluation: Internal evaluation has been introduced in 4 universities. It carries a maximum weightage of 20 %, in Arunachal University at the M.A./M.Sc. level. In Jammu University at the M.Sc. level, the weightage is 20% for Theory papers and 50% for Practicals. The Punjab University has not provided the weightage details. In Madurai Kamraj University weightage for internal assessment is 40%.

Number of teachers: Out of 27 universities from which information has been received, the total sanctioned positions in the Geography departments vary from 3 in Nagaland to 31 in Banaras Hindu University. Some Departments are working with less than sanctioned positions.

Teacher-student ratio:

23 universities have supplied this information and the teacher student ratio is unevenly distributed. Lowest ratio is 1:3 for Manipur, whereas highest of 1:100 is for Jai Narayan Vyas University, Jodhpur. However their frequency distribution is as under:

Range of Teacher Student Ratio	No. of Universities
<10	10
10-20	6
20-30	1
30-40	2
>40	4

Medium of Instructions: This information has been provided by 27 universities; As such, English is the medium of Instruction in 14 universities; and English & Hindi both are the Medium of Instruction in 10 universities. Gujarat and Vidyasagar universities impart instruction in their regional languages. However, Vidyasagar University imparts instruction in English also. Pandit Ravi Shankar Shukla University, Raipur imparts instructions only in Hindi. Students are, however, allowed to opt for English as medium of examination.

Wherever, English is the medium of instruction, in some of these universities students are allowed to write their examination in Hindi or in regional language.

Board of Studies: 15 universities have separate Board of Studies for undergraduate and post-graduate programmes, 12 have combined Boards of studies for UG & PG. Outside persons from Industries etc. are co-opted in Board of Studies only in 7 Universities.

Revision of Syllabus: All Departments except of 2 universities have revised their syllabii during the last 3 -5 years for the Undergraduate and Postgraduate courses in Geography. Gujarat and North Bengal universities revised their syllabii last in 1990.

Teaching Methods: In addition to the use of Black board & lecturing, the following methods are adopted:

- case-studies (18 Universities)
- Group discussions (15 Universities)
- Seminars (22 Universities)
- Tutorials (18 Universities)
- Field Studies (25 universities)
- UGC Audio Video Learning Material (12 Universities)

Apart from audio visual aids, most of the universities are using sound system, overhead projectors, slide projectors and computers. Most of the Universities follow more than one method. Field - work as a method of teaching and training is common to all the universities.

Information Technology

18 universities have proposed to make information technology as a part of the instruction methods.

Field Visits: Field visits are compulsory at both UG and PG level in most of the universities analyzed.

Undergraduate/ Postgraduate teaching: The information has been compiled on the basis of filled in questionnaires received from 29 universities.

Total no. of students at U.G. level in Geography during 2000-2001	**39,549**
Total no. of students at the PG level in Geography during 2000-2001	**2,825**

The number of students admitted to the undergraduate level varies from 15 in Manipur to10, 400 in Deendayal Upadhyay University, Gorakhpur

The number of students at the postgraduate level varies From 9 in Nagaland University to 424 in B.H.U.

The minimum requirement for admission to M.A./M.Sc. varies from 45% to 55% marks at the Graduate level. Some universities also conduct entrance examination for admission to post-graduate courses.

Core/ Optional Papers

All departments of Geography have compulsory (core) papers, optional (elective) papers, fieldwork and practicals including record-books. Field visits and Practicals are followed by Viva-Voce examination. Field visit are also followed by Report-writing.

M.Phil/Ph.D.

M.Phil Programme is offered in 10 Departments. Ph.D. Programme is offered in 30 Departments. The eligibility requirements for these programmes are an M.A./M.Sc. degree with 50 to 55% marks with an entrance examination in some universities. A formal interview with the faculty is also necessary for these programmes.

Thrust Areas of the Departments: Information received from 27 University Departments indicates the following thrust areas:

1. Geomorphology and other branches of Physical Geography specially Climatology and Pedology, environmental studies & management, Ecology:
2. Human Geography: Population & Human Settlements, Social, Cultural, Human Rights, Medical Geography;
3. Economic Geography : Agriculture, Land-use, Tourism
4. Applied Geography: Planning, Management of Resources.
5. Techniques-modern cartographic techniques: GIS / Remote Sensing, Advanced Cartography.
6. Regional Development including Rural/Urban development, regional development & Planning.

New Courses

<u>New Courses suggested at the undergraduate level are:</u>

Field methods, GIS, Remote Sensing, Environmental Geography.

New Courses suggested at the Post-graduate level are:

Information Technology, GIS/Remote Sensing and computer application in Cartography, Photogrammetry, Advanced Cartography, Resource Management Techniques, Disaster Management. **It is further suggested, that the new courses should be employment-oriented, technology oriented and socially relevant.**

General observations

These are based on the response to the questionnaires, circulated to the universities, experience of the members of the CDC and the information gathered in various meetings with the heads of Board of studies and feed-back from various conferences and workshops.

1. Medium of Instruction: having been English, Hindi and Regional Languages, there is a need for authoritative books in various languages.
2. There is a general demand for upgrading of laboratory equipment including latest topographical maps, satellite imageries, aerial photographs for teaching and research, computerizing laboratories, upgrading libraries, and orientation programmes for teachers. Strengthening & supporting fieldwork, providing additional space to the departments because of the vary nature of laboratory work, Field/instrumental Survey etc. require immediate attention for the development of the subject.
3. There is a general complaint of inadequacy of teaching staff (Faculty) with specializations in different branches of geography. As a result, there is disparity in the standards/quality of teaching and research across the Departments. This requires in-depth evaluation and formulating remedial measures. One of the suggestion would be selective upgradation of Departments through Special Assistance Programmes, the focus being on specialization in certain sub- fields of geography and those emerging areas in response to technological development and problems requiring solution through inter- disciplinary skills.
4. By and large, the students are quite keen to acquire the knowledge in geography and specially learn the applicability of information technology and such as computer cartography, GIS and Remote Sensing.
5. Since the last decade, geographers with skills in modern techniques have increasingly been absorbed by the user agencies outside the departments of geography in colleges or universities. This is a healthy trend and needs to be sustained.

6. Similarly, younger teachers are becoming by and large, conversant with the application of modern techniques in Geography by undergoing short-term training programmes in specific areas.

7. Scope and content of geography syllabus is still traditional despite efforts of the UGC in revision of syllabus keeping in view the trends in the progress of different fields of natural and social sciences in general and geography in particular. Hence, students are acquiring knowledge through diplomas/degrees in additional fields/subjects to improve their employment prospects

8. There is a wider interest of the faculty and the students in participation in seminars, workshops, conferences, and refresher courses to upgrade their knowledge.

ANNEXURE-III

Course: C 101

B.A./B.Sc. (General)
First Year

INTRODUCTION TO GEOGRAPHY:

Objective:

This introductory paper is intended to acquaint the students with distinctiveness of geography as a field of learning in social science as well as in natural science. The philosophy and methodology of the subject is discussed in such away that students develop a keen interest in the subject and pursue it for higher studies.

Course Content:

Unit - I : Introduction:

The nature of geography; objectives and relevance; place of geography in the classification of sciences; geography and other disciplines;

Unit - II : Geography: Major themes & sub-themes :

Geography as the study of environment; man-environment relationship; ecology and ecosystem; environmental determinism, possibilsm, neo-determinism; Dualism in geography- Systematic/ Regional; Physical/human; complementarity.

Unit - III : Methodology:

(i) Cartographic — map making and mapping techniques;

(ii) Quantitative - statistical methods;

(iii) Field work—collection of primary data through physical and socio-economic surveys; statistical analysis of data and preparation of maps iv) Instrumental surveys.

Unit - IV : Modern Techniques:

Introduction to modern techniques; use of air photos and satellite imageries, remote sensing as a tool for data generation and mapping; computer - cartography;

Unit - V : Geography Perspectives:

A brief historical over view of geography as a discipline; recent trends in geography with special reference to India; imperatives for the future; career opportunities for geographers. Note: Unit III & Unit IV to be supported by practical exercises based on secondary and primary data.

Suggested Readings

1. Abler, Ronald. F. et al Geography's Inner Worlds : Pervasive themes in contemporary American Geography; Routledge New Jersey, 1992.
2. Dikshit R.D.: The Arts, Science of Geography Integrated Readings Prentice Hall of India, New Delhi, 1994.
3. Dikshit R.D.: Geographical Thought - A contextual History of Ideas. Prentice Hall of India Pvt. Ltd. 2000.
4. Dohrs, F.E. and Sommers, L.W. (eds.) Introduction to Geography, Thomas Y. Crowell Co., New York, 1967.
5 Hartshorne, Richard: Perspective on the Nature of Geography, Rand McNally and Co., Chicago, 1959.
6. Harvey, David: Explanation in Geography, Edward-Arnold, London, 1972.
7. Holt-Jensen, A.: Geography: Its History and Concepts, Longmans, 1980.
8. Husain, Majid: Evolution of Geographical Thought, Rawat Publications, Jaipur, 1984.
9. James, P.E.: All Possible Worlds: A History of Geographical Ideas, Sachin Publication, Jaipur, 1980
10. Johnston, R.J. and Claval, P. (eds.): Geography Since the Second World War, Croom Helm, London/Bernes and Noble, N.J., 1984.
11. Jones, P.A.: Fieldwork in Geography, Longmans, 1968.
12. Lownsburg, J.F. and Aldrich, F.T.: Introduction to Geographical Methods and Techniques, Charles Marrill, Columbus, 1979.

13. Minshull, R.: The Changing Nature of Geography, Hutchinson University Library, London, 1970.

14. Wooldridge, S.W.: The Geographer As Scientist, Thomas Nelson and Sons Ltd., London, 1956.

Pedagogy

- Interaction with students from other disciplines with a view to compare geography with other disciplines and to inculcate a conviction in and commitment to geography.
- Throughout the course, conscious effort should be made to drive home the relevance and significance of geography in understanding man-environment interface.

Course: C 102

B.A./B.Sc. (General)

First Year

PHYSICAL GEOGRAPHY - I
(Elements of Geomorphology)

Objectives:

The objective of this course is to introduce the latest concepts in physical geography, essentially geomorphology; to the students of geography in a brief but adequate manner.

Course Contents:

Unit - I : The nature and scope of Physical Geography; Inter-relation of Physical Geography with other branches of earth sciences; the place of Geomorphology in Physical Geography; Geological Time Scale.

Unit - II : Earth's interior, Wegner's theory of Continental Drift; Plate Tectonics. Earth movements - orogenic and eperogenic. Isostasy, earthquakes and volcanoes.

Unit - III : Rocks - origin and composition of rocks; weathering; formation of regolith and soils; rocks and relief.

Unit - IV : Geomorphic agents and processes: erosion, transportation and deposition; mass wasting; Evolution of landscape; Concept of cycle of erosion, interruptions of cycle of erosion. Fluvial, Arid, Glacial, Karst and Coastal landscapes.

Unit - V : Application of geomorphology to human activities: settlements, transport, land-use, mining; resource evaluation; environmental hazards and assessment.

Suggested Readings

1. Dayal, P; A Text book of Geomorphology. Shukla Book depot, Patna,1996.
2. Dury, G.H. : The Face of the Earth, Penguins, 1980.
3. Ernst, W.G.: Earth systems - Process and Issues. Cambridge University Press, 2000.
4. ICSSR: A Survey of Research in Physical Geography. Concept, New Delhi, 1983.
5. Kale V. and Gupta, A: Element of Geomorphology, Oxford University Press, Calcutta, 2001.

6. Monkhouse, F.J.: Principles of Physical Geography. Hodder and Stoughton, London.1960

7. Pitty. A.: Introduction to Geomorphology, Methuen, London,1974.

8. Sharma, H.S.: Tropical Geomorphology, Concept, New Delhi,1987.

9. Singh,S. :Geomorphology, Prayag Pustakalaya, Allahabad,1998.

10. Small, R.J. : The Study of Landforms, Mc.Graw Hill, New York,1985.

11 Sparks, B.W. : Geomorphology, Longmans, London, 1960.

12. Steers, J.A.: The Unstable Earth.Some recent views in geography, Kalyani Publishers, New Delhi,1964

13. Strahler, A.N. : Environmental Geo-Science, Hamilton Publishing, Santa Barbara, 1973.

14. Strahler, A.N. and Strahler, A.H. : Modern Physical Geography; John Wiley & Sons, Revised edition 1992.

15. Summerfield, M.A.: Global Geomorphology, Longman, 1991

16. Thornbury, W.D.:Principles of Geomorphology, Wiley Eastern,1969.

17. Wooldridge, S.W. and Morgan, R.S. : The Physical Basis of Geography - An Outline of Geomorphology, Longman Green & Co., London, 1959.

18. Wooldrige, S.W. : The Geographer as Scientist. Thomas Nelson and Sons Ltd., London, 1956.

Pedagogy

- The teacher may familiarise the students with Indian examples of landforms with photographs and diagrams. In case it is possible, short field trips may be organised.

Course: C 103

B.A./B.Sc. (General)
First Year

CARTOGRAPHY - I

Objectives:

Geography is an amalgam of physical as well as social sciences and as such, it is necessary for the students to go through laboratory exercises, particularly the techniques of drawing cartograms showing physical, climatic and socio-economic attributes of a region. To achieve this objective, the concept of scale is to be understood at the initial stage.

Course Contents:

Unit - I : The nature and scope of cartography. Scale : Plain Linear, Statement,- Diagonal and comparative; Representative Fraction - types of maps.

Unit - II : Methods of showing relief- (hachures, shading, contours and layer tints); Representation of different landforms by contours. Drawing of profiles: cross and long profiles, superimposed, composite and projected profiles and their relevance in landform mapping and analysis.

Unit - III : Representation of temperature, pressure and rainfall data by line (examples isotherms, isobars and isohyets): and bar graphs.

Unit - IV : Drawing of climograph and hythergraph and their interpretation- Weather maps of India published by Indian Meteorological Department for July and January: Interpretation of Weather Maps.

Unit - V : Study of Survey of India topographical maps - classification and scale. Interpretation of S0I topo-sheets of a hilly and a plain area of India in respect of (i) relief (ii) drainage, (iii) settlement and (iv) communication pattern.

Suggested Readings

1. Misra, R.P. and Ramesh, A. Fundamentals of Cartography, McMillan Co., New Delhi,1986.
2. Pal, S.K. Statistics for Geoscientists — Techniques and Applications, Concept, New Delhi,1998.
3. Robinson, A.H. et al.: Elements of Cartography, John Wiley & Sons, U.S.A.,1995.
4. Sarkar A.:K Practical Geography: A Systematic Approach, Oriental Longman, Calcutta, 1997.
5. Singh, R.L. and Dutt, P.K.: Elements of Practical Geography, Kalyani Publishers, New Delhi,1979.

Pedagogy

- The course should be taught with the help of block diagrams, weather maps and topographical sheets of Survey of India. It is necessary to have a well equipped cartographic laboratory and motivate the students to use the instruments. Adequate number of maps of different areas of India be procured from Survey of India and Meteorology Department.

Course: C 201

B.A/B.Sc. (General)
Second Year

PHYSICAL GEOGRAPHY- II
(CLIMATOLOGY AND OCEANOGRAPHY)

Objectives:

- This paper on physical geography is structured into components of climatology and oceanography. The aspects of climatology emphasize the constituents of the atmosphere, the dynamic nature of the processes associated with it and their contribution in making the earth habitable. The course content also leads to the identification of climatic differentiation on the earth, and the consequences of human activities on the atmospheric processes.
- The component of oceanography similarly deals with the coastal processes and describes the vast and diversified resources the oceans hold.

Course Contents:

A. CLIMATOLOGY

Unit - I : Weather and climate; definition and significance of climatology. elements of weather and climate; their causes. Composition and structure of the atmosphere.

Atmospheric Temperature: Insolation and global energy budget, vertical, horizontal and seasonal distribution of temperature.

Atmospheric pressure and winds: vertical and horizontal distribution of pressure; planetary, periodic and local winds.

Unit - II : Atmospheric moisture: humidity, evaporation; and condensation; hydrological cycle; types of precipitation, world patterns of rainfall: regional and seasonal distribution.

Air masses and fronts: concept, classification and properties.

Atmospheric disturbances: tropical and temperate cyclones; thunderstorms and tornadoes.

Unit - III : Climatic classification; basis of Koppen's classification and types - distribution, characteristics and related plant and animal life.

Role of Climate in human life; Atmospheric pollution and global warming - general causes, consequences and measures of control.

B. OCEANOGRAPHY

Unit - IV : Relevance of oceanography in earth and atmospheric sciences: Definition of oceanography. Surface configuration of the ocean floor, continental shelf, continental slope, abyssal plain, mid-oceanic and oceanic trenches. Relief of Atlantic, Pacific and Indian Oceans.

Distribution of temperature and salinity of oceans and seas.

Unit - V : Circulation of oceanic waters: waves, tides and currents; currents of the Atlantic, Pacific and Indian oceans. Marine deposits and coral reefs; coastal environment. Oceans as storehouse of resources for the future.

Suggested Readings

Climatology

1. Barry, R.G. & Chorley, R.J. Atmosphere, Weather and Climate, Routledge, 1998.
2. Critchfield, H : General Climatology, Prentice-Hall, New York,1975.
3. Das, P.K.: The Monsoons, National Book Trust, New Delhi, 1968.
4. Lydolph, Paul, E. : The Climate of the Earth, Rowman and Allanheld, Totowa, N.J., 1985.
5. Mather, J.R. : Climatology, McGraw-Hill, New York, 1974.
6. Patterson, S. : Introduction of Meteorology, McGraw-Hill Book Co., London,1969.
7. Stringer, E.T. :Foundation of Climatology, Surjeet Publications, Delhi, 1982.
8. Trewartha, G.T. : An Introduction to Climate, International Students edition , McGraw Hill, New York,1980.

Oceanography

1. Anikouchine, W.A. and Sternberg, R.W. : The World Oceans - An Introduction to Oceanography, Englewood Cliffs, N.J. 1973.
2. Grald, S. : General Oceanography - An Introduction, John Wiley & Sons, New York, 1980.
3. Garrison, T. Oceanography. Wadsworth.com. USA 1998.
4. King, C.A.M.: Beaches and Coasts, E. Arnold, London, ,1972.
5. King, C.A.M: Oceanography for Geographers E. Arnold, London,1975.

6. Sharma, R.C. Vatel M. Oceanography for Geographers, Chetnya Publishing House, Allahabad,1970

7. Shepard, F.P. : Submarine Geology, Harper & Sons, New York, 1948.

8. Thurman, H.B. : Introductory Oceanography, Charles Webber E. Merril Publishing Co., 1984.

9. Weisberg, J. and Howard: Introductory Oceanography, McGraw-Hill Book Co., New York, 1976.

Pedagogy

- For effective teaching and meaningful learning, weather charts be shown to students and illustrations may be drawn from local/regional weather and climatic conditions throughout the course. Efforts should be made to drive home the relevance of climatology and oceanography for the life and activities of human beings.

Course: C 202

B.A./B.Sc. (General)
Second Year

HUMAN GEOGRAPHY

Objectives:

The objectives of this course are to acquaint the students with the nature of man-environment relationship and human capability to adopt and modify the environment under its varied conditions from primitive life style to the modern living; to identify and understand environment and population in terms of their quality and spatial distribution pattern and to comprehend the contemporary issues facing the global community.

Course content:

Unit - I : Nature and scope of human geography. Branches of human geography. Concepts of man-environment relationship - determinism, possibilism and probabilism; dichotomy in Physical and Human Geography; primitive life-style of mankind and subsequent migration.

Unit - II : Division of Mankind: spatial distribution, physical and social profile of racial groups, ethnic groups, tribal groups and religious groups in the world and in India; early economic activities of mankind: food gathering, hunting, fishing, and vegeculture, shifting cultivation.

Unit - III : Human Adaptation to the environment: (i) cold region—Eskimo; (ii) hot region Bushman, Beduin; (iii) Plateau—Gonds, Masai, (iv) Mountain — Gujjars, nomads, (v) regions of recurrent floods, droughts and other natural hazards; Adaptation in modern society-agricultural, urban and metropolitan;

Unit - IV : Distribution of population; world distribution pattern - physical, economic and social factors influencing spatial distribution; concepts of over population, under population and optimum population. Zero population growth: Migration—internal and international. Population conflicts and conflict resolution in developed and developing world. Population theories: Classical and Modern.

Unit - V : Population regions of India: dynamic, prospective, depressed; Problem of over population of India and remedial measures. Population programmes and policy of India.

Suggested Readings:

1. Bergwan, Edward E: Human Geography; Culture, Connections and Landscape, Prentice-Hall, New Jersey.1995.
2. Carr, M.: Patterns, Process and change in Human Geography. MacMillan Education, London, 1987.
3. Fellman, J.L.: Human Geography—Landscapes of Human Activities. Brown and Benchman Pub., U.S.A., 1997.
4. DeBlij H.J.: Human Geography, Culture, Society and Space John Wiley, New York,1996.
5. Johnston, R.J. (editor).: Dictionary of Human Geography Blackwell, Oxford, 1994:
6. Mc Bride, P.J.: Human Geography Systems, Patterns and Change, Nelson, U.K. and Canada, 1996.
7. Michael, Can: New Patterns: Process and Change in Human Geography Nelson,1997
8. Rubenstein, J.H. and Bacon R.S.: The Cultural Landscape — an Introduction to Human geography. Prenice Hall, India, New Delhi,1990.
9. Singh, K.N. :People of India, An introduction Seagull Books, 1992
10. Spate O.H.K. and Learmonth A.T.A. : India and Pakistan Methuen, London.1968.

Pedagogy

- Students should be introduced to the exact form of many development - environment relationship though local level field visits.
- They should be encouraged to browse through census atlases and census data and the topographical sheets to understand various dimensions of population and settlements & their relationship with the terrain.
- They should be encouraged to write an essay on the human geography of their local areas to understand the multi dimensional nature of the subject.
- Students should be introduced to the exact form of complex relationship among environmental - activities (Place-work-folk) and through local level field-visits.

Course: C 203

B.A./B.Sc. (General)
Second Year

CARTOGRAPHY-II

Objectives:

The objectives of this course are to train the students in the art of representing demographic and Socio-economic database of any area through simple statistical techniques and cartograms. The techniques of surveying and map projections necessary for accurate geographical positioning and preparing physical plans of an area also form parts of the practical exercises. This course thus trains the students in preparing different types of maps.

Course Contents:

Unit - I : Types of cartographic symbols and their uses: (a) Points (dots, proportional circles and spheres) (b) Line, (isopleths and flow lines) (c) Areas (Choropleth).

Use of line and bargraphs for representing population, agriculture, industry and transport data.

Representation of population (distribution, density, growth etc.), land-use, cropping pattern, industries and transport etc.

Unit - II : Use of Mean, Median and Mode, and Standard Deviation in data analysis and mapping - scatter diagram - association and relationship.

Unit - III : Basic principles of land surveying (i) Chain (ii) Tape and (iii) Prismatic Compass (iv) Indian Clinometer (v) Dumpy level and (vi) Plane Table surveying (three point problem).

Unit - IV : Map Projections: general principles, classification. Drawing graticules on the following projections by graphical and mathematical methods. (i) Simple Cylindrical projection (ii) Cylindrical Equal Area Projection (iii) Conical Projection with one standard parallel (iv) Conical projection with two standard parallels.

Unit - V : Field work and Field Report: Select any area near the Institution; collect topo-sheets of the area-1: 50,000 scale; Visit the area and identify the landforms, settlements, land use features and compare the same with the topo-sheets. Draw sketches and maps of the selected area; conduct fieldwork with the help of Survey instrument and incorporate the same in final Field Report.

Suggested Readings

1. Gregory S : Statistical Methods and the Geographer. Longman S. London, 1963 geography.
2. Khan, Z.A.: Text Book of Practical Geography Concept, New Delhi 1998.
3. Lawarence, G.R.P.: Cartographic methods, Methuen, London,1968.
4. Monkhouse, F.J. & Wilkinson, H.R.: Maps and Diagrams, Methuen, London,1994.
5. Pal, S.K. Statistics for geoscientists - Techniques and Applications, Concept, New Delhi, 1998.
6. Sarkar, A.K.: Practical Geography- A Systematic Approach Orient Longman, Calcutta, 1997.
7. Singh, R.L.:Elements of Practical Geography, Kalyani Pub., New Delhi.
8. Steers, J.A.: Map Projections., University of London Press, London.

Pedagogy

- The models showing the shape and size of the earth be made available to the students. Survey instruments like chain, prismatic compass, plane table, dumpy level and clinometers and their accessories be made available in sufficient number so that students may handle these instruments individually or in groups.

Course: C 301

B.A./B.Sc. (General)
Third Year

GEOGRAPHY OF INDIA

Objectives:

The course is aimed at presenting a comprehensive, integrated and empirically based profile of India. Besides, the objective is to highlight the linkages of systematic geography of India with the regional personality of the country. The course is designed so as to present the role of the geographical positioning of India in moulding its geopolitical personality and its inter-relations with other countries.

Course contents:

Unit - I : India in the context of Southeast and South Asia; India: a land of diversities; unity within diversities.

Major terrain elements of India and their role in shaping physical landscape of India. Drainage systems of India and their functional significance. The morphological regions of India.

Unit - II : Regional and seasonal variations of climate - The monsoon, western disturbance, norwesters. Climatic regions of India. Soil types of India-their distribution and characteristics; Vegetation types and their distribution.

Forests, minerals and power resources - The status of their use and need for conservation.

Unit - III : Spatial distribution of population and density; socio-economic implications of population explosion; urbanization, changing nature of Indian economy. Agricultural growth during the plan period; Green Revolution vis-à-vis traditional farming; regionalisation of Indian agriculture, and typology of agricultural regions and their relevance in agricultural development planning.

Industrial development and Indian economy; industrial regions of India and their industrial structure, composition of domestic and international trade.

Unit - IV : Basis of regional divisions of India - macro, meso and micro - regions of India - their comparative analysis. Resource Regions of India, regional planning of rural and urban regions.

Unit - V : Contemporary issues: regional disparity; poverty, population explosion, globalization. Impact of development on Environment, social and ethnic tension; gender discrimination and empowerment of women.

Suggested Readings:

1. Deshpande C.D: India-A Regional Interpretation Northern Book Centre, New Delhi.1992.
2. Farmer, B.H.: An Introduction to South Asia. Methuen, London, 1983.
3. Govt. of India: India - Reference Annual, 2001 Pub. Div, New Delhi, 2001.
4. Govt. of India: National Atlas of India, NATMO Publication, Calcutta..
5. Govt. of India: The Gazetteer of India. Vol I & III Publication Division, New Delhi, 1965.
6. Learmonth, A.T.A. et.al(ed.) : Man and Land of South Asia Concept, New Delhi.
7. Mitra, A.: Levels of Regional Development India Census of India, Vol I, Part I-A(i) and (ii) New Delhi, 1967.
8. Routray, J.K.: Geography of Regional Disparity Asian Institute of Technology, Bangkok, 1993.
9. Shafi, M: Geography of South Asia, McMillan & Co., Calcutta, 2000.
10. Singh, R.L.(ed.): India: A Regional Geography. National Geogphical Society. India, Varanasi, 1971.
11. Spate, O.H.K. and Learmonth, A.T.A.; India and Pakistan - Land, People and Economy Methuen & Co., London, 1967.
12. Valdiya, K.S.: Dynamic Himalaya, University Press, Hyderabad, 1998.
13. Wadia, D.N.: Geology of India, McMillan & Co., London, 1967.

Pedagogy

- Large-scale maps and illustrations through slide projectors/epidiascope, video-shows of the specific themes are advisable to create interest amongst. the students. The student-teacher interaction should be encouraged. The students should also be motivated to read daily newspapers to relate events, areas and places from regional geographical perspective.

Course: C 302

B.A./B.Sc. (General)
Third Year

WORLD REGIONAL GEOGRAPHY

Objectives:

The objectives of this course are to give an overview of the land, people and economy of the different countries of the world, so that the students are aware of their neighbours as well as other countries located in distant realms. In this process, the students would be abreast of the diverse geographical processes, in the ambits of which economic development of various countries of the world have evolved.

Course content:

Unit - I : Asia in the context of the world. Terrain pattern, drainage, climate, natural vegetation, soils, spatial distribution of population and economic base of the continent in general. Regional studies of South, South East, East West and Central Asia.

Unit - II : Europe in the context of Asia and Africa. Physical, economic and demographic characteristics of the continent of Europe. Regional studies of British Isles, New South Wales, North Ireland, European Union, Eastern Europe, Mediterranean Realm.

Unit - III : North & South America in the context of the Atlantic and Pacific rim States. Physical, economic and demographic set-up; Regional Studies of North America, Latin America, South America, New England, Brazil, Chile, Peru.

Unit - IV : Australia & New Zealand in the context of Polynesia, Micronesia and South Asia; general account of the physical, economic and demographic set-up. Detailed regional studies of Australia, Newziland, Pacific Islands.

Note: In units II,III,IV any one of the regional study mentioned above or any one other than these depending on the expertise level in the Department be taken up for detailed analysis.

Unit - V : Contemporary issues in world geography: globalization, W.T.O. and World Summit, UN Environment programmes (UNEP) UN Development Programmes, Population, environment and sustainable development.

Suggested Reading

1. Cole, J.: A Geography of the World's Major Regions, Routledge, London, 1996.
2. Cole, J.P. : Latin America - Economic and Social Geography, Butterworth USA, 1975.
3. DeBlij, H.J. : Geography: Regions and Concepts, John Wiley, New York, 1994.
4. Dickenson, J.P. et al.: The Geography of the Third World. Routledge, London, 1996.
5. Gourou, P.: The Tropical World, Longman, London, 1980.
6. Jackson, R.H. and Hudman, L.E.: World Regional Geography: Issues for Today. John Wiley, New York, 1991.
7. Kolb, A.: East Asia - Geography of a Cultural Region. Mathuen, London, 1977.
8. Minshull, G.N. : Western Europe, Hoddard & Stoughton, New York, 1984.
9. Patterson, J.H.: Geography of Canada and the United States. Oxford University Press 1985.
10. Songquiao, Z.: Geography of China. John Wiley, New York, 1994.
11. Ward, P.W. and Miller, A.: World Regional Geography: A Question of Place. John Wiley, New York, 1989.

Pedagogy

- The teacher is expected to make intensive use of maps; and students have to be motivated to consult Atlases as well as practice drawing the sketch maps.
- Videotapes or slides of different places available from the media as well as from embassies may be shown to the students for better assimilation.

Course: C 303

B.A./B.Sc. (General)
Third Year

RESOURCES AND ENVIRONMENT

Objectives:

The objective of this paper is to provide an overview of resource geography and its interface with environment. The course aims to provide an understanding of the existing reality of resource utilization and environmental depletion; further aims to sensitize the students to the concept of sustainable resource use and sustainable development.

Course Contents:

A. RESOURCES

Unit - I : Meaning, nature and components of resources and environment. Resources and environment interface.

Classification of resources: renewable and non-renewable: biotic (forests, wild-life, live-stock, fisheries, agricultural crops) and abiotic (land, water, mineral).

Unit - II : Distribution and utilization of water; minerals and energy resources, their economic and environmental significance and conservation. Types and distribution of forests, flora, fauna and fisheries - their economic and environmental significance and conservation. Major soil types and their distribution; problems of soil erosion and soil conservation.

Unit - III : Number, density, growth and distribution of population; population pressure and resource utilization.

