Department of Geography

St. Xavier's College, Ranchi

(An Autonomous College of Ranchi University)

COURSES OF STUDIES

2-YEARS NEP PG CURRICULUM

M.A. GEOGRAPHY PROGRAMME

Implemented w.e.f.
Academic Session 2025-26 & onwards

Table of Content

HIGHLIGHTS OF NEP PG CURRICULUM

CREDIT OF COURSES

The term 'credit' refers to the weightage given to a course, usually in terms of the number of instructional hours per week assigned to it. The workload relating to a course is measured in terms of credit hours. It determines the number of hours of instruction required per week over a semester (minimum 15 weeks).

a) One hour of teaching/ Lectures or two hours of laboratory /practical work will be assigned per class/interaction.
   One credit for Theory = 15 Hours of Teaching
   One credit for Practicum = 30 Hours of Practical work
   One credit for Internship = 02 Weeks of Practical experience

b) For credit determination, instruction is divided into three major components:
   Hours (L) – Classroom Hours of one hour duration.
   Tutorials (T) – Special, elaborate instructions on specific topics of one hour duration
   Practical (P) – Laboratory or field exercises in which the student has to do experiments or other practical work of a two-hour duration.

   Internship – For the Exit option after 1st year of the 2-year P.G. Programme for the award of P.G. Diploma, Level 6.5, Students can either complete two 4-week internships worth 2 credits each or one 8-week internship for all 4 credits. This practical experience connects academic learning with real-world applications, offering valuable exposure to professional environments in their fields of study

PG CURRICULUM

1. The PG Curriculum will be either of 1-year duration for students who studied the four-year UG Programme (FYUGP) or a 2-year duration for students who studied a three-year UG programme from a CBCS/LOCF/FYUGP Curriculum.
2. There is a flexible mode in the PG programme offered to the students of Ranchi University, Ranchi. The total credit for any semester will be 20 credits.
3. **Two-year PG curriculum:** The First year of the PG curriculum offers coursework only. There will be 3 courses at level 400 and 2 courses at level 500 in the first and the second semesters of any 2-year PG programme.
4. **One-year PG curriculum:** The Courses in the 1-year PG programme and the second year of the 2-year PG programme are the same.
   a. **Course work only**: There will be 5 courses at level 500 of 4 credits each in every semester for the coursework offered in the programme.
   b. **Course work and Research**: There will be 5 courses at the level 500 bearing 4 credits each in the first semester of a 1-year PG or in the third semester of a 2-year PG. There will be Research work offered in the next semester for this mode offered in the programme. The eligibility for this mode is available in the NEP PG curriculum of Ranchi University, Ranchi.
   c. **Research work only**: The eligible student will be offered this mode to conduct extensive research under the supervision of a guide. Each semester will be equivalent to 20 credits. The selection of a candidate for the research mode will depend upon the eligibility of the student, availability of the guide and seat in the department/institution of Ranchi University, Ranchi.

PROMOTION CRITERIA

Two Years Post-graduation programme having coursework only:

i. Each course shall be of **100 marks** having two components: **30 marks for Sessional Internal Assessment (SIA), conducted by the Department/College and 70 marks shall be assigned to the End Semester University Examination (ESUE), conducted by the University**.
ii. The marks of SIA shall further break into, 20 for Internal Written Examinations, 05 for Written Assignment/ Seminar presentation and 05 for overall performance of a student including regularity in the class room lectures and other activities of the Department/College.

iii. The Requisite Marks obtained by a student in a particular subject will be the criteria for promotion to the next Semester.

iv. There shall be two written internal examinations, each of 1 hour duration and each of 20 marks, in a semester out of which the '**Better One out of Two**' shall be taken for computation of marks under SIA.

v. If a student failed to secure pass marks in Mid Semester, he/she has to reappear in Mid & End Semester Examinations.

vi. In case a student is fail to secure pass marks in End Semester Examination, then he/she has to appear only in End Semester Examination of following Sessions within period of Upper Limit of Four Years and the Marks of Mid Semester will be carried for the preparation of result.

vii. Students' final marks and the result will be based on the marks obtained in Mid Semester and End Semester Examination organized taken together.

viii. The pass marks in the programme will be 45% of the total marks obtained in each Core/ Elective/ Other Courses offered.

ix. In absolute terms of marks obtained in a course, **a minimum of 28 marks is essential in the ESUE** and **a minimum of 17 marks is to be secured in the SIA** to clear the course. In other words, a student shall have to pass separately in the ESUE and in the SIA by securing the minimum marks prescribed here.

x. Every candidate seeking to appear in the ESUE shall be issued an Admit Card by the University. **No candidate will be permitted to appear in the examination without a valid admit card.**

xi. A candidate shall be permitted to proceed in next Semester (2nd, 3rd and 4th) **provided he/she has passed at least in 3 courses out of 5 courses** in the respective semester in theory and practical/ project courses taken together.

xii. A student will have to clear all his papers within maximum of Four Years of duration to qualify for the degree.

However, it will be necessary to procure pass marks in each of the papers before completion of the programme.

VALUE ADDED COURSES

1. The Value added course will be of **2 credits** to be covered during the first semester.
2. There will be objective-type questions asked in the End Semester University Examination (ESUE).
3. There will be OMR-based examination and the correct answer is to be marked by a black ballpoint pen only on the OMR sheet provided by the University.
4. For **50 Marks Examination** the student will be provided **Two hours** for marking their responses.
5. Students are not allowed to choose or repeat courses already undergone at the undergraduate level in the proposed major and minor streams.
6. The performance in this course will not influence the SGPA or CGPA of the PG Programme where the student is registered to obtain the Master's Degree. However, it will be mandatory to secure minimum pass marks in the course before exit from the PG Programme.
7. If the student fails to secure the minimum pass marks in the Value added course in the first semester, he may appear in the examination of the said course with the following batch of the next session.
8. The student may appear in the examination of the said course further if could not clear the course in the following attempt, subject to the date of validation of the Registration.

