Nehru Gram Bharati (Deemed to be University)

Faculty of Arts

Department of Geography

M. A. Geography: 2 Years Semester Course Outline, 2019-20

Department of Geography

Nehru Gram Bharati (Deemed to be University)

Kotwa- Jamunipur- Dubawal, Allahabad- 221505

About University

Nehru Gram Bharati (Deemed to be University) occupies an esteemed place among the rural universities of India for over decades now. Established on 27th June 2008, it is one of the promising institutes in the State of Uttar Pradesh situated at the fertile alluvial land of northern (left) bank of river Ganges in the heart of the triangle constituted by joining the villages Kotwa - Jamunipur – Dubawal, Prayagraj. It was basically conceived by our Ist Prime Minister of India, Late Pt. Jawahar Lal Nehru, who laid the foundation stone of Nehru Gram Bharati on 26th July 1962 in the village of Rishi Durvasha Ashram, Kotwa-Jamunipur, Dubawal Complex of his phulpur constituency in Prayagraj District. His dream was translated into reality by Sri J.N. Mishra, who had a clear vision and dedication to the cause of upliftment of rural masses through education.

As on date, the campus has emerged as a prominent establishment of professional, technical education and traditional education for meeting the aspirations of youth from rural as well as urban areas. To begin with Rajiv Gandhi Degree College was established in the year 1996 and upgraded to Rajiv Gandhi Post Graduate College from the academic session 2000-01 which subsequently merged into the Nehru Gram Bharati (Deemed to be University) in 2008-09 after University Grants Commission recommended to the Ministry of Human Resource & Development for granting it Deemed to be University Status. The MHRD notified vide its gazette Notification no. F.9-42/2005-43(A) dated as 27th June 2008 bestowing the Deemed to be University status to Nehru Gram Bharati.

The Nehru Gram Bharati (Deemed to be University) is composed of six campuses encircling approximately 76 acres of land spread over within a radius of about 5 Kilometers. The campuses are as under:

Nehru Gram Bharati (Deemed to be University), Jamunipur Main Campus: The lush green campus has buildings for Administrative Office, Central Library, Faculty of Teacher Education, Arts, Science & Commerce. The Undergraduate Courses viz., Bachelor of Arts (in the subjects Ancient History, Pol. Science, Hindi, Geography, Education, Sanskrit, English, Sociology, Home Science, Economics, Music & Philosophy), Bachelor of Commerce, Bachelor of Science (In Physics, Chemistry, Zoology, Mathematics & Physics), Bachelor of Education(B.Ed.), Bachelor of Special Education (Hearing Impairment), Diploma in Special Education(D.Ed.Spl.Ed.[HI]), Bachelor of Elementary Education (B.El.Ed.), Diploma in Elementary Education (D.El.Ed.) are being offered in this campus. The Post Graduate Courses viz., Master of Arts (In Ancient History, Pol. Science, Hindi, Education, Sanskrit, English, Economics, Sociology, Home Science, Philosophy & Geography), Master of Commerce, Master of Science (In Physics, Chemistry, Zoology, Mathematics and Botany), Master in Education (M.Ed.), Master of Special Education in Hearing Impairment (M.Ed.Spl.Ed.[HI] are being offered in the campus.

More than 5000 students study in the university pursuing different courses in the different fields. We have spruced computer lab with internet facility & and more than 36000

books in the fully digitalized library. Regular university Bus services operate in and around Prayagraj and adjoining areas. We have several memorandums of understanding with different universities from India abroad. All courses are duly approved by statutory bodies like AICTE, BCI, RCI, NCTE and UGC etc.

Nehru Gram Bharati has a Research Centre at Shashi campus Jhuthi Tali, Prayagraj to conduct Research Programme in various discipline for Ph. D. Degree. Admissions to Doctoral Programme are made through Common Research Entrance Test (CRET). The Research work is in progress and the Programme is attracting quite a considerable number researchers. Since 2009 we are pursuing Research in different fields adopting a multi-collaborate approach on case to case basis. Currently more than 500 Research scholars are registered under Ph. D. Programme against which is more than 200 has been awarded Ph. D. Degree.

Students are appropriately guided through our Carrier Counseling Center and Placement Cell Computers with internet facility and adequate hostel facilities for Boys and Girls are available. Due to attention is paid for cultivating sports, culture and others extra-curricular activities. Efforts are also made to assist students for getting scholarships and fee refund from state/ Central Government. Research scholars are encouraged to submit research proposal to state and National funding agencies. NGB (DU) making its own niche in higher education and receiving generous appreciation and warm response it is desired that NGB would serve the students to enable them gain knowledge and acquire skill to succeed in career and life.

Salient Features of NGB (DU)

- *Job oriented academic programs*
- *Medium of instruction for all programs is both Hindi as well as English*
- *Choice based credit system in PG programs and semester system in UG programs*
- *Facility for earning while learning*
- *Modern infrastructure*
- *Green ambience campus*
- *Student counseling services*
- *Bus facility from nearby places*
- *Separate Hostels for boys and Girls*
- *Health centre and medical facility*
- *Campus placement*
- *Sports & co-curricular Activities*
- *Students welfare committee*
- *Well stocked Library & Digital Library*
- *Fully Wi-Fi Campus*
- *Open Auditorium for culture activities*

PREAMBLE

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 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.

About the Department (*Vision & Mission*)

It gives me immense pleasure to lead the family of more than 200 students and staff in Department of Geography, Nehru Gram Bharati (Deemed to be University) which has doubled in strength every second year. The University has situated sub-tropical monsoon climate near confluence of river *Ganga*, *Yamuna* and extinct *Sarswati*, Allahabad. The University has faced number of obstacles in last ten years facing Socio-economic backwardness, political instability, insurgency and finance. In such challenging situations, the education and health sectors couldn't develop as desired.

The department is well equipped with the GIS and Remote Sensing lab, Cartographic lab, Water analysis lab, Earth & Soil lab and Computer lab. The physical infrastructure of the department is sufficient to support the Post Graduate and Ph. D. students in near future. Very soon PG Diploma Course in GIS and Remote Sensing and Geoinformatics will start in the department. The facility of e-library has facilitated the e-learning resources for the students. Very soon new and applied aids of e-learning would be available to all the students and staff. The department provides equal opportunity to everyone irrespective of gender, community, region or belonging. The student's participation and keen interest in academic and extracurricular activities provide the catalysm to us in fostering more proactive measures for academic development. Career opportunity in Geography is very vast. The Career Counselling committee of the department is working hard to address the career related problems of the students and ensure their good placement. I wish all the students of the department to excel in the field they choose for their future. Last but not least, students are the only treasures we have, so don't hesitate to meet me anytime.

The Philosophy of Geography Programme is to equip the student with theoretical and practical knowledge of the interrelationship between physical and human environment. Hence the Programme is designed in such a way that the student will understand, utilize

and effectively manage their environment. Geography as an academic discipline in the Nehru Gram Bharati (Deemed to be University) was introduced in 2009. The staff will adequately provide dynamic environment for training and research.

The department is growing and changing very fast in terms of staff composition, number of students and course content. The department has state of the art laboratories, classrooms, conference halls with multimedia facilities, staff offices, separate toilets for staff and students (male and female), computer room, examination & records room, central and departmental libraries with e-journal and e-book facilities and 4 wheel drive vehicles for the field survey. With the support from the University management the facilities are increasing every day. The department continues to provide an avenue for training in basic research and workforce development for the country and the people as a whole. The students of the department are so trained that they can work in almost all the spheres of civil services, demography, health, women and child development, urban, rural and regional development and planning etc for the country and beyond; in various ministries and at every level of government from local to national, Non Governmental Organizations, Community Based Activities as well as in any private sector. The training of Geographical Information System and remote sensing will make the students well equipped in digital cartography and highly skilled to get employment in any sectors of economy from micro level to the global.

The objectives of the Department are as following:-

i. To provide training in the principles of geographic ideas or knowledge as applicable in various spheres of life.
ii. To foster awareness of and concern about economic, social, political, ecological, and spatial interdependences in the physical and human environment.
iii. To enable students acquire the knowledge, values, attitudes, commitment and skills needed to protect and improve the environment.
iv. To create new patterns of behaviour of individuals and interactions between groups and society as a whole towards the environment.
v. To provide students with opportunities to acquire the necessary applied skills that will enable them pursue career in areas like Environmental Impact Assessment, Geographic Information System (GIS), Remote Sensing, Metrological Station (IAF), Cartography, Surveying, Urban planning, Rural Development, Medical/Health geography etc. Such

knowledge and skills will enable geography graduates to fit into many areas of both public and private sectors of the economy.

vi. To create diverse educational experiences fostering a deep understanding of sustainability at all the levels in the World.

The department has developed its own research unit with state of art facilities in terms of the laboratories, library, computer lab etc. The teaching and non teaching staffs of the department are specialized in different fields of Geography. The staff strength has kept on increasing in quality and area of specialization. The academic staffs of the department are well trained to guide the students in the fields of Climatology, Geomorphology, Biogeography, Rural Geography, Health/Medical Geography, Urban and Regional Planning, Environmental Hazard, Political Geography, Surveying, Population Studies, Hydrology, Remote Sensing and Geographic Information System (GIS).

Vision for the department for the next five years

The department has developed its own research unit with state of art facilities in terms of the laboratories, library, computer lab etc. The teaching and non teaching staffs of the department are specialized in different fields of Geography. The staff strength has kept on increasing in quality and area of specialization. The facility of e-library, GIS lab, Cartographic lab, Water analysis lab, Earth & Soil lab and Computer lab has facilitated for the students. The academic staffs of the department are well trained to guide the students in the fields of geography.

Proposed roadmap for teaching and research for the next five years

The student's participation and keen interest in academic and extracurricular activities provide the catalysm to us in fostering more proactive measures for academic development. Career opportunity in Geography is very to be start. The Career Counselling committee of the department is working hard to address the career related problems of the students and ensure their good placement, may be also used for this. I wish all the students of the department to excel in the field they choose for their future. Last but not least, students are the only treasures we have, so don't hesitate to meet me anytime.

Programme Introduction

Three Programme B. A., M.A. and Ph. D. run in the department.

Structure of M.A. Programme

The Four semester (Two years) M.A. Degree Programme of in Department of Geography, Nehru Gram Bharati (Deemed to be University) Prayagraj (U.P.). The M.A. Semester Ist, Semester IInd, Semester and IIIrd Semester examinations in Geography will comprise four theory papers each and one practical examination each in subject as well as one theory paper (VIth paper) each from others subject where as M.A. Semester IVth will be comprise four theory papers and one Field Work Dissertation with Viva-Voce examination in subject as well as one theory paper (VIth paper i.e. Inter-disciplinary course Papers) from others subject. Theory paper will be of three hours duration and will carry 60 marks as the maximum marks in core papers. The practical examination will be of six hours duration (in two parts of three hours duration) and will carry 100 marks as the maximum marks for Semester Ist, Semester IInd and Semester IIIrd where as in elective theory papers will be of three hours duration and will carry 45 marks as the maximum marks in each semester. Fifth theory papers (Skill Development) will be carry 30 marks as the maximum marks in each semester. In the Semester IVth for Field Work Dissertation, topic and guide allotment in beginning of IIIrd semester and submitted Dissertation in IVth Semester which is carry 100 marks as the maximum marks. The practical/ Field Work Dissertation examination will be conducted by one internal and one external examiner. It is obligatory to pass in the aggregate marks of the theory examination and in the practical examinations separately. The Internal assessment will carry 40 marks in core papers, 30 marks in elective papers and 20 marks in Skill Development (fifth) papers in each theory papers respectively. About programme, the students would understand the development of the subject and delve around issues suited to the needs of the contemporary world. The students would learn to use geographic understanding of various sub fields such as physiography, resources, global economic systems, socio- cultural aspects, rural and urban milieu, environmental and disaster studies and mapping methods. The geography post graduates will be well informed citizens who can play immense role in the civil society too. They will be able to pursue wide range of careers as planners, administrators, academicians, and managers.

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POST GRADUATE -PROGRAMME

ORDINANCES AND REGULATION FOR ALL POST GRADUATE - PROGRAMMES

A. ORDINANCE

1. The Degree of Master of Arts/Science/Social Science/ Commerce/ Law/Teacher's Education

The Nehru Gram Bharati (Deemed to University) may confer the Degree of Master's Programme on Such candidates who, being eligible for admission to the Post Graduate Degree Programme, have received regular instruction in the prescribed course of study, passed successfully relevant examinations and being otherwise suitable by virtue of their character, have fulfilled such other condition as may be laid down from time to time by the appropriate authorities.

2. The Curriculum and Duration of Studies

A. (i) The Curriculum of study of the Master Degree shall comprise of courses set out in Annexure B.

(ii) The Departmental Committee shall prescribe the detailed content of various of study, if required before the beginning of each session. The Departmental Committee can make changes in the optional papers/subjects, subjects to the availability of teaching facility/ faculty.

B. The curriculum of study for the Master Degree shall be spread over four Semesters having 80 credits (each semester of 20 credits).

3. Requirement for Admission

A. Registration:

Registration

(i) Candidates of Master Degree shall first be admitted to the first semester upon the reopening of the University after summer vacation every year.

(ii) Subsequent Registration

A candidate, who fails to clear a regular course of study during any of the second, third and fourth semesters may be registered in the appropriate term of

any subsequent year to the semester concerned but within such time as enables him, to compete the study of all semester comprising Master Degree Programme within a maximum period of four years from the date of his/her registration for the first semester.

B. Minimum Qualification for Admission

(i) Admission to the Master Degree Programme of study shall be open to those candidates who have passed the 3 Year Graduate Degree Examination of this University or such examination of any other University or Institution after Graduation under 10+2+3 and which is learn one of the concern subject (Geography) for Arts graduate or Science graduate or 10+2+4 pattern (B. Trch.) as recognized by the University. Admission shall be made according to merit subject to the fulfillment of eligibility requirement as determined by the University and availability of seats in the Master courses.

C. Conditions of Admission:

(i) No application for registration to the First Semester shall be entertained unless it is accompanied by:

(a) A duly migration of scholastic record of the candidate, commencing from the graduation or equivalent examination.

(b) Original migration of a candidate who has been a regular student in any Institution at any time prior to making application for registration in the Faculty.

(c) Original migration certificate if the candidate is not enrolled in this University or if enrolled, his enrollment has been cancelled. Provided that if a candidate is unable to produce any of the documents other than the marks-sheet of the graduate examination at the time of seeking admission in the concerned Faculty before admission committee, he shall undertake to submit them within one month or within such further period as the University authorities may prescribed; and the admission, if any of such candidate shall until the submission of the aforesaid documents, be deemed to be provisional.

(ii) Candidate shall give also a written undertaking to the effect that:

(a) He/ She shall exclusively devote his/her time to the study of courses prescribed for Master Degree and in particular he/she shall not offer any other

course leading to a degree of any description whatsoever, not shall he/she undertake any remunerative work, though with the prior permission of the Faculty, he/she may join certificate of or diploma courses in any foreign language.

(b) He/ She shall abide by the provision of NGB (DU) Act, Statutes, Ordinances, Regulations and Rules that are framed or may be framed there under and the orders of Officers and authorities of the University and the concerned Faculty from time to time.

4. Fees

The students pursuing Master Degree Programme of study shall have to pay fee as may be prescribed by the University from time to time.

5. The course of study, scheme of examination, result and promotion are covered in the regulation, and are given below.

REGULATIONS

1. Master Degree Programme has been divided in fours semesters in two years, this is a full time course study. The odd semester would run between July to December and even semester between January to June. Two consecutive (one odd + one even) semester constitute one academic year.

2. There will be 24 papers /courses in all in the whole programme. Besides, there would also be one course on **Dissertation and Viva-Voce.**

3. The course has 4 components: Core course Papers (one practical), Elective course Papers, Skill Development and Inter-disciplinary course Papers.

4. Each Core course has equal weightage. Each core course paper will have 100 marks or 4 credits. Elective and Inter-disciplinary course will have 3 credits and 75 marks, where as Skill Developments course papers will have 2 credits and 50 marks respectively.

5. The core courses are compulsory to all students in all four semesters. The fourth (Elective course) paper and fifth (Skill Development course) paper will be opted by the students of same Department. However, the sixth (Inter-disciplinary course / University elective course) paper of each semester will be opted by the students of other Departments only.

6. In the beginning of the Semester III, the Department would announce the available specialization group/ course in the Elective Group to the students for the current session. The choice of elective group/course in the semester will be limited to those announced by the Department. Because of infrastructural and Faculty limitations, the Department may put a cap on the number of students in an elective group/course.

7. Each semester shall have minimum 90 teaching days, exclusion of holidays, admission and examinations.

SCHEME OF EXAMINATION

1. The evaluation scheme of examination consists of two parts: Internal Assessment (IA), Mid Semester Exam (MSE) and End Semester Examination (ESE). Internal assessment includes Assignments, Presentations, Seminars, Quizzes, Case studies, Viva, Unit test, Group activities /Discussion, etc. The internal assessment will contribute 40% and the Semester and examination will contribute 60% to the total marks except practical course. This shall apply to both types of examination system i.e., Semester- wise and Choice based credit system (CBCS) based examination.