B. ENVIRONMENT

Unit - IV : Classification of Environment: Natural and Human. Man-environment interrelations with respect to population size types of economy, and technology; exploitation of natural resources and environmental hazards.

Unit - V : Emerging environmental issues - population explosion; food security; deforestation, global warming, conservation of bio-diversity; sustainable development.

Suggested Readings

1. Agarwal, A. et.al : The Citizen's Fifth Report. Centre for Science & Environment, New Delhi, 1999.
2. Alexander, John, W.: Economic Geography, Prentice Hall of India Ltd., New Delhi, 1988.
3. Allen, J.L. ; Student Atlas of Environmental issues, Dushkin Pub., 1997.
4. Brown, L.R. : In the Human Interest, East-West Press, New Delhi, 1976.
5. Chandna, R.C.: A Geography of Population:Concepts, Determinants and Patterns, Kalyani Publishers, New Delhi, 1986.
6. Cutter, L., Renwick, H. L.: Exploitation, Conservation and Preservation: A Geographic Perspective and Natural Resources Use, Rowman and Allanheld, Totowa, N.J., 1985.
7. Global Environment Outlook. Earthscan., London, 2000.
8. Hagget, Peter: Geography - A Modern Synthesis, Harper & Row Publishers, New York, 1975.
9. Janaki, V.A. : Economic Geography, Concept Publishing Co., New Delhi, 1985.
10. Liong G.C. and Nmorgen, G.C.: Human & Economic Geography Oxford University Press, London,1982.
11. Reid, D : Sustainable Development, Earthscan Pub., London, 1995.
12. Sharma, H.S.: Ravine Erosion in India, Concept New Delhi,1980
13. Sharma, H.S. and Chattopadhyay, S.K.: Sustainable Developments - Concepts and issues; Concept, New Delhi,2000.
14. Simmons, I.G.: The Ecology of Natural Resources Edward Arnold, London, 1974.
15. UNESCO : Use and Conservation of the Biosphere, Paris, 1970
16. Zelinsky, W. : A Prologue to Population Geography, Prentice Hall, Inc., Englewood Cliffs, N.J., 1966.

Pedagogy

- While discussing issues of resources in relation to environment, recent data be provided to the students. Audio visual aids will help the students in understanding the issues of population explosion and environmental degradation.

Course: CH 104

B.A./B.Sc.(Honours)
APPLIED GEOGRAPHY

Objectives:

To understand the prevalent issues in environment, society and economy and to provide a geographical interpretation with special reference to India.

Course-Contents:

Unit - I : Nature, scope and content of applied geography; identification of problems of interdisciplinary nature (like environment resource base, resource-use, development and disparity).

Unit - II : Issues related to variations in physical environment. Variations in land quality affecting agricultural productivity; environmental degradation, environmental disaster and environmental management.

Unit - III : Issues related to human resources; quality vs numbers; social and demographic issues: diversity and disparity; carrying capacity of the earth; human resource use and manpower planning.

Unit - IV : Issues related to economy; spatial organization of economic activities (like agriculture, industry, transport, trade, etc.) spatial inequalities -causes and consequences.

Unit - V : Environment and sustainable development with a focus on man- environment relationship. Review of policies related to planning formulated for local, regional and national level with special reference to India.

Suggested Readings

1. Dohrs, F.E. and Sommers, L.W.(eds.) :Introduction to Geography, Thomas Y. Crowell Co., New York,1967.
2. Hartshorne Richard: Perspective on the Nature of Geography Rand McNally & Co., Chicago, 1959
3. Harvey, David : Explanation in Geography, Edward-Arnold, London,1972.
4. Holt-Jensen, A : Geography: Its History and Concepts, Longmans,1980.

5. Husain, Majid : Evolution of Geographical Thought, Rawat Publications, Jaipur,1984.

6. James, P.E : All possible Worlds: A History of Geographical Ideas, Sachin Publication, Jaipur, 1980(Indian reprint).

7. Johnston, R.J. and Claval, P. (eds.): Geography Since the Second World War, Croom Helm, London/Bernes and Noble, Totowa, N.J., 1984.

8. Jones, P.A. : Fieldwork in Geography, Longmans.

9. Lownsburg, J.F. and Aldrich, F.T. : Introduction to Gographical Methods and Techniques, Charles Marrill, Columbus, 1979.

10. Minshull, R.: The Changing Nature of Geography, Hutchinson University Library, London, 1970.

11. Wooldridge, S.W. : The Geographer As a Scientist, Thomas Nelson and Sons Ltd., London,1956.

12. Misra, V.C., Ayyar, N.P.et.al.(editors): Essay in Applied Geography University Printing Press, Saugar,1976.

Pedagogy

- Exposure to media;
- National Five Year Plan documents and publications related to planning.
- Field work related to land-use and other socio-economic issues.

Course: CH 204
E 01

B.A./B.Sc.(Honours)
BIOGEOGRAPHY

Objectives:

The purpose of this paper is to appraise the students of the interrelationships among the living organisms within the environment and the importance of conservation of biosphere and biodiversity.

Course Contents:

Unit - I : Definition, scope and significance of Biogeography; Basic ecological principles: Bio energy cycle in the terrestrial ecosystem; energy budget of the earth; Trophic levels and food chain ; Darwin's theory of evolution ; Concepts of Biome, Ecotone and Community.

Unit - II : Origin of fauna and flora; major gene-centres; domestication of plants and animals and their dispersal agents and roots. Distribution of plant life on the earth and its relation to soil, climate and human activities; Geographical distribution of animal life on the earth and its relation to vegetation types, Climate and human activities.

Unit - IV : Communities - nature of communities and ecosystems; bio- diversities; human induced community change, habitat decay and conservation. Industrial effluent and its effect on fresh water and marine biology; management practices (special reference to India).

Unit - V : Study of any two of the following ecological regions of India in relation to their plant and animal life, their interrelations, problems, conservation and management: (a) Mangrove (b) Tropical rainforest (c) Desert (d) Mountain (e) Fresh water and marine.

Suggested Readings

1. Barry, C. : Biogeography - An Ecological and Evolutionary Approach, Cox Blackwell, Oxford, 1977.
2. Hagget, R.J.: Fundamentals of Biogeography. Routledge, London, 1988.
3. Hagget,R.J.: Geoecology: an Evolutionary Approach, Routledge, London, 1995

4. Joy, T.: Biogeography: A Study of Plants in the Ecosphere, Longman Sci & Tech., U.K. 1993.

5. Martin, C. : Plant Geography, Methuen, 1975.

6. Phillip, J. : Zoo Geography : The Geographical Distribution of Animals. John Wiley, New York, 1957.

7. Robinson H. : Biogeography, McDonald and Evans, London, 1982.

8. Seddon. B, : Biogeography, Duckworth, London, 1971.

9. Spellrberg, I.F & Sawyer, J.W.D.: An Introduction to Applied Biogeography, Cambridge University Press, 1999.

10. World Resources 2000-01: People and Ecosystems; World Resources Institute, Washington, 2001.

Pedagogy

- Use of overhead projector and 35 mm colour slides may be prepared and different plant species may be explained. Film on vegetation types and wild life may be arranged from Dept. of Environment and Forests/State/Central Government or procured for display. Students may be encouraged to watch Discovery Channel on Television.

Course: CH 204
E 02

B.A./B.Sc. (Honours)

ECONOMIC GEOGRAPHY

Objectives:

The basic economy of the world is undergoing rapid transformation in recent times. The process of such transformation of economic activities from primary to secondary and tertiary stage is dynamic in nature. In view of this, the objectives of this course are to integrate the various factors of economic development and to acquaint the students about this dynamic aspect of economic geography.

Course contents:

Unit - I : Definition, nature, scope and recent trends of economic geography, its relation with economics, and allied subjects, Classification of economies, local and spatial organization; Sectors of economy-primary, secondary and tertiary; the impact of economic activities on environment.

Unit - II : Natural resources, classification- renewable and non-renewable-biotic and abiotic, Conservation of resources, changing nature of economic activities; mining, forestry, agriculture, industry, trade and transport.

Unit - III : Agriculture-physical, social, cultural environment influencing crop production; Spatial distribution of major food and cash crops of the world; Agricultural types and classification.

Unit - IV : Minerals and Industries-classification of minerals: ferrous and non-ferrous and their world distribution, energy minerals and resources. Industries: factors of localization, Major industries-iron and steel, textile, chemicals, cement, paper, ship buildings and small scale and cottage industries.

Unit - V : Trade and Transport : geographical factors in their development, Major water, land and air transport. Internal and international trade. World Trade Organization (WTO) and globalization and their effect on developing countries of the world.

Suggested Readings

1. Boesch, H.: A Geography of World Economy, D.Van Nostrand Co., New York, 1964.
2. Chapman, J.D. : Geography and Energy, Longman, London, 1989.
3. Gregor, H.F.: Geography of Agriculture, Prentice Hall, New Jersey, USA, 1970.
4. Griggs, D.B.: The Agricultural Systems of the World, Cambridge University Press, New York, 1974.
5. Hartshorne, T.N. and Alexander, J.W.: Economic Geography, Prentice Hall, New Delhi, 1988.
6. Jones, C.F. and Darkenwald, G.G.: Economic Geography, McMillan Co., New York. 1975.
7. Millar E.: Geography of Manufacturing, Prentice Hall, New York, 1962.
8. Raza. M and Agrawal, Y.: Transport Geography of India, Concept, New Delhi, 1986.
9. Smith, D.M.: Industrial Location - An Economic Geographical Analysis, John Wiley, New York, 1971.
10. Thomas, R.S.: The Geography of Economic Activities, McGraw Hill, New York 1962.

Pedagogy

- The students should be taken to the field to identify the economic activities practiced by people-may be in agriculture, industry, trade and commerce. The factors of localization may be explained to the students citing local examples. The students should be encouraged to consult current journals and magazines from library.

Course: CH 204
E 03

B.A./B.Sc. (Honours)

POLITICAL GEOGRAPHY

Objectives:

- To familiarize the students with the geographical factors which have a bearing on the political/administrative organization of space;
- To enhance awareness of multi-dimensional nature of geo-political space.

Course Contents:

Unit - I : Nature, scope and subject matter of political geography; political geography and geopolitics.

- approaches to the study of political geography; morphological, functional and unified field theory.
- Role of physical, demographic, economic, socio-cultural and historical factors in the emergence of States.

Unit - II : State as a politico-territorial phenomenon:

- Changing nature of location, size and shape in political geography of States;
- Political and administrative framework and its hierarchical relationship to unitary and federal forms of governance.
- Boundaries and frontiers.
- Functions and classification of international boundaries.

Unit - III : Global strategic views: the views of Mackinder, Spykman; de. Seversky, and Mahan and their relevance to contemporary world situation.

Unit - IV : Underdevelopment and international policies, the North-South dialogue; SAARC and ASEAN the New International Economic order;

International tensions; identification of tension areas and factors contributing to tension in different areas; West Asia, and Indian Ocean region; Regionalism in International relations.

Unit - V : Geopolitical dimensions of environment

Suggested Readings

1. Bhagwati, J.N. (ed.): New International Economic Order - The North-South Debate, M.I.T. Press, London, 1976.
2. Dikshit, R.D.: Political Geography: A Contemporary Perspective, Tata McGraw-Hill Publishing Co., New Delhi, 1982 (also latest edition).
3. Glassner M.I.: Political Geography, John Wiley, New York, 1993.
4. Panikkar, K.M. Geographical factors in Indian History. Bharatiya Vidya Bhavan, Bombay 1956.
5. Pounds N.T.: Political Geography Mc Graw Hill, New York, 1972.
6. Prescott, J.R.V.: Political Geography, Methuen & Co., London, 1972.
7. Schwartzberg, J.E.: A Historical Atlas of South Asia, University of Chicago Press, U.S.A. 1993.
8. Short, J.R. : An Introduction to Political Geography, Routledge and Kegan Paul, London, 1982.
9. Taylor P.J (ed.): Political Geography of the 20th Centuary - A Global Analysis. New York, 1993.
10. Taylor, Peter: Political Geography, Longman, London, 1985.
11. William C.H. (ed.): Political Geography of the New World Order Halsted Ben, New York, 1993.

Pedagogy

- Fieldwork to understand the political/administrative boundary configurations and people's problems and perceptions.
- Consult political maps (large scale, small scale),
- Atlases and archival records ;
- Collect relevant newspapers items for group discussion.
- Prepare pin-up board for display of important events of geopolitical nature.

Course: CH 204
E 04

B.A./B.Sc.(Honours)

POPULATION GEOGRAPHY

Objectives:

The course is meant to provide an understanding of spatial and structural dimensions of population and the emerging issues. The course is further aimed at familiarizing the students with global and regional level problems and also equip them for comprehending the Indian situation.

Course Contents:

Unit - I : Nature, scope and contents of Population Geography; sources of data.

Unit - II : Spatial pattern of distribution - distribution, density and growth of population; determinants of world regional patterns, the Indian Scene.

Unit - III : Composition of Population: Age and Sex composition; rural-urban composition, economic composition; determinants; world regional patterns; composition of population in India.

Unit - IV : Migration: Classification, determinants and consequences of migration; world regional patterns, migration in India.

Unit - V : Population and Environment interface: Cause-effect syndrome; global and Indian profile.

Suggested Readings

1. Beaujeu-Garnier, J. : Geography of Population (Translated by Beaver, S.H.) Longmans, London, 1966.
2. Census of India 2001 Series-I India Provisional Population Totals. Published by Registrar General & Census Commissioner, India, 2001.
3. Census of India, 1991 India : A State Profile Published by office of the Registrar General of India, Census Operations, New Delhi.
4. Chandna, R.C. : Geography of Population: Concepts, Determinants and Patterns, Kalyani Publishers, New Delhi, 2000.

5. Clark J.1: Population Geography, Permagon Press, New York, 1965.

6. Sundram K.V. & Nangia Sudesh, (editors): Population Geography, Heritage Publishers, Delhi, 1986.

7 Peters: G.L. and Larkim R.P: Population Geography: Problems, Concepts and Prospects Kendele-Hunt Iowa, 1979.

8. Srinivasan K. and M. Vlassoff Population Development nexus in India: challenges for the new millennium. Tata McGraw Hill Publishing Co. Ltd., New Delhi 2001.

9. Trewartha, G.T. : A Geography of Population : World Patterns, John Wiley & Sons, Inc., New York, 1969.

10. Trewartha, G.T. : The More Developed Realm: A Geography of its Population, Pergamon Press, Oxford, 1978.

11 Trewartha, G.T.: The Less Developed Realm - A Population Geography, McGraw-Hill, New York, 1972.

12 UNDP: Human Development Report, Oxford University Press 2001.

13. Zelinsky, W. : A Prologue to Population Geography, Prentice-Hall, Englewood Cliffs, 1966.

Pedagogy

- use maps and atlases
- Students should be encouraged to read Population Clock,
- Consult census publications,
- Organise field work
- Organise discussions on population issues.

Course: CH 204
E 05

B.A./B.Sc.(Honours)

SETTLEMENT GEOGRAPHY

Objectives:

- The aims of this course are to acquaint the students with the spatial and structural characteristics of human settlements under varied environmental conditions;
- to enable them to diagnose special issues related to urban and rural settlements;
- to enable the students to equip themselves for a career in various agencies linked with the socio-economic well being of human communities and planning of human settlements.

Course Contents:

Unit - I : Nature, scope and content. Definition of urban and rural settlements: merits and limitations.

Unit - II : Settlement site and structure: internal morphology, external form; field patterns, functions, house-types.

Unit - III : Spatial Organization: size, spacing and hierarchy of settlements; emergence and characteristics of urban settlements.

Unit - IV : Settlement - Environment relationship, global and regional pattern; policies and programmes.

Unit - V : Salient features of human settlements in India.

Suggested Readings

1. Bose A.: India's Urbanization 1947-2000 Tata McGraw Hill, New Delhi.
2. Carter H.: The Study of Urban Geography, Edward Arnold, London, 1972.
3. Chisholm, M.: Rural Settlement and Land Use, Hutchinson, London,1970.
4. Clout, R.D. :Rural Geography, Pergamon Press, London,1970.
5. Deshpande, C.D.: Shehre, Continental Prakashan, Pune, 1983 (Marathi).

6. Dickinson, R.E. City, Region and Regionalism, Kegan Paul, Trench, Trubner & Co., London, 1947.

7. Johnson, J.H.: Urban Geography: An Introductory Analysis, Pergamon Press, London, 1967.

8. Krishan, G. : Nagar Bhoogol, Punjab State University Text Book Board, Chandigarh (Punjab).

9. Mayer, H.M. & Kohn, C.F.(eds.) : Readings in Urban Geography, Chicago Printing Press, Chicago, 1967.

10. Misra, H.N.(ed.) : Rural Geography, Heritage Publishers, New Delhi,1987.

11. Money, D.C. : Patterns of Settlements, Evan Brothers, London, 1972.

12. Mukerji, R.K. : Man and His Habitation, Popular Books, Bombay, 1968.

13. Nangia S.: Delhi Metropolitan Region, Rajesh Publications, 1976.

14. Perpillou, A.: Human Geography, Longmans, London, 1966.

15. Singh, R.L. : Readings in Rural Settlement Geography, Banaras Hindu University, Department of Geography, Varanasi, 1972.

16. Turner, Roy (ed.) : India's Urban Future, Oxford University Press, Bombay, 1962.

Pedagogy

- The course should include field study to obtain insight into settlement patterns under different environment millieu.
- Students should have access to multi-media and multi-disciplinary approach to the understanding of human settlement issues.
- They should use topographical sheets, cadestral maps, city guide-maps, Census Atlases.
- Students should be encouraged to study the City Master Plans.

Course: CH 304

B.A./B.Sc. (Honours)

ADVANCED CARTOGRAPHY

Objectives:

- to develop a skill among the students to prepare maps, keeping in view the principles of cartography and also user requirements.
- to make the student understand the techniques of mapping.

Course Contents:

Unit - I : The Earth: shape, size, areas and great circles-coordinate system: plane and spherical, latitude and longitude, direction and distance. Map design and layout concept of base map.

Unit - II : Mapping: Quantitative, Qualitative-print, line, area and volume-size, location, and direction of symbols - selection of class intervals and cholopleth and isopleth maps.

Unit - III : Map projections: scale and projection-deformation. Classification and choice of map projections-properties, merits and demerits of Cylindrical, Conical, Zenithal and Conventional projections. Projections suitable for maps of India.

Unit - IV : Technology and its application in Cartography: aerial photos and satellite data, generating cartographic data from aerial photographs and remote sensing data products-application of computer in cartography-cartography and GIS.

Unit - V : Basics of map-making: compilation: determination of scale-generalization: elements, controls, simplification, symbolization: Kinds of symbols-visual perceptions.

Field work

(i) Choose an area near to the Department of Geography and prepare base maps of the area. The base map should include the characteristic landforms, drainage and broad land use, settlements and transport line.

(ii) Conduct a field visit of the area to acquire knowledge about interpretation of the features depicted on the base map and identification of the features mentioned above as one observes on the ground.

(iii) Consolidate the salient features in the form of brief write up.

Suggested Reading:

1. Jefreys, S and John E: Geographic Information Systems-An Introduction Prentice Hall, New Jersey, 1990.
2. Misra R.P. and Ramesh A : Fundamentals of Cartography. Concept, New Delhi, 1989.
3. Monkhouse, F.J. Maps and Diagrams. Methuen, London, 1967.
4. Nag. P. Thematic Cartography and Remote Sensing. Concept, New Delhi.
5. Raize. I : Principals of Cartography. McGraw Hill, New York, 1982.
6. Robinson A.H. and Sale R. D. Elements of Cartography John Wiley, New Jersey, 1953.

Pedagogy

- Students may be asked to prepare a base map for a select theme with the available materials.
- Students may be given a 1:50,000 SOI topo-sheet and physical map of NATMO at the scales of 1:1,000,000, and they may be asked to see the differences in map symbols of different categories.
- A demonstration with air photos and imageries may be attempted by the faculty for generating cartographic data.
- Students may be taken on a tour to any nearby centre of air photo and remote sensing activities to get to know about the technology, products and data.

Course: CH 305

B.A/B.Sc. (Honours)

REGIONAL GEOGRAPHY OF THE WORLD
(Natural and Cultural Regions)

Objectives:

- To introduce the broad regional divisions of the world in a changing world system.
- To appraise the students about resources: their potentials; utilisation and sustainability aspects.
- To provide for an understanding and appreciation of the mutual dependence and resource sharing.

Course Contents:

Unit - I : Basics of regionalization - Determinants and world regions.

Unit - II : Natural and Cultural regions: Physical Resources

Unit - III : Natural and Cultural regions: Human Resources

Unit - IV : Natural and Cultural regions : Economic Resources

Unit - V : Regions in globalized world with special reference to environmental problems arising out of development and under development.

Suggested Readings

1. Blij H. Muller, O: Geography, Regions and Concepts: John Wiley, New York, 1993.
2. Don R. H. (ed.): Essentials of Geography and Development McMillan, New York, 1980.
3. English, Paul Ward & Miller J.A. World Regional Geography: A Question of Place, John Wiley, New York, 1989.
4. Jackson, R. H and Hudman L.E.: World Regional Geography: Issues for today. John Wiley, New York, 1991.

Pedagogy:

- The students may be involved in mapping the world regions based on income levels (as adopted in World Development Reports) and match these with the cultural and natural regions. Class room discussions may be based on student assignments on content analysis of world regions covered by mass media. Students may the motivated to acquire an evaluative approach towards resources.
- Reference to World Atlases and small scale maps may be encouraged.

ANNEXURE-4

Course: C 401

M.A./M.Sc.

GEOMORPHOLOGY

Objectives:

- It being a course at the interface of Geography with earth, the student has to be sensitized to background knowledge of geology and environmental sciences.
- The objectives of the course is to familiarize the students with the need for understanding of geomorphology with reference to certain fundamental concepts, focusing on the unity of geomorphology in the earth materials and the processes with or without an element of time. Process component of geomorphology is segmented into the internal and external processes of landscape evolution.
- Finally a few selected applications of geomorphology to societal requirements and quality of environment are dealt with.

Course Contents:

Unit - I : Nature and scope of Geomorphology, Fundamental concepts—Geological structures and landforms, uniformitarianism, multicyclic and polygenetic evolution of landscapes,concept of threshold, Environmental change — climatic change and geochronological methods-documentary evidence, artifacts, major horizons, dendrochronology, pollen, thermoluminescence

Unit - II : Earth movements - epeirogenic, orogenic and cymatogenic earth movements. Forces of crustal instability, isostasy, plate tectonics, seismicity, vulcanicity, orogenic structures with reference to the evolution of the Himalaya.

Unit - III : Exogenic Processes: Concept of gradation, Agents and processes of gradation, causes, types and classification of weathering, massmovement erosional , and depositional processes and resultant landforms and soil formation. Slope evolution, downwearing, parallel retreat and slope replacement models.

Unit - IV : Geomorphic processes. dynamics of fluvial, glacial, Aeolian, marine, and karst processes and resulting landforms' complexities in geomorphological processes, Erosion surfaces— techniques of identification and correlation.

Unit - V : Applied geomorphology — application of geomorphic mapping terrain evaluation. Digital Elevation Model (DEM) and Triangulated Irregular Network (TIN) unit, land capability and land suitability classification, hydro-geomorphology, urban geomorphology, environmental geomorphology, geomorphic hazards.

Suggested Readings

1. Chorley, R.J.: Spatial Analysis in Geomorphology, Methuen, London, 1972.
2. Cooke, R.U. and Doornkamp, J.C.: Geomorphology in Environmental Management— A introduction, Clarendon Press, Oxford, 1974.
3. Dury, G.H.: The Face of the Earth, Penguin Harmondsworth, 1959.
4. Fairbridge, R.W. Encyclopedia of Geomorphology, Reinholdts, New York, 1968.
5. Goudie, A.: The Nature of the Environment, Oxford & Blackwell, London, 1993.
6. Garner, H.F.: The Origin of landscape— A Synthesis of Geomorphology, Oxford University Press, London, 1974.
7. Mitchell, C.W. :Terrain Evaluation, Longman, London, 1973.
8. Ollier, C.D.: Weathering, Longman, London, 1979.
9. Pitty, A.F. Introduction to Geomorphology, Methuen, London, 1971.
10. Stoddart, D.R.(ed.): Process and Form in Geomorphology, Routledge, New York,1996.
11. Skinner, B.J. & Porter, S.C.: The Dynamic Earth John Wiley, New York, 1995.
12. Sparks, B.W. Geomorphology, Longman, London, 1960.
13. Sharma, H.S.(ed.) :Perspectives in Geomorphology, Concept, New Delhi,1980.
14. Singh, S.: Geomorphology, Prayag Publication, Allahabad,1998.
15. Thornbury, W.D. Principles of Geomorphology, JohnWiley, New York, 1960.

Pedagogy

- Geomorphology is essentially a field science, therefore students be taken to the field for effective understanding of geomorphic forms and processes. Department must have good geomorphic lab equipped with photographs of landforms of various climatic regions and toposheets of Survey of India

Course: C 402

M.A./M.Sc.

ECONOMIC GEOGRAPHY

Objectives:

The economy of the world is changing in recent times. The changes in primary, secondary and tertiary stage is dynamic in nature. In view of this, the objectives of this course are to integrate the various factors of economic development to acquaint the students about dynamic aspects of economic geography.

Course Contents:

Unit - I : Scope, content and recent trends in economic geography, relation of economic geography with economics and other branches of social sciences, Location of economic activities and spatial organization of economics, Classification of economies; sectors of economy (primary, secondary and tertiary).

Unit - II : Factors of location of economic activities: physical, social, economic and cultural; Concept and techniques of delimitation of agricultural regions, crop combination and diversification-Von Thunen's model and its modifications.

Unit - III : Classification of industries; Resource based and footloose industries, Theories of industrial location-Weber, Losch and Isard; Case studies of selected industries Iron and Steel, Aluminum, Chemical, Oil refining and Petrochemical, Engineering, Textile etc.

Unit - IV : Modes of transportation and transport cost; accessibility and connectivity: international, inter and intraregional; comparative cost advantages. Typology of markets, market network in rural societies, market system in urban economy, role of market in the development of trade and commerce.

Unit - V : Economic development of India, Regional disparities, Impact of green revolution on Indian economy, Globalization and Indian economy and its impact on environment.

Suggested Readings

1. Berry J.L. Geography of Market Centres and Retail Distribution, Prentice Hall , New York, 1967.
2. Chatterjee, S.P. : Economic Geography of Asia, Allied Book Agency, Calcutta, 1984.
3. Chorley, R.J. and Haggett, P. (ed.): Network Analysis in Geography, Arnold, 1969.
4. Dreze, J. and Sen, A. : India-Economic Development and Social Opportunity, Oxford University Press, New Delhi, 1996.
5. Eckarsley, R.(ed.): Markets, the State and the Environment, McMillan, London, 1995.
6. Garnier. B.J. and Delobez, A Geography of Marketing, Longman, London, 1979.
7. Hamilton, F.E.I. : Spatial Perspectives on Industrial Organisation and Decision Making, John Wiley, New York 1974.
8. Hamilton, I. (ed.) : Resources and Industry, Oxford University Press, New York, 1992.
9. Hurst E: Transport Geography-Comments and Readings, Mc Graw Hill, New York 1974.
10. Morgan, WB and Munton R.J.C.: Agricultural Geography, Methuen, London, 1977.
11. Pachuri, R.K. Energy and Economic Development in India, Praeger, New York 1977.
12. Robertson, D. (ed.): Globalization and Environment, E. Elgar Co., U.K., 2001.
13. Rostow, W.W.: The Stages of Economic Growth, Cambridge University Press, London, 1960.
14 Singh J. and Dhillon. S. S. Agricultural Geography, McGraw Hill, India, New Delhi 1984.
15. Symons. L: Agricultural Geography, Bell and Sons, London, 1972.
16. Wheeler, J.O. et. al.: Economic Geography, John Wiley, New York, 1995.

Pedagogy

- The students should be acquainted with the different branches of economic geography with examples. They should be motivated to interact with the teacher to identify economic activities of the people residing in different parts of the world.

Course: C 403

M.A./M.Sc.

REGIONAL GEOGRAPHY OF INDIA

Objectives:

- to understand India in terms of various regional divisions, their important characteristics, Intra-regional and inter-regional linkages; to analyse the natural and human resource endowments, their conservation and management;
- to sensitize the students with development issues and policies and programmes designed for regional development.

Course Contents:

Unit - I : Basis of regionalization: geo-political, climatic, agro-climatic, physiographic, historical, demographic, socio-economic dimensions of regionalization, case studies.

Unit - II : Macro-Regions: Genesis and changing profile; Indian federalism: a synoptic view; natural and human resources and resource utilization; Population-development environment interface. Policies and Programmes.

Unit - III : Meso-Regions: bases of regionalization, physical and human resources; economic and interlinkages; population-development environment interface; Policies & Programmes.

Unit - IV : Micro-Regions: bases of regionalization; physical, human and economic resources; formal and functional linkages; Population-development, environment nexus; policies and programmes.

Unit - IV : Case- studies of Meso/Micro level regions in detail (one from each of the divisions):

1. Natural/Physical: like Sundarbans Delta, Indo-gangetic plain, Coastal India.
2. Political: New States of India: (Jharkhand, Uttaranchal, Chhatisgarh; Union territories;
3. Urban/Metropolitan Regions: Delhi Metropolitan Region, Calcutta Metropolitan Region, Bombay Metropolitan Region etc.
4. Cultural Regions: Bundelkhand, Mewat.

Note: These regions are only by way of a few examples. The regions may be selected on the basis of the expertise available with the Departments/Universities. The study should relate to natural and human resources their viability and stability inter-regional relations, development problems and prospects; polices and programmes.

Unit - V : Regions and regional development, Environmental issues in regional development and planning.

Suggested Readings

1. Centre for Science & Environment (1988) State of India's, Environment, New Delhi.
2. Deshpande C.D India: a Regional Interpretation ICSSR & Northern Book Centre. 1992.
3. Dreze, Jean & Amartya Sen (ed.) India Economic Development and Social opportunity : Oxford University Press, New Delhi, 1996.
4. Kundu A. Raza Moonis: Indian Economy: the Regional Dimension. Spectrum Publishers, New Delhi, 1982.
5. Robinson, Francis : The Cambridge Encyclopaedia of India, Pakistan, Bangladesh, Sri Lanka, Nepal, Bhutan & Maldives. Cambridge University Press, London, 1989.
6. Singh R.L. (ed.) : India-A Regional Geography. National Geographical Society, India, Varanasi, 1971.
7. Spate OHK & ATA Learmonth - India & Pakistan Methuen, London. 1967.
8. Tirtha R. & Gopal Krishna, Emerging India Reprinted by Rawat Publications, Jaipur, 1996.

Pedagogy

- Students should be involved in classroom discussions and exercises on regions as reported in the Print and the Visuals.
- Visits to local regions of interest should be undertaken to study the spatial and functional contiguity, process of development and transformation.
- The assignments on regions to be followed by seminars and brain storming sessions.

Course: C 404

M.A./M.Sc.

ADVANCED CARTOGRAPHY

Objectives:

- To apprise the student with latest trends in the development of cartography as a tool in mapping thematic and quantitative data to facilitate spatial analysis and synthesis.
- To provide training in application of modern tools and techniques to data in a variety of topical and regional studies at local, regional and national levels.
- To attempt regional synthesis by the use of cartographic and quantitative techniques.

Course Contents:

Unit - I : Introduction - Trends in the development of cartographic techniques for descriptive, analytical and prescriptive aspects in the use of maps.