The Regulations related to any concern not mentioned above shall be guided by the existing Regulations of the PG Curriculum of Ranchi University, Ranchi.

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COURSE STRUCTURE FOR PG **'PG DIPLOMA/ COURSEWORK ONLY/ COURSEWORK WITH RESEARCH/ RESEARCH ONLY'**

Table 1: Credit Framework for One Year Postgraduate Programme (PG) [Total Credits = 80]

Academic Level	Level of Courses	Semester	Coursework Level 400	Coursework Level 500	Research Preparedness	Research thesis/ Project/ Patent	Total Credits
YEAR 1							
Level 6.5	**Coursework**	**I**	**4+4+4**	**4+4**	**---**	**---**	**20**
		II	**4+4+4**	**4+4**	**---**	**---**	**20**
YEAR 2:	**Exit Point: Having Internship of 4 credits Exit allowed with PG Diploma Certificate**						
Level 6.5	**Coursework**	**III**	**---**	**4+4+4+4+4**	**---**	**---**	**20**
		IV	**---**	**4+4+4+4+4**	**---**	**---**	**20**
OR							
Level 6.5	**Coursework + Research**	**III**	**---**	**4+4+4+4+4**	**---**	**---**	**20**
		IV	**---**	**---**	**20**		**20**
OR							
Level 6.5	**Research**	**III**	**---**	**---**	**20**	**---**	**20**
		IV	**---**	**---**	**---**	**20**	**20**
Total credits of P.G. Programme = **80**							

Note: **Having Internship of 4 credits 'Exit' is allowed with awarding the PG Diploma Certificate.**

AIMS OF MASTER'S DEGREE PROGRAMME IN GEOGRAPHY

The aim of the Master's degree programme in Geography is to provide:

The 'Master of Arts in Geography' programme offered by the department, aims at empowering students with knowledge and skills for spatial thinking and analysis, to navigate real world problems, and contribute to society in a meaningful way. The aims of the course are to familiarize the students about geomorphic process, climatological characteristics, spatial variation of human societies and its features with integration of latest geo-spatial technologies such as GIS, Remote Sensing and GPS.

PROGRAMME LEARNING OUTCOMES

The broad aims of Master's degree programme in Geography are:

At the end of the two-year (four-semester) course, students will have comprehensive understanding of spatial variation of physical environmental features, human environmental features and features, factors developed because of interrelationship among them. The students will acquire knowledge about contemporary issues in geography, both physical and human geography.

The Courses in One Year P.G. Programme and in the Second year of Two years P.G. Programme are Common.

Table 2: Semester-wise Course Code and Credit Points

Sem	Core, AE/ GE/ DC/ EC & Compulsory FC Courses				Examination Structure		
	Paper	Paper Code	Credit	Name of Paper	Mid Semester Evaluation (F.M.)	End Semester Evaluation (F.M.)	End Semester Practical/ Viva (F.M.)
I	Foundation Course	FCGEO101	4	Social Geography	30	70	----
	Core Course	CCGEO102	4	Advanced Geomorphology	30	70	----
	Core Course	CCGEO103	4	Research Methodology	30	70	----
	Core Course	CCGEO104	4	Climatology and Climatic Change	30	70	----
	Practicals on Core	CPGEO105	4	Practical-I (Advance Cartography)	----	----	100
II	Core Course	CCGEO201	4	Hydrology & Watershed Management	30	70	----
	Core Course	CCGEO202	4	Regional Planning and Development	30	70	----
	Core Course	CCGEO203	4	Cultural and Tribal Geography	30	70	----
	Core Course	CCGEO204	4	Natural Resource Management	30	70	----
	Practicals on Core	CPGEO205	4	Practical-II (Physical Survey)	----	----	100
III	Core Course	CCGEO301	4	IKS in Geography	30	70	----
	Skill Enhancement Course	ECGEO302	4	Environment Geography and Disaster Management	30	70	----
	Core Course	CCGEO303	4	Transport and Tourism Geography	30	70	----
	Core Course	CCGEO304	4	Political & Electoral Geography	30	70	----
	Practicals on Core	CPGEO305	4	Practical-III (Instrumental Survey)	----	----	100
IV	Elective	ECGEO401	4	A. Agricultural Geography/ B. Remote Sensing and GIS/ C. Urban Geography	30	70	----
	Elective	ECGEO402	4	A. Soil Geography/ B. Application of Remote sensing & GIS/ C. Rural Development	30	70	----
	Core Course	CCGEO403	4	Mining and Industrial Geography	30	70	----
	Practicals on Elective	EPGEO404	4	A. Practical – IV A B. Practical – IV B C. Practical – IV C	----	----	100
	PROJECT	PRGEO405	4	Dissertation/ Project/ Teaching Aptitude	----	----	100

*** Either One Internship of 4 credits or Two Internships of 2 credits each is required before opting for the 'Exit' option after First year of the P.G. Programme.**

INSTRUCTION TO QUESTION SETTER

SEMESTER INTERNAL EXAMINATION (SIE):

There **Marks Weightage of a Course:** Each non-practical/non-project course shall be of **100 marks** having two components: **70 marks shall be assigned to the End Semester University Examination (ESUE), conducted by the University, and, 30 marks for Sessional Internal Assessment (SIA), conducted by the Department/College**.