**Note: The ratio of internal assessment and semester and examination will be the same as determined by the University.

2. There shall be continuous assessment of the student in each course. The course instructor shall hold a maximum of three and minimum of one internal test /assignment /presentation, etc. The distribution of marks in Internal assessment will be in two parts; 20% (Mid Sem. Exam) and 20% (Assignments/Presentations/Group Discussion etc.)

3. In case of semester examination, there shall be no binding on the number of external paper setters/examiners, though in case of CBCS/ CBSS system, generally the course instructor shall be the paper setter and examiner. However, the Core courses papers comprising "Dissertation and Viva-Voce " and "Project Work and Viva-Voce" respectively will be evaluated / examined by Board/s consisting of one external examiner and one internal examiner who shall be the Chairman of the Board. The Dissertation / Project Work and Viva-Voce shall equal weightage and would be judged separately. The remuneration for these courses would be at par with such courses been run in other Department of the University.

4. The practical course will be evaluated / examined in the department by Board/s consisting of one external examiner and one internal examiner who shall be the Chairman of the Board.

PROGRAMME LEARNING OUTCOMES IN COURSE (After 2 Years)

1. Compare and contrast the theories, philosophies, and concepts in the discipline of geography, including unifying themes of spatial patterns and structures, the interrelationship between people and places, and the interactions between nature and society.
2. Demonstrate an advanced understanding of and ability to differentiate among the various methodologies used in geographic research.
3. Acquire, analyze, evaluate, interpret and critique geographic data and/or research.
4. Communicate mastery of geographic data, theories, philosophies, and concepts in oral, written, and visual forms, with ethical engagement and respect for diversity of individuals, groups, and cultures.
5. Identify and assess how geographic concepts apply in the workplace and in everyday life to solve real-world problems.

Structure of M.A. Programme

SEMESTER - I

Paper Code	Explanation	Paper Title	Paper No.	Theory Paper	Internal Marks	Practical	Total MM
GEOG 210 (1)	Theory (Core)	Contemporary Geographical Thought	I	60	40	-	100
GEOG 210 (2)	Theory (Core)	Advanced Climatology	II	60	40	-	100
GEOG 210 (3)	Practical (Core)	Map Projection and Computer Application in Geography	III	-	-	100	100
One paper of the special group to be selected from the following:							
GEOG 210 (4) GEOG 210 (5) GEOG 210 (6)	Theory (Elective)	Cultural Geography OR Geography of Tourism and Recreation OR Geography of Health	IV	45	30	-	75
One paper of the special group to be selected from the following:							
GEOG 210 (7) GEOG 210 (8) GEOG 210 (9)	Theory (Skill Developme nt)	Geography of Resources OR Geography and Eco-System OR Bio-Geography	V	30	20	-	50
GEOG 210 (10)	University Paper (Not for Geography Students)	Natural Resource Management	VI	45	30	-	75
Total				**240**	**160**	**100**	**500**

SEMESTER – II

Paper Code	Explanation	Paper Title	Paper No.	Theory Paper	Internal Marks	Practical	Total MM
GEOG 210 (11)	Theory (Core)	Interdisciplinary Research Methods and Techniques	I	60	40	-	100
GEOG 210 (12)	Theory (Core)	Advanced Geomorphology	II	60	40	-	100
GEOG 210 (13)	Practical (Core)	Remote Sensing, Aerial Image Processing and Field Excursion based Assignment	III	-	-	100	100
One paper of the special group to be selected from the following:							
GEOG 210 (14) GEOG 210 (15) GEOG 210 (16)	Theory (Elective)	Area Study of Africa OR Area Study of South America OR Area Study of South East Asia	IV	45	30	-	75
One paper of the special group to be selected from the following:							
GEOG 210 (17) GEOG 210 (18) GEOG 210 (19)	Theory (Skill Developme nt)	Agricultural Geography OR Population Geography OR Geography of Tourism and Recreation	V	30	20	-	50
GEOG 210 (20)	University Paper (Not for Geography Students)	Geography of Trade and Marketing	VI	45	30	-	75
Total				**240**	**160**	**100**	**500**

SEMESTER - III

Paper Code	Explanation	Paper Title	Paper No.	Theory Paper	Internal Marks	Practical	Total MM
GEOG 210 (21)	Theory (Core)	Urban & Regional Planning	I	60	40	-	100
GEOG 210 (22)	Theory (Core)	Regional development in India	II	60	40	-	100
GEOG 210 (23)	Practical (Core)	GIS, Surveying and Computer Assisted Cartography	III	-	-	100	100
One paper of the special group to be selected from the following:							
GEOG 210 (24) GEOG 210 (25) GEOG 210 (26)	Theory (Elective)	Environmental Geography OR Water Resource Management OR Geographical Dimensions of Hydrology	IV	45	30	-	75
One paper of the special group to be selected from the following:							
GEOG 210 (27) GEOG 210 (28) GEOG 210 (29)	Theory (Skill Developme nt)	Political Geography OR Geography of Transport and Communication OR Bio-Geography	V	30	20	-	50
GEOG 210 (30)	University Paper (Not for Geography Students)	Applied Economic Geography	VI	45	30	-	75
Total				**240**	**160**	**100**	**500**

SEMESTER - IV

Paper Code	Explanation	Paper Title	Paper No.	Theory Paper	Internal Marks	Practical	Total MM
GEOG 210 (31)	Theory (Core)	Techniques of Spatial Analysis	I	60	40	-	100
GEOG 210 (32)	Theory (Core)	Urban Geography	II	60	40	-	100
GEOG 210 (33)	Practical (Core)	Field Work Dissertation and Viva Voce: (3+1Credits)	III	-	-	100	100
One paper of the special group to be selected from the following:							
GEOG 210 (34) GEOG 210 (35) GEOG 210 (36)	Theory (Elective)	Tropical Geomorphology OR Monsoon Climatology OR Resource Planning	IV	45	30	-	75
One paper of the special group to be selected from the following:							
GEOG 210 (37) GEOG 210 (38) GEOG 210 (39)	Theory (Skill Developme nt)	GIS and Its Application OR Industrial Geography OR Geography of Crime and Terrorism	V	30	20	-	50
GEOG 210 (40)	University Paper (Not for Geography Students)	Natural Hazard Management	VI	45	30	-	75
Total				**240**	**160**	**100**	**500**
Grand Total= Ist Sem. 500 + IInd Sem 500 + IIIrd Sem 500 + IVth Sem 500 = 2000 MM and Total Credits = 80							

Nehru Gram Bharati (Deemed to be University)

Faculty of Arts

Department of Geography

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SEMESTER - I

Paper Code	Explanation	Paper Title	Paper No.	Credits	Number of Lectures
GEOG 210 (1)	Theory (Core)	Contemporary Geographical Thought	I	4	60
GEOG 210 (2)	Theory (Core)	Advanced Climatology	II	4	60
GEOG 210 (3)	Practical (Core)	Map Projection and Computer Application in Geography	III	4	60
One paper of the special group to be selected from the following:					
GEOG 210 (4) GEOG 210 (5) GEOG 210 (6)	Theory (Elective)	Cultural Geography OR Geography of Tourism and Recreation OR Geography of Health	IV	3	45
One paper of the special group to be selected from the following:					
GEOG 210 (7) GEOG 210 (8) GEOG 210 (9)	Theory (Skill Development)	Geography of Resources OR Geography and Eco-System OR Bio-Geography	V	2	30
GEOG 210 (10)	University Paper (Not for Geography Students)	Natural Resource Management	VI	3	45
Total				**20**	**300**

SEMESTER – II

Paper Code	Explanation	Paper Title	Paper No.	Credits	Number of Lectures
GEOG 210 (11)	Theory (Core)	Interdisciplinary Research Methods and Techniques	I	4	60
GEOG 210 (12)	Theory (Core)	Advanced Geomorphology	II	4	60
GEOG 210 (13)	Practical (Core)	Remote Sensing, Aerial Image Processing and Field Excursion based Assignment	III	4	60
One paper of the special group to be selected from the following:					
GEOG 210 (14) GEOG 210 (15) GEOG 210 (16)	Theory (Elective)	Area Study of Africa OR Area Study of South America OR Area Study of South East Asia	IV	3	45
One paper of the special group to be selected from the following:					
GEOG 210 (17) GEOG 210 (18) GEOG 210 (19)	Theory (Skill Development)	Agricultural Geography OR Population Geography OR Geography of Tourism and Recreation	V	2	30
GEOG 210 (20)	University Paper (Not for Geography Students)	Geography of Trade and Marketing	VI	3	45
Total				**20**	**300**

SEMESTER - III

Paper Code	Explanation	Paper Title	Paper No.	Credits	Number of Lectures
GEOG 210 (21)	Theory (Core)	Urban & Regional Planning	I	4	60
GEOG 210 (22)	Theory (Core)	Regional development in India	II	4	60
GEOG 210 (23)	Practical (Core)	GIS, Surveying and Computer Assisted Cartography	III	4	60
One paper of the special group to be selected from the following:					
GEOG 210 (24) GEOG 210 (25) GEOG 210 (26)	Theory (Elective)	Environmental Geography OR Water Resource Management OR Geographical Dimensions of Hydrology	IV	3	45
One paper of the special group to be selected from the following:					
GEOG 210 (27) GEOG 210 (28) GEOG 210 (29)	Theory (Skill Development)	Political Geography OR Geography of Transport and Communication OR Bio-Geography	V	2	30
GEOG 210 (30)	University Paper (Not for Geography Students)	Applied Economic Geography	VI	3	45
Total				**20**	**300**

SEMESTER - IV

Paper Code	Explanation	Paper Title	Paper No.	Credits	Number of Lectures
GEOG 210 (31)	Theory (Core)	Techniques of Spatial Analysis	I	4	60
GEOG 210 (32)	Theory (Core)	Urban Geography	II	4	60
GEOG 210 (33)	Practical (Core)	Field Work Dissertation and Viva Voce: (3+1Credits)	III	4	60
One paper of the special group to be selected from the following:					
GEOG 210 (34) GEOG 210 (35) GEOG 210 (36)	Theory (Elective)	Tropical Geomorphology OR Monsoon Climatology OR Resource Planning	IV	3	45
One paper of the special group to be selected from the following:					
GEOG 210 (37) GEOG 210 (38) GEOG 210 (39)	Theory (Skill Development)	GIS and Its Application OR Industrial Geography OR Geography of Crime and Terrorism	V	2	30
GEOG 210 (40)	University Paper (Not for Geography Students)	Natural Hazard Management	VI	3	45
Total				**20**	**300**

SEMESTER – I

Contemporary Geographical Thought

GEOG 210 (1) **CREDITS: 4**

Theory (Core) **Number of Lectures: 60**

UNIT-I

Development of geography after second half of the 20th century; concept of paradigm; Paradigm shift in geography; Humanistic Geography; Neo-determinism; Behaviouralism; Neo-environmentalism; Structuralism and Post-modernism.

UNIT-II

Quantitative revolution in geography; Models and theory building; welfare approaches in geography-Radical geography, Marxist geography; New models of environment and resources –Resource management and natural hazards.

UNIT III

New models of regional geography; New models of geo--political change, Post cold war democracy and human rights, geopolitics in the era of globalization.

UNIT IV

Perception and cognition; Mental Maps; Feminist geography-Gender discrimination; Geography in the era of globalization –peripheral capitalization; Crisis of modernity.

UNIT V

Status of Indian Geography after 1950; Impact of Post colonialism and Gandhianism on Indian Geography; Development in the field of geomorphology, urban geography, rural settlement geography, regional planning and political geography; Future of Indian geography –problems and prospects.

Books Recommended:

1. P. Haggett: Geography –A Modern Synthesis
2. R.J. Chorley and P.Haggett: Models in Geography
3. R.J. Johanston and P.Claval: Geography since the Second World War: An International Survey, Crown Halm, Sydney 1984.
4. R.J. Johnston: The Future of Geography, Methuen, London 1988.
5. V. Edmunds Bunkse: Geography and the Art of Life, John Hopkins University Press Baltimore, 2004
6. Marcus Doel: Post structuralist Geography, The Diabolical Arts of Spatial Sciences, Edinburgh University Press, Edinburgh, 1999.
7. Gray Gaile and Cort Wilmot (Ed) Geography in America at the Dawn of the 21st Century, Oxford University Press,Oxford & New York 2003.
8. Phill Hubbardm et al..Thinking Geographically: Space, Theory and Contemporary Human Geography, Continuum, London, 2002.
9. Richard Peet, Modern Geography Thought, Blackwell, Oxford 1998.
10. Anu Kapur (Ed), Indian Geography Voice of Concern, Concept Pub. Co. New Delhi, 2001.

11. D. Harvey: Spaces of Capital: Towards, a Critical Geography, Edinburgh Uni. Press Edinburgh, 2001.
12. D. Harvey: The Condition of Post Modernity, Blackwell, London, 1989.
13. A Blunt and C .Mc Ewan : Post Colonial Geographics,Continial,2002.
14. R.D. Dixit: Geographical Thought A Critical History of Ideas, Prentice Hall of India, New Delhi, 2001 (English & Hindi).

Advanced Climatology

GEOG 210 (2) **CREDITS: 4**
Theory (Core) **Number of Lectures: 60**

UNIT I

Meaning, scope and development of Climatology; Atmospheric equilibrium adiabatic temperature change; stability and instability.

UNIT II

Upper air circulation and jet stream; Theories of precipitation; Air masses –origin, growth, classification and distribution.

UNIT III

Front and frontogenesis: cyclones and anticyclones –theories about the origin of temperate cyclones; Origin of Indian Monsoon—recent views; El-nino, La-Nina, Walker Circulation, Southern Oscillation.

UNIT IV

Climatic Classification of Koppen, Thornthwaite and Oliver- Hidore; Major climate types and biomes; Weather analysis and Weather forecast, weather and human behaviours, weather modification.

UNIT V

Climatic change--causes and theories; Global warming evidences 'causes and effect; Atmospheric Hazards, Disasters Tropical Cyclones tornadoes, thunderstorms Agrolimatic Planning; Applied Climatology, Micro climate, urban climate, certificial climate.

Books Recommended:

1. R.G. Chorley and R.G. Barry: Atmosphere, Weather and Climate, 1995, Methuen a Co. Ltd. London.
2. H.J. Critchfield : General Climatology ,Prentice Hall of India ,New Delhi,2002.
3. E. Aguado and J.E. Burt, Understanding Weather and Climate, Prentice Hall, 2001. 4. G.P. Brasseur et al: Atmospheric Climatology and Global Change, Oxford University Press,New Delhi,1999.
5. J. Hanwell:, Atmospheric Processes ,George Allten and Unwin,London
6. J.J. Hiddore: Global Environmental Change, Prentice Hall, New Jersey,1996.
7. J.G. LockwoodL World Climatology, Elbs and Edward Arnold (Pub) Ltd. 1979.
8. A. Miller et al: Elements of Meteorology, Merrill, and Columbus.
9. M.D. Morgon and J.M. Moran : Weather and People, Prentice Hall, New Jersey 1997.
10. J.E. Oliver and J.J.Hiddore: Climatology; An Atmosphere Science, Pearson Education,

India, 2003.
11. R.D. Thompson, and A. Perry: Applied Climatology, Routledge: London and New York, 1997.
12. G.T. Trewartha: An Introduction to Climate, Mc.Graw Hill Series in Geography, 1954.
13. G.T. Trewartha: The Earth's Problem Climates, University of Wisconsin Press 1981.
14. D.S. Lal: Climatology, Prayag Pustak Bhawan, Allahabad.
15. Savindra Singh: Climatology ,Prayag Pustak Bhawan,Allahabad,2005.
16. Dayashankar Lal: Jalvayu Vigyan,Sharda Pustak Bhawan,Allahabad.
17. Savindra Singh: Jalvayu Vigyan,Prayag Pustak Bhawan,Allahabad.

Practical: Map Projection and Computer Application in Geography

GEOG 210 (3) **CREDITS: 4**
Practical (Core) **Number of Lectures: 60**

UNIT I (PRINCIPLES OF MAP PROJECTION)

1. Transformation of Earth's Surface and Co-ordinate System.
(a) The shape and size of the earth- spherical earth, ellipsoidal earth, geoidal earth; cartographic use of sphere; ellipsoid and geoid; Earth's coordinate system- -latitudes and longitudes; measuring distance direction on the earth's surface.
(b) Principles of transformation –Developable surfaces, perspective and non-perspective map projections; Maintaining scale, area, shape and direction on map projections; standard parallel, central meridian, Great circle, loxodronme, Rhumbline.
(c) Classifications of Map Projections.
(d) Use of Map Projections.