Unit - II : Thematic Cartography-Physical:

1. Assessment of land quality by using different attributes in the evolution of land forms and measuring their association and spatial differentiation.
2. Land based resources and cover and land use.

Unit - III : Thematic cartography - Socio-economic: Data sources and techniques of analysis of socio-economic data through the preparation of single purpose and composite maps.

Unit - IV : Creation of spatial database and application using GIS, Remote sensing and Computer cartography.

Unit - V : Regional Synthesis and characterization of the observed spatial patterns for predictive purposes. Preparation of spatial models; cartography for environmental education and planning

Suggested Readings

1. American Society of Photogrammetry, Manual of Remote Sensing. ASP, Falls Church, V.A., 1983.

2. Aronoff S. Geographic Information Systems: A Management Perspective, DDL Publication, Ottawa. 1989.

3. Barrett E.C and L.F. Curtis, Fundamentals of Remote Sensing and Air Photo Interpretation, Mcmillan, New York, 1992.

4. Burrough P.A . Principles of Geographic Information Systems for Land Resource Assessment Oxford University Press, New York.1986.

5. Campbell J. Introduction to Remote Sensing, Guilford, New York. 1989.

6. Curran, Paul J. Principles of Remote Sensing, Longman, London, 1985.

7. David Unwin, Introductory Spatial Analysis, Methuen, London, 1981.

8. Fraser Taylor D.R. Geographic information Systems. Pergaman Press, Oxford,1991.

9. Gregory, S. Statistical Methods and the Geographer, Longman, London, 1978

10. Hammond R and P.S. McCullagh Quantitative Techniques in Geography: An Introduction, Clarendan Press, Oxford, 1974.

11. Hord R.M. Digital Image Processing of Remotely Sensed Data, Academic, New York. 1989.

12. John P.Cole and Cuchlaine A. M. King, Quantitative Geography, John Wiley, London, 1968.

13. Johnston R. J., Multivariate Statistical Analysis in Geography, Longman, London. 1973.

14. Luder D, Aerial Photography Interpretation: Principles and Application, McGraw Hill, New York, 1959.

15. Maquire D. J. M.F. Goodchild and D. W. Rhind (eds.). Geographic information Systems:Principles and Application. Taylor & Francis, Washington. 1991.

16. Mark S Monmonier . Computer-assisted Cartography. Prentice-Hall, Englewood Cliff, New Jersey, 1982.

17. Peuquet D.J. and D.F. Marble Introductory Reading in Geographic Information Systems. Taylor & Francis, Washington.1990.

18. Pratt W.K. Digital Image Processing. Wiley, New York, 1978.

19. Rao D.P. (eds.) Remote Sensing for Earth Resources, Association of Exploration Geophysists, Hyderabad, 1998.

20. Star J and J. Estes .Geographic Information Systems: An Introduction. Prentice-Hall, Englewood Cliff, New Jersey, 1994.

21. Yeats, Maurice An Introduction to Quantitative Analysis in Human Geography, McGraw Hill, New York, 1974.

Pedagogy

- The students need to be trained in the use of conventioned vis-à-vis modern tools and techniques of cartographic analysis to generate spatial pattern and associations and attempt a geographical interpretation..
- They should be encouraged to create spatial database for their local areas based on satellite imageries and remote sensing techniques and other kinds of maps.

Course: C 405

M.A/M.Sc.

CLIMATOLOGY

Objectives :

The aim of the course is to provide an understanding of weather phenomena; dynamics of global climates and generation of climatic information and their application.

Course Contents:

Unit - I : Nature and scope of climatology and its relationship with meteorology . Composition, mass and structure of the atmosphere.

Insolation heat balance of the earth, green house effect; vertical and horizontal distribution of temperature. Atmospheric motion: Forces controlling motion of air vertical motion and vorticity, local winds, jet stream, general circulation in the atmosphere;

Atmospheric moisture: Humidity, evaporation, condensation, precipitation: formation, types, acid rain, world pattern of precipitation.

Unit - II : Tropical, temperate and high latitude weather systems - concept of air masses and atmospheric disturbances, ocean atmospheric interaction - El Nino, southern oscillation (ENSO) and La Nina, monsoon winds, norwesters, and cyclones Tropical Temperate phenomena, climate of India and its controls: Western disturbances .

Unit - III : Climatic classification of Koppen, and Thornthwaite. Major climates of the world - tropical, temperate, desert and mountain climate.

Unit - IV : Climatic changes : Evidences, possible causes; global warming, environmental impacts and society's response.

Unit - V : Applied climatology : Data collection, archiving, accessing, interpretation and generation of climatic information specially for water balance studies, soils, agriculture activities, house types and health.

Suggested Readings

1. Barry, R.G. and Chorley P.J.; Atmosphere, Weather and Climate, Routledge, London and New York, 1998.
2. Critchfield, J.H. : General Climatology, Prentice Hall, India, New Delhi, 1993.
3. Das, P.K.: Monsoons National Book Trust, New Delhi, 1987.
4. Fein, J.S. and Stephens, P.N.: Monsoons. Wiley Interscience, 1987.
5. India Met. Deptt. : Climatological Tables of Observatories in India, Govt. of India, 1968.
6. Lal, D.S.: Climatology, Chaitanya Publications, Allahabad, 1986.
7. Lydolph, P.E. : The Climate of the Earth, Rowman, 1985.
8. Menon, P.A.: Our Weather, N.B.T., New Delhi, 1989.
9. Peterson, S. :Iontroduction to Meteorology, Mc Graw Hill Book, London,1969.
10. Robinson, P.J. and Henderson S. :Contemporary Climatology, Henlow, 1999.
11. Thompson, R.D. and Perry, A (ed.): Applied Climatology, Principles and Practice, Routledge, London, 1997.

Pedagogy

- Weather and climatic charts be made available to the students to explain weather conditions. Audio-visual aids be used for effective teaching.

Course: C 406

MA./M.Sc.

POPULATION GEOGRAPHY

Objectives:

- To introduce the students to the complex dimensions of population.
- To understand and evaluate the association between demographic and socio-economic attributes of population and the resultant levels of social well- being and economic development.
- To understand the role and relationship between population and environment in an ever changing space — time continuum.

Course Contents:

Unit - I : Population Geography: Scope and Objectives; development of Population Geography as a field of specialisation-Population Geography and Demography-sources of population data, their level of reliability, and problems of mapping of population data

Unit - II : Population distribution: density and growth - theoretical issues; Classical and modern theories in population distribution and growth; World patterns and their determinants; India -: population distribution, density and growth profile, Concepts of under population and over population.

Unit - III : Population composition: age and sex; family and households; literacy and education; religion, caste and tribes; rural and urban; urbanisation; occupational structure; gender issues; Population composition of India.

Unit - IV : Population dynamics: Measurements of fertility and mortality. migration: national and international patterns; India's population dynamics.

Unit - V : Population and development: population- resource regions and levels of population and socio-ecoinomic development; population policies in developed and less developed countries; Human Development Index and its components; India's population policies; population and environment; implications for the future.

Suggested Readings

1. Bilasborrow, Richard E and Daniel Hogan, Population and Deforestation in the Humid Tropics, International Union for the Scientific Study of Population, Belgium 1999.
2. Bogue, D.J. Principles in Demography, John Wiley, New York 1969.
3. Bose, Ashish et. al. : Population in India's Development (1947-2000); Vikas Publishing House, New Delhi 1974.
4. Census of India, India: A State Profile, 1991.
5. Chandna, R.C. Geography of Population; concept, Determinants and Patterns. Kalyani Publishers, New York 2000.
6. Clarke, John I., Population Geography, Pergamon Press, Oxford 1973.
7. Crook, Nigel Principles of Population and Development. Pergmon Press, New York 1997.
8. Daugherty, Helen Gin, Kenneth C.W. Kammeyir, An Introduction to Population (Second Edition), The Guilford Press, New York, London 1998.
9. Garnier, B.J. Geography of Population Longman, London 1970.
10. Kochhar, Rajesh, The Vedic People: Their History and Geography Orient Longman Ltd., New Delhi 2000.
11. Mamoria C.B. India's Population Problem, Kitab Mahal New Delhi 1981.
12. Mitra, Asok, India's Population: Aspects of Quality and Control. Vol. I & II, Abhinar Publications, New Delhi 1978.
13. Premi M.K., India's Population: Heading Towards a Billion, B.R. Publishing Corporation, 1991.
14. Srinivasan K. and M.Vlassoff. Population Development Nexus in India: Challenges for the New Millennium. Tata McGraw -Hill, New Delhi 2001.
15. Srinivasan, K. Basic Demographic Techniques and Applications Sage Publications, New Delhi 1998.
16. Sundaram K.V. and Sudesh Nangia, (ed.) Population Geography, Heritage, Publications, Delhi 1986.
17. UNDP: Human Development Report. Oxford University Press, Oxford 2000.
18. United Nations, Methods for Projections of Urban and Rural Populations, No. VIII, New York 1974.
19. Woods R. Population Analysis in Geography. Longman, London1979.
20. Zelinsky Wilbur, A Prologue to Population Geography, Prentice Hall, 1966.

Pedagogy

- Classroom discussions may focus on population and development linkages. Students may also be encouraged to consider various quantitative attributes of population from Census 2001, India. Discussion may be arranged on the implications of population policies announced from time to time.

Course: C 407

MA./M.Sc.

REGIONAL PLANNING AND DEVELOPMENT

Objectives:

- To understand and evaluate the concept of region in geography and its role and relevance in regional planning;
- to identify the issues relating to the development of the region through the process of spatial organization of various attributes and their inter relationship.
- To identify the causes of regional disparities in development, perspectives and policy imperatives.

Course Contents:

Unit - I : Regional concept in geography, conceptual and theoretical framework, merits and limitations for application to regional planning and development; changing concept of the region from an inter-disciplinary view-point, concept of space, area and locational attributes.

Types of regions: Formal and functional; uniform and nodal, single purpose and composite region, in the context of planning; regional hierarchy; special purpose regions.

Unit - II : Physical regions, resource regions, regional divisions according to variations in levels of socio-economic development; special purpose regions-river valley regions, metropolitan regions, problem regions - hilly regions, tribal regions, regions of drought and floods.

Unit - III : Approaches to delineation of different types of regions and their utility in planning.

Planning process - sectoral, temporal and spatial dimensions; short-term and long term perspectives of planning. Planning for a region's development and multi-regional planning in a national context. Indicators of development and their data sources, measuring levels of regional development and disparities - case study of India

Unit - IV : Regional development strategies-concentration vs. dispersal, case studies for plans of developed and developing countries, Regional plans of India.

Unit - V : Concept of Multi-level planning; decentralised planning; peoples participation in the planning process; Panchayati Raj system; role and relationship of Panchayati Raj Institutions (Village Panchayat, Panchayat Samithi and Zila Parishad) and administrative structure (Village, Block and District). Regional development in India-problems and prospects.

Suggested Readings

1. Abler, R., et. al.: Spatial Organisation: The Geographer's View of the World, Prentice Hall, Englewood Cliffs, N.J., 1971.
2. Bhat, L.S.: Regional Planning in India, Statistical Publishing Society, Calcutta, 1973.
3. Bhat, L.S. et al.: Micro-Level Planning: A Case Study of Karnal Area, Haryana, K.B. Publications, New Delhi, 1976.
4. Chorley, R.J. and Hagget, P.: Models in Geography, Methuen, London, 1967.
5. Christaller, W.: Central Places in Southern Germany, Translated by C.W. Baskin, Prentice Hall, Englewood Cliffs, New Jersey, 1966.
6. Friedmann, J. and Alonso, W.: Regional Development Policy- A Case Study of Venezuela, M.I.T. Press Cambridhge, Mass, 1966.
7. Friedmann, J. and Alonso, W.: Regional Development and Planning - A Reader, M.I.T. Press, Cambridge, Mass, 1967.
8. Glikson, Arthur: Regional Planning and Development, Netherlands Universities foundation for International Co-operation, London, 1955.
9. Gosal, G.S. and Krishan, G.: Regional Disparities in Levels of Socio-Economic Development in Punjab, Vishal Publications, Kurukshetra, 1984.
10. Government of India, Planning Commission: Third Five Year Plan, Chapter on Regional Imbalances in Development, New Delhi,1961.
11. Indian Council of Social Science Research: Survey of Research in Geography, Popular Prakashan, Bombay,1972.
12. Johnson, E.A.J.: The Organisation of Space in Developing Countries, Harvard University Press, Cambridge,1970.
13. Kuklinski, A.R.(ed.): Growth Poles and Growth Centres in Regional Planning, Mouton, The Hague,1972.
14. Kundu, A. and Raza, Moonis: Indian Economy- The Regional Dimension, Spectrum Publishers, New Delhi,1982.

15. Losch, A.: The Economics of Location, University Press, Yale, New Haven,1954.

16. Misra, R.P.: Regional Planning: Concepts, Techniques and Policies, University of Mysore, Mysore, 1969.

17. Misra, R.P. and Others (editors): Regional Development Planning in India-A Strategy, Institute of Development Studies, Mysore,1974.

18. Mitra, A.: Levels of Regional Development, Census of India, Vol.I, Part IA(I) and (ii), New Delhi 1965.

19. Myrdal, G.: Economic Theory and Under-Development Regions, Gerald Duckworth, London,1957.

20. Nangia Sudesh, Delhi Metropolitan Region Rajesh Publication, Delhi, 1976.

21. Richardson, H.W.: Regional Economics, Weidenfeld and Nicolson, London, 1969.

22. Sundaram, K.V.(ed.): Geography and Planning, Essays in Honour of V.L.S. Prakasa Rao, Concept Publishing Co., New Delhi,1985.

23. Tarlok Singh India's Development Experience, Mc Millan New Delhi, India, 1974.

24. Raza Moonis (editer) Regional Development Heritage Publishers Delhi. 1988.

25. Mishra, R.P. et. al. Multi-Level Planning Heritage Publishers, Delhi. 1980.

Pedagogy

- The students should be made to do sessional assignments based on diverse data to formulate regions at the local, Regional levels, and identify the regional differentiations.
- They should be made conversant with the trends in the development of the regional concepts, using 'space' in the multi disciplinary approach to regional Development.

Course: C 408

M.A./ M.Sc.

QUANTITATIVE TECHNIQUES IN GEOGRAPHY

Objectives:

- To introduce some basic statistical procedures to the students to be applied to various themes in geography.
- To indicate the assumptions, limitations and interpretation of these procedures and results.
- To train the students to handle these statistics towards analysing the geographical problems.

Course Contents:

Unit - I : Probability: Theory of probabilities-law of addition and multiplication-probabilities of distribution: normal, binomial, Poisson-sampling: basic concepts, sample units and design, sampling frame and procedures, standard error and sample size, testing the adequacy of samples.

Unit - II : Hypothesis Testing: Needs and types of hypotheses-goodness of fit and significance and confidence levels-parametric and non-parametric procedures: contingency tables, Chi-square test, binomial test, t-test, Mann-Whitney U test, Analysis of Variance (ANOVA)

Unit - III : Bivariate Analysis; Forms of relation and measuring the strength of association and relation-construction and meanings of scatter diagram-simple linear and regression analyses-Spearman's Rank and Product Moment Correlation Coefficients-the ordinary least square method of fitting a regression line - construction of regression line: interpolation, prediction, explanation and residual-statistical tests of significance of the estimates; residuals and their mapping.

Unit - IV : Multivariate Analysis; Basics of multiple regression-partial correlation coefficient regression analysis and ANOVA-testing the overall significance of a regression auto correlation-multicolliniarity-basic principles and elements of Factor Analysis and principal component analysis.

Unit - V : Surfaces and Models: Gravity potential; model-spatial interpolation and trend surface analysis-simulation models: random walk and diffusion models-Markov chain model similarity indices and region building-construction of Thiessen polygons.

Suggested Reading

1. David Unwin, Introductory Spatial Analysis, Methuen, London, 1981.
2. Gregory, S. Statistical Methods and the Geographer, Longman, London, 1978.
3. Hammond R and P.S. McCullagh Quantitative Techniques in Geography: An Introduction, Clarendan Press, Oxford, 1974.
4. John P.Cole and Cuchlaine A. M. King, Quantitative Geography, John Wiley, London, 1968.
5. Johnston R. J., Multivariate Statistical Analysis in Geography, Longman, London. 1973.
6. Koutsoyiannis, Theory of Econometrics, Mcmillan, London, 1973.
7. Maurice Yeats, An Introduction to Quantitative Analysis in Human Geography, McGraw Hill, New York, 1974.
8. Peter Haggett, Andrew D. Cliff, & Allan Frey, Location Methods Vol. I and II, Edward Arnold, London, 1977..

Pedagogy

- Students may be asked to compare the means of measurements of any one variable from a section of toposheet by varying the sampling frame and sample size.
- Students may be asked to delineate regions quantitatively, using district level or state level census or agricultural data and adopting a simple regionalization procedure.
- Students may be asked to work out a diffusion model, using some hypothetical data or data gathered from the fellow students in the class or college or university.

Course: C 409

M.A/M.Sc.

OCEANOGRAPHY

Objectives:

The objectives of the course are to introduce students to the many facets of Oceans, such as, evolution of the oceans, physical and chemical properties of sea water, atmospheric and oceanographic circulation, the fascinating world of marine life and the characteristic of marine environment and the impact of man on the marine environment.

Course Contents:

Unit - I : Nature and scope of oceanography—History of oceanography; distribution of land and water; major features of ocean basins; continental margin and deep-ocean basins: earth structure and Plate tectonics; marine sediments.

Unit - II : Physical and chemical properties of sea water; Interlink between atmospheric circulation and circulation patterns in the oceans; Surface currents; thermohaline, waves and tides.

Unit - III : Marine biological environment : bio—geochemical cycles in the ocean, biozones, types of Organisms: Palankton, Nekton and Benthos, food and mineral resources of the sea.

Unit - IV : Major Marine Environments: Coastal,: estuaries, deltas, barrier Island, rocky coasts - Open: reefs, continental-shelf, continental - slope and deep, pelagic environment and floor of the ocean basins.

Unit - V : Impact of Humans on the Marine Environment. Law of the Sea; exclusive economic zone, marine deposits and formation of coral —reefs.

Suggested Readings

1. Davis.Richard J.A.: "Oceanography - An Introduction to the Marine Environment". Wm. C. Brown Iowa. 1986.
2. Duxbury, C.A and Duxbury B.: An Introduction to the world's Oceans -C.Brown. Iowa 2nd ed. 1996.

3. Garrison, T.: "Oceanography - An Introduction to Marine Science, Books/Cole, Pacific Grove, USA, 2001.

4. Gross, M.Grant: Oceanography, a View of the earth , Prantice - Hall Inc. New Jersy, 1987.

5. King, C.A.M. Oceanography for Geographers 1962.

6. Sharma, R.C. " The Oceans " Rajesh N.Delhi. 1985.

7. Ummerkutty, A.N.P. Science of the Oceans and Human life, NBT, New Delhi 1985.

Pedagogy

- Detailed charts and maps showing oceanic relief, currents and circulation of oceanic water be used for teaching. Audio Visual aids be provided for teaching.

Course: C 410

M.A./M.Sc.

SETTLEMENT GEOGRAPHY

Objective:

- To familiarise the students with the conceptual theoretical and empirical development in settlement studies in Geography, and the current settlement scenario in India.
- to sensitize the students with the problems of population growth and environmental degradation in human settlements.
- to provide the students an idea about international and national concerns on settlement issues.

Course Contents:

Unit - I : Evolution, size and growth of human settlements: Theories of evolution of settlements; size, distribution, spatial and temporal trends in size and growth of settlements.

Unit - II : Distribution Pattern: Spatial distribution pattern of settlements: Theoretical models and empirical findings.

Unit - III : Settlement Structure: Physical (characteristics of internal structure and external form, theories explaining internal morphological structure of cities; empirical and theoretical models explaining the functional classification of towns & villages; functional classification of urban centres, functional typology of villages, functional landscape, functional structure of towns in India. Landuse (principles and theories of landuse in urban and rural setting: house types and building materials, environmental, soci-economic/cultural factors influencing the dynamics of settlement structure.

Unit - IV : Settlement Hierarchy: theories of Christaller and Losch and their application to settlement hierarchy, factors contributing to hierarchy, Central Place theory: measurement of centrality and hierarchy. Hierarchy of settlements in India - an empirical exercise.

Unit - V : Issues, perspectives and policies on Population and Human Settlements. Interface between human settlements and environment.

Suggested Reading

1. Ambrose, Peter, Concepts in Geography Vol.-I Settlement Pattern, Longman 1970.
2. Baskin, C., (Translator), Central Places in Southern Germany, Prentice-Hall Inc. Englewood Cliffs New Jersey, 1966. Originally written by C.W. Christaller in German with title Die Zentralen Orte Suddeutsch land in 1933.
3. Census of India, House types and Settlement Patterns of Villages in India, GOI, New Delhi 1961,.
4. Haggett, Peter, Andrew D. Cliff and Allen Frey (editer), Locational Models Arnold Heinemann 1979.
5. King, Leslie, J., Central Place Theory, Saga Publications, New Delhi 1986.
6.. Mayer, M. Harold and Clyde F. Kohn (editors), Readings in Urban Geography, Central Book Depot, Allahabad 1967.
7. Mitra, Asok, Mukherjee S and Bose R. Indian Cities Abhinav Publications, New Delhi 1980.
9. Nangia, Sudesh, Delhi Metropolitan Region, K.B. Publications, New Delhi 1976.
10. Prakasa, Rao, V.L.S., Urbanisation in India; Spatial Dimensions, Concept Publishing Co., New Delhi 1983.
11. Ramachandran, R., Urbanisation and Urban Systems in India, Oxford University Press, New Delhi 1992.
12. Singh R.L. and Kashi Nath Singh (editors), Readings in Rural Settlement Geography, National Geographical Society of India, Varanasi 1975.
13. Srinivasan, K. and M. Vlassoff, (editors), Population-Development Nexus in India: Challenges for the New Millennium, Tata McGraw-Hill Publishing Co. Ltd., New Delhi 2001.
14. Ucko, M.J., Ruth Tringham and G.W. Dimbleby (editors), Man, Settlement and Urbanism, Duckworth 1972.
15. United Nations Centre for Human Settlements (HABITAT), An Urbanising World, Global Report on Human Settlements, Oxford University Press for HABITAT 1996.

Pedagogy

- The students should be trained in the interpretation of settlement patterns from the topographical sheets.
- They should be encouraged to use census and allied data sources to understand hierarchy/ centrality/functional organization of settlements in space.
- The students should be taken for field visits to identify the exact form of relationship between population growth, changes in morphological structure and environmental degradation in and the settlements and should be encouraged to write field report based on their observations.

Course: C 411

M.A./M.Sc.

REGIONAL GEOGRAPHY OF A MESO REGION OF THE WORLD

Objectives:

- to understand the grouping of a few countries as regions based on geographical historical, political compulsions and cultural similarities.
- to explore the forward and backward linkages of regions with the rest of the world.
- to understand the need for regional cooperation for development.

Course Contents:

Unit - I : Region as a geographical entity and as a component of global system. Basis of regionalization/grouping of countries-geographical, political, historical, cultural etc.

A survey of systematic grouping of countries: examples: East Asia, South Asia, South-East Asia, West Asia, European Union, Eastern Europe, Central Asia, North America, Latin America, South America, Sub-Saharan Africa, South Africa, Pacifc Islands, Oceania etc. in terms of their historical development.

Unit - II : Systematic Geography of any one region in terms of physical resources and development issues.

Unit - III : Systematic Geography of any one region in terms of population and human settlements, urbanization, immigration and other development issues.

Unit - IV : Systematic Geography of any one region in terms of its economy and development issues.

Unit - V : Region in the context of globalization; Changing population- environment relationship.

Note: The suggested readings for selected regions may be given in the class. However, some suggested readings pertaining to a few regions are given in the following list:

Suggested Readings

1. Ahmad, K.S.: Geography of Pakistan, Oxford University Press, Karachi, 1964.
2. Ahmad, N. : An Economic Geography of Bangladesh, Vikas, New Delhi, 1975.
3. Chiao-min Hsieb: Atlas of China, McGraw Hill, New York, 1973.
4. Chiao-min Hsieb: China: Ageless Land and Countless People, Van Nostrand, New York, 1967.
5. Dobby, E.H.G. : Southeast Asia, University of London Press, London, 1960.
6. Farmer, B.H. : An Introduction to South Asia, Methuen & Co., Ltd., London, 1983.
7. Farmer, B.H. : Ceylon, Oxford University Press, London, 1963.
8. Fisher, W.B.: Middle East : A Physical, Social and Regional Geography, Dutton, New York, 1963.
9. Johnson, B.L.C. : South Asia, Heinemann Education Book Ltd., London, 1982.
10. Karan, P.P. : The Himalayan Kingdom, Van Nostrand, New York, 1962.
11. Kolb, A: East Asia, Methuen and Co. Ltd., London, 1981.
12. Nolte, Richard H (ed.) : The Modern Middle East, Atherton Press, New York, 1963.
13. Ooi, Jin-Bee : Land, People and Economy in Malaya, Longmans, London, 1963.
14. Spate, O.H.K., and Learmonth, A.T.A.: India and Pakistan and Ceylon, Methuen & Co., London, 1967.
15. Spencer, Joseph & Thomas, William L. : Asia:East by South: A Cultural Geography, John Wiley & Sons, New York, 1971.
16. Trewartha, G.T.: Japan: A Physical and Cultural Geography, University of Wisconsin Press, Madison, 1965.
17. Wolmington, M.W. : Middle East : Centre of Supply, University Press, London, 1971.

Pedagogy:

- Students may be encouraged to look for the connections between Meso regions with the Macro and Micro level regions. Readings from other disciplines focusing on the selected regions may also be emphasized.

Course: C 412

MA./M.Sc.

HISTROY OF GEOGRAPHICAL THOUGHT

Objective:

- To introduce the students to the philosophical and methodological foundations of the subject and its place in the world of knowledge;
- to familiarize them with the major landmarks in development of geographic thought at different periods of time

Course Contents:

Unit - I : The field of geography; its place in the classification of sciences; geography as a social science; and natural science, selected concepts in the philosophy of geography, distributions; relationships, interactions; areal differentiation and spatial organization

Unit - II : Dualisms in geography; systematic & regional geography; physical & human geography. Systematic geography & its relation with systematic sciences and with regional geography. The myth and reality about dualisms. Regional geography: Concept of region, regionalization and the regional method.

Unit - III : Scientific explanations: routes to scientific explanations (Inductive/Deductive); types of explanations; cognitive description; cause & effect; temporal; functional/ecological systems.

Unit - IV : Laws, theories & models, the quantitative revolution, responses to positivism, behaviourism, postmodernism.

Unit - V : Historical Development

Contributions of different scholars during ancient medieval and modern period.

Geography in the 20th century; conceptual and methodological developments and changing paradigms; status of Indian Geography, Future of geography; task ahead relating to development of geographic thought with special reference to changing views on man-environment relationship

Suggested Readings

1. Abler, Ronald; Adams, John S.Gould, Peter: Spatial Organization: The Geographer's View of the World, Prentice Hall, N.J., 1971.
2. Ali. S.M. : The Geography of Puranas, Peoples Publishing House, Delhi, 1966.
3. Amedeo, Douglas: An Introduction to Scientific Reasoning in Geography, John Wiley, U.S.A.,1971.
4. Dikshit, R.D.(ed.): The Art & Science of Geography Integrated Readings, Prentice Hall of India, New Delhi,1994.
5. Hartshorne, R. :Perspectives on Nature of Geography, Rand McNally & Co., 1959.
6. Husain,M. :Evolution of Geographic Thought, Rawat Pub., Jaipur, 1984.
7. Johnston, R.J. :Philosophy and Human Geography, Edward Arnold, London, 1983.
8. Johnston, R.J.: The Future of Geography, Methuen, London, 1988.
9. Minshull, R. : The Changing Nature of Geography, Hutchinson University Library, London, 1970.

Pedagogy

- Students of geography may be encouraged to interact with their counterparts from other disciplines and discuss the nature of their subject.
- The students may be encouraged to collect information on any theme amenable to geographical interpretation.

Course: C 413

M.A./M.Sc

FIELD-WORK (PHYSICAL SURVEY)

Objectives:

The main objective of the field work (Physical) is to conduct an extensive survey of a contiguous wider region and identify salient landforms; their genesis and their impact on human life, flora and fauna.

Course Contents:

Unit - I : Trace the prominent features of the area to be surveyed. Identify salient landform features of the selected area on a topographical sheet.

Unit - II : Identify the landforms on the surface, while in the field. Also note the agents of erosion, transportation and deposition associated with the landforms.

Unit - III : Identify and classify the biodiversity in the area (Flora & Fauna).

Unit - IV : Observe the relationship of various landforms, flora and fauna with land-use, settlement structure and life style of people.

Unit - V : Based on observations of the above characteristics, prepare a field survey report. The report need to be supplemented with maps, sketches, photographs etc.

Pedagogy

- The practical exercises should aim at identification of micro-geomorphic features on the ground and their relationship to land-use/ settlement patterns.
- This is also a training in Report Writing

Course: C 414

M.A/M.Sc.

FIELD WORK (SOCIO-ECONOMIC)

Objectives:

Main objective of the field work is to provide the students with the understanding of ground reality of a chosen village/town by observation; mapping of land quality, land use and cropping pattern and conducting Socio-economic survey of the households with the help of a specially prepared questionnaire.

Course Contents:

Unit - I : Procure a topographic map of 1:50,000 or 1:25,000 scale to study the settlements selected in its regional setting.

Unit - II : Collect demographic, social & economic data of the village/town from Census Reports to study the temporal changes in the profile of such characteristics.

Unit - III : Procure a cadestral map of the village/town for field mapping of the features of land-use and land quality. Procure/prepare the settlement-site map through rapid survey to map the residential, commercial, recreational (parks, playgrounds), educational, religious and other prominent features.

Unit - IV : Conduct a socio-economic survey of the households with a structured questionnaire. Supplement the information by personal observations and perceptions.

Unit - V : Based on results of the land-use and socio-economic enquiry of the households, prepare a critical field-survey report. Photographs and sketches, in addition to maps and diagrams, may supplement the report.

Pedagogy

- The exercise should familiarize the students with the basic socio-economic characteristics of the chosen area/settlements through lab experiments, followed by field-visit and conducting enquiry at the village/town/household level.
- This is also training in Report Writing for the students.

Course: E 501

M.A./M.Sc.

ADMINISTRATIVE GEOGRAPHY

Objectives:

Main objective of the course is to provide insight into the complex relationship between geographical factors that have a strong bearing on the administrative framework and its horizontal and vertical relationship through which it functions.

Course Contents:

Unit - I : Administrative Geography: definition, subject matter, and significance-Administrative Geography as the study of administrative areas and area administration; Geography and Public Administration; Administrative Geography and Modern Political Geography.

Unit - II : Administrative Areas: evolution, change and periodic reforms; types of administrative areas - general purpose, special purpose.

Structural attributes of administrative areas-hierarchy, size, shape and headquarters.

Area Administration: Geography of Public policy - formulation, implementation and impact; Geography of public finance - revenue, expenditure and balance; Administrative system - the world pattern.

Unit - III : Spatial Organisation of Administration and the Development Process: Measures of spatial quality of administrative areas; measures of development level; relationship between spatial quality and development level of administrative areas. Administrative Geography of select Countries: India, U.S.A. Russia and United Kingdom.

Unit - IV : Concept of Multi-level planning in India - Top down and bottom-up approach. Decentralised planning; Panchayati Raj role and relationship of Zila Parishad, Panchayat Samithi and Village Panchayat, Relationship with the administrative framework. Case study from selected States in India

Unit - V : The administrative framework and the environment: Inter relationship and impact assessment.