The marks of SIA shall further break into, 20 for Internal Written Examinations, 05 for Written Assignment/ Seminar presentation and 05 for overall performance of a student including regularity in the class room Lectures and other activities of the Department/College. There shall be two written internal examinations, each of 1-hour duration and each of 20 marks, in a semester out of which the **'Better One out of Two'** shall be taken for computation of marks under SIA.

In absolute terms of marks obtained in a course, **a minimum of 28 marks is essential in the ESUE and a minimum of 17 marks is to be secured in the SIA to clear the course**. In other words, a student shall have to pass separately in the ESUE and in the SIA by securing the minimum marks prescribed here.

A. (SIE 20+5=25 marks):

There will be a uniform pattern of questions for mid-semester examinations in all the courses and of all the programmes. There will be **two** groups of questions in 20 marks written examinations. **Group A is compulsory** and will contain five questions of **very short answer type** consisting of 1 mark each. **Group B will contain descriptive type five** questions of five marks each, out of which any three are to be answered. Department may conduct Sessional Internal Examinations in other format as per needs of the course.

The Semester Internal Examination shall have two components. (a) One Semester Internal Assessment Test (SIA) of 20 Marks, (b) Class Attendance Score (CAS) of 5 marks.

Conversion of Attendance into score may be as follows:

Attendance Upto 45%, 1mark; 45<Attd.<55, 2 marks; 55<Attd.<65, 3 marks; 65<Attd.<75, 4 marks; 75<Attd, 5 marks.

END SEMESTER UNIVERSITY EXAMINATION (ESUE):

A. (ESUE 70 marks):

There will be a uniform pattern of questions for all the courses and all the programmes. There will be **two** groups of questions. **Group A is compulsory** and will contain two questions. **Question No.1 will be very short-answer type** consisting of five questions of 1 mark each. **Question No.2 will be a short-answer type** of 5 marks. **Group B will contain descriptive type six** questions of fifteen marks each, out of which any four are to be answered. The questions will be so framed that examinee could answer them within the stipulated time.

[**Note:** There may be subdivisions in each question asked in Theory Examinations]

B. (ESUE 100 marks):

Practical/ Project courses would also be of 100 marks but there **shall be no internal written examinations** of the type specified above. The total 100 marks will have two components: **70 marks for the practical ESUE and 20 marks for the Viva-voce examination** conducted during the ESUE to assess the applied and practical understanding of the student.

The written component of the project (**Project Report**) shall be of **70 marks and 20 marks will be for the Viva-voce examination** jointly conducted by an external examiner, appointed by the University, and the internal supervisor/ guide.

10 marks will be assigned on the cumulative assessment of the examinee during the semester and will be awarded by the department/faculty concerned.

FORMAT OF QUESTION PAPER FOR MID/ END SEMESTER EXAMINATIONS

Question format for **20 Marks:**

Subject/ Code

F.M. =20 Time=1Hr. Exam Year

General Instructions:

i. **Group A** carries very short answer type compulsory questions.
ii. **Answer 1 out of 2** subjective/ descriptive questions given in **Group B**.
iii. Answer in your own words as far as practicable.
iv. Answer all sub parts of a question at one place.
v. Numbers in right indicate full marks of the question.

Group A

1. [5x1=5]
   i. .....
   ii. .....
   iii. .....
   iv. .....
   v. .....
2. ..... [5]

Group B

3. ..... [10]
4. ..... [10]

Note: There may be subdivisions in each question asked in Theory Examination.

Question format for **70 Marks:**

Subject/ Code

F.M. =70 Time=3HrS. Exam Year

General Instructions:

i. **Group A** carries very short answer type compulsory questions.
ii. **Answer 4 out of 6** subjective/ descriptive questions given in **Group B**.
iii. Answer in your own words as far as practicable.
iv. Answer all sub parts of a question at one place.
v. Numbers in right indicate full marks of the question.

Group A

1. [5x1=5]
   i. .....
   ii. .....
   iii. .....
   iv. .....
   v. .....
2. ..... [5]

Group B

3. ..... [15]
4. ..... [15]
5. ..... [15]
6. ..... [15]
7. ..... [15]
8. ..... [15]

Note: There may be subdivisions in each question asked in Theory Examination.

SEMESTER I

I. FOUNDATION COURSE [FCGEO101]
SOCIAL GEOGRAPHY

Marks: 30 (MSE: 20 Th. 1Hr + 5 Attd. + 5 Assign.) + 70 (ESE: 3 Hrs) = 100 **Pass Marks: (MSE: 17 + ESE :28) = 45**

(Credits: Theory-04, 60 Hours)

Course Objectives:
The Learning objective of this course are as follows-

1. To familiarize the about social geography, its concept, nature and scope; migration social categories
2. To make students learn about Tribal geography and its concepts; Tribes and their economic activities, marriage, faith and practices

Learning Outcomes:
After the completion of course, the students will have ability to:-

1. Understand the nature, scope and relationships of geography and human wellbeing
2. Acquire knowledge on spatial dimensions of social diversity components
3. Understand the contemporary social issues of India and the world

Course Content:

Unit 1- Meaning, nature, and scope of Social Geography; Social structure: caste and class. Social process: Urbanization, industrialization, and migration

Unit 2- Social indicators of development: Education and health; Concepts of social justice and social security with examples from India

Unit 3- Social problems in rural areas: Migration, Marginalization and deprivation; Social problems in urban areas: Poverty, Inequality and crime; Contemporary social issues: Gender related problems;

Unit 4- Social welfare schemes for tribes, women, and children; Social segregation: A comparison between cities of global north and south