UNIT II (CONSTRUCTION OF MAP PROJECTION)

2. Principles of construction map projections.
(a) Conical Projection- Bonne's, Polyconic, Lambert's Conformal conic.
(b) Cylindrical Projection –Gall's Projection, Marcater's Projection.
(c) Zenithal Projection-Zenithal equal area (Polar case), Zenithal Stereographic (equational case), Gnomonic Projection (equational case)
(d) Conventional Projection-Sinusoidal and Mollweide Projection (interrupted), Good's homolosine.
(e) Merits and demerits of map projection.
(f) Deformation on map projections- visual criterion, scale (world and regional)

UNIT III

Components of a computer, input unit, memory unit, processing unit, out put unit, software; hardware; central processing unit; Types of memory cells: random access memory, serial access memory, volatile memory, destructive memory, non destructive memory, read only memory, main memory and secondary memory.

UNIT IV

Computer application: Defining spatial characteristic-- point attributes, line attributes, area attributes; measuring polygons, measuring slope, measuring distance, surface analysis –Dot map, choropleth map, dasymmetric map.

UNIT V

Spatial analysis –point patterns (quadrant analysis, nearest neighbour analysis, Thiessen polygons), area patterns; linear patterns (reagent neighbours, connectivity, gravity model).

Books Recommended

1. A.H. Robinson et al : Elements of Cartography, John Wiley, New York.
2. J.A. Steers: An Introduction to the Study of Map Projections U.L.P. London.
5. G.P. Kellawag: Map Projections,B.I. Publications, Delhi 1979.
6. R.P. Misra: Fundamentals of Cartography,Prasaranga ,University of Mysore,1969.
7. R.C.Tiwari & Sudhakar Tripathi: Abhinav Prayogatmak Bhoogol,Prayag Pustak Bhawan,Allahabad.
8. Sinha, P. K and Sinha, P.: Computer Fundamentals, 3rd Ed. BPB Publications.
9. Ram, B.: Computer Fundamentals, New Age International Publication.
10. Information Technology of Uptech Computers Books, Computer Consultancy Ltd.
11. Michael N. Demers: Fundamentals of Geographic Information Systems, 2nd Ed.
12. Dawson, J.A. and Unwin, D.J.: Computing for Geographers, David and Charles, London, 1976.

Special Group (A)

One paper of the special group to be selected from the following:

Cultural Geography

GEOG 210 (4) **CREDITS: 3**

Theory (Elective) **Number of Lectures: 45**

UNIT-I

Concept of Culture; Meaning and scope of cultural geography; Processes of Cultural evolution; Cultural changes—perception.

UNIT-II

Behaviouralism and cultural relativism; Major concepts—cultural diffusion, material culture, cultural landscape, cultural ecology, acculturation.

UNIT-III

Origin and dispersal of man; Cultural hearths; Primitive culture; Agricultural practices, Agricultural innovations; industrial and technological revolution; globalization and cultural development, cultural conflict.

UNIT-IV

Origin and dispersal of human races; zone-strata theory; Racial composition of India, Major Religions of the world; Religion and economic development; Major linguistic families; world distribution of major languages; Religious composition of India.

UNIT-V

Environment and Culture; environmental perception; Resources and culture; space adjustment and space intensification; major cultural realms of the world; Major cultural regions of the world.

Books Recommended:

1. J.E. Spencer and W.L. Thomas: Introducing Cultural Geography John Willey and Sons, New York, 1973.
2. P.J.Wagner and M.W.Mikesell: Readings in Cultural Geography, University of Chicago Press, 1962
3. F. Rostlund: Outline of Cultural Geography, California Book Co. Berkley.
4. S. N. Dicken & F. R. Pitts: Introduction to Cultural Geography: A Study of Man and his Environment, Gown and Co. Walthan. Mass. 30.
5. C.L. Saltar: The Cultural Landscape, Durbury Press, Clifurnia,1971.
6. J.M. Broek: Geography of Mankind, Mc. Graw Hill, New York..
7. T.G. Jordon & L. Lawntree: The Human Mosaic-A Thematic Introduction to Cultural Geography, Harper and Row, New York.
8. G.F. Carter: Man and the Land-A Cultural Geography; Reinhardt, New York, 1968.
9. F.E. Dohrs, L.M. Sommers (Ed): Cultural Geography-Selected Readings, Dunn-Donnal\y Publishing Corporation, New York, 1967.
10. David E. Sopher: Geography of Religions, Prentice Hall, New Jersey.
11. E.F. Frazier: Race and Cultural Contacts in the Modern World, A.A. Knopf, New York 1957.
12. R. Coulborn: The Origin of Civilized Societies, Princeton University Press, Prirection, N.J. 1959.
13. P.L. Wagner: Environment of People, Prentice Hall, Englewood, Cliffts 1972.

Geography of Tourism and Recreation

GEOG 210 (5) **CREDITS: 3**

Theory (Elective) **Number of Lectures: 45**

UNIT I

Leisure, recreation and tourism- definitions and relationships; Meaning, scope and development of geography of tourism and recreation; approaches to the study of geography of tourism; conceptual foundations and models of tourism.

UNIT II

Tourism Types: Cultural, etho- coastal and adventure tourism, national and international tourism; globalization and tourism; Tourism as an industry-structural components and characteristics; Impact of tourism- environmental, economic, socio-cultural.

UNIT III

International pattern of Tourism; major tourist circuits and nodes; Some case studies- Philippines, France, Netherlands, New Zealand, Nepal

UNIT IV

Tourism development in India- origin and evolution, spatial pattern, problems and polices, impact on society and environment**.**

UNIT V

Planning of Tourism –conflicting issues of development, urban and rural dimensions, concepts of green tourism, eco- tourism, Sustainable tourism; state contribution in tourism development; Community participation; role of foreign capital and impact of globalization in tourism.

BOOKS RECOMMENDED

1. H. Robinson: A Geography of Tourism, Macdonald and Evans, London,1976.
2. D. Milton: Geography of World Tourism, Prentice hall ,New York,1993.
3. C.M. Hall and S.J. Page: The Geography of Tourism and Recreation, Environment, Place and Space, Routledge,London,1999.
4. G. Shaw and A.M. Williams: Critical Issues in Tourism: A Geographical Perspective, Blackwell ,Oxford,1994.
5. R. K. Kaul: Dynamics of Tourism and Recreation, Inter India, New Delhi,1985. 6. D. Pearce: Tourism Today-A Geographical Analysis, Longman Scientific and Technical, New York,1987.
7. A.K. Bhatia: Tourism Development, Principles and Practices, Sterling, Bagalore,1989.
8. Ryan Cris: Recreational Tourism, A Social Science Perspetive, Routledge,London,1991.
9. C.M. Hall and S.J.Page: Tourism in South and South East Asia; Issues and Cases, Butterworth Heinemann, Oxford, 2001.
10. N.K. Garg: Tourism and Economic Development, Avishkan, Jaipur,1996.
11. P.C. Sinha: International Encyclopedia of Tourism Management, Vol.1-12,Anmol, New Delhi
12. D.S. Bhardwaj and M. Chaudhary: Contemporary Issues in Tourism, Himalaya, Mumbai, 1997.
13. C. Huster and H.Green : Tourism and the Environment: A Sustainable Relationship, Routledge, London, 1995.
14. E. Inskeep: Tourism Planning: An Integrated and Sustainable Development Approach, Van Nostrand and Rein hold, New York,1991.
15. J. Lee: Tourism and Development in the Third World, Routledge, London, 1988.
16. Sharma, A.K. (2015), Paryatan ke Vividh Aayam: Uttar Pradesh ek Adhyayan, New Royal book Company, Lucknow.

Geography of Health

GEOG 210 (6) **CREDITS: 3**

Theory (Elective) **Number of Lectures: 45**

UNIT I

Nature, Scope and development of Geography of Health; Distinction between Geography of Health and medical science; Geographical factor affecting human health and diseases – Physical factors (relief, climate, soil and vegetation),

UNIT II

Social factors (population density, literacy, social customs and poverty), economic factors (food and nutrition, occupation, standard of living), 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-malaria, tuberculosis, cardiovascular, cancer and AIDS

UNIT IV

Ecology, aetiology and transmission of major diseases: cholera, malaria, tuberculosis, hepatitis, leprosy, cardiovascular, cancer, AIDS and STDS; Spread of diseases and their causes; Deficiency, disorders and problems of mal nutrition in India.

UNIT V

Healthcare 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; family welfare, immunization, national disease eradication and health for all programme; Health care policy in India

BOOKS RECOMMENDED

Special Group (B) Skill Development

One paper of the special group to be selected from the following:

Geography of Resources

GEOG 210 (7) **CREDITS: 2**

Theory (Elective) **Number of Lectures: 30**

UNIT I

Introduction and Bases. Concept and scope of Resource Geography; World resources: distribution and pattern; Non-conventional sources of energy.

UNIT II

Human resources; Resource base and its dynamism as related to stages of cultural, technological and economic development.

UNIT III

Resource Use. The limits to growth and critique; Resource scarcity hypothesis; World energy crisis; Resource conservation and management; Watershed management; Sustainable development; Resources, development and international politics.

UNIT IV

Theories of Resource Use. Theories of agricultural location; Theories of industrial location: Weber, and Lösch; Trade blocs.

UNIT V

Regional Perspectives. Resource regionalisation; World economic development; Concept of developed and developing nations; Concepts of North-South and First, Second, Third and Fourth Worlds.

Books Recommended

1. Burton, I. and Kates, R.W. (1978): Readings in Resource Management and Conservation. McGraw Hills, New York
2. Clark, G. L., Feldman, M.P. and Gertler,M.S. (eds.) (2000): The Oxford Handbook of Economic Geography. Oxford University Press, Oxford and New York.
3. Ehrlich, P.R., Ehrlich, R.H. and Holdren, J.P.(1998): Ecoscience: Population, Resources and Development. 2nd edition. Freeman and Company, San Francisco.
4. Sheppard E. and Treror I. B. (ed.) (2003): A Companion to Economic Geography, Blackwell Publication, U.K. and USA.
5. McCarty, H.M. and James B.L. (1976): A Preface to Economic Geography. Prentice Hall, New Jersey.
6. Mitra, A. (2000): Resource Studies; Shridhar Publishers., Kolkata.
7. Ramesh, A. (ed.) (1984): Resource Geography. Heritage Publishers, New Delhi.
8. Singh, J. (2000):Sansadhan Bhoogol, Gyanodaya Prakashan, Gorakhpur
9. Singh, K.N. and Singh, J. (2003):Arthik Bhoogol Ke Mool Tatva, Gyanodaya Prakashan, Gorakhpur.
10. Todaro M.P. and Smith S.C. (2004): Economic Development, Pearson Education, (Singapore) Private Ltd. Singapore

Geography and Eco-System

GEOG 210 (8) **CREDITS: 2**

Theory (Elective) **Number of Lectures: 30**

UNIT I

Ecosystem concept and its components- functions, trophic levels, niches, energy and nutrients, hydrological cycle, food chains and food webs, ecological succession and equilibrium

UNIT II

Major ecosystems of the world: Tropical and temperate forest ecosystem, boreal ecosystem, grassland ecosystem, desert ecosystem, island ecosystem, mountain ecosystem, aquatic ecosystem.

UNIT III

Population growth in the different ecosystems and its effects on environment; Carrying capacity of the earth, Land resources and World food security; Bio diversity and its conservation; Preservation and conservation of ecosystem through resource management.

UNIT IV

Man-environment relationship: resource use and ecological imbalance; Human activities and disruption of different ecosystems; Human impact on vegetation, animals, soils, waters, climate and atmosphere.

UNIT V

Environmental management: Principles, standards, environmental impact assessment, Environmental Authority and quality of life; Environmental legislation- Environmental conferences (Stockholm conference, the Earth Summit), Environmental laws in India; Social Consequences of pollution.

BOOKS RECOMMENDED:

1. E.J. Kormendy: Concepts of Ecology, Prentice Hall, 1989.
2. Nobel and Wright: Environmental Science; Prentice Hall New York 1996.
3. E.P. Odum: Fundamentals of Ecology, W.B. Saunders, Philadelphia, 1971.
4. I.G. Summons: Ecology of Natural Resources, Edward Arnold, London.
5. R.L. Smith: Man and his Environment: An Ecosystem Approach : Harper and Raw, London.
6. Savindra Singh: Environmental Geography, Prayag Pustak Bhawan, Allahabad.
7. UNEP: Global Environmental, Outlook, U.N.Pub. 1983.
8. R.C.Chandna: Environmental Awareness,Kalyani Pub. New Delhi.
9. W.G.Ernost (Ed): Earth System, Processes and Issues, Cambridge University press U.K.,2000.
10. P.A.Trick Sborne: Tropical Ecosystems and Ecological Concepts, Cambridge University Press, UK, 2000.
11. Andrew Goudie: The Human Impact on the Natural Environment,IV Edn Blackwell, Oxford 1993.
12. A. Agrawal and S. Sen: The citizen's Fifth Report, Centre for Science and Environment, New Delhi, 1999.
13. E. Bodkin: Environmental Studies, George Bragiller, New York,1958.
14. R.R. Duport (Ed): Environmental Management: Problems and Solutions, Lewis Pub. Boca Raton, S.A. 1998
15. L.R.Singh et al: Environmental Management, Allahabad Geographical Society, Allahabad, 1983.

Bio-Geography

GEOG 210 (9) **CREDITS: 2**

Theory (Elective) **Number of Lectures: 30**

UNIT I

Biogeography: Nature, Scope, Significance, Approaches, History, Recent Development; Concept of Ecology, Ecosystem, Succession and Ecological Adaptation.

UNIT II

Historical Evolution of Plants and animals; pattern and causes of plant and animal distribution; Major plant formations of the tropics- forests, grasslands, deserts, mangroves; Biogeographical regions of world and India.

UNIT III

Biodiversity: concept and significance; Biodiversity and global climatic change; Palaeobotanical and palaeo climatological records of environmental change in India; Biogeography of the seas and islands.

UNIT IV

Conservation of wildlife and forests, soil conservation of forestation, reforestry, social forestry, National forest policy of India.

UNIT V

International and national efforts for conserving biological resources; Biosphere reserves; Tropical forest Action Plan.

BOOKS RECOMMENDED:

1. M.J. Bradshaw: Earth and Living Planet, ELBS, London, 1979.
2. C.B. Cox and P.D. Moore: Biogeography: An Ecological and Evolutionary Approach, 5th Edition . Blackwell, 1993.
3. J.B. Hogt: Man and the Earth, Prentice Hall,USA,1992.
4. R.J. Huggett: Fundamentals of Bigeography, Routledge,USA,1998.
5. B.M. Bansereau: Bio-geography-An Ecological Perspective, Ronald Press, New York, 1957.
6. T. Joy: Bio-geography: A Study of Plants in the Ecosphere, Oliver & Boyd, Edinburgh, 1977.
7. M.S. Masi (Ed): Bio-geography of India, The Hogue, 1975.
8. C. Martin: Plant Geography, Methuen, London, 1975.
9. H.S. Mathur: Essentials of Bio-geography, Any Printers, Jaipur, 1998.
10. N. Pears: Basic Bio-geography, Education, Longman, London, 1985.
11. H Robinson: Bio-geography, Mc Donald, London, 1982
12. G.H. Smith: Conservation of Natural Resources, Wiley & Sons, London, 1962.
13. H.A. Viles: Bio-geomorphology, Oxford Basil Blackwell, 1988.
14. S.S. Negi: Biodiversity and its Conservation in India: Indus Publishing Co. New Delhi,1993.
15. J.H. Brown and A.C. Gibson: Biogeography, St. Louis, Mesby, 1983.
16. B. Seddon: Introduction to Bio-geography, Duckworth, London, 1971.

Natural Resource Management

GEOG 210 (10) **CREDITS: 3**

University Paper (Not for Geography Students) **Number of Lectures: 45**

UNIT-I

Concept of natural resources; classification of natural resources; Dynamic theory of resources; Problems of resource utilization; Development and resources; resource regionalization.

UNIT-II

Use and Misuse of resources--global and Indian scenario; Imbalance in resource distribution and utilization; Resource and economic development; Globalization and resources; Future prospects of soil, water mineral and forest resources.

UNIT-III

Resource appraisal; use of GIS and Remote Sensing in resource appraisal; resource depletion and emerging issues-desertification, deforestation less of bio diversity, energy crisis, water scarcity and conflicts.

UNIT-IV

Sustainable development and conservation of resources; concept of resource planning and resource conservation; Conservation strategies.

UNIT-V

Resource planning and economic development; Community participation and governance; Integrated resource development.

BOOKS RECOMMENDED:

1. J.L. Holechek et al: Natural resources: Eulogy Economics and Policy, Prentice Hall, New Jersey, 2000.
2. R.W. Kates and I. Burton (Eds): Geography, Resources and Environment, Vol. II, University of Chicago Press, Chicago, 1986.
3. D.J. Mc Laren and B.J. Skinnet (Eds): Resources and World Development, John Wiley & Sons, New York, 1986.
4. M.D. Newson: Land, Water and Development: River Basin Systems and Management, Routledge London, 1991.
5. S. Owen, PL Owens: Environment, Resources and Conservation, Cambridge University Press, New York, 1991.
6. J. Rees: Natural Resources: Allocation, Economics and Policy Methwan, London, 1988.
7. M. Redclift: Sustainable Development: Exploring the Contraction, Methuen London, 1987.
8. I.G. Simmons: Earth, Air and Water Resources and Environment in Late 20th Century, Edward Arnold, 1991.
9. Alan Thomas et al: Environmental Policies & NGO Influence, Rutledge, London, 1995.
10. A.S. Mather and K. Chapman: Environmental Resources, Longman Scientific and Technical, London, 1995
11. C.L. Harper: Environment and Society Human Perspectives on Environment Issues, Prentice Hall, New Jersey.
12. I Burton and R.W. Kates (Ed): Readings in Resource Management and Conservation,1965.
13. S.W. Allen and J.W. Leonard: Conserving Natural Resources, McGraw Hill, New York.
14. G.H. Smith (Ed.): Conservation of Natural Resources, John Wiley, New York.