Suggested Readings

1. Alderfer, H.F.: Local Government in Developing Countries, McGraw-Hill, New York, 1964.
2. Bennett. R.J.: Geography of Public Finance, Methuen, New York, 1980
3. Coppack, J.T. and J.R.D. Sewell (eds.): Spatial Dimension in Public Policy, Pergamon Press, Oxford, 1976.
4. Deshpande C.D. : India-A Regional Interpretation ICSSR, Northern Book Centre, New Delhi, 1992.
5. Fesler, J.W.: Area and Administration, University of Alabama Press, Alabama, 1949.
6. Government of India, Planning Commission, New Delhi: Report of the Working Group on District Planning 2 volumes, New Delhi, 1984.
7. Government of India: Report of the Committee on Panchayati Raj Institutions (Ashoka Mehta Committee), 1978.
8. Humes, S. and Martin, E.M.: The Structure of Local Government Throughout the World, Martinues Nijhoff, The Hague, 1961.
9. Johnston, R.J.: Geography and the State, Macmillan, London, 1982.
10. Maass, A.: Area and Power, The Free Press, Glencoe, 1959.
11. Massam, B.H.: Location and Space in Social Administration, Edward Arnold, London, 1975.
12. Massam, B.H.: The Spatial Structure of Administrative Systems. Association of American Geographer Research Paper No. 12, 1972.
13. Misra R.P. and Sundaram K.V.: Multi-level Planning Heritage Publishers, New Delhi.
14. Muir, R.: Modern Political Geography, Macmillan, London, 1981.
15. Nigro, F.A. and Nigro, L.G. : Modern Political Administration, Harper and Row, New York, 1984.
16. Prescott, J.R.V.: The Geography of State Policies, Hutchinson, London, 1968.
17. Taylor, P.J. - Political Geography: World Economy, Nation, State and Locality, Longman, London, 1985.

Pedagogy

- Focus of the lectures should be on the factors that divide and unite macro, meso and micro regions of India. The lectures may be illustrated with the help of maps depicting administrative re-organisation of India and changes in political-administrative structure over time in same countries. Students may be asked to consult National and Regional Atlases along with critical assignment of the relationship of geographical and administrative boundaries.

Course: E 502

M.A./M.Sc.

AEOLIAN GEOMORPHOLOGY

Objectives:

- As the arid and semi—arid climatic regions occupy a major portion of the continents, it becomes essential to understand the deserts in detail as they hold a key to the natural resource evaluation.
- Aeolian environments are particularly sensitive to aridity, bio-mass and human interferences. All these activities affect wind shear in different degrees, set time in motion the processes of erosion and deposition. These processes and their resulting forms are highlighted in the course content.
- Aeolian activities are not restricted to the present day conditions but also to the past environmental stress conditions. These palaeo- environments are discernible by using established dating techniques which have enabled the interpretation of past climates and pre-historic cultures. A direction is set for the application of aeolian geomorphic principles for the efficient management of land-based human economic activities through advanced monitoring technique with special reference to India.

Course contents:

Unit - I : Wind Environments: Introduction; desert wind systems; directional variability and resultant drift potential; scope of aeolian geomorphology. Grain in motion: fluid flows - flow types; interaction of the wind and the bed - wind shear; entrainment - lift and drag; Thresholds of movement: static and dynamic ; modes of transport: saltation, creep, reptation and suspension; transport rates.

Unit - II : Wind erosion and landforms: Processes: abrasion, deflation and aerodynamic erosion; Landforms: ventifacts, yardangs, pans, stone pavements, deflation hollows; desert varnish; processes and significance. Dusts-Sources; - contemporary and proximal, mineral composition; Dust-generating and dust yielding systems, gross spatial patterns of production and removal; deposition: loess, types, palaeo - environmental significance.

Unit - III : Forms of wind deposition: sand ripples, obstacle dunes,;dune- classification schemes; morphodynamics of the crescentic, longitudinal and complex dunes.

Unit - IV : Plaeo—environments : Introduction; sediment movement in the past; relic and active dunes; dating aeolion deposits; pre-leistocene sand dunes; Pleistocene and Holocene dunes; Aeolinites - composition and distribution.

Unit - V : Applied Aeolian Geomorphology : Introduction; wind erosion on agricultural fields; controls of dust; Management of coastal dunes and dunes in semi -arid areas; desertification and its controls with special reference to India. Remote sensing and GIS applications in aeolian settings.

Suggested Readings

1. Abrahams, A.D. and Parsons, A.J. (eds.), Geomorpology of Desert Environments Chapman & Hall, London, 1994.
2. Goudie,A and Hegde : Palaeo-geography and Pre-history of Indian Desert, Academic Press, London,1980. .
3. Baumont, P.: Drylands-Environment, Management and Development, Routledge, New York,1993.
4. Bagnold, R.A. The Physics of Blown Sand and Desert Dunes, Methuen, London, 1941.
5. Cook, R.U., Waren, A. and Goudie, A.S. Desert Geomorphology, London, UCL Press, London, 1993.
6. Embleton, C. and Thornes, J. (eds.), Process in Geomorphology, Arnold -Heinemann, New Delhi, 1980.
7. Greeley, R and Iversen, J.D., Wind as a Geological Process. Cambridge University Press, Cambridge, 1985.
8. Lancaster, N: Geomorphology of Desert Dunes Routledge, New York,1995.
9. Livingstone I. and Warren, A. Aeolian Geomorphology ,Adison Wesley, Longman, Essex, 1996.
10. Mckee, E.D. (ed.) A Study of Global Sand Seas, Castel House, Kent, 1980.
11. Nickling, W.G. (ed.) Aeolian Geomorphology. Allen & Unwin, Boston, 1986.

12. Singhvi, A.K. and Derbyshire, E.(eds.) Palaeo—environmental Reconstruction in Arid Lands, Oxford & IBH, New Delhi, 1999.

13. Tchakerian, V.P. (ed.) Desert Aeolian Process ,Chapman & Hall, London, 1995.

Pedagogy

- Arid lands are vulnerable and sensitive to human interface and at the same time, people settle on them and adjust themselves in this hostile landscape. Hence, teaching methods should incorporate above elements citing examples from local desert regions.

Course: E 503

MA./M.Sc.

AGRICULTURAL GEOGRAPHY

Objective:

- To familiarise the students with the concept, origin, and development of agriculture; to examine the role of agricultural determinants towards changing cropping patterns, intensity, productivity, diversification and specialization. The course further aims to familiarise the students with the application of various theories, models and classification schemes of cropping patterns and productivity;
- Its objectives is also to discuss environmental, technological and social issues in agricultural sector with special reference to India.

Course Contents:

Unit - I : Nature, scope, significance and development of agricultural geography. Approaches to the study of agricultural geography: Commodity, systematic and regional and systems. Origin and dispersal of agriculture. Sources of agricultural data.

Unit - II : Determinants of agricultural land use - Physical, economic, social, and technological. Land holding and land tenure systems, Land reforms, land use policy and planning. Selected agricultural concepts and their measurements; cropping pattern, crop concentraion, intensity of cropping, degree of commercialisation, diversification and specialzation, efficiency and productivity, crop combination regions and agricultural development. Green Revolution - its impact and consequences.

Unit - III : Theories of agricultural location based on several multi-dimensioned factors: Von Thunen's theory of agricultural location and its recent modifications; Whittlesey's classification of agricultural regions; land use and land capability.

Unit - IV : Agricultural in India- Land use and shifting cropping pattern. Regional pattern of productivity in India. Green Revolution, White Revolution, Food deficit and food surplus regions; nutritional index. Specific problems in Indian agriculture and their management and planning. Agricultural Policy in India.

Unit - V : Contemporary Issues: Food, nutrition and hunger, food security, drought and food security, food aid programmes; environmental degradation, role of irrigation, fertilizers, insecticides and pesticides, technological know-how. Employment in the agricultural sector: landless labourers, woman, children: occupational health and agricultural activities.

Suggested Readings

1. Bayliss Smith, T.P. : The Ecology of Agricultural Systems. Cambridge University Press, London , 1987.
2. Berry, B.J.L. et. al. : The Geography of Economic Systems. Prentice Hall, New York, 1976.
3. Brown, L.R. : The Changing World Food Prospects - The Nineties and Beyond. World Watch Institute, Washington D.C., 1990.
4. Dyson, T. : Population and Food - Global Trends and Furure Prospects. Routledge, London, 1996.
5. Gregor, H.P. : Geography of Agriculture. Prentice Hall, New York, 1970.
6. Grigg, D.B. : The Agricultural Systems of the World. Cambridge University Press, New York 1974.
7. Hartshorn, T.N. and Alexander, J.W. : Economic Geography. Prentice Hall, New Delhi, 1988
8. Mannion, A.M. : Agriculture and Environment Change. John Wiley, London, 1995.
9. Morgan W.B. and Norton , R.J.C. : Agricultural Geography. Mathuen, London, 1971.
10. Morgan, W.B. : Agriculture in the Third World - A Spatial Analysis. Westview Press, Boulder, 1978.
11. Sauer, C.O. : Agricultural Origins and Dispersals. M.I.T. Press, Mass, U.S.A., 1969.
12. Singh, J. and Dhillon, S.S. : Agricultural Geography, Tata McGraw Hill Pub., New Delhi, 1988.
13. Tarrant, J.R. : Agricultural Geography. Wiley, New York, 1974.

Pedagogy

- The teacher should impress the students the overall importance of agriculture in the global perspective. The world is fast changing and its impact is felt on agriculture. Population is increasing and demand of agricultural products is also on the increase. Contrary to it, the farm lands are decreasing, that necessitates infusion of technology in agricultural sector. It is causing environmental pollution. The teacher should interact with students on above mentioned issues. Examples from neighboring areas may be given to the students for better perception.

Course: E 504

M.A./M.Sc.

BIOGEOGRAPHY

Objective:

To introduce the student the concept of Biogeography and its, interpretation. Information and their application; interaction between living organisms with climate and physical environment, with special reference to India.

Course Contents:

Unit - I : Scope and development of Biogeography. Environment, Habitat and Plant-animal association, biome types.

Unit - II : Elements of plant geography, distribution of forests and major communities. Plant successions in newly formed landforms. Examples from flood plains and glacial fore fields.

Unit - III : Zoogeography and its Environmental Relationship.

Unit - IV : Palaeobotanical and Palaeo climatological records of environmental change in India.

Unit - V : National Forest Policy of India. Conservation of Biotic Resources

Suggested Readings

1. Agarwal, D.P. : Man and Enviroment in India Through Ages, Book & Books, 1992.
2. Bradshaw, M.J.: Earth and Living Planet, ELBS. London, 1979.
3. Cox, C.D. and Moore, P.D.: Biogeography: An Ecological and Evolutionary Approach 5th edn. Blackwell, 1993.
4. Gaur, R.: Environment and Ecology of Early Man in Northern India R.B. Publication Corporation, 1987.
5. Hoyt, J.B.: Man and the Earth, Prentice Hall, U.S.A.1992.
6. Huggett. R.J.: Fundamentals of Biogeography. Routledge, U.S.A 1998.

7. Illies, J.: Introduction to Zoogeography, Mcmillan, London, 1974.

8. Khoshoo, T.N. and Sharma, M. (eds.): Indian Geosphere-Biosphere Har-Anand Publication, Delhi 1991.

9. Lapedes, D.N. (ed.): Encyclopedia of Environmental Science, McGraw Hill, 1974.

10. Mathur H.S.: Essentials of Biogeography, Anuj Printers, Jaipur, 1998.

11. Pears, N.: Basic Biogeography. 2nd edn. Longman, London, 1985.

12. Simmon. I.G.: Biogeography, Natural and Cultural, Longman, London 1974.

13. Tivy, J. : Biogeography: A study of Plants in Ecosphere 3rd edn. Oliver an Boyd, U.S.A.,1992.

Pedagogy

- The students should be taken on field-visit to the local floral fauna zones, they should be acquainted with the local biogeography of the areas.
- Seminars/lectures should be organized where speakers from the allied disciplines-environmental sciences, ecology, biosciences etc. should be invited to discuss with the students various issues of biogeography with a multidisciplinary approach.

Course: E 505

M.A./M.Sc.

COASTAL GEOMORPHOLOGY

Objective:

The basic objective of this course is to enlighten the students about the mechanism of landform development resulting from coastal and marine processes. In view of the fact that about one-third of the world population lives in coastal areas. Thus coastal geomorphology becomes relevant to geographers. This branch involves reinterpretation of coastal environment through geomorphological viewpoints. Since this study has both academic as well as applied interests, the objective is to train the students in both to prepare them as better academicians and better researches.

Course Contents:

Unit - I : Significance of coastal geomorphology; classification of coasts and shore; coastal processes - waves in shallow and deep water, wave energy, wave induced currents, tides and tidal waves; coastal materials - sand and shingle, organic reefs.

Unit - II : Coastal erosion- movement of materials, sorting; beach profile. Coastal landforms — Sand dunes and sand ridges, spits, barriers, lagoons, cliffs - their origin and distribution.

Unit - III : Classificaion of coasts by Johnson, Shepard and Cotton. Submarine morphology, continental shelf, continental slope, submarine canyons and oceanic ridges.

Unit - IV : Tidal landforms; mudflats- processes and morphology. Salt Marsh- Processes and Morphology. Formation of estuaries and mangroves.

Unit - V : Applied coastal geomorphology; Mechanism of sea-level changes, and eustatic movements; Evolution of Eastern and Western Coasts of India, Coast Zone Management.

Suggested Readings

1. Ahmad, E.: Coastal Geomorphology of India. Orient Longmans, Bombay, 1973.
2. Bose, A. et. al: Coastal Zone Management of West Bengal, Pub. Sea Explorers Institute, Calcutta, 1985.

3. Bird, E.C.: Coasts -An Inroduction to Coastal Geomorphology. Basil-Blackwell, Oxford,1984

4. Davis, J.L.: Geographical Variation in Coastal Development. Hafner Pub. Co., New York, 1973.

5. French, P.W.: Coastal and Estuarine Management, Routledge, London, 1997.

6. John, P: An Introduction to Coastal Geomorphology. Arnold- Heinemann, London,1984.

7. King, C.A.M; Beaches & Coasts, Edward Arnold, London, 1972.

8. Scientific American : Readings in Earth Sciences, Vols I-III. Taraporevala Pub., Bombay, 1975..

9. Shepard, F.P. and Wanless, N.R.: Our Changing Coastlines. Oxford University Press, 1971.

Pedagogy

- In view of the fact one third of the population of the world dwell in coastal areas, emphasis should be given on these morphological units which are not given adequate attention. In view of the environmental degradation and impending possibilities of large scale submergence due to global warming, scientific studies of the coast should be given priority by the geographers. Field work of coastal areas should be organised.

Course: E 506

M.A./M.Sc.

COMMERCIAL GEOGRAPHY

Objectives:

- To understand the scope and content of commercial geography in relation to spatial distribution of agricultural and industrial production, their forward and backward linkages.
- To relate spatial patterns of origin and destination with changes in socio-economic development of regions.

Course Contents:

Unit - I : Nature, scope, significance and development of commercial geography. Nature of economic activities : primary, secondary, tertiary and their contributions in the national economy. Approaches to the study of commercial geography.

Unit - II : Development of marketing: theoretic frame Central Place theory of Christaller and Losch; Delimitation of market, classification of markets-permanent, fairs, retail, wholesale, formal and informal markets, modern markets functional relationship hierarchy of market centres, market areas, consumer behaviour, travel pattern.

Unit - III : Marketing structure-regulated and rural markets, nature of inter-urban and intra urban marketing. Marketing and development - role of market centres in regional and commercial development. Planning for the development of modern market places.

Unit - IV : Significance of trade and its role in world and regional economy. History of trade, type of trade flow of commodities; international trade, trading zones: Europe, North American. Latin America, Africa, Australia, Asia. Flow of commodities in economic blocks: EU, ASEAN, EFTA, LAFTA and SAARC.

Unit - V : Indian Trade: Contemporary restructuring of global economy and its influence on Indian trade; World Trade Organization: impact on Indian agriculture; industry and informal sector; recent trends; in Indian trade critical evaluation of trade policy of India.

Suggested Readings

1. Berry, B.J.L. Geography of Market Centres and Retail Distribution. Prentice Hall, Englewood cliffs, N. J. 1967.
2. Davis R.L.: Marketing Geography. Methuen, London, 1976.
3. Dixit R.S.: Market Centres and their Spatial development in the Umland of Kanpur Allahabad,1984.
4. Garnier, B.J. and Delobez A.: Geography of Marketing. Longman, London, 1977.
5. Losch A: Economics of Location. Yale University Press, New Heaven, 1954.
6. N.C.A.E.R.: Market Towns and Satial Development in India, NCAER, New Delhi, 1983.
7 Saxena, H.M. : Geography of Marketing- Concepts and Methods, New Delhi, 1984.
8. Scott. P : Geography and Retailing Hutchinson, London.

Pedagogy

- Students should get acquainted with the data sources and techniques of utilisation through mapping and providing geographical interpretation. They should also get training in using the theoretical knowledge and application to inter-disciplinary themes such as of commerce and economics.

Course: E 507

M.A./M.Sc.

CULTURAL GEOGRAPHY

Objectives:

- to understand diversity of cultures in the world as well as in India;
- to comprehend the diffusion of various ethnic traits and religions,
- to understand the relationship between cultures and pattern of living and economic development.

Course Contents:

Unit - I : Introduction: Nature and scope of cultural geography; Definition, cultural element and components of culture; convergence and divergence processes; cultural changes: perception, behaviouralism and cultural relativism.

Unit - II : Cultural Diversity: Bases of cultural diversity-race, religion and language. Cultural diversity in world, cultural diversity and regionalization in India.

Unit - III : Geography of ethnic groups and tribal groups. Religion and its diffusion; diffusion of ethnic traits in world as well as India; ethnic landscape and economy of the area; Diffusion in folk geography; cultural landscape and cultural ecology in folk geography; Religions: origin, diffusion and spatial distribution; religion & economic development.

Unit - IV : Patterns of livelihood: various economic activities & cultural adaptations; agriculture, industrialization and modernization; technological changes and their geographic implications.

Unit - V : Human settlements: Relation to ideology, social structure and technology, social structure and technology, pattern of rural & urban society, social processes in the city, the city in the developing countries.

Suggested Readings

1. Broek, J.C. and Webb, J.W: A Geography of Mankind, McGraw Hill, New York, 1978.
2. Crang, Mike: Cultural Geography, Routledge publicatins, London,1998.
3. Harmandorf, Tribes of India: The Struggle for Survival, Oxford University Press, Delhi,1989.
4. Hazra, (ed.), Dimensions in Human Geography, Rawat Publication, Jaipur, 1997.
5. Hutchinson, and Smith, D: Ethnicity; Oxford University press, Oxford,1996.
6. Jordon, & Lester G: The Human Mosaic, Harpar & Row, New York; 1979.
7. Massey, D & Jess P. A Place in the World: Places, Cultures and Globalization Oxford University, New York, 1995.
8. Massey, et.al (ed), Human Geography Today, Polity Press, Combridge, 1999.
9. Mukherjee, A.B. and Aijazuddin, A: India: Culture, society and Economy, Inter-India Publication, New Delhi, 1985.
10. Steve.P & Michael.K (ed): Places and the Politics of Identify, Routledge, London, 1993.
11. Schwartzberg, J.E: Historical Atlas of South Asia, University of Chicago, 1978.
12. Singh, A.K: Approaches to Tribal Development, Swarup and Sona, New Delhi, 1994.
13. Sopher, D.E : Exploratin of India: Geographical perspectives on Society & Culture, Longman, London, 1980.

Pedagogy

- Students may be introduced to the cultural elements of society/groups from various regions through dance-drama-cultural shows, arts exhibitions and field-visits.
- They should be asked to prepare seminar papers on the issues/problems confronting various cultural groups in India.

Course: E 508

M.A./M.Sc.

FIELD WORK - INSTRUMENTAL SURVEY

Objectives:

To familiarize how topographic, cadastral maps or plans of any area are prepared to enhance the skill of the students in the field of survey for revenue purposes and understand the principles of map making.

Course Contents:

Unit - I : Importance of field instrument survey - scope and purpose, principles and application of selected survey instruments.

Unit - II : Chain survey: use of tapes-open traverse, triangulation survey;

Plane table; plan preparation, resection -one point and two point problem; three point problem; tracing paper method.

Unit - III : Prismatic compass: Open and closed traverse, elimination error, bowdich method.

Unit - IV : Dumpy level: traverse survey, contour plan preparation. Theodolite - horizontal and vertical (height) measures, accessible and inaccessible method.

Unit - V : Other smaller instruments - Sextant, Abney level and Indian clinometer; height measurements; coastal mapping; survey of a selected area. Preparation of base map by the use of surveying instruments; environmental Impact assessments of an area where base maps are not available.

Suggested Readings

1. Clendinning , J. Principles and use of Surveying Instruments. 2nd edition, Blockie.A 1958.
2. Clendinning ,J Principles of surveying 2nd edition 1960.
3. Hotine, Major M. The re-triangulation of Great Britain. Empire survey review 1935.
4. Mitra,R.P. and Ramesh A : Fundamentals of Cartography Revised Edition, Concept Publication, New Delhi.

5. Monkhouse - Maps and diagrams Methuen 1971.

6. Negi, Balbir Singh. Practical Geography Third revised Ed. Kedar Nath and Ram Nath, Meerut &Delhi, 1994-95.

7. Sandover,J.A. Plane Surveying. Arnold 1961.

8. Singh & Karanjta - Map work and Practical Geography Central Book Dept Allahabad 1972.

9. Singh, R.L.and Dutt, P.K. Elements of Practical Geography, Students Friends, Allahabad.1968.

Pedagogy

- Village/Local area to be surveyed and other buildings in the university plans to be prepared for the geography department.

Course: E 509

M.A./M.Sc.

FLUVIAL GEOMORPHOLOGY

Objectives:

- The rivers being the major geomorphic agent of erosion, the course assumes significance as it mainly deals with an understanding of the fluvial forms and processes. The evolution of drainage pattern and alluvial channels are governed by the forces resisting and driving the flow of water. The students are introduced to the activities of these two forces and their resultant effects on the flow patterns, sediment load and channel patterns.
- The use of rivers and the landscape develop certain feedback mechanism within the system which have the ability to alter the human vis-à-vis fluvial environments.

Course Contents:

Unit - I : Fluvial Geomorphology and Geography; hydrological cycle and subcycle; drainage pattern evolution; limits of drainage development; channel changes with time.

Unit - II : Fundamentals of river mechanics: - types of flow and flow discrimination; forces acting in channels; Low regimes; sediment load of streams. sediment transport; competent velocity; lift force; critical tractive force.

Unit - III : Hydraulic geometry of streams at a station and down-stream; channel thalweg; causes of concavity; channel patterns, equilibrium profile - straight, meandering and braided.

Unit-IV : Drainage basin as a fundamental geomorphic unit. Drainage basin - form and process; drainage basin morphometry; morphometric interrelations.

Unit - V : Applied fluvial geomorphology; human adjustment to flood plain, alluvial fans and deltaic environments (case studies). Effects of reservoirs on fluvial systems. Remote sensing and GIS application to fluvial environments.

Suggested Readings

1. Chorley R.J. (ed) ' Introduction of Fluvial Processes Methuen & Co., London, 1973.
2. Coates D.R. and Vitek J.I. Thresholds in Geomorphology. George Allen Unwin, London 1980.
3. Gregory K.J. 'River Channel Changes' John Wiley & Sons, New York, 1977.
4. Gregory K.J. and Walling, D.E.: Drainage Basin: Forms and Process- A Geomorphological Approach. John Wiley & Sons, New York, 1985.
5. Kingston D. Fluvial Forms and Processes Edward Arnold, London, 1984.
6. Leopold C.B. et.al..: Fluvial Processes in Geomorphology; Freeman, London 1964.
7. Morisawa M.(ed.) Fluvial Geomorphology. George Allen & Unwin, 1981.
8. Gleick, P.H. (ed.): Water in Crisis Oxford University Press, New York 1993.
9. Morisawa M: 'Streams - Their Dynamics and Morphology' McGraw Hill, New York, 1968.

Pedagogy

- In order to impart effective teaching in this paper, well-equipped laboratory having models, detailed toposheets, and aerial photographs is essential. Students should be taken in nearby basin for detailed study of fluvial system.

Course: E 510

M.A./M.Sc.

GENDER GEOGRAPHY

Objectives:

The basic objectives of this course are (i) to aware the students of the variability of gender relationship across the human world, and (ii) to explore how gender relations and geography are mutually structured and transformed spatially.

Course Contents:

Unit - I : Growth and evolution of this discipline; its connotation; traditional concept of interdependence between men and women; emergence of patriarchy and capitalism and post-modern feminism movement.

Unit - II : Gender based demographic structure; infant mortality rates between boys and girls; maternal mortality rate; female infanticide; Gender and Longevity Gap - their spatial variations.

Unit - III : Male-Female involvement in Economic and Social Activities; multiple role of women in land, water and forest resource management; involvement of women in household works, agriculture, mining, construction, industry, service and informal sectors; health-care deliverer.

Unit - IV : Gender Gaps in Social and Public Life: Education, wage differentials in economic activities, health care and nutrition, participation in politics and enfranchisement.

Unit - V : Scope for Bridging Gender Gap: empowerment of women with education, economic opportunities, access to reproductive health services, involvement in decision making processes in the arenas of development and environmental management.

Suggested Readings

1. Boserup, E.: Women's Role in Economic Development. Earthscan, London, 1989.
2. Dankelman, I. &Davidson,J.: Women and Environment in the Third World. Earthscan, London, 1989.
3. Deblig, H.J.: Human Geography-Culture, Society and Space (5th ed.), John Wiley, New York, 1996.
4. Haraway, D.: Simians, Cyborgs and Women-The Reinvention of Nature. Routledge, New York, 1991.
5. Johnston, R.J. et.al (eds.): The Dictionary of Human Geography. Blackwell, Oxford, 1996.
6. Koblinsky, M. et.al (eds.): The Health of Women-A Global Respective. Westview Press, Boulder, 1993.
7. Lee, D.: Women in Geography-A Comprehensive Bibliography. Boca Raton, Florida, 1988.
8. Lewis, R.: Race, Feminity and Representation. Routledge, New York, 1995.
9. Momsen, J.H. & Townsend, J. (eds.): Geography of Gender in the Third World, Albany, New York, 1987.
10. Montagu, A.: Man's Most Dangerous Myth-the Fallacy of Race. Cleveland, 1964.
11. Reagent, A.C. & Monk J.J. (eds.): Women and Spatial change. Kendell & Hunt, Dubuque, Iowa, 1982.
12. Rhodda, A.: Women and Environment.Zed, London, 1991.
13. Seager, J.&Olson, A.: Women in the world - An International Atlas.
14. Sivant, R.L.: Women-A World Survey. World Priorities Washington, D.C., 1985.
15. Skjelsback, I & Smith, D.: Gender, Peace and Conflict. Sage, London, 2001.
16. Sowell, T.: Race and culture -A World View. Basic Books, New York, 1994.

17. UNICEF: The Lesser Child-the Girl in India. United Nations, Geneva, 1990.

18. United Nations: The World's Women, 1970-1990. United Nations, New York, 1991.

19. United Nations: World Resources 1994-95. Chapter 3: Women and Sustainable Development. United Nations, New York, 1995.

Pedagogy

- The teacher should cite examples of gender gaps existing in the developing as well as in the developed world and generate opinion to reduce inequalities existing between men and women.

Course: E 511

M.A./M.Sc.

GEOGRAPHIC INFORMATION SYSTEM & COMPUTER MAPPING

Objectives:

- to introduce GIS (Geographic Information System) as a tool of spatial science.
- to indicate the basic elements of GIS and methodology of GIS.
- to outline the steps and areas of application of GIS.

Course Contents:

Unit - I : Spatial Science: Geography as a spatial science, maps and spatial information, dynamics of spatial information, elements of information technology, geographic objects and their relations-definition and development of GIS, computer environment for GIS.

Unit - II : Spatial Data: Elements of spatial data; data sources: primary and secondary, census and sample-data; quality and error variations-raster and vector data structures data conversion-comparison of raster and vector databases-methods of spatial interpolation-GIS data formats for the computer environment.

Unit - III : Elements of GIS: Data capture-verification and preprocessing-data storage and maintenance of databases-Database Management Systems: types and merits and demerits-data manipulation, analysis (integrated analysis of spatial and attribute data, overlay analysis, neighbourhood operations and connectivity functions) and spatial modeling-output format and generation.

Unit - IV : GIS Technology: Coordinate system-basic principles of cartography and computer assisted cartography for GIS-remote sensing data as a data source for GIS and integration of GIS and Remote Sensing-GPS and GIS: technology, data generation and limitations-visualization in GIS-Digital Elevation Models (DEM and TINS).

Unit - V : GIS Application: GIS as a Decision Support System-expert system for GIS-basic flow chart for GIS application-GIS standards, legal system and national GIS policy application of GIS in Land Information System, Urban Management, Environmental Management and Emergency Response System.

Suggested Readings

1. Aronoff S. Geographic Information Systems: A Management Perspective, DDL Publication Ottawa. 1989.
2. Burrough P.A . Principles of Geographic information Systems for Land Resource Assessment Oxford University Press, New York.1986.
3. Fraser Taylor D.R. Geographic information Systems. Pergamon Press, Oxford.1991.
4. Maquire D. J. M.F. Goodchild and D. W. Rhind (eds.). Geographic information Systems:Principles and Application. Taylor & Francis, Washington. 1991.
5. Mark S Monmonier . Computer-assisted Cartography. Prentice-Hall, Englewood Cliff, New Jersey, 1982.
6. Peuquet D.J. and D.F. Marble, Introductory Reading in Geographic Information Systems. Taylor & Francis, Washington.1990.
7. Star J and J. Estes. Geographic Information Systems: An Introduction. Prentice-Hall, Englewood Cliff, New Jersey, 1994.

Pedagogy

- Student may be asked to refer to any one of the grid square of the SOI topographic maps and vector objects can be listed. They can convert this vector data into raster data and they may be asked to observe the difference in the vector and raster data.
- Student may be taken to any mapping organization and they can note the traditional and modern and computer-assisted cartography.
- Students may be taken to any of the government or private departments which are using GIS as a tool, and they can observe the methods and areas of application of GIS.

Course: E 512

M.A./M.SC.

GEOGRAPHY AND ECOSYSTEM

Objectives:

The basic objectives of this course are to appraise the students with the interrelationship between man, the environment within which he lives and his linkages with other organisms. Such linkages form ecosystem, which varies in different biomes. The importance of conserving biodiversity to maintain ecological balance has also been emphasized in the course. Examples of some man induced ecological changes have been highlighted and restoration measures suggested.

Course Contents:

Unit - I : General systems; ecological concepts; geography as human ecology Ecosystem concept and components. Ecosystem-form and function: trophic level, ecological pyramids, ecological niche, energy and nutrients in the ecosystem, hydrological cycle, foodchains and foodwebs.

Unit - II : Major terrestrial ecosystems of the world: agriculture, forests, grassland and desert. Population growth and environment, carrying capacity of the earth. Land resources and world food security.

Unit - III : Man - environment relationship: Resource use and ecological imbalance with reference to soils, forests and energy resources. Biodiversity and its conservation. Preservation and conservation of the ecosystem through resource management.