References

1. Ahmed A., 1999: Social Geography, Rawat Publications.
2. Anderson, K., Domosh, M., Pile, S., & Thrift, N. (Eds.). (2003). Handbook of cultural geography. SAGE Publications.
3. Casino V. J. D., Jr., 2009) Social Geography: A Critical Introduction, Wiley Blackwell.
4. Cater J. and Jones T., 2000: Social Geography: An Introduction to Contemporary Issues, Hodder Arnold.
5. Panelli R., 2004: Social Geographies: From Difference to Action, Sage.
6. Rachel P., Burke M., Fuller D., Gough J., Macfarlane R. and Mowl G., 2001: Introducing Social Geographies, Oxford University Press.
7. Smith D. M., 1977: Human geography: A Welfare Approach, Edward Arnold, London.
8. Smith S. J., Pain R., Marston S. A., Jones J. P., 2009: The SAGE Handbook of Social Geographies, Sage Publications.
9. Sopher, David (1980): An Exploration of India, Cornell University Press, Ithasa
10. Srinivas, M. N. (1966). Social change in modern India. University of California Press
11. Srinivas, M. N. (1987). The dominant caste and other essays. Oxford University Press.
12. Srinivas, M. N. (1998). Village, caste, gender and method: Essays in Indian social anthropology. Oxford University Press.
13. Valentine G., 2001: Social Geographies: Space and Society, Prentice Hall.
14. Valentine, G. (2001). Social geographies: Space and society. Routledge.

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CORE COURSE [CCGEO102]

ADVANCED GEOMORPHOLOGY

Marks: 30 (MSE: 20 Th. 1 Hr + 5 Attd. + 5 Assign.) + 70 (ESE: 3 Hrs) = 100 **Pass Marks: (MSE: 17 + ESE: 28) = 45**

(Credits: Theory-04, 60 Hours)

Course Objectives:

The Learning objective of this course are as follows-

1. To familiarise students about geomorphic environment, landform development
2. To make student learn and apply geomorphic ideas for water management and environmental degradation

Course Learning Outcomes:

After the completion of course, the students will have ability to:

1. Learn the geomorphic/ physical environment of the area. It will help in the understanding of geomorphic analysis of landform development
2. Have sound knowledge of geomorphic features which will enable the students in application of geomorphic ideas for water management and environmental degradation
3. It will help the understanding of natural hazard management and various geomorphic applicability

Course Contents-

Unit 1- Defining the field, nature and scope of geomorphology, fundamental concepts, Process of landform evolution – concept of gradation, theory of landform evolution and Slope Development;

Unit 2- Earth movements- Epierogenic, Orogenic and Cymatogenic, climatogentic, Isostasy and anthropogenic evolution of landforms, drainage system analysis, morphometric analysis, drainage basin and channel morphology

Unit 3- Regional geomorphology of Chotanagpur plateau, Palamu upland, Rajmahal upland, Kolhan Region and denudation chronology

Unit 4- Applied Geomorphology- application of geomorphology to urbanization, agriculture, water resource management, watershed planning and development forestry, regional planning and development, Geomorphic hazard

Reference Books:

1. Ahmad, E (1985) Geomorphology, Kalyani Publishers , New Delhi
2. Bloom, A. L., (2003): Geomorphology: A Systematic Analysis of Late Cenozoic Landforms, Prentice-Hall of India, New Delhi.
3. Christopherson, R. W. and Birkeland, G. H., (2012) Geosystems: An Introduction to Physical Geography (8th edition), Pearson Education, New Jersey.
4. Das Gupta, A and Kapoor, A.N., (2001) Principles of Physical Geography, S.C. Chand & Company Ltd. New Delhi
5. Dayal, P., (1996) A Text book of Geomorphology. Shukla Book Depot, Patna.
6. Huggett, R.J. (2007) Fundamentals of Geomorphology, Routledge, New York.
7. Kale, V. S. and Gupta A., (2001): Introduction to Geomorphology, Orient Longman, Hyderabad.
8. Khullar, D.R., (2012) Physical Geography, Kalyani Publishers, New Delhi.
9. Singh Savindra(2015): Bhuakriti vigyan ka Swarup, Prayag Pustak Bhawan, Allahabad
10. Strahler, A. H. and Strahler, A N., (2001):Modern Physical Geography (4/E), John Wiley and Sons, Inc., New York.
11. Shukla, J (2016) Geomorphology, Disha International Publishing House, Delhi
12. Summerfield M. A. (2013): Global Geomorphology, Routledge, New York
13. Thornbury, W. D., (2004): Principles of Geomorphology, Wiley, New York.

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CORE COURSE [CCGEO103]

RESEARCH METHODOLOGY

Marks: 30 (MSE: 20 Th. 1 Hr + 5 Attd. + 5 Assign.) + 70 (ESE: 3 Hrs) = 100 **Pass Marks: (MSE: 17 + ESE: 28) = 45**

(Credits: Theory-04, 60 Hours)

Course Objectives:

1. To understand essential of research in Geography and its significance.
2. To understand the ways data are collected, classified tabulated and analysed.
3. To make student aware about fundamentals of sampling techniques in Geographic research.

Course Learning Outcomes:

1. Acquaintance with basics of research its typology and conceptualization of research problem
2. Understanding of sources, types and tools of data collection and data analysis
3. Understanding nuance of thesis writing in Geography.

Course Content:

Unit-1- Introduction to Research Methodology: Defining Research, Methods of Research Types, Significance of Geographical Research, Research Ethics; Scientific Method in Geographical Studies, Inductive and Deductive, Basic Element and Attributes, Scale of Research, Macro, Meso, Micro Problem of Formulation and Identification; Review of Literature: Significance and Sources of Literature Review; Research Design: Meaning, Stages, Characteristics, Significance of Research Design.