SEMESTER – II

Interdisciplinary Research Methods and Techniques

GEOG 210 (11) **CREDITS: 4**
Theory (Core) **Number of Lectures: 60**

UNIT I

Introduction to research in Geography: Concept and significance of research in geography; Philosophy and methods; Naturalism and anti-naturalism; realism and idealism.

UNIT II

Scientific Research; Inductive and deductive approaches; Research design; Formulation of research problem.

UNIT III

Development and testing of hypothesis; Techniques of data collection; Sampling and field survey.

UNIT IV

Qualitative research: Qualitative research design; Case study; Ethnography; Phenomenology and participatory research.

UNIT V

Data Analysis, interpretation and report writing: Data classification and tabulation; Data analysis and interpretation; Writing thesis, project report and research paper.

Books Recommended

1. Ahuja, R. (2001): Research Methods, Rawat Publications, Jaipur and New Delhi.
2. Bhattacharyya, D. K. (2005): Research Methodology, Excel Books, New Delhi.
3. Blackburn, J. and Holland, J. (eds.) (1998): Who Changes? Institutionalising Participation in Development. IT Publications, London.
4. Blaxter, L.; Hughes, C. and Tight, M. (1996): How to Research. Open University Press, Buckingham.
5. Crang, Mike 1999. Cultural Geography. Routledge, London.
6. Daniels, P., Bradshaw, M., et al. (2000): Human Geography: Issues for the 21st Century.
7. Prentice Hall, London, and Pearson Publishers., Singapore. Indian reprint, 2003.
8. Denzin, N. K. and Lincoln, Y.S., (eds.) (2000): Handbook of Qualitative Research. Thousand Oaks CA. Sage Publications.
9. Dikshit, R. D. (2003): The Art and Science of Geography: Integrated Readings. Prentice-Hall of India, New Delhi.
10. Dorling, D. and Simpson, L. (eds.) (1999): Statistics in Society. Edward Arnold, London.
11. Fisher, P. and Unwin, D., (eds.) (2002): Virtual Reality in Geography. Taylor and Francis, London.

12. Flowerdew, R. and Martin, D. (eds.) (1997): Methods in Human Geography. A Guide for Students Doing a Research Project. Longman, Harlow.
13. Hay, I. (ed.) (2000): Qualitative Research Methods in Human Geography. Oxford University Press, New York.
14. Henn, M., Mark W., and Nick F. (2006): A Short Introduction to Social Research, Vistaar Publications, New Delhi
15. Eyles J. and Smith D. M. (1988): Qualitative Methods in Human Geography, Polity Press, Dales Brewering Cambridge.
16. Kitchin, R. and Tate, N., (2001): Conducting Research into Human Geography. Theory, Methodology and Practice. Prentice-Hall, London.
17. Kitchin, R. and Fuller, D., (2003): The Academic's Guide to Publishing, Vistaar Publications, New Delhi
18. Limb, M. (2001): Qualitative Methodologies for Geographers. Issue and Debates. Edward Arnold, London.
19. Lofland, J. and Lofland, L.H. (1995): Analysing Social Setting. A Guide to Qualitative Observation and Analysis. Wadsworth, Belmont, CA.
20. Longley, P., Goodchild, M.F., Maguire, D. and Rhind, D. (1999): Geographic Information Systems. Principles, Techniques, Management, Applications. John Wiley and Sons, New York.
21. Maso, I., Atkinson, P.A. Delamont, S. and Verhoeven, J.C. (eds.) (1995): Openness in Research. The Tension between Self and Other. Van Gorcum, Assen, Netherlands.
22. Mikkelsen, B. (2005): Methods for Development Work and Research: A New Guide for Practitioners. Sage Publications, London.
23. Mukherjee, N. (1993): Participatory Rural Appraisal: Methodology and Application. Concept Publishing Company, New Delhi.
24. Mukherjee, N. (2002): Participatory Learning and Action: with 100 Field Methods. Concept
    Publishing Company, New Delhi.
25. O' Leary, Z. (2005): The Essential Guide in Doing Research, Vistaar Publications, New Delhi
26. Pacione, M., (ed.) (1999): Applied Geography: Principle and Practice. Routledge, London.
27. Parsons, T. and Knight, P. G., (1995): How to Do Your Dissertation in Geography and Related Disciplines. Chapman and Hall, London.
28. Patrick M. and Chapman S. (1990): Research Methods(Third Edition), Routledge, London.
29. Peet, R. and Thrift, N. (ed.) (1989/ 2002): New Models in Geography (2 vols.). Rawat Publishers., Jaipur and New Delhi.
30. Rachel, P. et al. (2001): Introducing Social Geographies. Arnold Hodder Group, London, and Oxford University Press, Oxford.
31. Robson, C. (1993): Real World Research. A Resource for Social Scientists and PractitionersResearchers. Blackwell Publishers, Oxford.

32. Rogers, A. and Viles, H. A. (2003): The Student's Companion to Geography. Blackwell Publishers, Oxford. Indian reprint available.
33. Sheskin, Ira, M. (1987): Survey Research for Geographers, Scientific Publishers, Jodhpur.
34. Silverman, D. (1993): Interpreting Qualitative Data. Methods for Analysing Talk, Text and Interaction. Sage Publications, London.
35. Singh, R. L. and Singh, Rana P.B. (1993): Elements of Practical Geography. Kalyani Publishers, Ludhiana and New Delhi. (English and Hindi editions).
36. Singh, Rana P.B. and Singh, R. B. (1981): Changing Frontiers of Indian Village Ecology.National Geographical Society of India, BHU, Varanasi, Publication number 27.
37. Turkle, S. (1996): Life on the Screen: Identity in the Age of Internet. Weidenfeld and Nicolson, London.
38. Wolcott, H. (1995): The Art of Fieldwork. AltaMira Press, Walnut Creek, CA.
39. Wright, D.B. (1997): Understanding Statistics. An Introduction for the Social Sciences. Sage Publications, London.
40. Sharma, P.R., Yadava, R.S. ans Sharma, V.N., (2011), Interdisciplinary Research
41. Methods: Concepts and Studies, R.K. Books Publishers, New Delhi.

Advanced Geomorphology

GEOG 210 (12) **CREDITS: 4**

Theory (Core) **Number of Lectures: 60**

UNIT –I

Methods and approaches to the study of landforms; Basic concepts in Geomorphology related to geomorphic equation, geological structure, geomorphic process and geomorphic scales.

UNIT-II

Geomorphic theories, uniformitarianism; Theories of landscape development by G.K. Gilbert, Comparison between W.M. Davis and W. Penck, S.A. Schumm and M. Marisawa.

UNIT-III

Plate tectonics; Plate tectonics and continental drift and mountain building; Mass movement of rock waste and resultant land forms; Slope evolution and slope classification; theories of slope development by W. Penck and O. Lehman. Structural geomorphology: fault and fold geomorphology.

UNIT-IV

Morphometry of drainage basins; Profile of equilibrium; Channel morphology; Denudation chronology and erosion surfaces; Peniplains, Panplains, Pediplains, climatic geomorphology; climatic change and quaternary geomorphology.

UNIT V

Regional geomorphology of the Peninsular India, Kumaun Himalaya, Ganga Plain and west coastal plains; Applied geomorphology--geomorphic hazards including Tsunamis and their

mitigation; Geomorphology and engineering construction; urban geomorphology; Anthropogenic geomorphology--man and coastal processes, man and periglacial processes, Man and river processes.

Books Recommended:

1. A.L. Bloom; Geomorphology, Prentice Hall, New Jercy
2. A Goudie: Geomorphological Techniques, George Allen and Unwin, London
3. A.L. Washborn: Periglacial Processes and Environment, Edward Arnold, London
4. A.Young: Slopes, Oliver and Boyd London
5. C.A.M. King: Techniques in Geomorphology, Edward Arnold, London 1968
6. C. Embleton and J. Theories: Processes in Geomorphology, Arnold Hienmann, London
7. D.D. Phodes and G.P. Williams: Adjustment of Fluvial Processes, George Allen and Unwin Boston.
8. I.G. Grass et al : Understanding Earth, the Allemis Press Ltd. Sussex
9. I Tricart and A. Caillaux to Climatic Geomorphology, Longmans, London.
12. 10.E.Derbyshrine, K.J. Gregory and J.R. Hail: Geomorphological Processes, Butterworths, London.
13. 11.K.J.Gregory and D.E.Walling: Drainage Basin Processes and Forms, Edward Arnold, London.
8. K.J. Gregory and D.E. Walling: Man and Environment Processes, Butterworths, London.
14. 13.K. Richards: Rivers, Methuem, London.
15. M.J. Shebly: Hillslope Materials and Processes, Oxford University Press, London.
16. M. Thormas: Tropical Geomorphology, Macmillan, London.
17. R.J. Chorley et al: Geomorphology, Metheum, London
18. R.J. Small: The Study of Landforms, Cambridge University Press, Cambridge, 1972.
19. Savindra Singh: Geomorphology, Prayag Pustak Bhawan, Allahabad.
20. V.S. Kale and A.Gupta:Introduction to Geomorphology, Orient Longman, Hyderabad.
21. W.N. Melhorn and R.C. Flemal: Theories of Landform Development, George Allen Unwin,
London.
22. Woldenberg and J. Michal (Ed): Models in Geomorphology, Allen and Unwin,Boston.
23. F. Anhert: Introduction to Geomorphology, Arnold, London, Sydney, 1996.
24. B.W. Sparks: An Introduction to Geomorphology, Longman, London, 1988.
25. Savindra Singh: Bhuakriti Vigyan, Vasundhara Prakashan, Gorakhpur, 2005.

Practical: Remote Sensing, Aerial Image Processing and Geographical Excursion

GEOG 210 (13) **CREDITS: 4**

Practical (Core) **Number of Lectures: 60**

UNIT I

Remote Sensing – definition, types and historical development; Physics of remote Sensing interaction of EMR with atmosphere and earth surface, atmospheric windows, spectral signatures; types and characteristics of platforms and sensors with special reference to Land sat, SPOT and IRS.

UNIT II

History of aerial photogrammetry; photogrammetry--definitions and concepts; aerial cameras and aerial photographs, geometry of aerial photographs, scale of aerial photographs; image displacement; measurement of height differences; principles of stereo photogrammetry; air photo interpretation; slope , size pattern , lose , texture , shadows, site.

UNIT III

Digital image processings-- definition and concepts; Structure of images; Digital to visual; RGB cube; digital image formats- BSQ, BIL and BIP; Methods of digital image processing – image restoration, image enhancement, image classification, accuracy assessment; Interpretation of SLAR imageries.

UNIT IV

Aerial photo and image interpretations and mapping land use and land cover, land evaluation, urban land use, landform and its processes, weather studies and studies of water resources; Remote Sensing and GIS; remote sensing and hazard management; remote sensing and environmental management.

UNIT V

Field Study and Geographical Excursion

Duration: 10 – 15 Days; Area, India: South / Northwest / North

BOOKS RECOMMENDED:

1. F.F. Sabins (Jr) Remote Sensing: Principles and Interpretations, John Wiley and sons, New york, 1987.
2. J.R. Jenson: Digital Image Processing.
3. P.R. Wolf: Elements of Photogrammetry.
4. T.M. Lilleesand and R.W. Keifer: Remote Sensing and Image Interpretation, John Wiley and Sons, New York, 1979.
5. American Society of Photogrammetry: Manual of Photogrammetry, 3rd Ed. Verginia 1966.
6. American Society of Photogrammetry: Manual of Remote Sensing,Verginia, 1975.
7. T.E. Avery and G.L. Berlin: Fundamentals of Remote Sensing and Air photo Interpretation, 5th Ed. Mac Millan, Publishing co. New York, 1983.
8. P.J. Curran: Principles of Remote Sensing; ELBS Edn. Longman Hong Kong, 1988.
9. Robert G.Reeves (Ed): Manual of Remote Sensing (2 vols), The American Society of Photogrammetry.
10. R.N. Colwell (Ed): Manual of Remote Sensing, 2nd Ed. Falls Chuch Va: American Society of Photogrammetry, 1983

11. J. Campbell: Introduction to Remote Sensing, Guilford, New York.
12. R.M. Hard: Gigittal Image Processing of Remotely Sensed Data, Academic Press, New York.
13. C.P. Lo: Applied Remote Sensing, Longman, Scientific and Technical, Harlow, Essex.
14. W.K. Prater: Digital Image Processing, John Wiley, New York, 1978.
15. D.P.Rao (Eds) ;Remote Sensing for Earth Resources, Association of Exploration Geologist , Hyderabad.
16. H. Verrtappen: Remote Sensing in Geomorphology, Elserier Scientific Publication Co., Amsterdam.
17. T.P. Kanetkar: Surveying and Levelling, Ara Prakashan.
18. J.C. Pugh: Surveying for Field Scientists, Methuen, London.
19. R.C.Tiwari & Sudhakar Tripathi: Abhinav Prayogatmak Bhoogol, Prayag Pustak Bhawan,Allahabad.
20. B.C. Purnmia: Surveying,Laxmi Pub. New Delhi, 1988.

Special Group (A)

One paper of the special group to be selected from the following:

Area Study of Africa

GEOG 210 (14) **CREDITS: 3**
Theory (Elective) **Number of Lectures: 45**

UNIT I

Location, Topography, Drainage, Climate, Natural Vegetation, Soils, Water Resources, Mineral resources.

UNIT II

Population Growth and Distribution; Ethnic Diversity, Language, Religious structure.

UNIT III

Agriculture, Industrial Development, Means of Transport and Communication.

UNIT IV

Regional Divisions of Africa, North Africa, North East Africa, West Africa, West Central Africa, Southern Africa.

UNIT V

Geographical study of Egypt, Sudan, Algeria, South Africa and Zaire.

Books Recommended:

1. Majid Hussain: World Geography, Rawat Pub. Jaipur and New Delhi, 2004.
2. W.M. Adams, G. Andrew, S. & O. Antroy (Eds): The Physical Geography of Africa, Oxford University Press, New York, 1996.
3. T. Binns: Tropical Africa, Routledge: London and New York 1994.

4. G.P. Chapman & K.M. Baker: The Changing Geography of Africa and Middle East, Routledge: London and New York.
5. A.A. Gordon and D.L. Gordon (Eds): Understanding Contemporary Africa, Lynna Rienner, Boulder Colo.
6. A.T. Grove: The Changing Geography of India, Oxford University Press, New York, 1994.
7. Charles G. Gurdon (Ed) The Horn of Africa, St. Martins' Press New York.1994.
8. Robert W. July: A History of African People 4th Ed. Seribers, New York, 1985.
9. David Lamb: The Africans, Random House, New York, 1983.
10. J.P. Murdack, 1959: Africa its Peoples and their Culture History, Mc. Graw Hill, New York, 1959.
11. J.M. Pritchard; Landform and Landscape in Africa, Edward Arnold, London, 1979.
12. R. Stock: Africa South of the Sahara: A Geographical Interpretation, Gilford Press, New Delhi, 1995.
13. J. Swift.: The Sahara, Time Life Book Alexandria, 1975.
14. Y. H.Zoubir (ed): North Africa in Transition: State Society and Economic Transformation in the 1990's University Press of Florida Gainesoville-Fle, 1999.

Area Study of South America

GEOG 210 (15) **CREDITS: 3**
Theory (Elective) **Number of Lectures: 45**

UNIT I

Location, Topographical Features, Drainage, Natural Vegetation; Soils, Water Resources, Mineral Resources.

UNIT II

Population growth and Distribution, Racial Composition; Ethic Diversity, Languages, Religious structure,

UNIT III

Agriculture, Industrial Development, Means of Transport and Communication.

UNIT IV

Regional Divisions of South America: Amazon Basin; Andes mountains; Pampass Plains; South America and Antarctica.

UNIT V

Geographical Study of Brazil, Argentina, Venezuela and Bolivia.

BOOKS RECOMMENDED:

1. Majid Hussain: World Geography, Rawat Pub. Jaipur, 2004.
2. R.Janathan Barton: A Political Geography of Latin America, Routledge: London & New York, 1997.
3. B.K.Becker & C.A.C. Egler: Brazil : A New Regional Power in the World Economy: A Regional Geography,Cambridge University Press,New York,1992.