Unit - IV : Case studies of man-induced environmental and ecological changes; Ecology of tropical farming systems; mountain ecosystem with specific references to Aravali hills, big dams with reference to Sardar Sarover,National Parks .

Unit - V : Environmental legislation - The Stockholm Conference, the Earth Summit, Environmental laws in India (the Wild Life Act. Water Act, Forest Act, Environment Protection Act and National Environment Tribunal Act).

Suggested Readings

1. Ackerman, E.A., Geography as a Fundamental Research Discipline, University of Chicago Research Papers, 1958,
2. Agarwal, A. and Sen, S. : The Citizens Fifth Report. Centre for Science and Environment New Delhi 1999.
3. Bertalanffy, L. General Systems Theory, George Bragiller New York, 1958.
4. Bodkin, E.: Environmental Studies, Charles E. Merril Pub. Co., Columbus, Ohio, 1982.
5. Chandna, R.C. : Environmental Awareness, Kalyani Publishers, New Delhi, 1998.
6. Chorley, R.J., Geomorphology and General Systems Theory, U.S.G.S. Professional Paper, 500B, 1962.
7. Eyre, S.R. and Jones, G.R.J. (eds.), Geography as Human Ecology, Edward Arnold, London, 1966.
8. Kormondy, E.J. : Concepts of Ecology, Prentice Hall, 1989.
9. Manners, I.R. and Mikesell, M.W.(eds.), Perspectives on Environment, Commission on College Geography, Publ. No. 13, Washington, D.C., 1974.
10. Nobel and Wright : Environmental Science, Prentice Hall, New York 1996.
11. Odum, E.P. : Fundamentals of Ecology, W.B. Saunders, Philadelphia, 1971.
12. Russwurm, L.H. and Sommerville, E. (eds.) : Man's Natural Environment - A systems Approach, Duxbury, Massachusetts, 1985.
13. Sharma, H.S.: Ranthambhore Sanctuary -Dilemma of Eco-development, Concept, New Delhi,2000.
14. Simmons, I.G. : Ecology of Natural Resources, Edward Arnold, London, 1981.
15. Singh, S. : Environmental Geography, Prayag Publications, Allahabad, 1991.
16. Smith, R.L. : Man and his Environment: An Ecosystem Approach, Harper & Row, London, 1992.

17. U.N.E.P. : Global Environmental Outlook, U.N. Pub., New York, 1998.

18. World Resources Institute : World Resources, (Latest Report) Washington D.C.

19. World Watch Institute: State of the World, (Latest Report) Washington, D.C.

Pedagogy

- There must be more interaction between teacher and students on different aspects of ecology with the help of models, charts and pictures. Emphasis should be given on environmental problems faced by India in recent years.

Course: E 513

M.A./M.Sc.

GEOGRAPHY OF CENTRAL PLACES

Objectives:

To introduce the basic concepts pertaining to the system of Central Places and their relevance in the context of balanced regional development.

Course Contents:

Unit - I : Genesis: Concept of Central Places, attributes; and principles of central places, process of formation of central places.

Geographical foundations of Central Places: Locational arrangement of nodes, spacing, dispersion and localisation, clustering and competition, Economies of agglomeration.

Unit - II : Central Place Functions: Nature of central functions, locational pattern of functions within a central place region; hierarchy of nodal centres based on functions and size.

Unit - III : Measurement of Centrality and Hierarchy: The scale of functional hierarchy; Methods of measurement of centrality and hierarchy (like central score, central tendency, population threshold, and graph theoretical techniques); hierarchy of settlements based on hierarchy of functions.

Unit - IV : Central Place and Region: Delimitation of central place region commutation, communication, flow of goods and services; form of interaction and analysis of gradient.

Central Place and Region, theoretical framework: Central Place theory; Basic concepts classical and modern;central place theories; relevance of the study of Central places.

Unit - V : Central Place Systems: Central Place theory vis-à-vis other location theories; Central Place Systems and their controls.

Central Place Systems in India: Individual case studies of the Metropolitan Cities of India.

Suggested Readings

1. Baskin, C.W, (Translator), :Central Places in Southern Germany, Prentice-Hall Inc. Englewood Cliffs New Jersey, 1966. Originally written by C.W. Christaller in German with title Die Zentralen Orte Suddevtsch Land in 1933.
2. Bird: Centrality and Cities, Routeledge and Keagan Paul, London, 1977.
3. Dogan, M. and John D. K (ed.), :The Metropolis Era. Vol 2 Mega Cities, Sage Publications, New Delhi,1988.
4. Haggett, P, Andrew D. et.al. (eds),: Locational Models Arnold Heinemann, 1979.
5. Hugh, M. : City Form and Natural Process, Croom Helm, London, 1984.
6. King, L. J.,:Central Place Theory, Saga Publications, New Delhi,1986.
7. Lefebvre, H.,: Writings on Cities, translated and edited by Eleonore Kofman and Elizabeth Lebas, Blackwell Publishers, U.K,1996.
8. Mishra, R.P. and K. Mishra, : Million Cities of India; Growth Dynamics, Internal Structure, Quality of Life and Planning Perspectives, Sustainable Development Foundation, India Vol I and II, 1998.
9. Mitra, A., Mukherjee S and Bose R.: Indian Cities Abhinav Publications, New Delhi, 1980.
10. Nangia S. and Sukhadeo T.,: Slum in a Metropolis, The Living Environment, Shipra, New Delhi, 2000 .
11. Nangia, S.,: Delhi Metropolitan Region, K.B. Publications, New Delhi, 1976.
12. Prakasa, Rao, V.L.S., : Urbanisation in India; Spatial Dimensions, Concept Publishing Co., New Delhi, 1983.
13. Qazi, Ahmad, : Indian Cities, Characteristics and Correlates, University of Chicago, U.S.A., 1965.
14. Ramachandran, R.: Urbanisation and Urban Systems in India, Oxford University Press, New Delhi, 1992.
15. United Nations Centre for Human Settlements (HABITAT), : An Urbanising World, Global Report on Human Settlements, Oxford University Press for HABITAT, 1996.

Pedagogy

- The students should be encouraged to take up empirical exercise to understand the system of central place in contiguous/functional regions.
- Field visits should be organised to familiarize them with the identification of central places of various hierarchial orders in space and their physical characteristics.
- Maps and Atlases should be used to understand the theoretical location models and observed locational forms.

Course: E 514

M.A./M.Sc.

GEOGRAPHY OF ENERGY

Objectives:

The objectives of the course are to understand:

- the concepts and form of energy and the energy systems.
- the interlinkage between energy, economic development and environment;
- the global energy trends and related geopolitics;
- the national situation of energy with special emphasis on its sectoral and spatial components.
- the energy crisis and planning in India.

Course Contents:

Unit - I : Introduction: nature and scope; concepts, definitions and types of energy resources; energy system.

Unit - II : Energy development and environment: Concept of entropy; historical background of energy use and development; issue related to energy use and environment, case studies of developed and developing countries.

Unit - III : Geopolitics of Energy:- Global trends of energy production and consumption; issues related to trade, energy crises and various related treatise and agreements.

Unit - IV : Energy in India:- Sectoral and temporal pattern of energy consumption: in agriculture, transport and industries; Spatial pattern of energy use with reference to different States and rural and urban areas, metropolitan cities; energy needs.

Planning: Various energy related agreements of India with other countries; Institutional arrangements, policy models and energy management process in India.

Unit - V : Energy Conservation:- Future prospects and protections of global energy trends and problems; methods of energy conservation; traditional vs. modern, energy management and sustainable development; potential zones of energy conservation.

Suggested Readings

1. Blowers, Andrews, 'Planning for a sustainable Environment,' 1993, Earthscan Publication, London.
2. Chapman, J.D.: Geography and Energy: Commercial energy systems and National Policies, Longman Scientific & Technical Publication, USA, 1989.
3. Essam EL. Hinnawi: The Environmental Impacts of Productions and use of Energy: Nairobi: U.N. Environmental Programme (UNEP), 1981.
4. Goldemberd, Jose: Energy environment and Development; Earthscan publications, U.K., 1996
5. Ion, D.C. : Availability of World Energy Resources, Great and Tretnon Ltd. London, 1980.
6. Kursunoglu, B.N. et.al. (ed.): A Global View of Energy: Lexington Books, 1982.
7. Mahajan, V.S. (ed.): National Energy, Policies, Crisis and Growth: Ashish Publication, New Delhi, 1991.
8. O 'Dell, P.R : Energy Needs and Resources, McMillan, London, 1977.
9. Pachauri, R.K. (ed.) Energy Policy in India An Interdisciplinary Analysis, Mac Millian, London, 1985.
10. Planning Commission, Ninth Five Year Plan, New Delhi,1997 .
11. Read, P: 'Responding to Global Warming: the Technology, Economics and Politics of Sustainable Energy; Zed book Ltd., London and New Jersey, 1994.
12. Schumacher, D: Energy Crisis or Opportunity: An Introduction to Energy Studies: Mac Millian, London 1985.
13. Soussan, J: 1988, ' Primary Resources and Energy in the Third World', Routledge Publications, London, 1998.

Pedagogy

- The students should be made to understand the importance of energy on human life. Data should be given to portray the consumption pattern of energies in urban and rural areas. Group discussions on energy crisis should be organized.

Course: E 515

MA./M.Sc.

GEOGRAPHY OF HEALTH

Objective:

The objectives of this course are:

- to acquaint the students with the role of geographical factors, viz., physical, demographic, social and economic, influencing the spatial distribution of diseases;
- to highlight the relation of health with nutrition, environmental degradation and urbanization;
- to decipher the causes of the changing disease pattern, and
- to make the students abreast of existing health-care facilities, so as to train them with better health care planning for the country.

Course Contents

Unit - I : Nature, scope and significance of geography of health. Development of this area of specialization; its distinction from medical science.

Unit - II : Geographical factors affecting human health and diseases arising from them, viz.

(i) Physical factors- relief, climate, soils and vegetation.

(ii) Social factors- population density, literacy, social customs and poverty.

(iii) Economic factors-food and nutrition occupation and standard of living

(iv) Environmental factors- urbanization and congestion, water, air and noise pollution and solid waste.

Unit - III : Classification of diseases: genetic, communicable and non-communicable; occupational and deficiency diseases. WHO classification of diseases, Pattern of World distribution of major diseases.

Unit - IV : Ecology, etiology and transmission of major diseases: cholera, malaria, tuberculosis, hepatitis, leprosy, cardiovascular, cancer, AIDS and STDS. Diffusion of diseases and causes for the same. Deficiency disorders and problems of mal-nutrition in India.

Unit - V : Health-care planning:

(i) international level-WHO, UNICEF, Red Cross

(ii) National level-Government and NGOs,

Health Care Planning and Policies ; availability, accessibility and utilization of health care services; Primary health care; Inequalities in health care services in India; family welfare, immunization, national disease eradication, and Health for All programmes.

Suggested Readings

1. Banerjee, B. and Hazra J. : Geo-Ecology of Cholera in West Bengal, University of Calcutta, Calcutta 1980.
2. Cliff, A. and Haggett, P. : Atlas of Disease Distribution. Basil Blackwell, Oxford, 1989.
3. Digby, A. and Stewart, L. (eds.) : Gender, Health and Welfare. Routledge, New York, 1996.
4. Hazra, J. (ed.): Health Care Planning in Developing Countries. University of Calcutta, Calcutta, 1997.
5. Learmonth A.T.A. : Patterns of Disease and Hunger. A Study in Medical Geography. David & Charles, Victoria, 1978.
6. May, J.M.: Studies in Disease Ecology, Hafner Pub., New York, 1961.
7. May, J.M.: Ecology of Human Disease, M.D. Pub., New York, 1959.
8. May, J.M.: The World Atlas of Diseases, Nat. Book Trust, New Delhi, 1970.
9. Mc. Glashan, N.D. : Medical Geography, Methuen, London, 1972.
10. Narayan, K.V.: Health and Development- Inter-Sectoral Linkages in India. Rawat Pub., Jaipur, 1997.
11. Phillps, D.R. : Health and Health Care in the Third world. Longman, London, 1990.
12 Pyle, G. : Applied Medical Geography. Winston Halsted Press, Silver Springs, Md, U.S.A., 1979.
13 Rais, A. and Learmonth, A.T.A.: Geographical Aspects of Health and Diseases in India.

14. Shannon, G.M. et. al : The Geography of AIDS. Guilford Press, New York, 1987.

15. Smith, D. : Human Geography - A Welfare Approach. Arnold Heinemann, London, 1997.

16 Sochin, A.A: Fundamentals of Medical Geography, Dept. of Army Tran, M.J. 5264, Washgington D.C, 1968.

17. Stamp, L.D.: The Geography of Life and Death. Cornell University, Ithaca, 1964.

Pedagogy

- There should be interactions between the teacher and students. The teacher should cite examples from neighbouring localities. Day trips to health centres may be of interest to the students. Video-shows may be arranged where facilities are available.

Course: E 516

M.A./M.Sc.

GEOGRAPHY OF MANUFACTURING

Objectives:

- To introduce the nature, development and significance of manufacturing and its links with the world economy.
- To understand the location of major manufacturing activities with the support of various industrial location theories and models.
- To discuss problems and impact of manufacturing industries with respect to relocation, environmental pollution and occupational health and industrial hazard.

Course Content:

Unit - I : Nature, scope and recent developments, elements and factors of localization of manufacturing industries; centralization and decentralization of industrial enterprises; horizontal, vertical and diagonal linkages of modern industries.

Unit - II : Theories and models of industrial location: Weber, Losch, Isard and Hoover. Modern refinements to least-cost-theory; Critical review and application of industrial location theories. :

Unit - III : Distribution and spatial pattern of manufacturing industries-Iron and Steel, engery goods and automobiles; textiles, chemicals, petro-chemicals, hardware and software industries. Methods of delineating manufacturing regions; major manufacturing regions of the world.

Unit - IV : Methods of measuring the spatial distribution of manufacturing industries: location quotient, co-efficient of geographic association, index of concentration; case studies on application of these methods.

Unit - V : Environmental degradation caused by manufacturing industries Industrial hazards and occupational health. Impact of manufacturing industries on economic development; Role of globalisation on manufacturing sector; shifting of industries and its impact on the urban fringe; changing industrial policy - need for integrated industrial development.

Suggested Readings

1. Alexander, J.W. Economic Geography, Prentice Hall, Englewood Cliffs, 1988.
2. Alexanderson, C.: Geography of Manufacturing, Prentice Hall, Bombay, 1967.
3. Hoover, E.M.: The Location and Space Economy, McGraw Hill, New York 1948.
4. Isard, W.: Methods of Regional Analysis, The Technology Press of M.I.T. & John Wiley & Sons, New York 1956.
5. Miller, E.: A Geography of Manufacturing, Prentice Hall, Englewood Cliffs, New Jersey, 1962.
6. Weber, Alfred, Theory of Location of Industries, Chicago University Press, Chicago, 1957.

Pegagogy

- The teachers should take the students to a neighbouring industrial area and appraise them of the functioning of the various industries, difficulties faced and environmental problems created by them.

Course: E 517

M.A./M.Sc.

GEOGRAPHY OF RURAL SETTLEMENTS

Objectives:

The objectives of the course are to motivate the students:

- to understand the growth and evolution of rural settlements;
- to recognise and analyse the distributions, patterns, morphology and functions of rural settlements;
- to analyse and suggest rural settlement planning in India;
- to examine the prevailing social and environmental issues in rural areas of India.

Course Contents:

Unit - I : Nature, scope, significance and development of settlement geography. Approaches to rural settlement geography; human settlement as a system. Rural-urban continuum.

Histogenesis of rural settlements: spatio-temporal dimensions and sequent occupance.

Definition and characteristics of rural settlements in the fringe areas and sparsely settled areas.

Distribution of Rural settlements: size and spacing of rural settlements.

Unit - II : Types, forms and Patterns of rural settlements: cause and effect; Functional classification of rural settlements; Central places and rural service centres: their nature, hierarchy and functions; rural-urban fringe - structure, characteristics and functions.

Unit - III : Social issues in rural settlements: poverty, housing and shelter, deprivation and inequality; empowerment of women, health care; Rural-urban interaction.

Unit - IV : Environmental issues in rural settlements: access to environmental infrastructure: water supply, sanitation, drainage, occupational health hazards.

Unit - V : Cultural landscape elements in rural settlements in different geographical environments with special reference to India: House types and field patterns Origin, evolution, size, socio-spatial structure of Indian villages. Rural development planning in India; Integrated Rural Development

Suggested Readings

1. Alam, S.M. et. al. : Settlement System of India, Oxford and IBH Publication Co, New Delhi, 1982.
2. Brock, J.O.M. and Welb, J.W.: Geography of Mankind. McGraw Hill, London, 1978.
3. Chisholm, M. : Rural Settlements and Land Use, John Wiley, New York, 1967.
4. Clout, H.D.: Rural Geography, Permagon, Oxford, 1977.
5. Daniel, P. and Hopkinson, M.: The Geography of Settlement. Oliver & Byod, Edinburgh, 1986.
6. Grover, N.: Rural Settlements - A Cultural Geographical Analysis, Inter-India Publication, Delhi, 1985.
7. Hudson, F.S.: A Geography of Settlements, MacDonald & Evans., New York, 1976.
8. Mitra, A.: Report on House Types and Village Settlement Patterns in India. Publication Development, Govt. Of India, Delhi 1960.
9. Ramchandran, H.: Village Clusters and Rural Development, Concept Publication, New Delhi, 1985.
10. Rao, E.N. : Strategy for Integrated Rural Development. B.R. Publication Cor., Delhi, 1986.
11 Rappoport, A.: House Form and Culture, Prentice Hall, New Jersey, 1969.
12. Sen, L.K. (ed.): Readings in Micro-level Planning and Rural Growth Centres. National Institute of Community Development, Hyderabad, 1972..
13 Srinivas, M.N.: Village India, Asia Publication House, Bombay, 1968.
14 Wanmali, S.: Service Centres in Rural India, B.R. Publication Cor., New Delhi, 1983.

Pedagogy

- The teacher should motivate the students with illustrations of diverse patterns of settlement in different natural settings of this country and abroad. Models, maps, illustrations and audio-visual devices should form teaching aids to impress the students. The students are advised to consult census of India Tables-H-Series.

Course: E 518

M.A./M.Sc. Elective

GEOGRAPHY OF TOURISM

Objectives:

The objectives of this course are:

- to familiarize the students with aspects of tourism which have a bearing on subject matter of geography;
- to orient the students to the logistics of tourism industry and the role of tourism in regional development;
- to understand the impact of tourism on physical and human environments.

Course Contents:

Unit - I : Basics of tourism:, Definition of tourism; Factors influencing tourism: historical, natural, socio-cultural and economic; motivating factors for pilgrimages: leisure, recreation; elements of tourism, tourism as an industry.

Unit - II : Geography of tourism: - its spatial affinity; areal and locational dimensions comprising physical, cultural, historical and economic; Tourism types: cultural, eco - ethno-coastal and adventure tourism, national and international tourism; globalization and tourism.

Unit - III : Indian Tourism: regional dimensions of tourist attraction; evolution of tourism, promotion of tourism.

Unit - IV : Infrastructure and support system - accommodation and supplementary accommodation; other facilities and amenities; Tourism circuits-short and longer detraction - Agencies and intermediacies - Indian hotel industry.

Unit - V : Impacts of tourism: physical, economic and social and perceptional positive and negative impacts; Environmental laws and tourism - Current trends, spatial patterns and recent changes; Role of foreign capital & impact of globalization on tourism.

Project report on relevant topics such as impact of tourism on Garhwal Himalaya, Dal Lake, Goa and North East India, impact on a historic city.

Selected Readings

1. Bhatia A.K. : Tourism Development: Principles and Practices. Sterling Publishers, New Delhi 1996.

2. Bhatiya, A.K. International Tourism - Fundamentals and Practices, Sterling, New Delhi, (1991).

3. Chandra R.H.: Hill Tourism: Planning and Development, Kanishka Publishers, New Delhi, 1998.

4. Hunter C and Green H: Tourism and the Environment: A Sustainable Relationship, Routledge, London, 1995.

5. Inskeep. E : Tourism Planning: An Integrated and Sustainable Development Approach, Van Nostrand and Reinhold, New York, 1991.

6. Kaul R.K. Dynamics of Tourism & Recreation. Inter-India, New Delhi. (1985).

7. Kaur J. : Himalayan Pilgrimages & New Tourism Himalayan Books, New Delhi, 1985.

8. Lea J.: Tourism and Development in the Third World, Routledge, London, 1988.

9. Milton D.: Geography of World Tourism Prentice. Hall, New York, 1993.

10. Pearce D.G.: Tourism To-day: A Geographical Analysis, Harlow, Longman, 1987.

11. Robinson, H. A Geography of Tourism. Macdonald and Evans, London, 1996.

12. Sharma J.K. (ed.) : Tourism Planning and Development - A new perspective, Kanishka Publishers, New Delhi, 2000.

13. Shaw G. and Williams A.M. : Critical issues in Tourism-A Geographical Perspective, Oxford: Blackwell, 1994.

14. Sinha P. C. (ed.) : Tourism Impact Assessment, Anmol Publishers, New Delhi, 1998.

15. Theobald W. (ed.) : Global Tourism: The Next decade, Oxford, Butterworth, Heinemann, Oxford,1994.

16. Voase R. : Tourism: The Human Perspective Hodder & Stoughton, London, 1995.

17. Williams A.M. and Shaw G. (eds.): Tourism and Economic Development - Western European Experiences, Belhaven, London.

18. Williams Stephen: Tourism Geography, Routledge, contemporary Human Geography, London, 1998.

Pedagogy

- Students may be encouraged to gain first hand knowledge from field excursions.

  An assignment may be given to the students in one of the followings:

  (a) Visit to a tourist centre and talk to some tourists and to write a report.

  (b) Collect the tourist pamphlets and maps from tourism-promotion agencies and to make a review on content.

  (c) Visit to a tourist place and to list and map the work generation and problems and to suggest remedial measures.

  (d) Study tourism development policy and plans of government of India and the states with which the student is familiar and provide a geographer's view point.

Course: E 519

M.A./M.Sc.

GEOGRAPHY OF TRANSPORT

Objectives:

- To provide clarity about elements of transport as an infrastructure that facilitates linkages among locations and areas with varied demographic socio-cultural and economic attributes and natural and agricultural resources.
- To acquaint the students with scope, content and theoretical framework relating to transport routes, hierarchies, accessibility (physical and economic).
- To understand the spatial variations in movement of commodities, and trade relations within and between regions.
- To relate the characteristics of flow pattern and their intensity with levels of functional-economic organization in space.

Course Contents:

Unit - I : Nature, scope, significance and development of Transport Geography. Factors associated with the development of transport system:.physical, economic, social, cultural, and institutional; economic, technological and regional development and transport development.

Unit - II : Characteristics and relative significance of different modes of transport: railways, roads, airways and waterways, pipelines etc.

Unit - III : Structure - Accessibility and Flow models; network structure, graph theoretic measures, measurement of accessibility, models of network change. Linear programming and gravity models,. Theories related to freight rate structure, bases of spatial interaction, complementary intervening opportunity and transferability.

Unit - IV : Patterns of movement : the type, patterns of movement and transport modes, simple model of interaction, transportation network: the functions, pattern of movement, movement geometry, transport development.

Unit - V : Transport policy and planning, transport development in developing countries, urban, transportation; growth and problems of urban transportation,. transport and environmental degradation; vehicular pollution and congestion, alternatives to transport system in mega cities of India, National Highway Development and Planning in India.

Suggest Readings

1. Chorley R.J. & Haggett P.: Models in Geogrpahy Methuen & Co. London. 1967.
2. Hurst, M.E.(ed.): Transportation Geography, McGraw-Hill, 1974.
3. Hagget, F and Chorley, R.J. Network Analysis', Edward Arnold, London, 1968.
4. Hay, A.: Transport Economy, MacMillan, London, 1973.
5. Hoyle, B.S.(ed.): Transport and Development, MacMillan, London, 1973.
6. Raza, M. and Agrawal Y.P. : Transport Geography of India, Concept. New Delhi, 1985.
7. Robinson H & Bamford C.G. : Geography of Transport Macdonald & Evans. London 1978.
8. Taffe, E.J. & Gauthier (Jr.) H.L. : Geography of Transportation, Prentice-Hall, Englewood Cliffs, N.J., 1973.
9. Ullman E.L. : American Commodity Flow University of Washington Press 1957.
10. White H.P. and Senior, M.L. Transport Geography, Longman, London, 1983.

Pedagogy

- The students should familiarize themselves with data sources including maps of transport network and mapping flow data of people and goods (roads and railways) and demarcating tributary areas and major nodes. They should also undertake practical exercises in working out accessibility index, network density and hierarchy, study of transport should be related to regional and locational interaction using maps of market and urban centres and industrial location.

Course: E 520

M.A./M.Sc.

GEOGRAPHY OF WATER RESOURCES

Objectives:

The objectives of this course are to bring an awareness among the students about the finite nature of water resources; declining per capita availability of quality water; escalating demands and the looming water crisis. It stresses the need for better management of water resources through appropriate methods and conservation of water resources.

Course Contents:

Unit - I : Water as a focus of geographical interest, inventory and distribution of world's water resources (surface and subsurface); world hydrologic cycle: quantitative estimates; water storages. Glaciers, river channels, lakes and reservoirs; soil moisture, ground water.

The basic hydrologic cycle: precipitation: potential, evapotranspiration and interception losses; runoff

Unit - II : Water demand and use: methods of estimation — agricultural, industrial and municipal uses of water.

Agricultural use of water: estimation of crop —water requirement; soil-water- crop relationships; water balance and drought; major and minor irrigation :methods of distribution of water to farms; water harvesting techniques, soil water conservation.

Irrigation - water logging, salinity and alkalinity of soil - over exploitation of ground water, land subsidence, saline water intrusion into the coastal aquifers.Water quality parameters, water pollution-river and ground water-floride and arsenic

Unit - III : Industrial use of water: methods of estimation; demand for water in the industrial sector of India.

Municipal use of water: general trends in water supply to the urban and rural communities in India, Internal navigation, hydel power and recreation.

Unit - IV : Problems of water resource management. Floods - magnitude/frequency, structural and non structural adjustment of flood hazards;, embankments, reservoirs, channel improvement, soil conservation, afforestation, flood forecasting, evacuation, floodplains; landuse regulation and insurance. Case studies of major floods.

Droughts - occurrence, major drought management.

Unit - V : Conservation and planning for the development of water resources-social and institutional considerations; integrated basin planning; conjunctive use of surface and groundwater resources; watershed management; international and inter-state river water disputes and treaties; some case studies.

Suggested Readings

1. Agarwal, Anil and Sunita Narain : Dying Wisdom: Rise, Fall and Potential of India's Traditional Water Harvesting System. Centre for Science and Environment, New Delhi, 1997.

2. Economic and Social Commission for Asia and the Pacifi,c United Nations, ; Guidelines for the preparation ofNational Master Water Plans, 1989.

3. Govt. of India, Ministry of Agriculture Report of the Irrigation Commission, Vol. I to IV, New Delhi, 1972.

4. Govt. of India, Ministry of Energy and Irrigation , Rashtriya Barh Ayog (Report-National Commission on Floods. Vol. I & II, New Delhi, 1980.

5. Gulhati, N.D: Development of Inter-State Rivers: Law and Practice in India. Allied Pub., Bombay, 1972.

6. International Water Resource Association and Central Board of Irrigation & Power: Water for Human Needs, Vols. I toV Proceedings of the Second World Congress on Water Resources, 12-16 December, New Delhi, 1975.

7. Jones, J.A. : Global Hydrology: Processes, Resources and Environmental management, Longman, 1997.

8. Krutilla, John V. and Eckstein, O.: Multiple purpose River Development: Studies in Applied Economic Analysis, John Hopkin's Press, Boston,1958.

9. Law. B.C. (ed.) Mountains and Rivers of India IGU National Committee for Geography, Calcutta, 1968.

10. Michael. A.M.: Irrigation:Theory and Practices, Vikas Publishing House Pvt. Ltd., New Delhi, 1978.

11. Matter, J.R., Water Resources Distribution, Use and Management, John Wiley, Marylane, 1984.

12. Newson, M. Land, Water and Development River Basin Systems and their Sustainable Management, Routledge, London, 1992.

13. Pereira, H.C.: Landuse and Water Resources, Cambridge University Press, Cambridge, 1973.

14. Rao, K.L. : India's Water Wealth, Orient Longman, New Delhi, 1979.

15. Kates R.W. and Burton, I. (ed.): Geography, Resources and Environment, Ottowa, 1980.

16. Singh, R.A. and Singh, S.R.: Water Management: Principles and Practices, Tara Publication, Varanasi, 1979.

17. Smith, K.: Water in Britain : A Study in Applied Hydrology and Resource Geography, McMillan, London, 1972.

18. Tebbutt, T.H.Y. (ed.): Advances in Water Engineering, Elsevier Applied Science Pub., London, 1985.

19. Tideman, E.M. Watershed Management: Guidelines for Indian Conditions, Omega, New Delhi, 1996.

20. Todd, D.K.: Ground Water Hydrology, John Wiley, New York, 1959.

21. U.S.D.A.: The Year Book of Agriculture: Water, Oxford and I.B.H. Publishing Co., New Delhi, 1955.

22. Verghese, B.G. : Water of Hope: Integrated Water Resource Development and Regional Co-operation within the Himalayan-Ganga-Brahmaputra-Barak Basin, Oxford

IBH, New Delhi, 1990.

23. White, G.F.L Environmental Effects of Complex River Development, Westriver Press, Boulder, Colorado, 1977.

Pedagogy

- Water is a scarce resource in some areas and abundant in other areas. The use and misuse of water should be stressed to the students with examples from local and regional areas. Models relating to traditional water harvesting systems should be shown to the students. The concept of water recycling should also be emphasised during lectures.

Course: E 521

M.A./M.Sc.

GLACIAL AND PERIGLACIAL GEOMORPHOLOGY

Objectives:

- to appreciate the contrasting geomorphic processes operating in glacial and periglacial environments
- to understand the deformational behaviour of ice and the meltwater
- to understand the sensitiveness of the periglacial environment to heat budget
- to understand the impact of human activities on permafrost environment

Course Contents:

Unit - I : Ice Ages and World Glacitation: Causes of Ice Ages-Pleistocene Glacitation: onset and retreat direct and indirect effects of Pleistocene Glacitation-glacier regimes: definition, mass balance and response to climatic changes-glacier ice: physical and thermal properties, glacier flow and internal deformation.

Unit - II : Erosional Process: glacial erosion: ice and meltwater-mechanical and chemical processes of erosion; development of erosional landforms-morphodynamics of the features of erosion at or inside glacier margins-glacial thermofrost; superglacial, englacial, and basal.

Unit - III : Depositional Process: Processes-stratified and non-stratified; drifts-morphodynamics of moraines: forms of moraines-glaciofluvial and glacio-lacustrine environment; Pleistocene glacitation in South Asia-Hazards in glacial environment: glacial surges and glacier dam bursts.

Unit -IV : Periglacial Processes: frozen ground phenomenon:identification, depth variations, thermal properties, classification and distribution-ground ice: types and morphodynamics of periglacial processes: mechanism of frost action, mass wasting, nivation.

Unit - V : Periglacial landforms; frost actions and landforms-mass wasting and landforms adaptation of human beings to periglacial environment.