Unit-2- Research Hypothesis and Sampling: Meaning of Hypothesis, Relevance and Types of Hypothesis; Identification of Problem and Hypothesis, Problem Identification, Testing Hypothesis, Generalization; Sampling: Meaning and Importance, Types of Sampling; Selection of Sample and size of Sample.

Unit-3- Nature of Geographical Data: Nature and Types of Geographical Data, Significance of Spatial and Temporal Data in Geographical Studies; Levels of measurement: Nominal, Ordinal, Ratio and Interval; Methods and Sources of Geographical Data Collection, Conventional and modern limitation of secondary data and need for data generation, collection of primary data: questionnaires and schedules, fieldwork, Sample surveys and their significance.;

Unit-4- Geographic data analysis and Report writing: Quantitative, Qualitative and advanced techniques of Geomorphic data processing and analysis, Geographical matrix and its significance in analysis of geographic data. Report writing- Introduction: Aim and Objective, Data and Methodology; Data Analysis, Result and Conclusion.; Referencing System, Webliography and Bibliography; Plagiarism Design, Concept of Impact Factor, Citation, DOI

References

1. Karlekar Srikant and Kale Mohan (2005) Statistical analysis of Geographical data, Diamond Publication
2. Clark W.A.V. and Hosking, P.C (1906) Statistical methods for Geographers, John Willey & Sons New York.
3. Dickinson Gre (1997). Statistical Mapping and Presentation of Statistics, Edward Arnold limited London.
4. Shukla, Jitendra (2011). Research Methodology in Geographical Research. Disha International publication, New Delhi.
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8. C.R. Kothari (2004) Research methodology method and Techniques, New age international (P) limited, Publisher, New Delhi
9. Kumar, Ranjit – Research Methodology: A Step by Step guide for beginners

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CORE COURSE [CCGEO104]

CLIMATOLOGY AND CLIMATIC CHANGE

Marks: 30 (MSE: 20 Th. 1 Hr + 5 Attd. + 5 Assign.) + 70 (ESE: 3 Hrs) = 100 **Pass Marks: (MSE: 17 + ESE: 28) = 45**

(Credits: Theory-04, 60 Hours)

Course Objectives:

The Learning objective of this course are as follows-

1. To familiarise students about elements of weather and climate
2. To make student learn about winds, cyclone, and climatic change
3. To make student learn about air mass and fronts

Course Learning Outcomes:

After the completion of course, the students will have ability to:

1. Understand the elements of weather and climate
2. Understand working of winds, cyclone systems and climatic changes
3. Understand the concept of air mass, fronts

Course Contents-

Unit 1: Definitions, nature, scope of Climatology. Elements of weather and climate. Origin, Composition and Structure of atmosphere. Temperature: Solar radiation principles, Greenhouse effects, Horizontal and Vertical distribution of temperature & inversion of temperature. Global warming.

Unit 2: Atmospheric Pressure: Pressure Gradient, Coriolis Effect, Horizontal and vertical distribution of Air Pressure and Pressure Belts. Winds: Planetary, Seasonal, Local Winds, Jet Streams, El-Nino, Southern Oscillation (ENSO), La-Nina.

Unit 3: Air masses: Definition, Nature, Source Region, Classification of air masses. Fronts - Frontogenisis and Frontolysis, Classification of fronts, Cyclones: Tropical Cyclones & Temperate Cyclones - Origin, types, structure and distribution.

Unit 4: Overview of Climatic Change: Causes, trends, impact and predictions of global temperature rise since 1850 CE. Formation, depletion, restoration and significance of ozone layer, Weather forecasting, Problems and prospects of weather forecasting in India.

References:

1. Savindra Singh (2005): Climatology, Prayag Pustak Bhawan, 20-A, University Road, Allahabad- 02. UP.
2. Savindra Singh (2020): jalvayu vigyan
3. Critchfield H.J. (2005): General Climatology, Prentice Hall of Inida, Pvt. Ltd. New Delhi-01.
4. Lal D.S (2009): Physical Geography, Sharada Pustak Bhawan, II, University Road, Allahabad – UP.
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6. Siddhartha K (2005): Atmosphere, Weather and Climate, Kisalaya Publications Pvt.ltd., C—2, Padma Apartment, Mehruli, New Delhi-30.
7. Lal D.S. (2005): Climatology: Sharadu Pustak Bhawan, 11, Univ. Road, Allahabad -02, UP.
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11. Tiwari, Ram Kumar (2016) Bhoutik Bhugol, Hindi Granth Academy, Jaipur, (Raj.).

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CORE COURSE **[CPGEO105]**

PRACTICAL-I ADVANCED CARTOGRAPHY

Marks: 30 (MSE: 20 Viva + 5 Attd. + 5 Record) + 70 (ESE Pr: 6 Hrs) = 100 **Pass Marks = 45**

(Credits: Practical-04, 120 Hours)

Instruction to Question Setter for

End Semester Examination (ESE Pr):

There will be one Practical Examination of 6Hrs duration. Evaluation of Practical Examination may be as per the following guidelines:

Experiment/Lab work	*= 70 marks*
Practical record notebook	*= 05 marks*
Attendance	*= 05 marks*
Viva-voce	*= 20 marks*

Practical:

Course Objectives:

The Learning objectives of this course are as follows-

1. To familiarise students about methods, tools and techniques of cartography
2. To make student learn and apply principles of map design, thematic mapping techniques and preparation of an Atlas

Learning Outcomes:

After the completion of course, the students will have ability to:

1. Have sound knowledge regarding construction of maps using computers or manual methods.
2. Have proper utilization of maps for the planning and development.
3. Appreciate the preparation of various thematic maps with the application of various techniques.