4. H. Blackemore & C.T. Smith (Eds): Latin America: Geographical Perspective, Methuen, London and New York, 1983.
5. M. Brawer: Atlas of South America, Simon & Schuster, New York, 1991.
6. D.L. GlawsonL: Latin America and Caribbean: Lands and Peoples, Mc Graw Hill, Dabuque, Jova, 2000.
7. C. Marshall Eakin: Brazil: The Once and Future Country, St. Martin' Press New York, 1997.
8. Alen Gilbert: Latin America, Routledge: London and New York, 1990.
9. Perth E. James and C.W. Minkel: Latin America, John Wiley and Sons, New York, 1986.
10. Simons Collier et.al (Eds): The Cambridge Encyclopedia of Latin America and the Caribbean, Cambridge University Press, New York, 1992.

Area Study of South East Asia

GEOG 210 (16) **CREDITS: 3**
Theory (Elective) **Number of Lectures: 45**

UNIT I

Indias Relation with South East Asia; Spatial Factors; Physiography: Drainage; Climate, Natural Vegetation, Mineral Resources.

UNIT II

Population-growth and distribution; Racial composition-Chinese population; regional structure, language.

UNIT III

Agriculture-plantation farming, industrial development, means of transport and communication.

UNIT IV

Colonialism in South East Asia; Post Colonial Scenario; Growing influence of China; Asean, India and South East Asia.

UNIT V

Geographical study of Indonesia, Malaysia, Vietnam, Thailand, Maynmar and Singapore.

BOOKS RECOMMENDED:

1. Majid Hussain: World Geography, Rawat Pub. Jaipur, 2004.
2. Ashok K. Dutt (ed): South East Asia: Recalm of Contrast, Westview Press, Boulder, Col. 1985
3. C. A. Fisher: South East Asia: A Social Economic and Political Geography. E.P. Datton, New York, 1966.
4. R.D. Hill (Ed) South East Asia Systematic Geography, 26, 1936.
5. D.R. Sar Desai: South East Asia: Past and Present, West view Press, Boulder, Colo, 1997.
6. C.L. Slater et.al. Essentials of World Regional Geography, 2nd Ed. H.B. College Pub. New York.
7. R. Ulack and G. Pauer: Atlas of South East Asia, Macmillan, New York, 1988.

8. D. Wurfel and B. Burton (Eds): South East Asia in the New World Order, St. Matrin's Press, New York.
9. R.C. Tiwari, 2005: Geography South East Asia.

Special Group (B) Skill Development

One paper of the special group to be selected from the following:

Agricultural Geography

GEOG 210 (17) **CREDITS: 2**

Theory (Skill Development) **Number of Lectures**: **30**

UNIT I

Nature, Scope, Significance and development of agricultural geography; Approaches to the study of agricultural geography-commodity, systematic, regional and systems; origin and dispersal of agriculture –major agricultural hearths; Diffusion of agricultural innovations; Recent trends in Agriculture.

UNIT II

Determinants of agriculture- physical, economic, political, technological, Socio-cultural; land reforms, land use survey; Selected agricultural concepts and their measurements cropping pattern, crop concentration, cropping intensity, degree of commercialization, diversification and specialization, efficiency and productivity, crop combination regions.

UNIT III

Theories of agricultural location; Von Thunen's model and its modification Sinclair's approach; Concept of agricultural region: Whittle Sey's classification of agricultural regions; Agricultural regions and agro-climatic regions of India and their characteristics; land use and land capability classification: methods and applications.

UNIT IV

Agriculture in India: Land use and shifting cropping pattern; New trends in Indian agriculture- Green revolution, white revolution; Food deficit and food supply regions; nutritional index, agricultural development; Green revolution- its impact and consequences.

UNIT V

Problems of India agriculture, agricultural policy in India; Contemporary issues: nutrition and hunger, food security, drought and food security, agriculture and environmental degradation; Sustainable agricultural development.

BOOKS RECOMMENDED

1. T.P. Bayliss Smith: The Ecology of Agricultural Systems, Cambridge University Press, London, 1987.
2. H.P. Gregor: Geography of Agriculture, Prentice Hall, New York, 1970.
3. W.B. Morgon and R.J.C. Norton: Agricultural Geography, Methuen, London, 1971.
4. J. Singh and S.S. Dhillon: Agricultural Geography, Tata Mc Graw Hill Pub. New Delhi, 1988.

5. J.R. Tarrant: Agricultural Geography, Wiley, New York, 1974.
6. M. Hussain: Agricultural Geography, Inter India Publications, Delhi, 1979.
7. B.W. Inberg: Agricultural Geography, Oxford University Press, 1985.
8. L. Symons: Agricultural Geography, G. Bells, London, 1967.
9. D.Grigg: An Introduction to Agricultural Geography, Hutchinson Publication, London.
10. D.B. Grigg: The Agricultural Systems of the World, Cambridge University Press, New York, 1974.
11. A.M. Mansion: Agriculture and Environment Change, John Wiley, London, 1995.
12. Carl Sauer: Agricultural Origin and Dispersals American Geographical Society, New York, 1952.
13. L.R. Brown: The Changing World food Prospects: The Nineties and Beyond, World Watch Institute, Washington DC, 1990.
14. T.Dyson: Population and Food-Global Trends and Future Prospects, Routledge, London, 1997.
15. W.B. Morgan: Agriculture in the Third World- A Spatial Analysis, Westview Press, Boulder, 1978.
16. B.B. Singh: Krishi Bhoogol, Gyanoday Prakashan, Gorakhpur.
17. Pramila Kumar evm S.K. Sharma: Krishi Bhoogol, Hindi Granth Academy, Bhopal.
18. R.C. Tiwari evm B.N. Singh : Krishi Bhoogol, Prayag Pustak Bhawan.

Population Geography

GEOG 210 (18) **CREDITS: 2**
Theory (Skill Development) **Number of Lectures**: **30**

UNIT I

Relevance of Population studies in Geography; Nature and scope of population geography; Methodological problems in population Geography; recent development in population geography; Development of population geography in India; Sources of population data.

UNIT II

Population growth and distribution –theoretical issues; classical and modern theories in population growth and distribution; world patterns and their determinations.

UNIT III

Concepts of under and over population; population composition, age sex literacy, urbanization, occupational structure, gender issues.

UNIT IV

Population Dynamics- measurement of fertility and mortality; Migration-- national and international patterns- Rural and urban dimensions, Globalisation and labour Mobility.

UNIT V

Population resource regions; population planning; population policies in developed and development countries, population and socio-economic development; population as social capital; population and human resource; population and environment; Human development index.

Books Recommended:

1. D.J. Bogue: Principles in Demography, John Wiley, New York 1969.
2. Ashish Bose et al: Population in India's Development (1947-2000), Vikas Publishing House, New Delhi.
3. R.C. Chandna: Geography of Population; Concept, Determinants and Pattern, Kolyani Pub. New Delhi, 2000.
4. John I. Clarke: Population Ecology, Pergamon Press, Oxford 1973.
5. Nigael Crook: Principles of Population and Development, Pergamon Press New York, 1997.
6. B.J. Garnier: Geography of Population, Longman, London 1970.
7. K. Srinivasan & M. Vlassoff: Population Development Nexus in India: Challenges for the Millennium, Tata Mc Graw Hill, New Delhi,2001.
8. K. Srinivasan: Demographic Techniques and Applications, Sage Pub. New Delhi, 1998.
9. K.V. Sundaram and Sudesh Nangia (Ed): Population Geography, Heritage Pub. Delhi, 1986.
10. R. Woods: Population Analysis in Geography, London 1979.
11. Wilbur Zelinsky: A Prologue to Population Geography, Prentice Hall, 1966.
12. J.I. Clarke: Population Geography, Peargam, Oxford, 1972.
13. W.E. Hornby and M Jones: An Introduction to Population Geography, Cambridge University. Cambridge, 1980.
14. R.B. Potter, T. Binns, J.A. Elliott and D. Smith: Geography of Development, London Longman, 1999.
15. H.R. Barret: Population Geography, Oxford and Boyd, Oxford, 1997.
16. G.J. Demko, H.M. Rose and G.A. Schnell: Population Geography: A Reader, Mc Graw Hill .New York.

Geography of Tourism and Recreation

GEOG 210 (19) **CREDITS: 2**

Theory (Skill Development) **Number of Lectures**: **30**

UNIT I

Leisure, recreation and tourism- definitions and relationships; Meaning, scope and development of geography of tourism and recreation; approaches to the study of geography of tourism; conceptual foundations and models of tourism.

UNIT II

Tourism Types: Cultural, etho- coastal and adventure tourism, national and international tourism; globalization and tourism; Tourism as an industry-structural components and characteristics; Impact of tourism- environmental, economic, socio-cultural.

UNIT III

International pattern of Tourism; major tourist circuits and nodes; Some case studies- Philippines, France, Netherlands, New Zealand, Nepal, Tourism development in India-

origin and evolution, spatial pattern, problems and polices, impact on society and environment.

UNIT IV

Planning of Tourism – conflicting issues of development, urban and rural dimensions, concepts of green tourism, eco- tourism.

UNIT V

Sustainable tourism; state contribution in tourism development; Community participation; role of foreign capital and impact of globalization in tourism.

BOOKS RECOMMENDED

1. H. Robinson: A Geography of Tourism, Macdonald and Evans, London, 1976.
2. D. Milton: Geography of World Tourism, Prentice hall, New York, 1993.
3. C.M. Hall and S.J. Page: The Geography of Tourism and Recreation, Environment, Place and Space, Routledge, London, 1999.
4. G. Shaw and A.M. Williams: Critical Issues in Tourism: A Geographical Perspective, Blackwell, Oxford, 1994.
5. R. K. Kaul: Dynamics of Tourism and Recreation, Inter India, New Delhi, 1985. 6. D. Pearce: Tourism Today-A Geographical Analysis, Longman Scientific and Technical, New York, 1987.
7. A.K. Bhatia: Tourism Development, Principles and Practices, Sterling, Bagalore, 1989.
8. Ryan Cris: Recreational Tourism, A Social Science Perspetive, Routledge, London, 1991.
9. C.M. Hall and S.J.Page: Tourism in South and South East Asia; Issues and Cases, Butterworth Heinemann, Oxford, 2001.
10. N.K. Garg: Tourism and Economic Development, Avishkan, Jaipur, 1996.
11. P.C. Sinha: International Encyclopedia of Tourism Management, Vol.1-12, Anmol, New Delhi.
12. D.S. Bhardwaj and M.Chaudhary: Contemporary Issues in Tourism, Himalaya, Mumbai, 1997.
13. C.Huster and H.Green : Tourism and the Environment: A Sustainable Relationship, Routledge, London, 1995.
14. E.Inskeep: Tourism Planning: An Integrated and Sustainable Development Approach, Van Nostrand and Rein hold, New York, 1991.
15. J. Lee: Tourism and Development in the Third World, Routledge, London, 1988.
16. Sharma, A.K.(2015), Paryatan ke Vividh Aayam: Uttar Pradesh ek Adhyayan, New Royal book Company, Lucknow.

Geography of Trade and Marketing

GEOG 210 (20) **CREDITS: 3**

University Paper (Not for Geography Students) **Number of Lectures**: **45**

UNIT I

Geography of Trade and marketing-Scope, Content and Contemporary trends; Origins of trade and marketing forms of exchange in simpler and complex societies; Evolution of international trade and structuring of the world economy patterns in mercantile, colonial and post industrial periods;

UNIT II

Theoretical perspective on trade and marketing- doctrine of free trade and trade barriers; classical, neoclassical and contemporary versions of international trade theory; concepts of squall exchange; spatial dynamics of international trade- pre-war and post –war trends.

UNIT III

Trade Integrations of developed and developing countries; Rise of international and supranational Institutions and related changes in world trade-WTO a international trade-impact on environment, economy and society.

UNTI IV

Development of marketing systems, Classification of markets-rural, urban, intra urban, periodic markets; market hinterlands, consumer behaviour, functional hierarchy of market; economic, political and social dimensions of market.

UNIT V

Globalization and contemporary issues of trade and marketing; Role of MMCS in restructuring of markets; Interface between global to local trade and marketing; Interact trading and marketing; Trade policy in developed and developing countries with special emphasis on India.

BOOKS RECOMMENDED

1. E.C. Coskling and R.C.Thoman: : Geography of International Trade, Prentice Hall, Englewood Cliffs, 1967.
2. B.J.L. Barry et.al.: Geography of Economic Systems, Prentice Hall, Englewood Cliff.
3. James E. Vince (Jr): The Merchants World -The Geography of Wholesaling, Prentice Hall Inc. Englewood Cliff, 1970.
4. B.J.L. Berry: Geography of Market Centres and Retail Distribution, Prentice Hall Inc. Englewood Cliff,1967.
5. J. Beauju- Garsier and A. Delobez: Geography of Marketing. Longman, London, 1979.
6. E. Altvater: The Future of the market, Verso, London,1992.
7. R. Eckersley (Ed): Markets, the State and the Environment, Macmillan, London.
8. B. Harris: State and Market, Concept, New Delhi, 1984.
9. B.M. Hockman and M.M. Kostecki: The Political Economy of World Trading System: from GATT to WTO, Oxford University Press, New York.
10. S.S. Acharya and N.L. Agrawal: Agricultural Marketing in India, Oxford and I.B.H. Publishing Co., 1999
11. S. Page: How Developing Countries Trade, Routledge, London.
12. W. Pereira and J. Sea Brook: Global Parasites, 500 Years of Western culture, Earth care Books, Mumbai, 1984
13. A.M.M. Hoogvelt: Globalisation and the Post Glovial World: The New Political Economy of Development, Macmillan London, 1997.

14. H.M. Saxena: Marketing Geography, Rawat Publications, Jaipur, 1990.
15. H.M. Saxena: Rural Markets and Development, Rawat Publications, Jaipur, 1988.
16. C.M. Good: Rural Markets and Trade in East Africa, Chicago University Press, 1970.

SEMESTER – III

Urban & Regional Planning

GEOG 210 (21) **CREDITS: 4**
Theory (Core) **Number of Lectures: 60**

UNIT I

Concept of planning; Types of planning; Concept of regional planning; Types of regional planning; City as unit of regional planning; Approaches to regional planning; Historical development of regional planning- -developed world and developing world.

UNIT II

Methodology and Techniques of Regional Planning; Analytical techniques and procedural techniques; Principles of regionalization; Indications of development and data sources.

UNIT III

Measures of regional development and regional disparities; Planning processes- sectoral and spatial planning; short medium and perspective planning; Multi regional and multilevel planning.

UNIT IV

Regional development strategies: Export base theory, convergence theory, Growth poles and growth centres in regional development; Industrial dispersal and backward area development; Identification of planning regions, Regional planning strategies for backward areas—drought prone area hill area, tribal area and Rural area.

UNIT V

Role of urban centres in regional planning; urban scenario in India; city regions and their problems; Problems of poorly urbanized areas, strategies for urban planning; metropolitan planning, preparation of master plans, city region planning;

BOOKS RECOMMENDED:

1. R. Abler et al: Spatial Organisation: The Geographers View of the World, Prentice Hall, Englewood Cliffs, NJ.
2. L.S. Bhat: Regional Planning in India, Statistical Publishing Society, Calcutta, 1973.
3. J. Friedmann and W. Alonso: Regional Development and Planning-A Reader, MIT Press, Cambridge, Mass 1967.
4. Arthur Glikson: Regional Planning and Development, Netherland, Universities Foundation for International Co-operation, Londlon, 1955.

5. E.A.J. Johnson: The Organisation pf Space in Developing Countries, Harward University Press, Cambridge, 1970.
6. A.R. Kuhlinski (Ed): Growth Poles and Growth Centres in Regional Planning, Mouton, The Hague, 1972.
7. R.P. Misra: et al: Regional Planning: Concepts, Techniques and Policies, University of Mysore, Mysore, 1969.
8. R.P. Misra et al: Multi Level Planning, Heritage Publishers, Delhi, 1930.
9. Peter Hall: Urban and Regional Planning, Penguin Books Ins. New York.
10. J.G.M. Hill Shorts: Regional Planning, University Press, Rotterdom.
11. John Glasson: Regional Planning, Hutchrson, London.
12. R.P. Misra: Development Issues of our time, Concept Pub. Co. New Delhi.
13. J. Alden and R. Morgan: Regional Planning: A Comprehensive View, Leonard Hill Books, Beds 1974.
14. J. Glassen: An Introduction to Regional Planning, Hutchron Educational, London.
15. P. Hall: Cities of Tomorrow, Updated Edition, Blackwell Publishers Ltd. Oxford 1996.

Regional development in India

GEOG 210 (22) **CREDITS: 4**

Theory (Core) **Number of Lectures: 60**

UNIT I

Concept of Regional Development; Approached to regional development; Intra Regional disparities in development; Regional development and regional planning.

UNIT II

Regional development in India; Disparities in regional development of India; Strategies for Regional Development; Five Year Plans; Achievements of Five Year Plans; Failures of Five Year Plans; Levels of Regional Development.

UNIT III

Multi-Level Planning in India –National level, State level, District level, Block level, Panchayat level; Rural Development, Programme of Rural Development, Planning Regions of India.