Suggested Readings

1. Brown, R.J.E., Permafrost in Canada. University of Toronto Press, Toronto, 1970.
2. Carson MA. and Kirkby M.J., Hillslope Form and Process, Cambridge University Press, 1972.
3. Coates, D.R.(ed.), Glacial Geomorphology, State University of New York,1974, New York, 1974.
4. Dixon, J.C. and Abrahams, A.D. (eds.), :Periglacial Geomorphology. John Wiley, New York, 1992.
5. Drewry, D., Glacial Geological Processes, Edward Arnold, London, 1986.
6. Embleton, C. and King, C.A.M., Glacial and Periglacial Geomorphology, Edward Arnold, London, 1968.
7. Embleton, C. and Thormes, J. (eds.), Process in Geopmorphology, Arnold - Hesnemann, New Delhi, 1980.
8. Hails, J.R. (ed.): Applied Geomorphology Elsevier Sci. Amsterdam, 1977.
9. Pewe, T.L.(ed.):. The Periglacial Environment. Mc. Gill- Queen's University Press, Montreal1969.
10. Peterson, W.S.B., The Physics of Glaciers. Pergamon Press, Oxford 1969.
11. Price, L.W., The Periglacial Environment, Permafrost and Man., Commission on College Geography, Resource Paper No. 14, Washington, D.C,1972.
12. Ritter, D.F. Craig, R. and Miller, J.P., Process of Geomorphology. , W.C. Brown Dubuque, 1995.
13. Slymaker, O. (ed.), Steepland Geomorphology., John Wiley, London, 1995.
14. Sugden, D.E. and John, B.S. Glaciers and Landscape. Edward Arnold, London, 1976.
15. Vander Veen, C.J., Fundamentals of Glacier Dynamics., A.A. Balkemma, Rotterdam, 1999.
16. Wright, A.E and Mosley, P.(eds), Ice Ages: Ancient and Modern., Seel House Press, Liverpool,1975.

Pedagogy

- Students may be asked to view National Geographic Video on glaciers to understand the behaviour of ice and glaciers.
- Students may be asked to read about global warming and collect news paper clippings on this issue and initiate an discussion in the class room
- Students may be asked to look into SOI topographic sheets of high altitudes of the Himalayas to locate the areas of glacial landforms.

Course: E 522

M.A./M.Sc.

HISTORICAL GEOGRAPHY

Objectives:

To familiarise the students in consulting basic sources for understanding historical geography with special reference to India during different historical periods.

Course Contents:

Unit - I : Nature and scope of Historical Geography; its relationship between history and geography.

Unit - II : Source materials for studies in historical geography- religious texts, epics and literary sources; travel accounts, archival sources, chronicles, old maps, revenue records; limitations of sources.

Unit - III : Ancient India: sources of information; process of peopling in different parts of the country; patterns of urbanization, Janapadas; administrative organization of space.

Unit - IV : Medieval India: sources of information; economic bases of cities, trade routes, patterns of urbanization, territorial arrangements of administration.

Unit - V : Colonial India: Sources of information; territorial arrangement for administration; comparative study of British Provinces and Princely States; colonial urban development, spatial manifestations of colonial economic policies with reference to agriculture and industry; environmentalism and other issues during 20th century.

Suggested Readings

1. Ali, S.M. : The Geography of the Puranas, Peoples Publishing House, Delhi, 1966.
2. Baden-Powel: Land Systems of British India. Publication Division, Govt. of India, New Delhi. 1960.
3. Carter, H.: An Introduction to Urban Historical Geography. Edward Arnold, Baltimore, 1983.
4. Cunningham, A,The Ancient Geography of India, Bharatiya Publishing House, Varanasi, 1975.

5. Habeeb, I.: The Agrarian System of Mughal India, Oxford University Press, London, 1963.

6. Habeeb, I.: An Atlas of the Mughal Empire, Oxford University Press, Delhi, 1982.

7. Norton, W.: Historical Analysis in Geography. Longman, New York, 1984.

8. Schwartzberg, J.: Historical Atlas of South Asia, Chicago University Press, Chicago, 1980.

9. Sircar, D.C.: Studies in the Geography of Ancient and Medieval India. Motilal Banarasi Das Publishers, Delhi, 1960.

Pedagogy

- Students may be encouraged to visit archives and museums to prepare a list of materials available on some selected themes. They may also visit any historical site and write a brief report on its evolution through time.

Course: E 523

M.A./ M.Sc

HYDROLOGY

Objectives:

Water is an integral part of all living things in the world. Hence it is necessary to make the students to understand the significance of a systematic study on fresh water resources and occurrence, flow, storage and utilization. The students also should be able to realize the importance of judicious utilization and conservation of water and its availability over space and its temporal dimensions.

Course Contents:

Unit - I : Hydrological cycle and its sub-cycle ; Man's interference on hydrological cycle.

Unit - II : Elements of hydrological cycle: precipitation - intensity and duration; evaporation; infiltration, surface runoff, urban flooding.

Unit - III : Drainage basin characteristics : human impact on hydrological system - morphometric analysis.

Unit - IV : Ground water - occurrence and types: movement - quality and quantity measures.

Unit - V : Principles of water balance and their application ,- its relevance in crop geography; water pollution, need for water management. Application of remote sensing in hydrological studies.

Suggested Readings

1. Addison, H. Land Water and Flood, Chapman and Hall, London 1961.
2. Chorley, R.J. (ed) : Introduction to Physical Hydrology, Methuen, London.1969
3. Chorley,R.J.: Water, Earth and Man,methuen,London,1967.
4. Dakshinamurthy, C .et al., Water Resources of India and Their utilisation in Agriculture, Indian Agriculture Research Institute, New Delhi,1973.
5. Jones, J.A.A : Global Hydrology: Processes, Resources and Environmental Management, Longman,London,1997.

6. Matter , J.R., Water Resources. Distribution, Use and Management, John Wiley, Marylane,1984.

7. Singh, R.A. and Singh, S.R.: Water Management: Principles and Practices. Tara Publication, Varanasi, 1972.

8. Todd, D.K.: Ground Water Hydrology, John Wiley, New York,1959.

Pedagogy

- Students to be taken on a field visit to nearby reservoirs. Data pertaining to water table in the local wells in different seasons has to be collected. and analyzed, Find Quality test of water before farming. Find out what is hard and soft water and their application in various walks of human life.

Course: E 524

M.A./M.Sc.

NATURAL RESOURCES MANAGEMENT

Objectives:

The objectives of this course are:

- to understand concepts and approaches of natural resource management;
- to examine use and misuse of various resources and to analyse future prospects,
- to study various methods and approaches of conservation and management of natural resources,
- to analyse natural resources' scenario through different techniques, especially remote sensing and GIS,
- to understand the concept of sustainable and integrated resource management and its application.

Course Contents:

Unit - I : Introduction: Concept, models and approaches to natural resource management; problems of resource utilization; population pressure, development and resource use; natural hazards and risk management.

Unit - II : Use and misuse of Resources: Global and Indian scenario; historical background and future prospects of various resources; soil, water, minerals, forests.

Unit - III : Conservation and management of resources: Meaning, principles, philosophy and approaches to conservation; resource conservation and management methods.

Unit - IV : Resource appraisal and policy making: appraisal of Land resources, geophysical, geochemical, geobotanical ; use of GIS and remote sensing in resource appraisal; institutional arrangements and policy models towards better management and conservation of resources.

Unit - V : Resource Development: Sustainable resource management concept, methods, dimension and sustainable system; integrated resource development and its application.

Selected Readings

1. Adams, W.M. :, Green Development: Environment and Sustainability in the Third World, Routledge & Chapman Hall, New York, 1990.

2. Granfelt, T.R., Managing the Globalized Environment, J. & L. Composition Ltd, New York, 1999.

3. Holechek, J.L. et al : Natural Resources: Eulogy Economics & Policy, Prentice Hall, New Jersey, 2000.

4. Hooja, R. & Joshi, R.: Desert, Drought and Development, Studies in Resource Management and sustainability; Rawat Publication, Jaipur, 1994.

5. Howard, M.C. (ed), Asia's Environmental Crisis, Westview Press, Prouldar,1993.

6. Kates, R.W. & Burton, I (eds): Geography, Resources and Environment, Vol I & II, University of Chicago Press, Chicago, 1986.

7. Mc Laren, D.J. and Skinnet, B.J. (eds): Resources and World Development, John Wiley & Sons, New York, 1986.

8. Newson,; M.D: Land, water & Development: River Basin systems & Management, Routledge London, 1991.

9. Owen, S. & Owens, P. L.: Environment Resources & Conservation, Cambridge University Press, New York, 1991.

10. Peckford, John et. al. (ed.): 1994,Water, Sanitation, Environment & Development, IT Publication, London, 1994.

11. Rees, J: Natural Resources: Allocation, Economics and Policy, Methuen, London, 1988,.

12. Redclift, M: Sustainable Development: Exploring the Contradiction,; Methuen, London, 1987.

13. Simmons, I. G.: Earth, Air & Water: Resources and Environment in Late 20th Century Edward Arnold, New York, 1991.

14 Thoman, Alan et. al.: Environmental Policies & NGO Influence, Routledge, London, 2001.

Pedagogy

- Maps can be shown related to distribution of various resources in World & India.
- Diagrams & Flow charts related to institutional setup & policy models.
- Projects related to data analysis of various resources in different parts of world & to analyse future prospects.

Course: E 525

M.A./M.Sc.

POLITICAL GEOGRAPHY

Objectives:

- to expose the students to the strategic importance of geographical parameters in the Political Science at global, regional and local level;
- to sensitize the students to geopolitical dimensions and the understanding of conflicts and regional cooperation; and to make them familiar with the political geography of selected countries.

Course Contents:

Unit - I : Nature, scope, subject matter and recent development in political geography; approaches to study;. major schools of thought.

Unit - II : Geographic Elements and the State: Physical Elements; Human elements; Economic elements; Political geography and environment interface.

Unit - III : Themes in Political Geography: State, Nation, Nation-State and Nation-building, Frontiers and boundaries, Colonialism, decolonization, Neocolonialism, Federalism and other forms of governance. The changing patterns of World Powers Perspectives on core-periphery concept, Conflicts and cooperation.

Unit - IV : Geopolitical significance of Indian Ocean: Political geography of any one of the following regions: SAARC Region, South-East Asia, West Asia, East Asia,

Note: The region may also be selected from the regions not referred to above, depending on the expertise available with the Department/University.

Unit - V : Political geography of contemporary India with special reference to: The changing political map of India, Unity - diversity: centripetal & centrifugal forces; stability & instability; Interstate issues (like water disputes & riparian claims) and conflict resolutions insurgency in border states; Emergence of New States; Federal India: Unity in Diversity.

Suggested Readings

1. Alexander, L.M. World Political Patterns Ran McNally, Chicago, 1963.
2. De Blij, H. J. and Glassner, Martin Systematic Political Geography, John Wiley, New York, 1968.
3. Dikshit, R.D. Political Geography: A Contemporary Perspective. Tata McGraw Hill, New Delhi. 1996.
4. Dikshit, R.D. Political geography: A Century of progress, Sage, New Delhi, 1999.
5. Sukhwal, B.L. Modern Political Geography of India Sterling Publishers, New Delhi. 1968.
6. Taylor, Peter; Political Geography Longman, London. 1985.
7. Fisher Charles A.: Essays in Political Geography, Methuen, London, 1968.
8. Pounds N.J.G.: Political Geography. McGraw Hill, New York, 1972.
9. John R. Short: An introduction to Political Geography Routledge, London, 1982.
10. Moddie, A.E : Geography Behind Politics Hutchinson, London, Latest edition.
11. Prescott. J.R.V.: The Geography of Frontiers and Boundaries Aldine, Chicago.
12. Deshpande C.D: India-A Regional Interpretation Northern Book Centre, New Delhi. 1992.
13. Panikkar K. M. : Geographical Factors in Indian History: 2 vols. Asia Publishing House, Bombay, 1959.

Pedagogy

- Students may be encouraged to collect clippings from newspapers on various topics included in the syllabus. They may be involved in discussions on the emerging political issues and attempt to provide geographical interpretation.

Course: E 526

M.A./M.Sc.

REGIONAL GEOGRAPHY OF INDIA - MESO AND MICRO LEVEL

Objectives:

- The aim of the course is to familiarize the students with a MESO and a micro-region of the country in its totality.
- To prepare the students for understanding the region as a dynamic entity emerging from the interaction and interrelationship of the physical and socio-economic elements of the regional structure over time.
- To evaluate the intra-regional and inter-regional hierarchic space relationship of the region and its implications for the future.

Course Contents:

Unit - I : Physical : Areal differentiation and characterizations of land units based on rock type, topography, drainage and soil.

Land cover: areal patterns and differentiation and characterization of different types of land cover (density and type of vegetation, grass land, cultivated land, water bodies, barren and waste lands, sites of human settlements and transport routes).

Unit - II : Cultivated Land: areal pattern and differentiation of different crops, crop intensity (irrigated and unirrigated), yield of crops and agricultural productivity of the land, impact of physical, economic and institutional factors (size of land holding land tenures, agricultural practices etc) on agricultural productivity of the land.

Unit - III : Population: demographic and socio-economic characteristics and locations of infrastructure facilities and amenities.

Unit - IV : Locations of economic activities; types of industries (large scale, medium and small scale) relationship to the resource based and footlose industries.

Unit - V : Settlement hierarchy by social facilities and amenities and economic activities and their space-relations problems / and prospects.

Suggested Readings

Other than the reading list provided in Regional geography course on India and topical studies, the teachers are expected to prepare a reference list to suit the region selected for case study.

Pedagogy

- Use of large-scale topographical maps, specialized maps and atlases as illustrations for study of observed patterns.
- Exercises in the use of secondary data to build up spatial profile of the selected regions should become part of the students learning method.
- Group discussion and field excursion where possible.

Course: E 527

M.A./M.Sc.

REGIONAL GEOGRAPHY OF THE WORLD — MESO AND MICRO LEVEL

Objectives:

- to develop a comprehensive understanding of the problems and prospects of development of a selected country/countries.
- to understand the concept of local to global as a continuum.

Course Contents:

Unit - I : Country/Countries as a region - introduction to any one country: site and situation - historical backdrop - political status - centrifugal and centripetal forces and emerging conflicts.

Unit - II : Land : resource distribution, utilisation, sustainability.

Unit - III : People : distribution, density, growth, urbanization, migration and mobility. Impact assessment.

Unit - IV : Economy: development, market linkages

Unit - V : Changing political maps - development, conflicts & conflict resolutions, environmental issues.

Suggested Readings

Depending upon the selected country; the latest relevant books covering various aspects of the country are to be consulted. Books on the selected country covering historical, economic & social aspects and sources of data to be referred .

Pedagogy

- Students may be involved in collecting and interpreting latest materials on a selected country. They may be asked to approach country embassies and libraries to consult country reports. Discussions may be encouraged on environmental issues.

Course: E 528

M.A./M.Sc.

REMOTE SENSING TECHNIQUES

Objectives:

- to introduce to the students the basic principles of Remote Sensing;
- to indicate the methods of visual and digital interpretations of satellite imageries.
- to outline the application value of remote sensing.

Course Contents:

Unit - I : Historical development of remote sensing as a technology-Relevance of remote sensing in Geography-Concepts and basics: Energy source, energy and radiation principles,energy interactions in the atmosphere and earth surface features,remote sensing systems: platforms, sensors and radiation records.

Unit - II : Air Photos and Photogrammetry: Elements of photographic system: types, scales and ground coverage, resolution, radiometric characteristics, films, filters, aerial cameras, film exposures,geometric fundamentals of photogrammetry: elements of vertical photographs,relief displacement, image parallax, streoscopic, orthophotos airphoto interpretation: shape, size, pattern, tone, texture, shadows, site.

Unit - III : Satellite Remote Sensing: platforms-LANDSAT, SPOT, NOAAAVHRR, RADARSAT, IRS, INSAT: principles and geometry of scanners and CCD arrays, orbital characteristics and data products-MSS, TM, LISS I & II, SPOTPLA & MLA, SLAR.

Unit - IV : Image Processing: types of imagery,techniques of visual interpretation,ground verification,transfer of interpreted thematic information to base maps-digital processing: rectification and restoration, image enhancemen,-contrast manipulation,classification: supervised and unsupervised,post-classification analysis and accuracy assessment,microwave sensing: interpretation of SLAR imageries, elements of passive microwave sensing.

Unit - V : Applications: Air photo and image interpretations and mapping landuse and land cover, land evaluation, urban landuse, landform and its processes, weather studies and studies of water resources; integration of Remote Sensing and GIB,-remote sensing and hazard management, remote sensing and environmental management.

Suggested Reading

1. American Society of Photogrammetry: Manual of Remote Sensing. ASP, Falls Church, V.A., 1983.
2. Barrett E.C and L.F. Curtis : Fundamentals of Remote Sensing and Air Photo Interpretation, Mcmillan, New York, 1992.
3. Compbell J. : Introduction to Remote Sensing, Guilford, New York. 1989.
4. Curran, Paul J. : Principles of Remote Sensing, Longman, London, 1985.
5. Hord R.M. : Digital Image Processing of Remotely Sensed Data, Academic, New York. 1989.
6. Luder D. : Aerial Photography Interpretation: Principles and Application, McGraw Hill, New York, 1959.
7. Pratt W.K. Digital Image Processing. Wiley, New York, 1978.
8. Rao D.P. (eds.) : Remote Sensing for Earth Resources, Association of Exploration Geophysicist, Hyderabad, 1998.
9. Thomas M. Lillesand and Ralph W. Kefer, Remote Sensing and Image Interpretation, John Wiley & sons, New York, 1994.

Pedagogy

- Students may be taken to any nearby Remote Sensing Organisation to observe different equipments, techniques, and products.
- Students may be asked to look into weather satellite photographs being published in the daily news papers and to prepare some quick report of weather.
- Students may be asked to visit any nearby ground area with its imagery and to compare the ground reality and the corresponding reality in the imagery.

Course: E 529

M.A./M.Sc.

SOCIAL GEOGRAPHY

Objectives:

The main objectives of this course are:

- to familiarize the students with the understanding of the society through concepts and social theory, philosophical approaches and spatial processes;
- to examine the process of social region formats in India with the help of social cultural and historical factors;
- to examine social distortion and regionalise the various components of social well- being in India; to review problems and suggest alternatives to improve the social well-being in environmentally problematic areas.

Course Contents:

Unit - I : Nature and development of social geography; philosophical bases of social geography-Positivists; structuralist; radical, humanist, post-modern and post structuralist; social geography in the realm of social sciences.

Unit - II : Space and society: Understanding society and its structure and process; geographical bases of social formations; contribution of social geography to social theory; power relations and space.

Unit - III : Towards a social geography of India; Social differentiation and region formation; evolution of socio-cultural regions of India; bases of social region formation; role of race, caste, ethnicity; religion and languages; Indian unity and diversity; social transformation and change in India.

Unit - IV : Social well-being: Concepts of social well-being, physical quality of life, Human development; measurement of human development with social, economic and environmental indicators; Rural urban deprivation in India with respect to health care;education and shelter; deprivation and discrimination issues relating to women and under privilegd groups; Patterns and bases of rural and urban society.

Unit - V : Public policy and social planing in India: review of Five year Plans and area plans towards social policy in India; Strategies to improve social well-being in tribal, hill, drought and flood prone areas; Social and environmental impact assessment of development projects.

Suggested Readings

1. Ahmad, Aijazuddin, Social Geography, Rawat Publication, New Delhi, 1999.
2. De Blij. H.D. Human Geography. John Wiley and son, New York.
3. Dreze Jean, Amartya Sen, Economic Development and Social opportunity, Oxford University Press, New Delhi, 1996.
4. Dubey. S.C : Indian Society, National Book Trust, New Delhi, 1991.
5. Gregory, D and J. Larry, (eds.). Social relations and spatial structures, McMillan, 1985.
6. Haq. Mahbubul: Reflections on Human Development, Oxford University Press, New Delhi.
7. Maloney, Clarence: People of South Asia, Winston, New York, 1974. .
8. Planning Commission, Government of India; Report on development of Tribal areas, 1981.
9. Rao, M.S.A.: Urban Sociology in India. Orient longman, 1970.
10. Schwartzberg Joseph; An Historical Atlas of South Asia, University of Chicago Press, Chicago, 1978.
11. Sen, Amartya & Dreze Jean, Indian Development: Selected Regional Perspectives, Oxford University Press, 1996.
12. Smith, David: Geography: A Welfare Approach, Edward Arnold, London, 1977.
13. Sopher, David.: An Exploration of India, Cornell University Press, 1980.
14. Subba Rao. Personality of India; Pre and Proto Historic foundation of India and Pakistan. M.S. University Baroda, Vadodara,1958.

Pedagogy

- The students should familiarize themselves with different areas to understand the patterns of socio-economic differentiation/ segregation and their social and cultural habitats.
- They should also interact with other disciplines like sociology, psychology and demography for understanding the social issues.

Course: E 530

M.A./M.Sc.

SOIL GEOGRAPHY

Objectives:

The aim of the course is to introduce the students to soil which is one of the important element of the earth which supports the life system. The over use and misuse of soil in recent years have resulted in degradation of soil. Study of soil will help the students to appreciate the inherent limitations of soil to a particular use and managing the soil effectiveness.

Course Contents:

Unit - I : Nature, scope and significance of Soil Geography; its relationship with Pedology.

Soil forming factors: parent material, organic, climatic, topographic Spatio-temporal dimensions.

Processes of soil formation and soil development: physical, biotic and chemical.

Soil Profile: development; Soil catena, pedogenic regimes; podzolization, laterisation, calcification and gleezation

Unit - II : Soil organisms, macro—animals (earthworms, sowbugs, mites, centipedes, rodents and insects), Microanimals and plants - Nematodes, Protozoa rotifers; fungi, bacteria, algae and actinomyces.

Unit - III : Physical properties of soils: morphology, texture, structure, water, air, temperature and other properties of soil;

Chemical properties of soil and soil reaction;

Genetic classification of soils, Taxonomic classification of soils zonal, azonal and intra-zonal soils, their characteristics and world patterns; methods to improve the physical qualities of soils; seventh approximation.

Soil erosion, degradation, and conservation.

Unit - IV : Evaluation of land and soil: Parametric and non parametric systems, Land capability classification, Soil survey, modern techniques, field study of soil profile and their characteristics.

Unit - V : Soil reclamation and management: soil survey and landforms in environmental management; Integrated soil and water management; Sustainable development of soil resources with reference to India.

Suggested Readings

1. Backman, H.O and Brady, N.C.: The Nature and Properties of Soils, Mc Millan New York, 1960.
2. Bennet, Hugh H.: Soil Conservation, McGraw Hill, New York .
3. Bunting, B.T.: The Geography of Soils, Hutchinson, London, 1973.
4. Clarke G.R.: Study of the Soil in the Field, Oxford University Press, Oxford, 1957.
5. Foth H.D. and Turk, L.M.: Fundamentals of Soil science, John Wiley, New York,1972.
6. Govinda Rajan, S.V. and Gopala Rao, H.G.: Studies on Soils of India Vikas, New Delhi,1978.
7. Mc. Bride, M.B.:Environmental Chemistry of Soils, Oxford University Press, New York 1999.
8. Nye, P.H. and Greene, D.J.: The Soil under Shifting Cultivation Commonwealth Bureau of Soil Science, Technical Communication, No. 51; Harpender, England,1960.
9. Raychoudhuri, S.P.: Soils of India, ICAR, New Delhi,1958.
10. Russell, Sir Edward J.: Soil Conditions and Plant Growth, Wiley, New York, 1961.

Pedagogy

- The importance of soil particularly top 8 c.m. of surface soil assumes great significance for scienific landuse and crop production. The teacher should impress this basic fact to the students focussing on use and misuse of soil resource and consequences resulting out of this. Field trips to identify soil layers, colours, broad types etc. be organised.

Course: E 531

M.A./M.Sc.

TROPICAL GEOMORPHOLOGY

Objectives:

The purpose of this course is to understand geomorphological processes and landform development under tropical environment

Course Contents:

Unit - I : Basics: Scope and significance of Tropical Geomorphology-climatic elements and geomorphic processes in tropics-nature of rocks and their impacts on relief in tropics natural vegetation and their impact on relief in tropics-morphogenetic regions.

Unit - II : Weathering: Process and products-factors defining depth of weathering-profile of weathering-duricrust and laterites: structure, morphology, profile, distribution, and origin with special reference to India.

Unit - III : Denudation Process: Denudation: mechanical and chemical-mass movement-slope wash and stream erosion-slope development-stability of surface and movement of materials on hillslopes-modeling of forms of hillslope.

Unit - IV : Tropical Terrain: relief, drainage and landforms-slopes, valleys, domes, inselbergs, tors and ventifacts-pediments;characters, distribution and origin and theories of development-plane surfaces in tropical region.

Unit - V : Tropical landforms: Mapping and identification of tropical landforms-identification of unique characters of tropical landforms; tropical landforms and their utility. Fragile environment of tropical regions; strategies of conservation of the tropical ecosystem.

Suggested Readings

1. Dikshit, K.R., Kale V.S., Kaul M.N. : India Geomorphological Diversities, Rawat, Jaipur, 1994.
2. Douglas I. and Spancer. J. Environmental Changes and Tropical Geomorphology. George Allen and Unwin, London, 1985.

3. Faniran, A. and Jeje L.K. : Humid Tropical Geomorphology Longman, London, 1983.

4. Garner H.P.Origin of Landforms : A Synthesis in Geomorphology . Oxford Univ. Press, New York,1974.

5. Kellman, A. and Tackaberry, R. : Tropical Environments . Route- ledge, London 1997.

6. Ollier C.D. : Weathering Longman, London, 1975.

7. Sharma, H.S. : Tropical Geomorphology, Concept, New Delhi, 1987.

8. Stewart G.: Landscape Evaluation . UNESCO, Paris 1969.

9. Thomas, M.: Tropical Geomorphology - A Study of Weathering and Landform Development in Warm Climate. Mc Millan , London,1974.

10. Tricart J : The Landforms of the Humid Tropics, Forests and Savannas, Longman, London 1972.

11. Tricart, J. & Cailleux A.: Introduction to Climatic Geomorphology. Longman Green Ltd. London, 1972.

12. Twidale C.R. : Analysis of Landform . John Wiley, London 1976.

Pedagogy

- Use of topographic maps, airphotos and imageries with a view to identification of tropical landforms, planning a local field work and appreciating the landforms.

Course: E 532

M.A./M.Sc.

URBAN GEOGRAPHY

Objectives:

The objectives of this course is to make the students

- understand the process of urbanization and origin, growth and classification of urban settlements with relevant theories and models;
- examine the changing economic base and structure of the contemporary cities;
- relate urbanization process and the evolution of urban system;
- examine the contemporary urban issues and suggest new urban planning and urban policy perspectives.

Course Contents:

Unit - I : Nature and scope of urban geography. different approaches and recent trends in urban geography; attributes of urban places during ancient, medieval and modern period; origin and growth of urban settlements: bases and process of urbanization and development; classification of urban settlements on the basis of size and function; urban systems: Urban growth and theories. Central Place Theory of Christaller and Losch;. Theories of Peroux and Boudeville; contributions of Indian scholars to the studies of urban settlements.

Unit - II : Urban economic base: Basic and non-basic functions, input-output models, concept of dualism; colonial and postcolonial structure, metropolitan city and changing urban function; role of informal sector in urban economy.

Unit - III : Organization of urban space: urban morphology and landuse structure: city core, commercial, industrial and residential areas; cores-country variations; city-region relations, modern urban landscape;. morphology of urban settlements and its comparison with western urban settlements; urban expansion, umland and periphery

Unit - IV : Contemporary urban issues: urban poverty, urban renewal, urban sprawl, slums; transportation, housing, urban infrastructure; urban finance; environmental pollution: air, water, noise, solid waste, urban crime, issues of environmental health.

Unit - V : Urban policy and planning: development of small and medium sized towns, planning for new wards, city planning, green belts, garden cities, urban policy; contemporary issues in urban planning; globalization and urban planning in the Third World, urban landuse planning.

Selected Readings

1. Alam, S.M.: Hyderabad - Secunderabad Twin Cities Asia Publishing House, Bombay, 1964.
2. Berry, B.J.L. and Horton F.F. Geographic Perspectives on Urban Systems, Prentice Hall, Englewood Cliffs, New Jersey, 1970.
3. Carter: The Study of Urban Geography, Edward Arnold Publishers, London, 1972.
4. Chorley, R.J.O., Haggett P. (ed.) : Models in Geography, Methuen, London, 1966.
5. Dickinson, R.E.: City and Region, Routledge, London, 1964.
6. Dwyer, D.J. (ed.) The City as a Centre of Change in Asia, University of Hong Kong Press, Hongkong, 1971.
7. Gibbs J.P.: Urban Research Methods D. Van Nostrand Co. Inc. Princeton, New Jersey, 1961.
8. Hall P. : Urban and Regional Planning, Routledge, London, 1992.
9. Hauser, Philip M. and Schnore Leo F. (ed.) : The Study of Urbanisation, Wiley, New York, 1965.
10. James, P.E. and Jones C.F. (eds.) : American Geography, Inventory and Prospect, Syracuse University Press, Syracuse, 1954.
11. Kundu, A. : Urban Development and Urban Research in India, Khanna Publication, 1992.
12. Meyor, H.M. Kohn C.F. (eds.) : Readings in Urban Geography, University of Chicago Press, Chicago, 1955.
13. Mumford, L : Culture of Cities, McMillan & Co., London, 1958.
14. Nangia, Sudesh Delhi Metropolitan Region: A study in settlement geography, Rajesh Publication, 1976.
15. Rao V.L.S.P. : Urbanisation in India: Spaial Dimensions. Concept Publishing Co. New Delhi Concept, New Delhi.

16. Rao VL.S.P.: The Structure of an Indian Metropolis: A study of Bangalore Allied Publishers Bangalore,1979.

17. Singh K and Steinberg F. (eds.) : Urban India in Crisis, New Age Interns, New Delhi, 1998.

18. Smailes A.E.: The Geography of Towns, Hutchinnson, London, 1953.

19. Tewari, Vinod K, Jay A. Weinstein, VLS Prakasa Rao (editors) Indian Cities:Ecological Perspectives Concept 1986.

Pedagogy

- Awareness to data sources such as from census of India, Town Planning organizations, and their application to understand and evaluate the spatial patterns and processes of urbanisation should be highlighted in the class. This needs to be in the form of selected case studies
- Study of urban morphology and urban functions with special reference to selected towns need to be encouraged.
- Atlases and maps of NATMO and census should be consulted and students should be given opportunity to participate in discussion groups.