Course Content:

Unit 1- Thematic Maps – Preparation and Interpretation of atlas

Or

Maps – Classification and Types, Thematic Mapping Techniques – Properties, Uses and Limitations Elements of map

Unit 2- Mapping of Pollution Intensity, Air Quality index, Mapping and measuring traffic density, traffic flow map

Or

Spatial and non-Spatial data; Point, Line and Areal Data, Coordinates system

Unit 3- Water potential zones (study and its interpretation in India and Jharkhand), simple numerical problems related to determining permeability in the field and laboratory,

Or

Principles of Map Design, Introduction of GIS software- QGIS

Unit 4- Ground water flow, Well hydraulics, Mapping religious contour of India (on an outline map of India), Mapping tribal pattern and contour in India and Jharkhand, mapping and analysis of international boundary of India

Or

Spatial data handling, creation, editing, joining of spatial and non-spatial data, Creating thematic maps, Layout preparation

Note: -

- Atlas should be prepared (computer aided or Manual) on a specific theme with at least ten plates for any City/Block/District/state of India.

References:

1. Monkhouse, F. J. and Wilkinson, H. R.,(1973): *Maps and Diagrams*, Methuen, London.
2. Cuff, J. D. and Mattson, M. T., (1982): *Thematic Maps: Their Design and Production*, Methuen Young Books
3. Dent, B. D., Torguson, J. S., and Holder, T. W., (2008): *Cartography: Thematic Map Design* (6th Edition), McGraw Hill Higher Education
4. Kraak, M.J. and Ormeling, F., (2003): *Cartography: Visualization of Geo-Spatial Data*, Prentice-Hall.

SEMESTER II

I. CORE COURSE [CCGEO201]
HYDROLOGY & WATERSHED MANAGEMENT

Marks: 30 (MSE: 20 Th. 1 Hr + 5 Attd. + 5 Assign.) + 70 (ESE: 3 Hrs) = 100 **Pass Marks: (MSE: 17 + ESE: 28) = 45**

(Credits: Theory-04, 60 Hours)

Course Objectives:
The Learning objective of this course are as follows-

1. To familiarise students about nature, scope and significance of hydrology
2. To make student learn about soil development, hydrological cycle, surface and ground water and its management

Course Learning Outcomes:
After the completion of course, the students will have ability to:

1. Study the soil as a basic resource, focusing its distribution, problems and management.
2. Understand the basic components of hydrological cycle and comprehend practices of integrated watershed management.
3. Evaluate the water balancing and river basin and water disputes

Course Contents-

Unit 1- Definition and scope of hydrology, Hydrological cycle, Importance of water; ground water and surface water; water storages – glaciers, river channels, lakes and reservoirs, soil moisture

Unit 2- Ground water: characteristics of stream flow, Darcy's law, permeability, infiltration, ground water storage, ground water aquifers in different rock systems, movement and discharge.

Unit 3- concept and demarcation of watershed, their utility as units of hydrological environmental and landuse planning and management; Water conservation: Micro- Catchment, Watershed harvesting, evaporation separation, and seepage reduction, supplemental irrigation, Ground water recharge, afforestation.

Unit 4- Preparation of Watershed developmental plan, administrative arrangement and agency selection for plan implementation, monitoring, and evaluation system, Management of Soil erosion: over land flow and gullies

References:

1. Timothy, Davie. 2003. Fundamentals of Hydrology. Routledge, Taylor and Francis Group, U.K.
2. Todd, D.K. 2009. Groundwater Hydrology. John Wiley & Sons Inc.
3. Mahajan, G. 1989. Evaluation and Development of Groundwater. Ashish Publishing House, New Delhi.
4. Karanth, K.R.C. 1988.Ground Water: Exploration, Assessment and Development. Tata-Mcgraw Hill, New Delhi.
5. Andrew D. Ward and Stanley Trimble. 2004(2nd edition). Environmental Hydrology. Lewis Publishers.

CORE COURSE [CCGEO202]

REGIONAL PLANNING AND DEVELOPMENT

Marks: 30 (MSE: 20 Th. 1 Hr + 5 Attd. + 5 Assign.) + 70 (ESE: 3 Hrs) = 100 **Pass Marks: (MSE: 17 + ESE: 28) = 45**

(Credits: Theory-04, 60 Hours)

Course Objectives

The Learning objective of this course are as follows-

1. To familiarize the concept of Region and regional planning, Its need and techniques
2. To make students learn about the theories and models for regional planning, Indicators of development, Multi-Purpose Projects

Course Learning Outcomes:

After the completion of course, the students will have ability to:

1. Identify notable lagging regions and solutions for their overall development
2. Have comprehensive understanding regarding the different regions and application of different models and theories for integrated regional development.
3. Select appropriate indicators for the measurement of socio-economic regional development

Course Content:

Unit 1- Concept of Region, Types, hierarchy, characteristics and delineation of Region, Regional planning: concept, scope, methods, techniques and need of regional planning; Regionalisation of India: Physiographic (R. L. Singh), Socio-Cultural (Sopher), Economic (Sengupta), Agro Ecological Zones

Unit 2- Theories and Models for Regional Planning: Growth Pole Model of Perroux; Growth Centre Model in Indian Context; Myrdal, Hirschman, Rostow and Friedmann; evaluation of regional disparities/imbalances, method of measuring imbalances