UNIT IV

Regional Development Programmes; Hill area development, tribal area development, River basin development, Drought prove area development; Metropolitan area development.

UNIT V

Role of private sector and multinationals in regional development of India. Globalization and regional development in India.

Books Recommended:

1. L.S. Bhat: Regional Planning in India, Statistical Pub. Society, Kolkata, 1972
2. J. Friedman and W. Alonso: Regional Development and Planning: A Reader, MIT Press, Cambridge, Mass.

3. J.G.M. Hillshorts: Regional Planning, University Press, Rotterdam.
4. R.P. Misra: Regional Planning and National Development, Vikas Publications, New Delhi.
5. R.P. Misra: Regional Planning: Concept Techniques and Case Studies, Concept Pub. Co. New Delhi.
6. R.P. Misra et al: Regional Development Planning in India, Vikas Publishers, New Delhi, 1978
7. R.P. Misra: (ed) Local Level Planning and Development, Sterling Pub. New Delhi.
8. D. Diamond (ed): Regional Disparities and Regional Policies, Pergamon Press, Oxford, 1982.
9. K.N.Subrahmayam (ed): Economic Development and Planning in India, Pub. New Delhi; 1985.
10. K.V. Sundaram, R.P. Misra and V.L.S.P. Rao: Spatial Planning for a Tribal Region, Inst. Of Development Studies, Mysore (1971).
11. Regional Science Association, India, IIT Kharagpur 1995.
12. K.V. Prasad: Planning at the Grass Roots, Sterling Pub. Pvt. Ltd. New Delhi.
13. Mahesh Chand and V.K. Puri: Regional Planning in India, Allied, New Delhi, 1983.
14. R.C. Chandna: Regional Planning: A Comprehensive Text, Kalyani Pub., New Delhi, 2000.
15. R.C. Tiwari: Geography of India, Prayag Pustak Bhawan, Allahabad, 2006.

Practical: GIS, Computer Assisted Cartography and Surveying

GEOG 210 (23) **CREDITS: 4**
Practical (Core) **Number of Lectures: 60**

UNIT I

FUNDAMENTALS OF GIS: Concepts and definitions; Evolution and development of GIS; Computer environment for GIS; Elements of spatial data and their graphical representation-Thematic maps; Scales and symbolization; Map projections; spatial data models and data structure in GIS environment modelling surfaces, networks' terrain' relief and time –virtual maps.

UNIT II

GIS Technology: Co-ordinate system-basic principles of cartography and computer assisted cartography for GIS; Remote Sensing data as a data source for GIS; Integration of GIS and Remote Sensing-GPS and GIS technology; Creation of location and attribute data bases-Vector and raster formats-digitizing and scanning-data editing and validation-decoding.

UNIT III

Data analysis and manipulation; measurement in GIS-classification, overlay analysis and intergradation of data-buffering- shortest path-interpolation- analysis of surfaces and networks; Modeling physical and environmental processes and human activities; visualization and mapping-forms of output: map, tables, report Cartographic principles and techniques of graphic representation-inbuilt tools and facilities in a GIS package.

UNIT IV

GIS as decision support system; Application of GIS technology in utilities management and other fields-GIS in land information system, urban management, environmental of management and emergency response system; Adoption of GIS technology in India; GIS project designing and implementation, Future prospects of GIS.

UNIT V (SURVEYING)

(a) Plane Table Surveying –triangulation, traversing and resection.
(b) Use of Telescopic Alidade in Plane Table Surveying- measurement of distances and mapping.
(c) Levelling- Differential and profile levelling
(d) Use of Indian Clinometers- Determination of spotheghts; Interpolation of Contours.
(e) Use of Theodolite – Triangulation and Traversing.

BOOKS RECOMMENDED:

1. S. Aronoff: Geographic Information Systems: A Management Perspective, D.D.L. Publication, Ottawa, 1989.
2. P.A. Burrough: Principles of Geographic Information Systems for Land Resource Assessment, Oxford University Press, New York, 1986.
3. D.R. Fraser, Taylor: Geographic Information Systems, Pergaman Press, Oxford, 1991.
4. D.J. Peuquet and D.F.Marble: Introductory Readings in Geographic Information Systems, Taylor & Francis, Washington, 1990.
5. J. Star and J Estes: Geographic Information Systems: An Introduction, Prentice Hall, England Cliff. New Jersey, 1994.
6. Marks S. Monmonier: Computer- Assisted Cartography, Prentice Hall, Englewood Cliff, New Jersey, 1982.
7. I. Heywood et al: An Introduction to Geographical Systems, Pearson Education, Ltd. New Delhi, 2002.
8. Christopher B. Jones: Geographical Information Systems and Computer Cartography, Addison Wealey Longman Ltd. England, 1997.
9. David Martin: Geographical Information Systems: Socio-Economic Application, IInd Edition, Routledge London & New York, 1996.
10. William E. Huxhold: An Introduction to Urban Geographic Information Systems, Oxford University Press, New York.
11. John Pickles (Ed) 1995: Ground Truth: The Social Implications of Geographical Information Systems, the Guilford Press, New York, 1995.

Special Group (A)

One paper of the special group to be selected from the following:

Environmental Geography

GEOG 210 (24) **CREDITS: 3**

Theory (Elective) **Number of Lectures: 45**

UNIT I

Meaning and Scope of environmental geography; basic principles of environmental geography; composition and types of environment; ecological principles; man–environment relationship.

UNIT II

Ecosystem: concept and components; trophic levels; food chains and food webs; energy flow in the ecosystem; circulation of matter in the ecosystem, geo-biochemical cycle, ecosystem productivity, ecosystem stability.

UNIT III

Environmental degradation; Extreme events, hazards and disasters (earthquake, volcanoes, cyclones, floods); Environmental pollution (air, water, solid waste, soil and noise pollution);

UNIT IV

Environmental pollution in India; Environmental Problems: global warming, ozone depletion, land degradation and reduction in biodiversity.

UNIT V

Environmental management: concept and approaches; environmental dimension, in planning sustainable development; environmental consciousness, environmental policy; environmental legislation; environmental impact assessment; disaster management.

BOOKS RECOMMENDED:

1. Association American Geographers: Perspectives on Environment, Washington D.C.
2. A.N. Strahler and A.H. Strahler: Geography and Man's Environment, John Wiley and Sons, New York.
3. C.C. Park: Ecology and Environmental Management, Butter worths, London.
4. D.B. Botkin and E.A. Keller: Environmental Studies, C.E. Mernill Pub. Co. Columbus.
5. J.B. Easts and L.W. Senger: Remote Sensing Techniques for Environmental Analysis, Hamilton Pub. Co. New York.
6. J.B. Hobbs: Applied Climatology, Butterworths, London.
7. L.R. Singh et al: Environmental Management, Allahabad Geographical Society, Allahabad.
8. National Academy of Sciences: Understanding Climatic Changes, Washington D.C.
9. P.A. Furley and W.W. Neway: Man and the Biosphere, Butterworths, London.
10. R. Arvil: Man and Environment, Pnguin.
11. R.J. Bennet and R.J. Chorley: Environmental System- Philosophy, Analysis and Control, Methuen, London.
12. Savindra Singh: Environmental Geography, Prayag Pustak Bhawan,Allahabad
13. T.R. Detwler: Man's Impact on the Environment, Mc Graw Hill, New York.
14. T.R. Detwyler and M.G. Marcus:Urbanization and Environment, Duxburg Press, California.
15. Savindra Singh: Paryavaran Bhoogol, Prayag Pustak Bhawan, Allahabad.
16. W.M. Adans: Green Development: Environment and Sustainability in the Third World, Routledge, London, 2001.
17. E.P. Odum: Fundamental of Ecology, W.B. Sounders Co. Philadelfia, 1971.

18. A.S. Mather and K. Chapman: Environmental Resources, Longman Group Ltd. U.K., 1995.
19. A. Goudie: The Nature of the Environment, Oxford, Basil Black Well, 1989.
20. K. Smith: Environmental Hazards: Assessing Risk and Reducing Disaster, Routledge London, 1996.

Water Resource Management

GEOG 210 (25) **CREDITS: 3**
Theory (Elective) **Number of Lectures: 45**

UNIT I

Water on Earth; Hydrological cycle; Elements of hydrological cycle- -precipitation, evaporation, infiltration, surface run off, urban flooding, Human interference in the hydrological cycle.

UNIT II

Occurrence and assessment of surface water resources; Water resources in oceans and seas; Hydrology of river basin- basin characteristics, discharge ratio, use of river basins— catchments and command areas.

UNIT III

Origin and occurrence of ground water, ground water recharge and utilization, Man induced problems related to ground water; Glacial hydrology and its significance; Nature of glacial and periglacial discharges; Problems associated with the utilization of glacial water- shrinking of glaciers.

UNIT IV

Concept of water balance; Areas of water surplus and water deficit; Conflict for water resources; water pollution; water management; water conservation, water harvesting.

UNIT V

Water policy rural and urban water supply; Conservation of water resources of India: indigenous and modern.

BOOKS RECOMMENDED:

1. R.J. Chorley: Water, Earth and Man., Methuen, London, 1967.
2. J.A. Jones: Global Hydrology: Processes, Resources and Environmental Management, Longman, London, 1997.
3. J.R. Matter: Water Resources, Distribution, Use and Management, John Wiley, Marylane, 1984.
4. D.K. Todd: Ground Water Hydrology, John Wiley, New york, 1959.
5. R.A. Singh and S.R. Singh: Water Management: Principles and Practices, Tara Pub.Varanasi 1972.
6. R.J. Chorley (Ed): Introduction to Physical Hydrology, Methuen, London 1969.
7. H. Bouwer: Ground Water Hydrology, Mc Graw Hill Book Co. New York, 1978.

8. K.R. Karanth: Ground Water Assessment: Development and Management, Tata Mc.Graw Hill New Delhi 1987.
9. R.L. Rao : India's Water Wealth, Orient Longman, New Delhi, 1979.
10. H.M. Ragunath: Hydrology, Wiley Eastern Ltd. New Delhi, 1985.
11. J.V.S. Murty: Watershed Management in India, Wiley Eastern Ltd., New Delhi, 1995.
12. M.M. Yoshino (Ed): Water Balance of Monsoon Asia, University of Hawai Press, Honolulu.
13. R.J. Reddy: The Text Book of Hydrology, Laxmi Publisher, New Delhi, 1999.
14. T.G.K. Charlu and D.K. Dutt: Ground Water Development in India, Rural Electrification Corporation, New Delhi.
15. E.M. Tiderman: Watershed Management: Guidelines for Indian Conditions, Omega, New Delhi.

Geographical Dimensions of Hydrology

GEOG 210 (26) **CREDITS: 3**
Theory (Elective) **Number of Lectures: 45**

UNIT I

Hydrology: Scope and content, basic concepts; Hydrological cycle; Man's interference on hydrological cycle; Elements of Hydrological cycle- precipitation, evaporation, infiltration, surface runoff; Hydrology of a river basin- basin characteristics, discharge potentials, utilization, constraint-Examples from India.

UNIT II

Ground Water Hydrology-origin, occurrence, movement, discharge, utilization, recharge; Man induced problems related to ground water; Glacial Hydrology potential, discharge, utilization, problems, examples from India.

UNIT III

Hydrology in monsoon, savannas, desert and poler areas; limestone hydrology; Urban hydrology; Surface and ground water resources of India- potentials, utilization and problems; Water utilization; Concept of water balance; Water pollution rural and urban areas.

UNIT IV

Areas of water surplus and water deficit; Over and under utilization of water resources; Privatization of water resources; Water conflict wars.

UNIT V

Water conservation: Present and future perspectives; Watershed development; Water legislation, water harvesting: Traditional and modern methods; water conservation programmes in India.

BOOKS RECOMMENDED

1. R.J. Chorley: Water, Earth and Man, Methuen, London, 1967.

2. R.J. Chorley: Introduction to Physical Hydrology, Methuen, London, 1967.
3. J.A. Jones: Global Hydrology: Processes, Resources and Water Management, Longman, London, 1997.
4. J.R. Matter: Water Resources: Distribution, Use and Management, John Wiley, Marylane
5. D.K. Todd: Groundwater Hydrology, John Wiley, New York.
6. H .Addison: Land, Water and Flood, Chapman and Hall, London, 1961.
7. H. Bouwer: Ground water Hydrology, Mc. Graw Hill Book Co. New York, 1978.
8. K.R. Karanth: Groundwater Assessment: Development and Management, Tata Mc Graw Hill, New Delhi, 1987.
9. K.L. Rao: India's Water Wealth, Orient Longman, New Delhi, 1979.
10. J.V.S. Murthy: Watershed Management in India; Wiley Eastern Ltd. New Delhi, 1995.
11. R.J. Reddy: The Textbook of Hydrology, Laxmi Publication New Delhi, 1999.
12. T.G.K. Charlu and D.K. Dutt: Ground Water Development in India, Rural Electrification Corporation, New Delhi, 1982.
13. R.A. Singh and S.R. Singh: Water Management: Principles and Practices, Tara Pub. Varanasi.
14. E.M.Tideman: Watershed Management: Guidelines for Indian Conditions, Omega, New Delhi.
15. S.K. Sain: The Flood Problem in India, Birala Institute of Scientific Research, Economic Research Division, New Delhi.
16. A.A. Sokolar and T.B. Chapman (Eds): Methods for Water Balance Computations: An International Guide for Research and Practice, The Unesco Press, Paris, 1974.

Special Group (B) Skill Development

One paper of the special group to be selected from the following:

Political Geography

GEOG 210 (27) **CREDITS: 2**

Theory (Skill Development) **Number of Lectures**: **30**

UNIT I

Meaning, Scope and recent development in political geography; approaches to the study of political geography; major schools of thought; concept of state and nation; spatial factors of state; buffer state, core area, ecumene, capital city, frontiers and boundaries.

UNIT II

Concepts of geo-strategy; world geopolitics in changing perspectives - colonialism, decolonization, neo-colonialism, federalism; strategic bases and military alliances; non aligned movement.

UNIT III

Geo-strategic ideas of Mahan, Mackinder, Spykeman, Cohen and Seversky and their relevance in the modern world.

UNIT IV

Geopolitical significance of the Indian ocean, Role of third world countries; political geography and regional co-operation; geopolitical study of USA, SE Asia, S.W. Asia, S. Asia and Africa.

UNIT V

Nature and scope of electoral geography; Geography of elections will special reference to India; Changing Political map of India; Interstate issues (like river disputes and riparian claims), insurgency in border states; emergence of new states terrorism.

BOOKS RECOMMENDED

1. B.L. Sukhwal: Modern Political Geography of India, Sterling Publication Pvt.Ltd., 1968.
2. J.R.V. Prescott: Political Geography, Mc Graw Hill New York.
3. H.J. de Blir: Systematic Political Geography, John Wiley, New York, 1968.
4. L. Carlson: Geography and World Polities, Prentice Hall, New Jercy, 1971.
3. R.D. Dikshit: Political Geography-A Perspective, Tata Mc Graw Hill Pub., New Delhi,1996.
4. N.J.G. Pounds: Political Geography, Mc Graw Hill, New York..
5. R.L. Dwivedi: Political Geography, Chaitanya Pub. Allahabad.
6. R.D. Dikshit: Political Geography -A Century of Progress, Sage, New Delhi, 1999.
7. P. Taylor: Political Geography, Longman, London, 1985.
8. J.R. Short: An Introduction to Ppolitical Geography, Routledge London, 1982.
9. E.F. Bergman: Modern Political Geography, WMC Brown Co. Dubuque, Jowa, 1975.
10. A.J. Nijman: The Geopolitics of Power an Conflict, Belhaven Press, 1993.
11. R.J. Jonston: Geography and the State Macmillan.
12. R.E. Norris and L.L. Haring: Political Geography, Bell and Howell, 1980.
13. R.D. Dikshit: Rajnitik Bhoogol, Tata, Maga Hill, New Delhi.
14. S.K. Dikshit: Rajnitik Bhoogol,Vasundhara Prakashn, Gorakhpur.
15. Manorma Sinha: Political Geography, Herizon Publication, Allahabad.
16. Manorma Sinha: Electoral Geography of India, Adheyan Publication, New Delhi.
17. R.D. Dikshit: Rajnitik Bhoogol, Tata Mc Graw Hill, New Delhi.
18. S.K. Dikshit: Rajnitik Bhoogol, Vasundhara Prakashan, Gorakhpur.

Geography of Transport and Communication

GEOG 210 (28) **CREDITS: 2**

Theory (Skill Development) **Number of Lectures**: **30**

UNIT I

Meaning, Objective, Scope and development of transport geography; Relevance of transport geography in planning and development; Factors associated with the development of transport and communication system: physical, economic, social, cultural and institutional; relative significance of different mode of transport and communication.

UNIT II

Structural properties of transport network- Accessibility and flow models, network structure, graph theoretic measure, 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 III

Functioning of transport network systems- Patterns of movement and transport modes, hierarchy networks, movement geometry; Post eighty revolution in communication and I.T.sector- Role of international organisations- Globalisation and associated aspects; Transport and Communication interface; Economic organisation and patterns of transport and communication system.