ANNEXURE-5

UNIVERSITY GRANTS COMMISSION
CURRICULUM DEVELOPMENT COMMITTEE IN GEOGRAPHY

QUESTIONNAIRE ON
GEOGRAPHY EDUCATION IN UNIVERSITIES AND COLLEGES
PART-I

(To be filled by the office of the Registrar of the university)

1.	Name of the University	:		
2.	Year of Establishment	:		
3.	Number of affiliated Colleges offering courses in Geography	:	UG	PG
	(a) Non Autonomous		___	___
	(b) Autonomous		___	___
4.	Number of affiliated Colleges offering Geography courses	:	UG	PG
	(a) On self financing basis		___	___
	(b) Evening Colleges		___	___
5.	Number of PG centers having Postgraduate departments In Geography	:	_____	
6.	Is Geography offered in any Professional courses in the university	:	Yes/No	
7.	If Yes, Please List the names of these Professional courses (Please enclose the Geography Syllabus being offered in the professional courses)	:		
8.	No of students enrolled in Geography during 2000-2001	:	UG	PG
	(a) In University Department			
	(b) In Colleges			
9.	No. of students passed out in in Geography during1999- 2000	:	B.A./B.Sc.	M.A./M.Sc.
	(a) In University Department			
	(b) In Colleges			

10. No. of students who completed : M.Phil Ph.D.
in Geography during 1999-2000

11. No. of teachers in Geography Departments :

Designation	___	___	___	___
(a) In Colleges				
(b) In Universities				

UNIVERSITY GRANTS COMMISSION
CURRICULUM DEVELOPMENT COMMITTEE IN GEOGRAPHY

QUESTIONNAIRE ON
GEOGRAPHY EDUCATION IN UNIVERSITIES
PART-II

(To be filled by the university Department)

1. Name of the University :

2. Year of Establishment of the Geography department :

3. Is the department separate or combined with other department/ School/Faculty? (If combined, please furnish details in a separate sheet) : Separate/Combined

4. Do you follow annual/semester system of Examination? : Annual/Semester

5. If semester system,whether it is a credit based course : Yes/No

6. Since when the system is in operation?

7. If credit based course, the evaluation procedures for B.A. B.Sc. M.A. M.Sc. & M.Phil course including percentage & weightage of marks for internal and external assessment may please be furnished in a separate sheet :

8. Number of Teachers in the Geography Department :

	Designation	Sanctioned	Occupied

9. Please provide the information of Admission of the students in the following Table during 1999-2000 :

	Approved intake	Applications received for admission	No.admitted Male Female
B.A. Geography			
B.Sc. Geography			
M.A.Geography			
M.Sc. Geography			
M.Phil (Geography)			
Ph.D. (Geography)			

10. Indicate teacher student ratio :

11. Minimum eligibility requirement for admission to :

    (a) B.A. B.Sc. Geography (if offered by the Deptt.) ……enclose the details
    (b) M.A. M.Sc. Geography ……enclose the details
    (c) M.Phil Geography ……enclose the details
    (d) Ph.D. ……enclose the details

12. Number of papers in Geography : Core Option Application/Vocational
    B.A. B.Sc. Iyear …….
    B.A. B.Sc. II Year …….
    B.A. B.Sc. III Year …….
    (Please enclose the current and old syllabus)

13. Number of papers in : Core Option
    M.A. M.Sc. (Part-I) ……..
    M.A. M.Sc.(Part-II) ……..

14. Medium of Instructions : English/Hindi/Regional Language

15. Do the students write the examination in the regional language? : All/Most/Many/Some

16. Is there viva-voce examination/project report at the level of ….. : Viva-voice Project report

    B.A. B.Sc. Geography(if offered in the deptt.) Yes/No Yes/No
    M.A. M.Sc. Geography Yes/No Yes/No
    M.Phil Geography Yes/No
    Ph.D. Yes/No

    If yes, state the marks and weightage for Viva-voice examination : **Marks** **Weightage**

    For M.A. M.Sc. Geography ……..
    For M.Phil Geography …….

17. Is there a separate or a combined board: Of studies for under graduate and post-Graduate courses? Separate / Combined

18. Are experts from Industry or other related organizations on these boards? : Yes/No

19. Is the syllabus revised according to UGC Curriculum Development Committee (CDC) Report of 1989? : Yes/No

20. When was the syllabus revised last? : …….

21.	Does it need revision now?	:	Yes/No
22.	If the revision of syllabus is required Please furnish details of such revision in the structure of course, course plan procedures to be proposed (use separate sheet)	:	
23.	What are the teaching methods used in the class room instruction?	:	(a) Case Studies (b) Group Discussion (c) Seminar (d) Tutorials (e) Chalk and talk
24.	Is the class room teaching supplemented with field visit?	:	Yes/No
25.	Is I.T. proposed to be made part of insturction methods? **(Use separate sheet for your detailed opinion)**	:	Yes/No
26.	Are U.G.C. Audio-Video learning materials used in teaching	:	Yes/No
27.	Does the department use the following:		
	a. Audio visual aids		Yes/No
	b. Sound system		Yes/No
	c. Overhead projector		Yes/No
	d. Slide projector		Yes/No
	e. Computer (PCs)		Yes/No
28.	State thrust areas of teaching and research in the department	:	…….....
29.	Please give suggestions to make Geography education socially relevant	:	…….....
30.	What are the new and innovative courses you like to suggest at the undergraduate level?	:	…….....
31.	What are the new and innovative courses you like to suggest at the post graduate level?		

ANNEXURE - 6

LIST OF UNIVERSITIES WHICH HAVE SUBMITTED SYLLABUS FOR GEOGRAPHY IN DIFFERENT COURSES

1. Aligarh Muslim University
2. Allahabad University
3. Amravati University
4. Andhra University
5. Arunachal University
6. Banaras Hindu University
7. Burdwan University
8. Deen Dayal Upadhyay University (Gorakhpur)
9. Gujarat University
10. Guru Nanak Dev University
11. Jamia Millia Islamia
12. Karnataka University
13. Kurukshetra University
14. Lucknow University
15. Madurai Kamraj University
16. Maharshi Dayanand University
17. Manipur University
18. Mumbai University
19. North Eastern Hill University
20. North Maharashtra University
21. Osmania University
22. Patna University
23. Pune University
24. Punjab University
25. Rajasthan University
26. Ranchi University
27. Shivaji University
28. Sri Krishnadevaraya University
29. Sri Venketeswara University
30. Utkal University

ANNEXURE-7

In this Section papers offered by various universities in Undergraduate & Postgraduate level in Geography has been tabulated. Information has been compiled for 30 universities listed in ANNEXURE-VI for which the U.G.C could get Syllabus. Some of the Universities have not supplied this information for all Geography courses.

UNIVERSITY	ALIGARH MUSLIM

List of Papers at different levels in Geography

B.A./B.Sc. (Hons.) Geography		
I Year	**II Year**	**III Year**
Paper - I Physical Geography - I (Geomorphology)	**Paper - I** Geography of Resources	**Paper - I** Evolution of Geographical Thought
Paper - II Physical Geography - II (Climatology and Oceanography)	**Paper - II** Geography of Resource utilization	**Paper - II** Major world Environment
Practical - I Cartography - I and surveying	**Practical - II** Cartography-II and Leveling	**Paper - III** Physical Geography of India **Paper - IV** Socio & Economic Geography of India **Paper - V Any one of following** 1. Geography of Asia (Excluding India) 2. Geography of North America 3. Geography of Australia and New Zealand **Paper - VI Any one of following** 1. Agriculture and Rural Development 2. Population and Settlement Geography 3. Urban and Regional Development **Practicals** (i) Astronomy and Map Projections (ii) Statistical Techniques (iii) Remote Sensing Techniques.

M.A./M.Sc. (Geography)	
I Year	**II Year**
Paper - I Geomorphology **Paper - II** Climatology **Paper - III** Oceanography **Paper - IV** Bio-Geography **Paper - V** Human and Economic Geography **Practicals** 1. Statistical Methods - I 2. Cartography - I 3. Air Photo Interpretation and Remote Sensing 4. Field methods and Tours	**Paper - I** Geographical Thought **Paper - II** Environmental Geography **Paper - III** India: A Systematic and Regional Geography **Paper - IV (Any one)** 1. Political Geography 2. Agricultural Geography 3. Rural Geography 4. Urban Geography **Paper - V (Any one)** 1. Regional Development and Planning 2. Population Geography 3. Social Geography 4. Geography of Resources **Practical - I** Statistical Methods - II **Practical - II** Cartography - II Surveying and Survey Camp. Project

POST GRADUATE DIPLOMA IN CARTOGRAPHY

Paper - I Fundamentals of Cartography

Paper - II Cartographic Methods and Techniques

Paper - III Quantitative Methods in Cartography

Paper - IV Computer Assisted Cartography

Practicals

I. Application of Cartographic Tools

II. Cartographic Representation of Statistical Data

III. Computer Cartography and Map Projection

Project work and field training

UNIVERSITY	**ALLAHABAD**

List of Papers at different levels in Geography

B.A./B.Sc. General		
I Year	**II Year**	**III Year**
1. Physical Geography	1. Regional Geography of excluding India	1. Geography of Climate and landforms
2. Human Geography	2. Geography of India	2. Geography of population and settlements
3. Practical	3. Practical	3. Resource Geography
		4. Practical

M.A./M.Sc.	
I Year	**II Year**
1. Geographical Thought	1. (a) Geomorphology or (b) Climatology and Oceanography
2. Environmental Geography	2. (a) Urban Geography or (b) Agricultural Geography
3. Social Geography	3. (a) Regional Planning or (b) Political Geography
4. Research Methodology **Practicals** - Tests in Cartographic laboratory work and field world.	4. (a) Geography of Tourism or (b) Remote sensing and Geographical Information System **Practicals** Cartographic Laboratory Work Field Work (Surveying) and Viva-Voce Geographical Field Study Report Sessional Record Work.

UNIVERSITY	**AMRAVATI**

List of Papers at different levels in Geography

B.A./B.Sc. General		
I Year	**II Year**	**III Year**
1. Physical basis of Geography 2. **Practical**	1. Regional Geography of Monsoon Asia and Bio-geography 2. **Practical**	1. Geography of Resources and their utilization 2. **Practical**

M.A./M.Sc.	
I Year	**II Year**
1. Geography of India 2. Geomorphology 3. Climatology 4. Practical	1. Geographic thought 2. Geography of Economic Activities 3. Agricultural Geography (Optional) 4. Population Geography (Optional) 5. Practical

UNIVERSITY	ANDHRA

List of Papers at different levels in Geography

B.A./B.Sc. Geography		
I Year	**II Year**	**III Year**
Paper-I Principles of Physical Geography Practical-I	**Paper-II** Economic Geography Practical-II	**Paper-III** Regional Geography of India **Paper-IV** Regional Geography of Asia Practical-III Practical-IV

M.A./M.Sc.	
I Year	**II Year**
Paper-I Physical Basis of Geography **Paper-II** Social and Economic Geography **Paper-III** Geographical Thought **Paper-IV** Regional Geography of India with special reference to Andhra Pradesh	**Paper-I** Urban and Regional Planning **Paper-II** Remote Sensing **Paper-III (optional)** (a) Advance Geomorphology (b) Advance Cartography **Paper-IV (optional)** (a) Geography of Resources (b) Urban Environmental Studies Practical-I Terrain Analysis and Techniques of Map Analysis Practical-II (a) Interpretation of Air Photographs (b) Interpretation of Satellite Imageries (c) Geographical Information System

UNIVERSITY	**ARUNACHAL**

List of Papers at different levels in Geography

B.A.(Pass) Geography		
I Year	**II Year**	**III Year**
Core **Paper-I** (a) Elements of Physical Geography (b) Map work and practical	**Paper-II** (a) Human and Economic Geography (b) Map Work and Practical	**Paper-III** (a) Geography of India with Special reference to North-East India (b) Map Work and Practical **Paper-IV** Population Geography

B.A. (Hons.) Geography		
I Year	**II Year**	**III Year**
Core **Paper-I** (a) Elements of Physical Geography (b) Map Work and Practical	**Paper-II** Human and Economic Geography **Paper-IV** Map Work and Practical **Paper-V** Geomorphology	**Paper-III** Geography of India with special reference to North-East India **Paper-VI** Climatology, Bio-Geography **Paper-VII (Optional)** (1) Population Geography (2) Agriculture. Geography (3) Urban Geography (4) Resource Geography and Regional Planning (5) Regional Geography of SAARC Countries **Paper-VIII** Map Work and Practical **Paper-IX** Map Work and Practical

UNIVERSITY	**BANARAS HINDU UNIVERSITY**

List of Papers at different levels in Geography

B.A.B.Sc. (Hons.) Geography		
I Year	**II Year**	**III Year**
1. Physical basis of Geography	1. Regional Study of selected developed and developing countries	1. Geomorphology
2. Human Geography	2. Economic Geography	2. Climatology
3. Practical-I	3. Practical-II	3. India 4. Indian Ocean Realm 5. Any two of following (i) Geography of settlement (ii) Historical and Cultural Geography (iii) Political Geography and Geopolitics (iv) Cartography (v) Transport Geography (vi) Population Geography (vii) Agricultural Geography (viii) Hydrology (ix) Industrial Geography (x) Regional Development 6. Practical-III 7. Practical-IV

M.A./ M.Sc. (Geography)	
I Year	**II Year**
Paper-I Geographic Thought; concept and Methodology	**Paper-VII** Environmental Studies
Paper-II Concept and Techniques in Geomorphology	**Practical-V** Hydrology, Air photo, soil and water analysis
Paper-III Physical Landscape and Hydrology	**Field of specialization**
Paper-IV Geography of Resources	**Group-I** Population and Settlement Geography
Paper-V Economic Regionalisation	**Group-II** Applied Geography and Regional Planning
Paper-VI Advanced Geography of India	
Practical-I Physical Maps and Diagrams	**Group-III** Cartography and Remote Sensing
Practical-II Research oriented survey methods statistical techniques and data processing	**Group-IV** Land and Water Resources (Each specialization group will have 4 Theory papers and two Practicals)
Practical-III Spatial Analysis (a) Network Analysis and (b) Locational Analysis	Field Training and Educational Excursion Problem Oriented Field work Dissertation (Related to field of Specialization)
Practical-IV Surveying and Advanced Map Projections	

UNIVERSITY	BURDWAN

List of Papers at different levels in Geography

B.A./B.Sc. (Hons.) Geography		
I Year	**II Year**	**III Year**
Paper-I Geotectonics, Geomerphology and Hydrosphere	**Paper-V** Nature of Geography	**Paper-IX** Group A- Concept and Primary activities Group B-Secondary and Territory activities.
Paper-II Climatology, Soil and Bio-Geography	**Paper-VI** Group A- Regional Geography Group B - Special Paper	
Paper-III Economic and Cultural Geography	**Practical Paper-VII** Cartography and field Techniques	
Practical Paper-IV Cartography	**Paper VIII** Group A- Statistical Techniques	
	Paper VIII Group B- Special Paper	

M.A./M.Sc. (Geography)	
I Year	**II Year**
Paper-I Geographic Thought	**Paper-VII** Social and Cultural Geography
Paper-II Geomorphology	**Paper-VIII** Land use and Land use planning
Paper-III Biogeography	**Paper-IX** India
Paper-IV Economic Geography	**Paper-X** Special Paper
PRACTICALS	**PRACTICALS**
Paper-V Statistical Techniques	**Paper XI** Geographical Information System, Remote Sensing and Advanced mapping Techniques - Group-A, Group-B
Paper-VI Cartography - Group A - Group B	**Paper XII** Special Paper

UNIVERSITY	DEEN DAYAL UPADHYAY, GORAKHPUR

List of Papers at different levels in Geography

B.A./B.Sc. (General) Geography		
I Year	**II Year**	**III Year**
NIL	NIL	**Paper-I** Evolution of Geographical Thought **Paper-II** Indian Ocean Region **Paper-III** Environment Ecology and Development **Paper-IV** Practicals

M.A./M.Sc. (Geography)	
I Year	**II Year**
Paper-I Geomorphology	**Paper-I** Climatology and Oceanography
Paper-II Man and Biosphere	**Paper-II** Advanced Geography of India
Paper-III Geography of Resource	**Paper-III (Optional-A)** (1) Agricultural, (2) Population, (3) Marketing, (4) Industrial, (5) Remote Sensing & Photogrametry, (6) Rural Settlement, (7) Advanced Cartography
Paper-IV Geographic Thought	**Paper-IV (Optional-B)** (1) Political, (2) Bio-Geography, (3) Transport, (4) Regional Planning, (5) Geographical Information System (GIS), (6) Urban,(7) Geography of Health
Paper-V Practical	**Paper-V** Practical: A - Cartography B - Field Work

UNIVERSITY	**GUJARAT**

List of Papers at different levels in Geography

B.A./B.Sc.(Pass) Geography		
I Year	**II Year**	**III Year**
I Physical Geography	III Human Geography	VI Geography of India
	IV (a) Physical and Economic Geography of South-East Asia	VII (a) Geography of Australia and New Zealand
II Geography of Gujarat	IV (b) South-West Asia Physical & Economic Geography	VII (b) Physical and Economic Geography of Europe VII (c) Physical and Economic Geography of North America
II (a) Introduction to Geography	IV (c) China and Japan IV (d) Introduction of Geography-II	VII (d) Physical and Economic Geography of USSR
II (b) Regional Geography of Neighbouring States	V Cartography-I	VIII (a) Elements of Economic Geography. VIII (b) Geography of Marketing VIII (c) Geography of settlements IX (a) Geography of Tourism IX (b) Elements of Political Geography IX (c) Geography of Soils and Agriculture X Cartography-II (Theory + Practical) XI (a) Contemporary issues in Applied Geography XI (b) Geography of Transportation & Trade

M.A./M.Sc. (Geography)	
I Year	**II Year**
1 Advanced Physical Geography or Geomorphology	1 Man and Environment System or Climatology & Oceanography
2 Geography of Natural Resources or Resource Geography of Gujarat	2 Geography of Manufacturing or Population Geography
	3 Social Geography or Geographical System Planning
3 Urban Geography or Geography of Rural Development	4 Methods and Techniques in Geographical Research
4 Development of Geographic Thought	5 Regional Planning and Development
5 Practical-I	6 Practical-II
	7 Dissertation

UNIVERSITY	GURU NANAK DEV

List of Papers at different levels in Geography

B.A./B.Sc. (Pass) Geography		
I Year	**II Year**	**III Year**
Paper	**Paper**	**Paper**
1. Physical Geography (I) Geomorphology (II) Climatology & Oceanography	1. Geography of Resources and Resources Utilization	1. World Regional Geography
2. Cartography	2. Geography of Punjab	2. Geography of India
3. Cartography		3. Map Projections and field Report

M.A./M.Sc. (Geography)	
I Year	**II Year**
Paper	**Paper**
1. India: A study in Resources their utilization and problems	1. Geographic Thought
2. Geomorphology	2. Town and country planning
3. Climatology	3. Geography of Regional Planning
4. **Optional Paper** (i) Agricultural Geography (ii) Geography and rural settlements (iii) Geography of Manufacturing (iv) Political Geography (v) Transportation Geography (vi) Geography and Ecosystem (vii) Urban Geography	4. Quantitative methods
5. Cartography	5. Field methods (practical only)
6. Map projections air photo, interpretations and remote sensing	6. Options:- (i) Marketing Geography (ii) Administrative Geography (iii) Social Geography (iv) Population and Development and Planning (v) Regional Development and Planning in India (vi) Special themes in Agricultural Geography (vii) Historical Geography (viii) Geography of Middle East (ix) Geography of Far East (x) Geography of SAARC Countries (xi) Population Geography

UNIVERSITY	**JAMIA MILLIA ISLAMIA**

List of Papers at different levels in Geography

B.A./B.Sc. (Gen.) Geography		
I Year	**II Year**	**III Year**
Paper	**Paper**	**Paper**
1. Human & Economic Geography Geography	1. Physical basis of Geography	1. Asia (excluding India)
2. Practical	2. India	2. Regional Geography
	3. Practical	3. Practical

B.A./B.Sc. (Hons.) Geography		
I Year	**II Year**	**III Year**
Paper	**Paper**	**Paper**
1. Human Geography	1. Geomorphology	1. Asia(excluding India)
2. Economic Geography of the World	2. Oceanography and Climatology	2. India
3. Practical	3. Practical	3. Regional Geography(Group A or Group B)
		4. History of Geographic Thought
		5. Practical

M.A./M.Sc. (Geography)	
I Year	**II Year**
Paper	**Paper**
I Physical Geography (Geomorphology)	VI Evolution of Geographical Thought
II Physical Geography (Climatology and Oceanography)	VII Systematic and Regional Geography of India
III Human Geography	VIII Remote Sensing
IV Economic Geography	IX Optional (Any one of the following) (a) Advanced Geomorphology (b) Agricultural Geography (c) Medical Geography (d) Population Geography (e) Urban Geography
V Regional Geography **Part-A:** Developed Countries (any one) U.S.A.; USSR; Great Britain; Japan	Practical-IV Advanced Statistical Methods Practical-V Advanced Surveying Practical-VI Air-Photo and Imagery Interpretation Practical-VII Remote Sensing Training
Part B: Developing Countries (any one) Bangladesh; Nepal; Pakistan; Sri Lanka	Project under optional paper - Dissertation and Viva-Voce
Practical-I Cartographic Methods in Geography	General Viva Voce - The general viva-voce will be ordinarily based on the courses taught in the M.A./M.Sc. Final
Practical-II Quantitative Methods in Geography	
Practical-III Socio-Economic Survey	

Post Graduate Diploma in Cartography

Paper-I — Fundamentals of Cartography

Paper-II — Method and Technique of Cartography

Practicals I, II, III

Project IV

Viva-Voce

UNIVERSITY	**KARNATAKA**

List of Papers at different levels in Geography

B.A. Geography		
I Year	**II Year**	**III Year**
1. Physical Geography	1. Geography of India	1. Human & Economic Geography (a) Fundamentals of Human Geography (b) Economic Geography
2. Climatology	2. Geography of Karnataka	2. Development of Geographical Thought
3. Oceanography & Bio-Geography		3. Geography of Environment **Practical-I** Study of S.O.I Topographical Maps **Practical-II** Statistics and Map Projections

B.Sc. Geography		
I Year	**II Year**	**III Year**
Paper-I Physical Basis of Geography (i) Geomorphology (ii) Climatology (iii) Oceanography, (iv) Bio-Geography	**Paper-I** Geography of India	**Paper-I** Human and Economic Geography
Practical Scales, Map Work and Enlargement and Reduction	**Practical** IMD Weather Maps and Map Projection	**Paper-II** Introduction to Bio-Geography **Practical-I** Basic Statistics and Cartographic Representation of Statistical Data **Practical-II** Study of S.O.I. Top graphical maps

M.A./M.Sc. (Geography)	
I Year	**II Year**
Paper-I Geomorphology **Paper-II** Climatology and Oceanography **Paper-III** Development of Geographic Thought **Paper-IV** Environmental and Population Geography **Practicals** I-A) Cartographic and Meteorological Instruments and Cartographic Methods. I-B) Surveying II-A) Basic Statistics, Representation of Geographic data and Computer Application II-B) Cartography and Computer Application	**Paper-V** Theoretical and Quantitative Geography **Paper-VI** Geography of Agriculture and Marketing **Paper-VII** Geography of Settlement and Transport **Paper-VIII** Regional Planning and Development **Practical-IIIA:** Interpretation of Indian and Foreign Weather maps **Practical-III-B:** Quantitative Techniques **Practical-IVA:** Ariel Photos, Remote Sensing and Geographical Information Systems (GIS). **Practical-IVB:** Project work. **Optional—** 1. Cultural and Tourism Geography 2. Resource Geography and Resource Planning

UNIVERSITY	KURUKSHETRA

List of Papers at different levels in Geography

B.A./B.Sc. General		
I Year	**II Year**	**III Year**
Paper-I Physical Basis of Geography	**Paper-I** Economic Geography	**Paper-I** Geography of India
Paper-II Map work and Practical (Cartography and surveying)	**Paper-II** Map work (Theory and Practical)	**Paper-II** Human Geography Statistical Methods and Surveying

M.A./M.Sc.	
I Year	**II Year**
Paper-I Geomorphology	**Paper-I** History of Geographical Thought
Paper-II Climatology	**Paper-II (any one of the following options)** (i) Urban Geography (ii) Landform Geography (iii) Agricultural Geography (iv) Cultural Geography (v) Population Geography
Paper-III Economic Geography	**Paper-III (any one of the following options)** (i) Water Resources (ii) Rural Settlement (iii) Political Geography (iv) Regional Planning and Development (v) Man and Environment
Paper-IV Quantitative Methods, Map Projections and Cartographic Representation of Climate and Socio-economic Data (Theory).	**Paper-IV** Remote Sensing, Toposheets Interpretation and Morphometric Analysis (Theory)
Paper-V Practical	**Paper-V** Remote Sensing, Toposheets Interpretation and Morphometric Analysis (Practical)

UNIVERSITY	LUCKNOW

List of Papers at different levels in Geography

B.A./B.Sc. (General.) Geography		
I Year	**II Year**	**III Year**
Paper-I Principles of Physical Geography	**Paper-I** Principles of Human Geography	**Paper-I** Principles of Economic Geography
Paper-II Regional Geography of North America or Europe or three Southern Continents	**Paper-II** Systematic and Regional Geography of India	**Paper-II** Political Geography **Paper-III** Population Geography
Practical Geography- Desk Work	Practical Geography - Desk Work	Practical Geography- Surveying and Field Work

M.A./M.Sc. (Geography)	
I Year	**II Year**
Paper-I Evolution of Geographical Thought	**Paper-I** Environmental Geography
Paper-II Geomorphology	**Paper-II** Geography of India
Paper-III Geography of Resources	**Paper-III** Marketing Geography
Paper-IV Settlement Geography	**Paper-IV** Regional Planning
Practical-I Lab Work: Cartography	**Practical-I** Laboratory work: Statistical Techniques
Practical-II Field work: Surveying	**Practical-II** Research Work

UNIVERSITY	MADURAI KAMRAJ

List of Papers at different levels in Geography

M.A./M.Sc.	
I Year	**II Year**
CORE COURSES	***CORE COURSES***
FIRST SEMESTER	**THIRD SEMESTER**
1. Principles of Geomorphology	1. Principles of Cartography
2. Theoretical and Applied Geomorphology	2. Concepts and Trends in Geography
3. Atmospheric and Oceanographic Studies	3. Transport Geography
4. Hydrology and Applied Climatology	4. Geography of India
5. Environmental Studies	5. **Practical-III** Computer application in Statistical Geography
6. **Practical -I** Terrain and Climatic Data Analysis	6. **Practical-IV** Thematic Cartography
SECOND SEMESTER	**FOURTH SEMESTER**
1. Geography of Economic-Activities	1. Geography of India
2. Population Geography	2. Principles of Remote Sensing and GIS
3. Urban Geography	3. Dynamics of Travel and Tourism
4. Agricultural Geography	4. Regional Planning
5. Medical Geography	5. **Practical-V** Interpretation of Remotely Sensed Produced Data and Application of GIS in Geography
6. **Practical-II** Basics of Computers in Geography	6. Project
	ELECTIVE COURSES
	1. Agricultural Geography 2. Medical Geography 3. Transport Geography 4. Geography of India 5. Dynamics of Travel and Tourism 6. Regional Planning

* Details for Undergraduate Courses are not available

UNIVERSITY	**MAHARSHI DAYANAND**

List of Papers at different levels in Geography

B.A./B.Sc. General		
I Year	**II Year**	**III Year**
Paper-I Physical Basis of Geography **Paper-II** Map Work and Survey (Theory & Practical)	**Paper-I** Economic Geography **Paper-II** Map work & Survey	**Paper-I** Geography of India **Paper-II** Human Geography **Paper-III** Statistical methods and Surveying

M.A./M.Sc.	
I Year	**II Year**
Paper-I Geomorphology **Paper-II** Climatology **Paper-III** Economic Geography National Resource Appraisal and Regional Development **Paper-IV** Quantitative Methods in Geography **Paper-V** Practical Geography	**Paper-I** Modern Geographical Thought **Paper-II** Advanced Regional Geography of India **Paper-III (any one of the following options)** 1. Political Geography 2. Urban Geography 3. Geography of rural settlement 4. Agricultural Geography 5. Regional Planning 6. Bio-Geography **Paper-IV (any one of the following options)** 1. Political Geography 2. Social Geography 3. Geography of Human Welfare 4. Cultural Geography 5. Applied Geography 6. Anthropo Geography **Paper-V** Field methods of Investigation in Geography (Theory) Scope analysis, Remote Sensing and Aerial-photo interpretation (Practical)

UNIVERSITY	MANIPUR

List of Papers at different levels in Geography

M.A./M.Sc. Geography	
I Year	**II Year**
Paper-I Geomorphology and Hydrology	**Paper-I** Remote Sensing and Resource Evaluation
Paper-II Geographic Thought and Methodology	**Paper-II** Population and Settlement Geography
Paper-III Geography of Resources	**Paper-III** Regional Development and Planning
Paper-IV Geography of India	**Paper-IV** Agricultural Geography
Paper-V Practical - Geological and Geomorphological Maps	**Paper-V** Practical - Remote Sensing and Resource Mapping
Paper-VI Practical - Quantitative Techniques	**Paper-VI** Practical- Spatial Analysis and Population Mapping
Paper-VII Practical - Research Methods and Field Report	**Paper-VII** Practical Agricultural Geography Practical and field report. **Additional Optional Papers (Theory & Practical)** 1. Climatology Practical and field Survey Report 2. Cultural Geography Practical and field Survey Report 3. Industrial Geography Practical and field Survey Report 4. Political Geography Practical and field Survey Report

UNIVERSITY	**MUMBAI**

List of Papers at different levels in Geography

B.A. (General) Geography		
I Year	**II Year**	**III Year**
Paper-I Global Processes and Patterns	**Paper-II** Processes and Patterns of World Economy **Paper-III** Geography of Economic Activities in India with special reference to Maharashtra	**Paper-IV** Fundamentals of Physical Geography **Paper-V** Fundamentals of Human Geography **Paper-VI** Topographical and Thematic Maps **Paper-VII** Geography of the Third World **Paper-VIII** Contemporary Issues : A Geographical Perspective or World Political Issues: A Geographical Perspective or Emerging Socio- cultural Issue in India: A Geographical perspective **Paper-IX** Geographical Skills and Aptitudes

M.A./M.Sc. (Geography)	
I Year	**II Year**
Paper-I Fundamentals of Geomorphology	**Paper-VII** Spatial Dimensions of Development
Paper-II Climato-Biotic Interaction	**Paper-VIII** Geography of South Asia with particular reference to India
Paper-III Geography of Human Society	**Paper-XI** Tools and techniques of spatial Analysis-III
Paper-IV Spatial Organization of Economic Activities	**Paper-XII** Tools and techniques of spatial Analysis-IV
Paper-V Tools and Techniques of Spatial Analysis-I	**Paper-IX-X** Optional papers
Paper-VI Tools and techniques of spatial Analysis-II	**Group A: Physical/Natural Resources** (1) Tropical Geomorphology (2) Coastal Geomorphology (3) Fluvial Geomorphology (4) Climatology of the Tropics (5) Microclimatology (6) Plant Geography with special reference to Tropics (7) Geography of Soils with special reference to Tropics (8) Geographical Perspective on Ocean Development (9) Geography of Water Resource Management

	Group B: Social and Cultural Group (1) Regional Development and Planning (2) Urban Geography (3) Social Geography (4) Historical Geography (5) Political Geography (6) Cultural Geography (7) Agricultural Geography (8) Geography of Energy Resources (9) Industrial Geography (10) Geography of Trade & Marketing (11) Geography of Transport & Communication (12) Geography of Tourism and Recreation (13) Geography of Tribes with special Reference reference to India **Group C: Interface Group** (1) Thematic Cartography (2) Advanced Techniques in Geography (3) Geography of Environmental Quality (4) Theoretical Geography (5) Geography of Health (6) Dissertation

UNIVERSITY	NORTH EASTERN HILL UNIVERSITY

List of Papers at different levels in Geography

B.A./B.Sc. General Geography		
I Year	**II Year**	**III Year**
Paper-I Physical Geography **Paper-III(a)** Practical	**Paper-II** Human Geography **Paper-IV** Regional Geography of India with Special Reference to the North East Region **Paper-III(b)** Practical	**Paper-V** Economic Geography **Paper-VI** Practical

B.A./B.Sc. (Hons.)Geography		
I Year	**II Year**	**III Year**
In addition to the papers as given for B.A.,B.Sc.General Course	In addition to the papers as given for B.A.,B.Sc.General Course	In addition to the papers as given for B.A.,B.Sc.General Course
Paper-VII History and Nature of Geography	**Paper-VIII** Regional Geography (a)Regional Geography of South East Asia (b) Regional Geography of USA or Western Europe	**Paper-X** Geography of Resources
Paper-IX(a) Practical	**Paper-IX(b)** Practical	**Paper-XI** Optional Paper (Any one of the following) a) Geomorphology b) Population Geography c) Urban Geography d) Agricultural Geography Practical and Project Regional Geography **Paper-XII** Practicals

M.A./M.Sc. (Geography)	
I Year	**II Year**
Core	
Paper-I	**Paper**
Geomorphology	1. Remote Sensing and Image Interpretation
Paper-II	2. Environmental Science and Geography
Climatology & Hydrology	3. Applied Climatology
Paper-III	4. Hydrology
Systematic and Regional	5. Tropical Geomorphology
Geography of India	6. Advanced Geomorphology
Paper-IV	7. Geography of Tribes of India
Introduction to Mathematical &	8. Political Geography
Statistical Techniques	9. Historical Geography
Paper-V	10. Geography and Development
Cartographic Techniques	11. Regional Planning-I (Principles & Techniques)
Paper-VI	12. Integrated Area Planning
Elements and Principles of Geology	13. Agricultural Geography
Paper-VII	
History and Philosophy of Geography	
Paper-VIII	
Principles and Techniques of Economic Geography	
Paper-IX	
Fundamental of Social and Cultural Geography	
Paper-X	
Settlement and Population Geography	
Paper-XI	
Remote Sensing and Surveying (Practicals)	

UNIVERSITY	**NORTH MAHARASHTRA**

List of Papers at different levels in Geography

B.A. Geography		
I Year	**II Year**	**III Year**
Paper-I Physical Geography	**Paper-II (Option)** Human Geography Or Political Geography **Special Paper-I (Option)** Economic Geography Or Geography of Tourism **Special Paper-II (Option)** Practical, Scale, Projections, Cartographic Techniques, and Surveying (Map Making) Excursions or Village Survey	**Paper-III (Option)** Population Geography Or Settlement Geography **Special Paper-III (Option)** Environmental Science Or Geography of Health and Nutrition **Special Paper-IV** Practical Elements of Map Reading and Statistical Methods

B.Sc. Geography		
I Year	**II Year**	**III Year**
Paper-I Elements of Physical Geography **Paper-II** Population Geography **Paper-III** Practicals, Scale, Toposheet, Weather Map Instruments	**Paper-I** Economic Geography **Paper-II** Environmental Science **Paper-III** Practical, Map, Projection, Surveying and Field Excursion	**Paper-I** Principles of Geomorphology **Paper-II** Principles of Climatology **Paper-III** Regional Geography of Maharashtra **Paper-IV** Settlement Geography Or Agricultural Geography **Paper-V** Soil Geography **Paper-VI** Political Geography Or Geography of Tourism **Practical-I** Statistical and Computer Techniques in Geography **Practicals** (1) Statistical and Computer Techniques in Geography (2) Practical in Geomorphology and Soil Analysis. (3) Remote Sensing, project work and excursion.