Unit 3- Concept of Development, Indicators of development, problems and issues of development, Backward regions: identification and its development; Planning process- sectoral, multi-level, Niti Ayog, Policy and framework,

Unit 4- Integrated area development (IADP), planning tribal and hill areas, draught prone areas, command areas in watershed, Border area development, Urban Green belt, Planning for metropolitan region; a case study- Dandakaranya, Multi-Purpose river valley projects- Damodar

Reference Books:

1. Agyeman, Julian, Robert, D. Bullard and Bob, Evans., (Eds.) (2003): Just Sustainabilities: Development in an Unequal World. London: Earth scan. (Introduction and conclusion.).
2. Anand, Subhash.,(2011):Eco-development : Glocal Perspectives, Research India Press, New Delhi.
3. Baker, Susan., (2006): Sustainable Development. Milton Park, Abingdon, Oxon; New York, NY: Routledge (Chapter2," The concept of sustainable development"
4. Blij, H. J. De., (1971): Geography: Regions and Concepts, John Wiley and Sons.
5. Friedmann, J. and Alonso W. (1975): Regional Policy - Readings in Theory and Applications, MIT Press, Massachusetts.
6. Haynes J., (2008): Development Studies, Polity Short Introduction Series.
7. Misra, R. P., Sundaram, K.V. and V.L.S. Prakasa Rao, (1974): Regional Development planning in India, Vikas Publishing House Delhi.
8. Peet, R., (1999): Theories of Development, The Guilford Press, New York.
9. Singh, R.B. (2002): Human Dimensions of Sustainable Development, Rawat Pub., Jaipur, pages
10. UNDP (2001-04): Human Development Report, Oxford University
11. Shukla, J (2016) Regional Planning and Development, Disha Publication, Delhi

CORE COURSE [CCGEO203]

CULTURAL AND TRIBAL GEOGRAPHY

Marks: 30 (MSE: 20 Th. 1 Hr + 5 Attd. + 5 Assign.) + 70 (ESE: 3 Hrs) = 100	Pass Marks: (MSE: 17 + ESE: 28) = 45

(Credits: Theory-04, 60 Hours)

Course Objectives:

The Learning objective of this course are as follows-

1. To familiarize the about cultural geography, its concept, nature and scope; migration social categories
2. To make students learn about Tribal geography and its concepts; Tribes and their economic activities, marriage, faith and practices

Learning Outcomes:

After the completion of course, the students will have ability to: -

1. Understand the nature, scope and relationships of geography and human wellbeing;
2. Acquire knowledge on spatial dimensions of cultural diversity components;
3. Understand the aspects of Tribal geography and tribal socio-economic activities

Course Content:

Unit 1- Cultural Geography- Nature, Meaning, Scope, Elements & Components; The evolutionary approach in cultural geography. The Framework of cultural Geography. The evolution of cultural Geography-The contribution of Otto Schluter and Carl Sauer

Unit 2- Cultural Areas, regions & Cultural Realm. Environment and Culture, Cultural adaptation and Environmental perception. Focus on similarities and differences of various cultures with respect to racial, religious, linguistic, and demographic, characteristics in Indian context.

Unit 3- Tribal Geography- meaning, concept, and scope of tribal geography; Tribes- Geographical distribution of Indian tribes,; Economic activities; Socio- Political Organization- Family, Marriage and kinship, faith, beliefs and practices

Unit 4- Tribal rights- Land, forests, water; Emerging social problems- Health and education, malnutrition, illiteracy, Alcoholism; Industrialization and tribe, mining and tribes, displacement

References

1. Ahmed A., 1999: Social Geography, Rawat Publications.
2. Casino V. J. D., Jr., 2009) Social Geography: A Critical Introduction, Wiley Blackwell.
3. Cater J. and Jones T., 2000: Social Geography: An Introduction to Contemporary Issues, Hodder Arnold.
4. Panelli R., 2004: Social Geographies: From Difference to Action, Sage.
5. Rachel P., Burke M., Fuller D., Gough J., Macfarlane R. and Mowl G., 2001: Introducing Social Geographies, Oxford University Press.
6. Smith D. M., 1977: Human geography: A Welfare Approach, Edward Arnold, London.
7. Smith S. J., Pain R., Marston S. A., Jones J. P., 2009: The SAGE Handbook of Social Geographies, Sage Publications.
8. Sopher, David (1980): An Exploration of India, Cornell University Press, Ithasa
9. Valentine G., 2001: Social Geographies: Space and Society, Prentice Hall.

IV. CORE COURSE [CCGEO204]

NATURAL RESOURCE MANAGEMENT

Marks: 30 (MSE: 20 Th. 1 Hr + 5 Attd. + 5 Assign.) + 70 (ESE: 3 Hrs) = 100 **Pass Marks: (MSE: 17 + ESE: 28) = 45**

(Credits: Theory-04, 60 Hours)

Course Objectives:

On completion of this course, the students will be able to understand:

1. Concepts of Natural resources, their significance and classification
2. Resource distribution, conflict and management
3. Significance of human resource and their issues

Course Learning Outcomes:

On successful completion of this course the student should know:

1. Classification of Natural resources and their significance
2. Metallic and non-metallic minerals and their distribution
3. Significance of human resource, sustainable utilization of resources

Course Content:

Unit 1- Natural Resources- concept, significance and classification. Natural Resources and Sustainable Resource Development. Distribution, Utilization, Problems and Management of Water, Forests and Energy.

Unit-2- Resource conflict and management: Agricultural resources conflicts: issues and productivity and resilience of indigenous species and genetically modified crops. Significance of human resource: issues related to capability development. Limits to growth and sustainable use of resources with reference to SDGs.