UNIT IV

Transport policy and planning; Transport and communication development in developing countries; Urban transport and communication system; vehicular pollution and congestion.

UNIT V

Transport and Communication development in mega cities of India; Planning rural transport and communication system in India; Sustainable development of transport and communication systems.

BOOKS RECOMMENDED

1. E.J. Taffee and H.L. Gauthier: Geography of Transportation, Prentice Hall, 1973.
2. E. Thurst: Transport Geography- Comments and readings, Mc Graw Hill, New York, 1974.
3. J.C. Lowe and S. Moryadas: The Geography of Movement, Haughton Mifflin, Boston, 1975.
4. A. Gatrell: Distance and Space: A Geographical Perspective, Clarendon Press, Oxford, 1983.
5. A. Hay: Transport for the Space Economy, Mac Millan,London.
6. R. Abler, D. Janelle, A. Philbrick and J. Sommer: Human Geography in a Shrinking World, Press, Duxvurg, 1975.
7. G.C. Stable (Ed): Telegraphy, International Institute of Communication, London, 1993.
8. N.Law and B. Gleeson: Making Urban Transport Sustainable, Palgrave Macmillan, 2003.
9. M. Raza and Y. Aggarwal: Transport Geography of India, Concept, New Delhi, 1986.
10. S. Munshi: Geography of Transportation in Eastern India under the British Change, Centre for Studies in Social Sciences, Monograph 1, Bagali, Kolkata, 1980.
11. B.S. Houle: Transport and Development, Mc Millan, London, 1973.
12. P. Golaing and P. Harris (Eds): Beyond Cultural Imperialism Sage Publications, London, 1997.
13. H. Robinson and C. Ganford: Geography of Transport, Macdonald & Evans, London, 1978.
14. H.P. White and M.L. Senior: Transport Geography, Longman, London, 1983.
15. P. Haggett and R.J. Chorley: Networks Analysis, Edward Arnold, London, 1968.
16. E.L. Ullman: American Commodity, Flow University of WashingtonPress, 1957.

Bio-Geography

GEOG 210 (29) **CREDITS: 2**

Theory (Skill Development) **Number of Lectures: 30**

UNIT I

Biogeography: Nature, Scope, Significance, Approaches, History, Recent Development; Concept of Ecology, Ecosystem, Succession and Ecological Adaptation.

UNIT II

Historical Evolution of Plants and animals; pattern and causes of plant and animal distribution; Major plant formations of the tropics- forests, grasslands, deserts, mangroves; Biogeographical regions of world and India.

UNIT III

Biodiversity: concept and significance; Biodiversity and global climatic change; Plaeobotanical and plaeo climatological records of environmental change in India; Biogeography of the seas and islands.

UNIT IV

Conservation of wildlife and forests, soil conservation of forestation, reforestry, social forestry.

UNIT V

National forest policy of India; International and national efforts for conserving biological resources; Biosphere reserves; Tropical forest Action Plan.

BOOKS RECOMMENDED:

1. M.J. Bradshaw: Earth and Living Planet, ELBS, London, 1979.
2. C.B. Cox and P.D. Moore: Biogeography: An Ecological and Evolutionary Approach, 5th Edition. Blackwell, 1993.
3. J.B.Hogt: Man and the Earth, Prentice Hall,USA, 1992.
4. R.J. Huggett: Fundamentals of Bigeography, Routledge, USA, 1998.
5. B.M. Bansereau: Bio-geography-An Ecological Perspective, Ronald Press, New York, 1957.
6. T. Joy: Bio-geography: A Study of Plants in the Ecosphere, Oliver & Boyd, Edinburgh, 1977.
7. M.S. Masi (Ed): Bio-geography of India, The Hogue, 1975.
8. C. Martin: Plant Geography, Methuen, London, 1975.
9. H.S. Mathur: Essentials of Bio-geography, Any Printers, Jaipur, 1998.
10. N. Pears: Basic Bio-geography, Education, Longman, London, 1985.
11. H Robinson: Bio-geography, Mc Donald, London, 1982
12. G.H. Smith: Conservation of Natural Resources, Wiley & Sons, London, 1962.
13. H.A. Viles: Bio-geomorphology, Oxford Basil Blackwell, 1988.
14. S.S. Negi: Biodiversity and its Conservation in India: Indus Publishing Co. New Delhi,1993.
15. J.H. Brown and A.C. Gibson: Biogeography, St. Louis, Mesby, 1983.
16. B. Seddon: Introduction to Bio-geography, Duckworth, London, 1971.

Applied Economic Geography

GEOG 210 (30) **CREDITS: 3**

University Paper (Not for Geography Students) **Number of Lectures: 45**

UNIT I

Nature, Scope and recent trends in Economic Geography; Relation of economic geography with economics and other branches of social science; Historical evolution of world economic systems; Classification of the economies of the world (primary, secondary and tertiary);Theories, concepts and models of development, developing and under developed economies.

UNIT II

Concepts of resources; classification of resources-- Natural resources and human resources; Renewable and non –renewable resources; concept of resource adequacy and resource scarcity; conservation of resources; sustainable developed and resource management.

UNIT III

Resource utilization patterns-- Transformation and communication as factors in resource utilization; agricultural activities (Von Thunen's models of agricultural location).

UNIT IV

Manufacturing industries; Theories of industrial location--Weber, Hoover, Losch, Isard and Smith; Location of tertiary activities- -central place theory of Chris taller.

UNIT V

Status of quaternary activities in different economic systems-recent trends; Emerging patterns of world trade- Barriers to trade—Dynamics of trade blocks; Economic development; regional disparities in economic development; economic regions.

BOOKS RECOMMENDED:

1. B.J.L. Berry et al: Geography of Economic Systems, Prentice Hall, Englewood, Cliff, 1976.
2. R.D. Boyce: Bases of Economic Geography, Holt Rinehart and Winston, New York.
3. E.C. Conkling and M. Yeates: Man's Economic Environment, Mc Graw Hill, London..
4. B.W. Hodder and R. Lee: Economic Geography, Field of Geography Series, Mathuen & Co. Ltd. London.
5. J.P. Cole: Geography of World Affairs, Butterworths, London.
6. P.E. Lloyd and P. Dicken: Location in Space, Harper and Row, San Francisco.
7. D.M. Smith: Industrial Geography: An Economic Geographic Analysis, John Wiley & Sons.
8. Thomas J. Wilbanks: location and Well –being, An Introduction to Economic Geography, Harper and Row, San Francisco.
9. W.W. Rostow: The Stages of Economic Growth, Cambridge University Press, London 1960.
10. J.O. Wheeler et al: Economic Geography, John Wiley, New York 1995.
11. T.A. Hartshrone and J.W. Alexander: Economic Geography, Prentice Hall of India, New Delhi, 1994.

12. J.W. Alexander: Economic Geography, Prentice Hall of India, New Delhi, 1974.
13. E.W. Zimmermann: Introduction to World Resources, Harper, New York.
14. G.H. Smith: Conservation of Natural Resources, John Wiley, New York.

SEMESTER – IV

Techniques of Spatial Analysis

GEOG 210 (31) **CREDITS: 4**
Theory (Core) **Number of Lectures: 60**

UNIT I

Types of spatial data: Scales of measurement; methods of data collection and compilation – census, sample survey; Analysis of point pattern: Mean centre, standard distance, nearest neighbor analysis,, quadrant count method, population potential.

UNIT II

Analysis of line pattern: Transport network- cyclometric number, LB.V. index; Drainage Network-Bifurcation ratio ,length ratio ,drainage density, drainage texture; Slope index; Area- Height diagram, Hypsometric curve, clinograph, slope analysis.

UNIT III

Scatter diagram, correlation by spearman's Rank Difference and Karl Pearson's Product Moment Methods, regression analysis; Theory of probabilities distribution; Sampling--Sampling frame and procedure, standard error and sample size.

UNIT IV

Hypothesis testing- Chi-square test, binomial test, t test, Mann-Whitney U test, Analysis of variance; Multivariate Analysis.

UNIT V

Basic principles and elements of factor analysis and principal component analysis; Gravity potential model; Trend surface analysis – simulation model, diffusion models.

BOOKS RECOMMENDED:

1. David Unwin: Introductory Spatial Analysis, Methuen, London, 1981.
2. S. Gregory: Statistical Methods and the Geographer, Longman, London, 1978.
3. R. Hammend and P.S. Cullagh: Quantitative Techniques in Geography: An Introduction, Clarendon Press, Oxford, 1974.
4. J.P. Cole and C.A.M. King: Quantitative Geography, John Willey, London, 1968.
5. R.J. Johnston: Multivariate Statistical Analysis in Geography, Longman, London, 1973.
6. G.B. Norcliffe: Inferential Statistics for Geographers Huntchinson, London.
7. B .Blackwell: Statistical in Geography, Basil Blackwell Ltd., 1988.
8. O.D. Durcan et al Statistical Geography, Free Press of Glen co New York, 1961

9. L.J. King: Statistical Analysis in Geography, Prentice Hall, Englewood Cliffs, N.J.
10. Aslam, Mohmood: Statistical Methods in Geographical Studies, Rajesh Publicaion, Delhi, 1997.
11. J.A. Mathewa: Quantitative and Statistical Approaches to Geography, Rawat, Jaipur, 1981.
12. A.H. Robinson et al: Elements of Cartography, John Willey and Sons, New York, 1995.
13. R.L. Singh: Elements of Practical Geography, Kalyani Pub. New Delhi.
14. R.C. Tiwari evm Sudhakar Tripathi: Abhinav Prayogatmak Bhoogol, Prayag Pustak Bhawan, Allahabad.

Urban Geography

GEOG 210 (32) **CREDITS: 4**
Theory (Core) **Number of Lectures: 60**

UNIT I

Meaning and Scope of Urban Geography, Changing Paradigm of Urban Geography, Approaches to the study of Urban Geography, Development of Urban Geography in India.

UNIT II

Theories of Urban Origin, early urban hearths, The forms of industrial and post-modern city, Urbanization cycle and stages of urban development model, Types of urbanization regions.

UNIT III

National urban systems, Functional Typology, central place theory, urban settlement spread theories, urban hierarchy and rank size, its applicability rule.

UNIT IV

Ecological models of Burgees, Hoyt, Harris and Ullman Maun, Vance and white interval structure of city in South Asia, Political, economy perspective, rural –urban fringe and concept of city region and its delimitation.

UNIT V

Third world Urbanization and Theories of urbanization, Peripheral, exo and implosion urbanization, Urban economy and informal sector in Thirld World city; Third World Urban Problems-Pollution ,Slums and Squatter settlements, Urban Poor, Urban Planning of B.J. L. Berry, Couples of garden city and new Town, Sustainable Development of Cities.

BOOKS RECOMMENDED

1. Harold Carter: The Study of Urban Geography, Edward Ernold, London, 1972.
2. H.M. Mayer and C.F. Kohn: Readings in Urban Geography, University Press, Chicago, 1959.
3. A Fredrick: Urban Geography: A Social Perspective, Praeger Inc. New York.
4. D.T. Herbert and C.J. Thomas: Urban Geography_ A First Approach, John Wiley, New York.

5. L.S. King and R.G. Goiledge: Cities, Space and Behaviour, Elements of Urban Geography, Prentice Hall, New Delhi.
6. H.N. Misra (Ed): Urban Geography, Heritage.
7. R.M. Northam: Urban Geography, John Wiley, New York.
8. R.J. Short: An Introduction to Urban Geography, Routledge and Kegar Paul, London, 1984.
9. R.J. Johnston: City and Society, Hutchinson, London.
10. D.T. Herbert: Urban Geography: As Social Perspective, David and Charles, Newton and Abbot, 1977.
11. J.H. Johnson: Urban Geography: An Introductory Analysis, Pergamon Press, London, 1972.
12. R.L. Singh:Urban Geography in Developing Countries, National Geographical Society of India, Varanasi.
13. B.J.L. Berry and F.F. Horton: Geographic Perspectives on Urban Systems, Prentice Hall, Englewood Cliffs, New Jersey, 1970.
14. R. Ramachandran: Urbanization and Urban Systems of India, Oxford, New Delhi, 1993.
15. P.L. Knox and P.J. Taylor: World Cities in a World System, Cambridge University Press, 1995, UK.
16. D. Harvey: Social Justice and the City, Arnold, 1973. 17. J.L. Abu and R. Hay (Jr): Third World Urbanization, Maarouta Press, 1977.
18. J. Gugler (Ed): The Urbanization of the Third World, Oxford University Press, 1988.
19. S. Sassen: The Global City, Princaton University Press, 1991.
20. P. Marcuse and R.V. Kempen (Eds): Globalizing Cities: A New Spatial Order, Blackwell.
21. N. Smith: The New Urban Frontier, Routledge.
22. R. Simmonds and G. Hack: Global City Regions, Spon Press, 2000.
23. Om Prkash Singh: Nagariya Bhoogol, Tara Prakashan, Varanasi.
24. S.C. Bansal: Nagariya Bhoogol, Minakshi Prakashan, Meerut.
25. R.C. Tiwari: Adhivas Bhoogol, Prayag Pustak Bhawan,Allahabad.

Field Work Dissertation and Viva Voce

(Thematic as per Specialization Group)

GEOG 210 (33) **CREDITS: 3+1**
Practical (Core) **Number of Lectures: 60**

Special Group (A)

One paper of the special group to be selected from the following:

Tropical Geomorphology

GEOG 210 (34) **CREDITS: 3**
Theory (Elective) **Number of Lectures: 45**

UNIT I

Scope and significance of tropical geomorphology; The Tropical Environment: Climatic elements and its effects, Nature of rocks and their impacts on relief.

UNIT II

Natural vegetation and its impact on relief in tropics-morphogenetic regions; Weathering in tropics: processes and types- Duricrusts and laterites, Character of tropical soils.

UNIT III

Mass movement on tropics and their effect in geomorphic evolution slope development and slope stability; Movement of materials down slope; Structural landforms of tropics- dons, tors, scarps- Deccan trap landforms.

UNIT IV

Fluvial processes in the tropics- tropical valley forms in humid and arid areas, tropical deltas and estuaries; Tropical coastal landforms- erosional and depositional; Arid landforms- inselberg, pediment, pediplain, landscape of the Thar Desert.

UNIT V

Human Activities in tropical areas- deforestation action, agricultural and industrial development, urbanization; Methods and techniques of evaluation of tropical land forms mapping and identification; soil loss evaluation; Fragile environment of tropical regions; Conservation strategies for tropical ecosystem.

BOOKS RECOMMENDED:

1. K.R. Dikshit, V.S. Kale and M.N. Kaul: India Geomorphological Diversities, Rawat Publication, Jaipur, 1994
2. I. Douglas and J. Spancer: Environmental Changes and Tropical Geomorphology, George Allen and Urwin,London, 1985
3. A. Fariran and L.K. Jeje: Humid Tropical Geomorphology, Longman London, 1983
4. A. Kellman and R. Tack berry: Tropical Environments,Routledge, London, 1997
5. H.S. Sharma: Tropical Geomorphology, Concept, New Delhi, 1987
6. M.F. Thomas: Tropical Geomorphology -A Study of Weathering and Landform Development in Warm Climate, Mc Millan, London, 1974.
7. J. Tricart: The Landforms of the Humid Tropics, Forests and Savannas, Longman, London, 1972.
8. J. Tricart and A. Cailleux: Introduction to Climatic Geomorphology, Longman Green Ltd. London, 1972.
9. C.R. Tridale: Analysis of Landform, John Wiley, London, 1976.
10. H.S. Sharma (Ed) Indian Geomorphology, Concept, New Delhi, 1991
11. S.R. Jog (Ed): Indian Geomorphology, Vols I & II, Rawat Publications, Jaipur, 1995
12. Savindra Singh: Geomorphology, Prayag Pustak Bhawan, Allahabad,

Monsoon Climatology

GEOG 210 (35) **CREDITS: 3**

Theory (Elective) **Number of Lectures: 45**

UNIT I

Extent of Monsoon Climate; Classical Monsoon, areas of South Asia; Heat budget of the tropics- Role of tropics in the general circulation of the atmosphere; Driving forces-Jet Streams and their influence; Air masses of the tropics and their characteristics; Air masses over South Asia and their seasonal variations.

UNIT II

The Monsoon- Genesis and development of tropical monsoons; Mechanism of the Indian Monsoon; Theories of the origin of monsoon- thermal concept, dynamic concept, role of Jet Streams, Tibet Plateau, el-niño, Southern oscillations; Forecasting Indian Monsoons.

UNIT III

Tropical Disturbances- Cyclones, Thunderstorms, Tornadoes- their characteristics, frequencies and paths; Cyclones in the Bay of Bengal and the Arabian Sea; Tracking of tropical disturbances.

UNIT IV

Classification of tropical climates-Regionalization of India based on the scheme of Koppen, Thonthwaite and Penman; Water balance: areas of surplus and deficit; Droughts and famines Drought prone areas of India; Floods in India.