M.A./M.Sc. (Geography)			
1st SEMESTER	**2nd SEMESTER**	**3rd SEMESTER**	**4th SEMESTER**
1. Principle of Economic Geography	1. Principles of Geomorphology	1.(a) Fluvial Geomorphology (b) Synoptic Climatology (c) Agricultural Geography (d) Population Geography	1.(a) Tropical Geomorphology (b) Monsoon Climatology (c) Industrial Geography (d) Urban Geography
2. Principles of population and settlement geography	2. Principles of Climatology	2.(a) Coastal Geomorphology (b) Applied Climatology (c) Geography of Trade and Transport (d) Geography of Rural Settlement	2. Regional Planning
3. Environmental Science	3. Statistical Methods	3. Interpretation of Aerial Photographs and Satellite imageries	3. Surveying and Interpretation of Topographical Maps
4. Physical and Regional Geography of India	4. Regional Geography of USA Japan, South-East Asia (Common Syllabus)	4.(a) Geography of Resources (b) Watershed Management and Planning (c) Political Geography	4.(a) Soil Geography (b) Hydrology (c) Development of Geographical Thoughts (d) Multivariate Statistical Analysis in Geography

5. Practical in Human Geography	5. Practical in Physical Geography (a) Geomorphology (b) Climatology (c) Excursion	5.(a) Geography of Economic Development (b) Geography of Health and Nutrition (c) Application of Computer in Geography and Geographic Information System	5.(a) Dissertation (b) Geography of Tourism (c) Bio-Geography

UNIVERSITY	OSMANIA

List of Papers at different levels in Geography

B.A./B.Sc. Geography		
I Year	**II Year**	**III Year**
Paper-I Principles of Physical Geography Practical-I	**Paper-II** Economic Geography Practical-II	**Paper-III** Regional Geography of India **Paper-IV** Regional Geography of Asia Practical-III Practical-IV

M.A./M.Sc.	
I Year	**II Year**
Paper-I Physical Basis of Geography **Paper-II** Social and Economic Geography **Paper-III** Geographical Thought **Paper-IV** Regional Geography of India with special reference to Andhra Pradesh	**Paper-I** Urban and Regional Planning **Paper-II** Remote Sensing **Paper-III (optional)** (a) Advance Geomorphology (b) Advance Cartography **Paper-IV (optional)** (a) Geography of Resources (b) Urban Environmental Studies Practical-I Terrain Analysis and Techniques of Map Analysis Practical-II (a) Interpretation of Air Photographs (b) Interpretation of Satellite Imageries (c) Geographical Information System

UNIVERSITY	PATNA

List of Papers at different levels in Geography

B.A./B.Sc. (Hons.) Geography		
I Year	**II Year**	**III Year**
Paper-I (a) Physical Geography (b) Practical **Paper-II** (a) Asia : Regional Study (b) Practical	**Paper-III** (a) India and Bihar: Regional Study (b) Practical **Paper-IV** (a) Economic and Resource Geography (b) Practical	**Paper-V** Geographical Thought and Three Southern Continents **Paper-VI** Human Geography **Paper-VII Optional:** (Any one of the following) 1. Population Geography 2. Geology of India 3. Landuse and Agriculture 4. Cartography and Map Making 5. Political Geography 6. Regional Planning 7. Urban Geography and Planning 8. Racial and Tribal Geography **Paper-VIII** Practical

M.A. (Geography)	
I Year	**II Year**
Paper-I Geophysics and Geomorphology **Paper-II** Climatology and Oceanography **Paper-III** Physical and Regional Geography of India **Paper-IV** Economic and Social Geography of India **Paper -V & VI (Any one of the following Groups)** **Group A** V-Geology of India-I VI-Geology of India-II **Group B** V- Political Geography-I **(Paper-II)** VI- Political Geography-II **Group C** V- Cartography-I VI-Cartography-II(Theory & Practical) **Group D (Paper-I)** V- Advance Geomorphology-I VI- Advance Geomorphology-II (Theory & Practical) **Paper-VII** Practical **Paper-VIII** Practical and Project work	**Paper-IX** Geographical Thought **Paper-X** Developing countries **Paper-XI** Resource Geography **Paper-XII** Social and Cultural Geography **Paper-XIII & XIV (Two Papers from any one the following Groups)** **Group E** XIII-Population Geography XIV-Population Geography of India **Group- F** XIII-Urban Geography XIV-Town and Regional Planning **Group- G** XIII-Environment Geography XIV-Environment Geography of India **Group H** XIII-Land use and Agricultural Geography XIV-Principles of land use and Agricultural Geography **Paper-XV & XVI** XV-Practical XVI-Practical

UNIVERSITY	**PUNE**

List of Papers at different levels in Geography

B.A. Geography		
I Year	**II Year**	**III Year**
Paper-I Elements of Physical Geography	**Paper-I** Political Geography **Paper-II** Population Geography **Paper-III (Special)** Economic Geography or Settlement Geography **Practical** Map making	**Special Paper-IV** Physical Geography of India and Geography of Maharashtra **Special Paper-V** Environmental Science or Geography of Tourism **Practical** Map Reading and Statistical Methods

B.Sc. Geography		
I Year	**II Year**	**III Year**
Paper-I Morphology and landscape	**Paper-I** Bio-Geography	**Paper-I** Geography of Resources
Paper-II Climatology and Oceanography	**Paper-II** Environmental Science	**Paper-II** Geography of Soils
Paper-III Practical	**Paper-III** Practical	**Paper-III** Hydrology
	Paper-IV Growth and Physiology of Micro-oganisms	**Paper-IV** Geography of Health and Nutrition
		Paper-V Physical Geography of India and Geography of Maharashtra
		Paper-VI Geography of Tourism
		Paper-VII Cartographic Techniques and Statistics
		Paper-VIII Practicals in Geomorphology and Soil Analysis
		Paper-IX Study of Toposheets, Project Work and Excursion

M.A./M.Sc. (Geography)			
1st Semester	**2nd Semester**	**3rd Semester**	**4th Semester**
Paper-I Principles of Geomorphology	**Paper-I** Development of Geographical Thoughts	**Paper-I** **One of the following according to specialization** - Tropical Geomorphology - Synoptic Climatology - Agriculture Geography - Population Geography of India	**Paper-I** **One of the following** - Coastal Geomorphology - Applied Climatology - Trade and Transport Geography - Urban Geography
Paper-II Principles of Climatology	**Paper-II** Principles of Population Geography	**Paper-II** **One of the following** - Fluvial Geomorphology - Monsoon Climatology - Industrial Geography - Geography of Rural Settlement	**Paper-II** **any one of the following (specialization)** - Watershed Management and Planning - Agro Climatology - Geography of Economic Development - Population, Resources, Development and Planning
Paper-III Principles of Economic Geography	**Paper-III** Geography of Resources	**Paper-III** **One of the following** - Multivariate Statistics - Political Geography - Soil Geography	**Paper-III** **One of the following** - Dissertation - Geography of Europe - Geography of SAARC Countries - Geography of China - Geography of USA

Paper-IV Principles of Settlement Geography	**Paper-IV** Practicals in Human Geography (a) Economic Geography (b) Population and Settlement Geography	**Practical** **One of the following** - Practicals in Geomorphology - Practicals in Climatology - Practicals in Settlement & Population	**Paper-IV** Any one of the following - Computer Application in Geography - Regional Planning
Paper-V Practicals in Physical Geography a)Geomorphology b)Climatology	**Paper-V** Village survey, Surveying and Statistical Method	**Practical** **One of the following** - Interpretation of Topo-graphical Maps & Cartography - Geographic Information System	**Practical** - Interpretation of Aerial Photography and Satellite Imageries

UNIVERSITY	PUNJAB

List of Papers at different levels in Geography

B.A. Geography		
I Year	**II Year**	**III Year**
Paper-A Physical Geography - I, Geomorphology	**Paper-A** Geography of Resources and Resource utilization	**Paper-A:** World Regional Geography
Paper-B Physical Geography-II, (Climatology & Oceanography)	**Paper-B** Geography of Punjab	**Paper-B** Geography of India or Environmental Geography
Paper-C Cartography	**Paper-C** **Cartography**	**Paper-C** Map Projection and Field Report

B.A.(Hons.) Geography	
II Year	**III Year**
Paper-I The Nature of Geography **Paper-II** **Any one of the following optional courses** (i) Population Geography (An Elementary Course) or (ii) Urban Geography (An Elementary Course)	**Paper-III** Applied Geography **Paper-IV** **Any one of the following options** (i) Agricultural Geography (ii) Political Geography (iii) Environmental Geography

M.A. (Geography)	
I Year	**II Year**
Paper-I Geographic Thought **Paper-II** Geomorphology **Paper-III** Climatology **Paper-IV** **Any one of the following optional paper** 1. Population Geography 2. Fundamentals of Agricultural Geography 3. Geography of Rural Settlements 4. Geography of Manufacturing 5. Political Geography 6. Transportation Geography 7. Geography and Ecosystems 8. Urban Geography **Paper-V** Cartography (Theory & Practical) **Paper-VI** Map Projections and Remote Sensing (Theory and Practical)	**Paper-I** Geography of India **Paper-II** Town and Country Planning **Paper-III** Geography of Regional Planning **Paper-IV** Quantitative Methods (Theory and Practical) **Paper-V** Field Methods in Geography (Practical only) **Paper-VI (Options)** 1. Marketing Geography 2. Administrative Geography 3. Social Geography 4. Population and Development Planning 5. Regional Development and Planning in India 6. Agricultural Geography 7. Historical Geography 8. Bio-Geography

UNIVERSITY	**RAJASTHAN**

List of Papers at different levels in Geography

B.A./B.Sc. (Pass) Geography		
I Year	**II Year**	**III Year**
Paper-I Physical Geography **Paper-II** Geography of Rajasthan **Practicals** - Surveying and Lab Work: - Chain & Tape; Contours, Toposheet, Scales, Enl. & Red. of Maps.	**Paper-I** Geography of India **Paper-II** Economic Geography **Practicals** - Surveying & Lab. Work Plane Table Survey - Representation of Population, Agriculture, Industrial Data - Mean, Median, Mode	**Paper-I** Regional Geography **Paper-II** Population & Settlement Geography **Practicals** - Surveying and Lab work; - Prismatic compass Survey; - Map Projections, Climatic data, Mean & Standard deriation, Correlation

B.A./B.Sc. (Hons.)Geography		
I Year	**II Year**	**III Year**
Paper-I Physical Geography **Paper-II** Human Geography **Paper-III** Economic Geography **Paper-IV** Cultural Geography **Practicals**	**Paper-V** Introduction to Political Geography **Paper-VI** Geography of Rajasthan **Paper-VII** Introduction to Bio-Geography **Paper-VIII** Statistical Methods in Geography **Practicals**	**Paper-IX** A systematic Geography of India **Paper-X** Evolution of Geographical Thoughts **Paper-XI** Agricultural Geography- an Introductory Course **Paper-XII** Land forms: Evolution and Evaluation **Practicals** Map projections and Surveying

M.A./M.Sc. (Geography)	
I Year	**II Year**
Paper-I Evolution of Geography Thoughts	**Paper-V** Advance Geography of India
Paper-II Physical basis of Geography	**Paper-VI** Optional - Any one of the following (a) Population Geography (b) Agriculture Geography (c) Industrial Geography (d) Transport Geography (e) Geography of Settlement (f) Advance Geomorphology
Paper-III Principles of Economic Geography	**Paper-VII** Optional - any one of the following (a) Urban Geography (b) Climatology & Oceanography (c) Applied Geography (d) Pedogogy (e) Medical Geography (f) Air Photo Interpretation and remote sensing
Paper-IV Optional (any one of the following) (a) Advance Geography of Monsoon Asia (b) Geography of Rural Development (c) Comparative Geography of USA and Russia (d) Geography of South Asian countries (Nepal, Bhutan, Bangladesh, Pakistan, Sri Lanka) (e) Advance Regional Geography of West Europe (f) Man and Natural Environment (g) Statistics on Geography	**Paper-VIII** Optional - any one of the following (a) Political Geography (b) Cultural Geography (c) Bio-Geography (d) Regional Planning (e) Meteorology (f) Geography of Water Resources and their management
Practicals: Laboratory & Map Work	**Practicals :** 7 days camp outside the State

UNIVERSITY	RANCHI

List of Papers at different levels in Geography

B.A. Geography (General)		
I Year	**II Year**	**III Year**
Paper-I Physical and Resource Geography Practical	**Paper-II** Geography of India	**Paper-III** Geography of Asia Practical

B.A./B.Sc. (Hons.)Geography		
I Year	**II Year**	**III Year**
Core		
Paper-I Physical Geography	**Paper-III** Geography of India with special reference to Jharkhand	**Paper-V** Geography of Three Southern Continents
Paper-II Regional Geography of Asia excluding India	**Paper-IV** Development of Geographical Thought	**Paper-VI** Resource and Environmental Geography
Subsidiary Paper	**Subsidiary Paper**	**Paper-VII**
Paper-I Physical and Resource Geography	**Paper-II** Geography of India	Geography of Settlements and landuse
Practical	Practical	Practical

M.A./M.Sc. (Geography)	
I Year	**II Year**
Paper-I Recent Developments in Geographic Thought	**Paper-IX** Resource Geography
Paper-II Physical Environment	**Paper-X** Human and Political Geography
aper-III Climate and Marine Environment	**Paper-XI** Research Methodology in Geography
Paper-IV Advanced Geography of India	**Paper-XII** Practical
Paper-V Detailed Geographical Study of Jharkhand	**Paper-XIII to XVI-Optional Paper Groups** A. Geology and Advanced Geomorphology B. Land use and Agricultural Geography C. Urban Geography and Regional Planning D. Geography of Tourism E. Population and Tribal Geography
Paper-VI Environmental Geography	
Paper-VII Practical	
Paper-VIII Practical	

UNIVERSITY	**SHIVAJI**

List of Papers at different levels in Geography

B.A. Geography		
I Year	**II Year**	**III Year**
Paper-I Physical Geography	**Paper-II** Human Geography **Paper-III** Geography of Maharashtra	**Paper-IV** 1. Economic Geography 2. Urban Geography **Paper-V** Geography of India Agriculture Geography **Paper-VI** 1. Thoughts and Concepts in Geography 2. Environmental Geography **Paper-VII (Practical-I)** Map Work and Weather Maps **Paper-VIII** Study of Topographical Map Practical-II Surveying, Tour Report

M.A./M.Sc. (Geography)			
1st Semester	**2nd Semester**	**3rd Semester**	**4th Semester**
Paper-I Geomorphology	**Paper-V** Applied Geomorphology	**Paper-IX** Development of Modern Geography	**Paper-XIII** Agricultural Geography
Paper-II Fundamentals of Climatology	**Paper-VI** Applied Climatology	**Paper-X** Geographical Aspects of Settle-ment System	**Paper-XIV** Urban Geography
Paper-III Geography of Man-Environment Interaction	**Paper-VII** Economic Geography	**Paper-XI** Regional Development Planning in India	**Paper-XV** i. Bio-Geography or ii. Geography of Tourism or iii. Remote Sensing Application in Geography
Paper-IV Social and Cultural Geography	**Paper-VIII** Geohydrology and Oceanography	**Paper-XII** Geography of Manufacturing	**Paper-XVI** i. Political Geography or ii. Geography of Health or iii. Geographical Information System in Spatial Analysis
Practical-I Analysis of Land - Forms	**Practical-III** Statistical Techniques in Geography	**Practical-V** Quantitative Methods and Computer Application in Geography	**Practical-VII** Remote Sensing Application (a) General (b) Special
Practical-II Analysis of Climatic Data	**Practical-IV** Analysis of Socio- Economic Data	**Practical-VI** Field Survey Methods and Techniques	**Practical-VIII** Project work based upon field work

UNIVERSITY	**SRI KRISHNADEVARYA**

List of Papers at different levels in Geography

B.A./B.Sc. Geography		
I Year	**II Year**	**III Year**
Paper-I Principles of Physical Geography	**Paper-II** Economic Geography	**Paper-III** Regional Geography of India
		Paper-IV Regional Geography of Asia
Practical-I	Practical-II	Practical-III
		Practical-IV

M.Sc. (Geography)	
I Year	**II Year**
1. Geomorphology	9. Urban Geography
2. Climatology and Oceanography	10. Agricultural Geography
3. Regional Geography of India with special reference to India	11. Human and Political Geography
4. Modern Geographical Thought	12. Cartography
5. Practical-I	13. Practical-V
6. Practical-II	14. Practical-VI
7. Practical-III	15. Practical-VII
8. Practical-IV	16. Practical-VIII

UNIVERSITY	SRI VENKETESWARA

List of Papers at different levels in Geography

B.A./B.Sc. Geography		
I Year	**II Year**	**III Year**
Paper-I Principle of Physical Geography	**Paper-II** Economic Geography	**Paper-III** Regional Geography of India
		Paper-IV Regional Geography of Asia
Practical-I	Practical-II	Practical-III
		Practical-IV

M.Sc. (Geography)	
I Year	**II Year**
1. Physical Geography	5. Regional Planning
2. Human Geography	6. Remote Sensing and Geographic Information System
3. Environmental Studies	**Optional Special Papers**
4. Advanced Regional Geography with special reference to Andhra Pradesh	**(Choose any one set)** A. Water Resources and Management Agricultural Geography B. Urban Geography Industrial and Transport Geography C. Applied Cartography Geography of Tourism and Travel
Practical-I	**Practical-III**
Practical-II	**Practical-IV**

UNIVERSITY	UTKAL

List of Papers at different levels in Geography

M.A./M.Sc. (Geography)	
I Year	**II Year**
17. Applied Geomorphology	7. Geographic Thought
18. Resource and Economic Geography	8. Environmental Geography
19. Regional Geography of India and Orissa	**Options** - any two of the following (a) Urban and Regional Planning (b) Population and Settlement Geography (c) Remote Sensing and Advanced Geography Information System
20. Geographic Information system	9. (i) Urban Planning (ii) Population Geography (iii) Remote Sensing 10. (i) Regional Planning (ii) Settlement Geography (iii) Advanced Geography Information System
Practicals	**Practical**
21. Statistical Methods and Computer Applications	11. Quantitative Geography
6. Cartography and Geography Information System Applications	12. Special Paper Practical (a) General Practical (b) Project Report

** Syllabus for Undergraduate Ccourse not available

ANNEXURE-8

Courses offered by universities in Geography at different levels

S. No.	University			BA	BSC	MA	MSC	DIPL-OMA
1	Aligarh Muslim	University,	Aligarh - 202002	1	1	1	1	1
2	Allahabad University	Allahabad - 211002.		1	0	1	0	0
3	Amravati University,	Amravati - 444604.		1	1	1	1	0
4	Andhra University,	Waltair,	Vishakhapatnam	1	1	1	1	0
5	Arunachal University	Itanagar - 791111.		1	0	1	0	0
6	Assam University	Silchar-788011		1	0	0	0	0
7	Awdesh Pratap Singh	University	Rewa - 486003.	1	0	1	0	0
8	Babasaheb Bhimrao	Ambedkar Bihar	Univ., Muzaffarpur	1	0	1	0	0
9	Banaras Hindu	University,	Varanasi - 221005.	1	1	1	1	0
10	Bangalore University	Bangalore - 560056.		1	0	1	0	0
11	Barkatullah	Viswavidyalaya,	Bhopal - 462026.	1	1	1	0	0
12	Berhampur University	Berhampur - 760007.		1	0	0	0	0
13	Bharathidasan	University ,	Tiruchirapalli	0	1	1	1	0
14	Bharti Vidyapeeth	Lal Bahadur Shastri	Marg, Pune-411030	1	0	0	0	0
15	Bhavnagar University	Bhavnagar - 364002.		1	0	0	0	0
16	Bundelkhand	University,	Jhansi - 284001.	1	1	1	0	0
17	Burdwan University,	Burdwan - 713104.		1	1	1	0	0
18	Calcutta University,	Calcutta - 700073.		1	1	1	1	0
19	Calicut University	Calicut - 673635.		1	0	1	1	0
20	Ch. Charan Singh Univ.	Meerut - 250005.		1	1	1	0	0
21	Chhatrapati Sahu Ji	Maharaj University	Kanpur	1	1	1	1	0
22	Deen Dayal Upadhyay	University Gorakhpur		1	0	1	0	0
23	Delhi University,	Delhi - 110007.		1	0	1	0	0
24	Devi Ahilya	Viswavidyalaya,	Indore - 452001.	1	1	1	0	0
25	Dibrugarh University	Dibrugarh - 786004.		1	1	1	0	0
26	Dr. Baba Saheb	Ambedkar Marathwada	Aurangabad -431004	1	1	1	0	0
27	Dr.Bhim Rao Ambedkar	University, Agra		1	1	1	0	0
28	Dr.Hari singh Gaur	Vishwavidyalaya,	Sagar - 470003.	1	1	1	1	0
29	Dr. Ram Manohar Lohia	Awadh University	Faizabad-224001	1	0	1	0	0
30	Gauhati University,	Gauhati - 781014.		1	1	0	1	0
31	Goa University,	Panaji		0	1	0	0	0

32	Gujarat University,	Ahemdabad - 380009.		1	0	1	1	0
33	Guru Ghasidas	University,	Bilaspur-485009(M.P)	1	0	1	0	0
34	Guru Nanak Dev	University ,	Amritsar - 143005.	1	1	1	1	0
35	Hemavati Nandan	Bahuguna Garhwal	University,Srinagar	1	1	1	0	0
36	Himachal Pradesh	University,	Simla - 171005.	1	1	1	0	0
37	Jai Narayan Vyas	University ,	Jodhpur - 342001.	1	1	1	0	0
38	Jai Prakash	Viswavidyalaya,	Chapra- 841301	1	0	1	0	0
39	Jamia Millia Islamia	New Delhi - 110025.		1	0	1	1	1
40	Jammu University,	Jammu - 180001.		1	1	1	1	0
41	Jawaharlal Nehru	University,	New Delhi -110067.	0	0	1	1	0
42	Jiwaji University,	Gwalior - 474011.		1	1	1	1	0
43	Karnatak University,	Dharwad - 580003.		0	1	1	1	0
44	Kashmir University,	Hazaratbal,	Srinagar - 190006.	1	1	1	0	0
45	Kerala University,	Thiruvanthapuram	-695034	1	0	0	0	0
46	Kumaun University,	Nainital - 263001.		1	1	1	0	0
47	Kurukshetra	University,	Kurukshetra - 132119	1	0	1	1	0
48	Lalit Narayan	Mithila University,	Darbhanga - 846004.	1	0	1	0	0
49	Lucknow University	Lucknow -226007		1	0	1	1	0
50	Rohilkhand	University,	Bareilly - 243001.	1	0	1	0	0
51	Madras University,	Chennai-600005		1	0	1	1	1
52	Madurai Kamraj	University,	Madurai - 625021.	1	0	1	1	1
53	Magadh University,	Bodh Gaya - 824234.		1	1	1	1	0
54	Maharaja Sayajirao	University of Baroda	Vadodara - 390002.	0	1	1	1	0
55	Maharishi Dayanand	University ,	Rohtak - 124001.	1	1	1	1	0
56	Maharshi Dayanand	Saraswati University	Ajmer - 305001.	1	0	1	0	0
57	Manipur University,	Canchipur,	Imphal - 795003.	1	1	1	0	0
58	Mohan Lal Sukhadia	Vishwavidyalaya,	Pratapnagar, Udaipur	1	0	1	0	0
59	Mumbai University	Mumbai-400 032		0	1	1	1	1
60	Mysore University,	Karya Soudha,	Crowford Hall, Mysore	1	0	1	0	0
61	Nagaland University,	Kohima-797001		1	1	1	1	0
62	Nagpur University,	Nagpur - 440001.		1	1	1	0	0
63	North Bengal	University,	Rajaram mohunpur.	1	1	0	1	0
64	North Eastern Hill	University, Shillong		1	1	1	0	0
65	North Gujarat	Universty,	Patan - 384265(N.G.)	1	0	0	0	0
66	North Maharastra	University, Jalgaon		1	1	0	1	0

67	Osmania University,	Hyderabad - 500007.		1	0	1	1	0
68	Pt. Ravi Shankar Shukla	University,	Raipur - 492002.	1	0	1	0	0
69	Patna University,	Patna - 800005		1	1	1	0	0
70	Periyar University	Salem,636011		0	1	0	0	0
71	Pondicherry University	Pondicherry-605014		1	0	1	1	0
72	Poona University,	Poona - 411007.		1	1	1	1	0
73	Punjab University,	Chandigarh - 160014.		1	0	1	0	0
74	Punjabi University,	Patiala - 147002.		0	1	0	1	0
75	Purvanchal (VBS)	University,	Jaunpur - 222002.	1	0	0	0	0
76	Rajasthan University	Jaipur - 302004.		1	1	1	1	0
77	Rajasthan Vidyapeeth	Pratapnagar,	Udaipur-313001	1	0	1	0	0
78	Ranchi University,	Ranchi - 834001.		1	0	1	0	0
79	Rani Durgavati	Viswavidyalaya,	Jabalpur - 482001.	1	1	1	0	0
80	Sambalpur University	Jyoti Vihar,Burla,	Sambalpur -768019	1	1	0	1	0
81	Sardar Patel	University,	Vallabh Vidyanagar.	1	0	0	0	0
82	Saurashtra Univ.,	Rajkot		1	0	0	0	0
83	Shivaji University,	Kolhapur - 416004.		1	1	1	1	0
84	Sidhu Kanhu Univ.	Santal Pargana,	Dumka-814101	1	0	0	0	0
85	Smt.Nathibai Damodar	Thakersey Women's	University, Mumbai	1	0	1	0	0
86	Sri Krishnadevraya	University,	Anantapur - 525003.	1	0	0	1	0
87	Sri Venkateswara	Universty,	Tirupati - 517502.	1	0	0	1	1
88	Swami Ramnand	Teerath Marathwada	University, Nanded	1	0	1	0	0
89	T.N. Bhagalpur University	Bhagalpur - 812007.		1	0	1	1	0
90	Tripura University,	Agartala - 799004.		1	1	0	0	0
91	Utkal University,	Vani Vihar,	Bhubaneswar - 751004	1	1	1	1	0
92	Veer Kunwar Singh	University,	Arrah- 802301	1	0	1	0	0
93	Vidya Sagar	University,	Midnapore,	1	0	0	1	0
94	Vikram University,	Ujjain - 456010.		1	1	1	0	0
95	Vinoba Bhave Univ.	P.B. no.31,	Hazari Bagh, Calcutta	1	0	1	0	0
96	Viswa Bharati,	Shantiniketan	- 731235.	1	0	1	0	0

Note : 1 indicates "Course exists in the university"

0 indicates "Course does not exit in the university"

SUMMARY OF STATISTICAL FACTS & ANALYSIS IN THE CDC REPORT ON GEOGRAPHY

Basic source for the following information

Handbook of Universities in India-2001 AIU Publication &

Information collected from universities in the Questionnaire

No. of Universities offering courses in Geography	**96**
No. of universities offering M.A/M.Sc	**83**
No. of universities offering Diploma Courses	**6**

Questionnaire sent to 96 universities

Responses Received (Partially or completely) from	**38 Universities**
Information Recd. In Part-I from Registrar's office	**30 Universities**
Information Recd. In Part-II from Geography Departments	**27 Universities**
In addition some universities sent only Syllabus	**10 universities**
Syllabus received for use and review by the CDC	**30 Universities**

Information about Teaching Staff in Geography

Compiled from Handbook of Indian Universities	**Prof.**	**Reader**	**Lect.**	**Total**
(For the year 2000) :- Total for 50 universities	**101**	**151**	**134**	**386**

This gives average teachers per university department

in Geography; Professors-2, Readers- 3 , Lecturers- 2.7

As per information compiled from Questionnaire

-Part-I received from 29 universities;

Total students enrolled during 2000-2001 in

Universities and Colleges for courses in	**Undergraduates**	**39549**
Geography are:	**Postgraduates**	**2825**

Out of 38 Universities

5 Universities do not have separate PG deptts. in Geography.(PG Courses are conducted in Colleges)

5 Universities are not having PG Course in the departments or their colleges

28 Universities are having separate postgraduate departments in Geography.

Courses developed by the present CDC

	Core	Elective
B.A/B.Sc.(General)	**9**	**-**
B.A/B.Sc.(Hons)	**3**	**5**
	(In addition to 9 above)	
M.A./M.Sc.	**14**	**32**

●●●