UNIT V

Agro- Climatic regions of India; Human impact on monsoon climate; Desertification in monsoon lands; Man-made climate: urban and industrial centres and related problems; Climatic approach to housing design- surface and building materials and their impact- House Types in the Ganga Valley in relation to climate.

BOOKS RECOMMENDED:

1. J.G. Lockwood: World Climatology and Environmental Approach, Edward Arnold, London, 1974.
2. S. Neuwal: Tropical Climatology, John Willey and Sons Ltd. New York, 1977.
3. M.A. Garbell: Tropical and Equatorial Meteorology, Sir Isaac Pitman and Sons Ltd.
4. C.S. Ramage: Monsoon Meteorology, Academic Press, U.K., 1971.
5. H. Riehl: Tropical Meteorology, Mc Graw Hill Co. U.K., 1954.
6. G.T. Trewartha: The Earth's Problem Climates, Metheun & Co. Ltd. London, 1962.
7. V.S. Datye et. al. (Ed.) Explorations in the Tropic, Prof. K.R. Dikshit, Feliciation Volume, Pune, 1987.
8. V.P. Subrahmanyam: Contributions to Indian Geography, Part III –General Climatology, Heritage Publication, New Delhi, 1983.
9. A.R. Subrahmanyam: Climatic Variability in India, Annals of NAGI, 12-1-2. 1992.
10. M.M. Yoshino (Ed) : Water Balance of Monsoon Asia, University of Tokyo, Press Tokyo, 1971.
11. W.Bach,J.Pankrath and W. Kellogg: Man's Impact on Climate, Elserier Scientific Publishing Co. New York, 1979

12. J.R. Mather: Climatology: Fundamentals and Applications, Mc Graw Hill Book Co. New York, 1974
13. Savindra Singh: Climatology, Prayag Pustak Bhawan,Allahabad, 2006
14. D.S. Lal: Climatology, Sharda Pustak Bhawan, Allahabad

Resource Planning

GEOG 210 (36) **CREDITS: 3**
Theory (Elective) **Number of Lectures: 45**

UNIT I

Basic Framework. Meaning, purpose and scope of resource planning; Methods and techniques of resource appraisal; Concepts and approaches of sustainable development; Human resource Development.

UNIT II

Resource Conservation. Principles of resource conservation; Resource management; Conservation and planning of resources: land, water, forest, and minerals (with special reference to India).

UNIT III

Indian Perspective, Resource utilisation and development; Impact of resource utilisation on environment; Environmental planning and policy in India;

UNIT IV

Resource potentials and resource regions; Agriculture regions; Population resource regions.

UNIT V

Case Study of India. Resource planning units and development strategies: Damodar Valley and National Capital Region (NCR).

Books Recommended

1. Adam, M.G. (2000a): Kumasi Natural Resources Management, Final Technical Report, Natural Resources Institute, University of Greenwich-UK
2. Adams, W. M. (1990): Green Development: Environment and Sustainability in the Third World. Routledge and Chapman Hall, London.
3. Alam, S. Manzoor and Kidwai, Atiya Habeeb (eds.) (1987): Regional Imperatives in Utilization and Management of Resources: India and the U.S.S.R. Concept Publishing. Company, New Delhi.
4. Burton, I. and Kates, R.W. (1978): Readings in Resource Management and Conservation. McGraw Hills, New York.
5. Corbridge, S., (ed.) (1995): Development Studies: A Reader. Arnold, London. Ehrlich, P.R., Ehrlich, R.H. and Holdren, J.P. (1998): Ecoscience: Population, Resources and Development. 2nd ed. Freeman and Company, San Francisco.
6. Frayer, D.W., (1965): World Economic Development. McGraw Hill, New York.
7. Freeman, T.W. (1972): Geography and Planning. Freeman and Company, New York.

8. Gupta, P., and Sdasyuk, G. (1968): Economic Regionalization of India: Problems and Prospects. Census of India, New Delhi
9. Holechek, J. L., Cole, R., Fisher, J., and Valdez, R. (2000): Natural Resources: Ecology, Economics and Policy. Prentice-Hall, New Jersey.
10. Mitchell, B. (1979): Geography and Resource Analysis. Longman, London.
11. Mitchell, B. (1997): Geography and Environmental Management. Longman, Harlow and London.
12. Mitra, A. (1999): Resource Studies; Shridhar Publications., Calcutta.
13. Prasad, H. et al.(eds.) (2005): Sustainable Management of Water Resources, Tara Book Agency, Varanasi
14. Preston, P. W. (1996): Development Theory: An Introduction. Blackwell Publications, Oxford.
15. Rao, P. K. (2001): Sustainable Development: Economics and Policy. Blackwell Publications., Oxford.
16. Raza, M. (ed.) (1989): Renewable Resources for Regional Development: The Indian and the Soviet Experience. Concept Publishing Company, New Delhi.
17. Rees, J. (1985): Natural Resources: Allocation, Economics and Policy. Methuen and Company Ltd., London.
18. Reid, S. (2000): Global Environmental Outlook. Earthscan, London.
19. Reid, S. (1995): Sustainable Development. Earthscan, London.
20. Simon, D. and Närman, A. (eds.) (1999): Development Theory and Practice. Longman.
21. Simon, D. (ed.) (2005): Fifty Key Thinkers on Development. Routledge, London.
22. Singh, M. B. et. al. (eds.) (2005): Sustainable Management of Natural Resources. Tara Book Agency, Varanasi.
23. Sundaram, K.V., (1983): Geography of Under Development. Concept Publishing Company, New Delhi.
24. Sundaram, K.V.; Mani, M. and Jha, M.M. (eds.) (2004): Natural Resource Management and Livelihood Security. Concept Publishing Company, New Delhi.
25. Thakur, B., (ed.) (2003): Perspectives in Resource Management in Developing Countries. Vol. I: Resource Management: Theory and Techniques, Concept Publishing Company, New Delhi.
26. Trivedi, P.R., Singh, U.K., Sudershan, K., Tuteja, T.K. (1994): International Encyclopedia of Ecology and Environment. Vol. 5: National Resource Conservation, Indian Institute of Ecology and Environment, New Delhi.
27. UNDP (2001-04): UNDEP Human Development Report. Oxford University Press.
28. Valdiya, K. S. (1987): Environmental Geology: Indian Context. Tata McGraw Hill Publishing Company. Ltd., New Delhi
29. World Bank (2001-05): World Development Report. Oxford University Press, NewYork.

Special Group (B) Skill Development

One paper of the special group to be selected from the following:

GIS and Its Application

GEOG 210 (37) **CREDITS: 2**

Theory (Skill Development) **Number of Lectures**: **30**

UNIT I

Definition and Evolution of GIS; Components of GIS; Issues in GIS: user, technology, data and
application; Recent trends in GIS; Mobile GIS

UNIT II

Geographical data: types and characteristics; Spherical and plane coordinate systems in GIS; Implications of earth's shape and datum in geo-referencing,

UNIT III

Digital representation of geographic data: Data structure, spatial data model, raster and vector models.

UNIT IV

GIS data standards: concepts and components; Digital Elevation Model (DEM): characteristics and applications.

UNIT V

Integration of Remote sensing and GIS; GIS project design and planning methodologies; GIS data base management systems; GIS information products; Applications of GIS.

Books Recommended

1. Bonham, Carter G.F. (1995): Information Systems for Geoscientists – Modelling with GIS. Pergamon, Oxford.
2. Burrough, P.A. and McDonnell, R. (1998): Principles of Geographic Information Systems. Oxford University Press, Oxford.
3. Chang, K.T. (2003): Introduction to Geographic Information Systems. Tata McGraw Hill Publications Company, New Delhi.
4. Chauniyal, D. D. (2004): Remote Sensing and Geographic Information Systems. (in Hindi). Sharda Pustak Bhawan, Allahabad.
5. Demers, M. N. (2000): Fundamentals of Geographic Information Systems. John Wiley and Sons, Singapore.
6. ESRI (1993): Understanding GIS. Redlands, USA
7. Fraser Taylor, D.R. (1991): Geographic Information Systems. Pergamon Press, Oxford.
8. George, J. (2003): Fundamentals of Remote Sensing. Universities Press Private Ltd, Hyderabad.
9. Girard, M. C. and Girard, C. M. (2003): Processing of Remote Sensing Data. Oxford and IBH, New Delhi.
10. Glen, E. M. and Harold, C. S. (1993): GIS Data Conversion Handbook. Fort Collins, Colorado, GIS Word Inc.
11. Goodchild, M.F.; Park, B. O. and Steyaert, L. T. (eds.) (1993): Environmental Modelling with GIS. Oxford University Press, Oxford.

12. Guptill, S.C., and Morrison, J.L. (1995): Elements of Spatial Data Quality. Elsevier/ Pergamon, Oxford.
13. Heywood, I. (2003): An Introduction to Geographical Information Systems. 2nd edition, Pearson Publishing Company, Singapore.
14. Korte, G. M. (2002): The GIS Book. On Word Press: Thomson Learning, New York and Singapore.
15. Lo, C.P. and Yeung, A. K. W. (2002): Concepts and Techniques of Geographic Information Systems. Prentice Hall of India, New Delhi.
16. Longley, P. and Batty, M. (eds.) (1996): Spatial Analysis: Modelling in a GIS Environment. GeoInformation International, Cambridge.
17. Longley, P., Goodchild, M.F., Maguire, D. and Rhind, D. (1999): Geographic Information Systems. Principles, Techniques, Management, Applications. John Wiley and Sons, New York.
18. Maguirre, D. J.; Michael F. G. and David W. R. (1999): Geographical Information Systems:
19. Principles and Application. Geo Information International, Vol.2, Longman Publication., New York.
20. Martin, D. (1996): Geographic Information Systems: Socioeconomic Implications. Routledge, London.
21. Michael F. G. and Karan K. K. (ed.) (1990): Introduction to GIS. NCGIA, Santa Barbara, California.
22. Ralston, B. A. (2002): Developing GIS Solutions with Map Objects and Visual Basic. OnWord Press: Thompson Learning, New York and Singapore.
23. Reddy, M. A. (2001): Textbook of Remote Sensing and Geographic Information Systems. B. S. Publications., Hyderabad.
24. Ripple, W. J. (ed.) (1989): Fundamentals of Geographic Information Systems: A Compendium. ASPRS/ ACSM, Falls Church.
25. Siddiqui, M.A. (2005): Introduction to Geographical Information Systems, Sharda Pustak Bhawan, Allahabad.
26. Star, J. and Estes, J. (1990): Geographic Information Systems – An Introduction. Prentice-Hall, Englewood Cliffs, New Jersey.
27. Worboys, M. F. (1995): GIS: A Computing Perspective. Taylor and Francis, London.
28. Bhatta,B. (2010), Remote Sensing and GIS, Oxford University Press, New Delhi.

Industrial Geography

GEOG 210 (38) **CREDITS: 2**
Theory (Skill Development) **Number of Lectures**: **30**

UNIT I

Nature, Scope and recent developments in industrial geography; Factors of industrial location; centralization and decentralization of industries; horizontal, vertical and diagonal linkages of modern industries.

UNIT II

Theories and Models of industrial location: Weber, Losch, Isard and Hoover; Critical review and application of industrial location theories; Distribution and spatial pattern of major industries- iron and steel, textiles, chemicals, petro – chemicals, automobiles, electronics; Major industrial regions of the world.

UNIT III

Historical review of Indian industrialization since 1947; Evolution of industrial regions in India; Development of small scale and cottage industries; Interregional disparities in Industrial development in India; Multinational corporations and India's industrial scenario; Industrial policy of India.

UNIT IV

Problems of industrial development; Industrial development and environmental degradation; Industries and economic development.

UNIT V

Impact of globalization on industrial development; Industrial decentralization and its impact on urban fringe; Changing industrial policy; sustainable industrial development.

BOOKS RECOMMENDED

1. M Pacione: Progress in Industrial Geography, Croom Helm, 1985.
2. C Alexanderson: Geography of Manufacturing, Prentice hall, Bombay, 1967.
3. J.W. Alexander: Economic Geography, Prentice Hall, Englewood Cliffs, 1988.
4. A. Miller: Geography of Manufacturing, Prentice Hall, Englewood Cliffs, New Jercy, 1962.
5. Alfred Weber: Theory of Location of Industries, Chicago University Press, Chicago, 1957.
6. E.M. Hoover: The Location and space Economy, Mc Graw Hill, New York, 1948.
7. W. Isard: Methods of Regional Analysis, The Technology Press of M.I.T. & John Wiley & Sons,New York,1956. 18
8. D.M. Smith: Industrial Location: An Economic Geographic Analysis, John Wiley & Sons, 1982.
9. I.M. Clarke: The Spatial Organisation of Multinational Corporation, Croom, Helem, U.K., 1985.
10. Banerjee and S.Guha: Spatial Dimensions of International Capital: Study of Multinational Corporations in India, Orient Longman, 1997.
11. H.D. Watts (Ed) (1980): Large Industrial Enterprise: Some Spatial Perspectives, Croom Heln, 1980.
12. M.R. Chaudhari:Indian Industries, Oxford Book House, 1976

Geography of Crime and Terrorism

GEOG 210 (39) **CREDITS: 2**

Theory (Elective) **Number of Lectures**: **30**

UNIT I

Meaning, Scope and development of Geography of Crime; Indian contribution to the Geography of Crime; Approaches to the study of Geography of Crime; Sources of data on crimes; Reliability of crime data.

UNIT II

Crime –definition and types; causes of crime-physical, economic, social; spatial dimension of crimes, crimes in developed countries; crimes in developing countries with special references to India, seasonality of crimes; crime and poverty, crime and illiteracy.

UNIT III

Urban and rural crimes; crime towards women, children and weaker section of the society; crime as social pollution; Role of police in crimes; Role of political system and judiciary in crimes.

UNIT IV

Terrorism- definition and types; Rise of international terrorism; terrorism and economic and social deprivation.

UNIT V

Role of religion in terrorism, Terrorism in India; Controlling crimes and terrorism-international and national efforts and strategy; Rehabitaion of criminals and terrorists.

RECOMMENDED BOOKS:

1. K.D. Harries: The Geography of Crime and Justice, Mc Graw Hill, New York.
2. W.A. Bonger: An Introduction to Criminology, Methuen, London.
3. S.L. Boggs: .urban Crime Pattern, Honter and Row, New York.
4. J.L. Gillin: Criminology and Pesology, Janathan Cape, London, 1937.
5. E.C. Lover: The Roots of Crime, Imago, London, 1960.
6. A.S. Gupta: Crime and Police in India, Sahitya Bhawan, Agra.
7. C.R. Walter: The Crime Problem, Bombay.
8. M.M. Lavariya: Aparadh Shastra, Delhi.
9. G. Shah: Aparadh: Karan Aur Nivaran, Banares.
10. R.S. Chandel: Aparadh Samasya Aur Samadhan: Kitabghar, Delhi.
11. D.S. Baghel: Aparadh Shastra: Vivek Prakashan, Delhi.
12. Bhartiya Dard Sashita: Law Book Agency, Allahabad.
13. U.P. Police: 9, Clive Road, Lucknow.

Natural Hazard Management

GEOG 210 (40) **CREDITS: 3**

University Paper (Not for Geography Students) **Number of Lectures**: **45**

UNIT I

Types of natural hazards-Earthquake, Tsunamis, Volcanic eruptions, Landslides, Avalanches, Floods, famines and Droughts, Cyclones, Distribution of natural hazards; Hazard prone areas of the world and India; Man's role in natural hazard.

UNIT II

Natural Hazards in India: Seismic zones, Tsunamis, Landslides prone areas, Flood prone areas, Drought prone areas; Damager due to natural hazards in India.

UNIT III

Some natural hazards of recent history-Earthquake-Koyna, Utterkashi, Bhuj; Tsunamis of 2005. Landslides in the Garhwal Himalays; Floods of the Ganga valley; Cyclones along Orissa Coast; Drought prone areas of India.

UNIT IV

Natural Hazards in world: Seismic zones, Tsunamis, Landslides prone areas, Flood prone areas.

UNIT V

Management of Natural Hazards- Prediction of natural hazards; Control measures for natural hazards; Planning for natural hazards- (a) long-term policy.

Recommended Books:

1. C. Enbleton: Natural Hazards and Global Change, I.T.C. Journal,1989,3/4,pp. 169-178.
2. W.J. Petak and A.D. Atkinson: Natural Hazard Risk Assessment and Public Policy, Spinger-Verlay, New York, 1982.
3. L. Tianch: Landslide Hazard Mapping and Management in China, ICIMOD, Nepal, 1996.
4. K.S. Valdiya: Environmental Geology, Tata Mc Graw Hill Co. Ltd. New Delhi, 1987.
5. Q. Zareba and V. Mance : Landslides and their Control, Elsevier Amsterdom, 1969.
6. G.F. White (Ed): Natural Hazards: Local, National, Global, Oxford University Press, London, 1974.
7. H.K. Gupta: Dans and Earthquakes, Elsever, Amsterdam, 1976.
8. I. Burton et al: The Environment as Hazard, O.P.U. New York, 1978.
9. B.A. Bolt et al (Ed): Geological Hazards, Spinger Verlay, New York, 1950.

THE END