Unit-3- Distribution, utilization and management of Power resources: Coal, Petroleum and Natural Gas of India, Atomic Energy- Distribution, utilization and management of Atomic Minerals, Rare Metal (RM) and Rare Earth Element (REE) of India,

Unit-4- Sustainable utilization, conservation and management of resources; Jharkhand's natural resource: Minerals, water and forest, Government policy of natural resource conservation and management. Resources utilization and environmental depletion in Jharkhand.

References-

1. Chandna, R. C., (2002): Environmental Geography, Kalyani, Ludhiana.
2. Jones, G. and Hollier, G., (1997): Resources, Society and Environmental Management, Paul Chapman, London.
3. Miller, G. T., (2004): Environmental Science: Working with the Earth, Thomson BrooksCole, Singapore.
4. Mitchell, B., (1997): Resource and Environmental Management, Longman Harlow, England.
5. Singh, Savindra.,(2001): Paryavaran Bhugol (Hindi), Prayag Pustak Bhawan, Allahabad. (in Hindi) 14. Singh,R.B., Prokop, Pawel (Eds.) (2016):Environmental Geography of South Asia, Springer Japan
6. UNEP, (2007): Global Environment Outlook: GEO4: Environment for Development, United Nations Environment Programme.

CORE COURSE [CPGEO205]

PRACTICAL-II – PHYSICAL SURVEY

Marks: 30 (MSE: 20 Viva + 5 Attd. + 5 Record) + 70 (ESE Pr: 6 Hrs) = 100 **Pass Marks = 45**

(Credits: Practical-04, 120 Hours)

Instruction to Question Setter for

End Semester Examination (ESE Pr):

There will be one Practical Examination of 6Hrs duration. Evaluation of Practical Examination may be as per the following guidelines:

Experiment/Lab work	*= 70 marks*
Practical record notebook	*= 05 marks*
Attendance	*= 05 marks*
Viva-voce	*= 20 marks*

Practical:

Course Objectives

The Learning objective of this course are as follows-

1. To develop and expose students to an extensive field survey of wider region of India.
2. To make students identify various physical landforms, processes, and their impact on human and biological world

Learning Outcomes:

After the completion of course, the students will have ability to:

1. to conduct an extensive survey of a contiguous wider region of India
2. identify salient landforms, their genesis and their impact on human life, flora and fauna.
3. Carrying out extensive field study outside the class room

Unit 1: Trace the prominent features of the area to be surveyed. Identify the salient landform features of the selected area on a topographical sheet.

Unit 2: Identify the landforms on the surface, while in the field. Also note the agents of erosion, transportation and deposition associated with the landforms.

Unit 3: Identify and classify the biodiversity in the area (Flora and Fauna).

Unit 4: Observe the relationship of various landforms, flora and fauna with land use, settlement, structure and life style of the people.

Note:

1. Departmental council will decide the physical survey area based on broad geomorphic and distinct region (Mountainous, Hilly, Coastal, Deltaic, Forest, Desert areas) for at least Five-Ten (5-10) days.
2. University/College will provide the requisite fund for physical survey
3. It is mandatory to all the students to participate in the physical survey.
4. Based on observations of the above characteristics, prepare a field survey report. The report need to be supplemented with maps, sketches, diagrams and photographs etc.
5. The practical exercises should aim at identification of micro-geomorphic features on the ground and their relationship to land use/settlement pattern. This is also a training in Report Writing.
6. Two written questions in the practical examination based on the physical survey report-
    a. writing method
    b. physical survey

References-

1. Creswell, J., (1994): Research Design: Qualitative and Quantitative Approaches, Sage Publications, California.
2. Dikshit, R. D. (2003). The Art and Science of Geography: Integrated Readings, Prentice-Hall of India, New Delhi.
3. Dash and Roy, (2022) Field Work In Social Work Education, Atlantic publisher

SEMESTER III

I. CORE COURSE [CCGEO301]

INDIAN KNOWLEDGE SYSTEM (IKS) IN GEOGRAPHY

Marks: 30 (MSE: 20 Th. 1 Hr + 5 Attd. + 5 Assign.) + 70 (ESE: 3 Hrs) = 100	Pass Marks: (MSE: 17 + ESE: 28) = 45

(Credits: Theory-04, 60 Hours)

Course Objectives:

On completion of this course, the students will be able to understand:

1. This course will make students aware of Indian knowledge traditions and their connection with Geography.
2. Contribution of Indian knowledge system in Geography.

Course Learning Outcomes:

On successful completion of this course the student should know:

1. Application of Principles of Indian knowledge system to modern Geography.

Course Content:

Unit 1- Ancient Geography: Ancient Indian texts mentioned information about Geography, Such as knowledge about rivers, mountains, climate, Astronomy, origin of the Universe, Nakshatra and season.; Geomorphology: Indian Principles of Geomorphology and their application, such as course of river, earthquake, Volcanoes.

Unit 2- Climatology: Indian principles of climatology and their effects, such as rainfall, seasons, temperature extreme, climatic phenomena, weather forecasting, Nakshatra used rainfall and cultivation. Environmental Geography: Contributions of Indian knowledge system to environmental Geography, such a forestry, agriculture, water management, dairy and animal husbandry land use planning, tenure and tenants.

Unit 3- Population and Settlement: Contribution of the Indian knowledge system to population and settlement Geography, such as growth of villages and towns, town planning architectures, social organization and trade Indus valley civilization.

Unit 4- Tribal and Cultural Geography: Contribution of tribal cultures and their livelihood, Sustainability to environment, food habits, rituals and habitat; Rich cultural heritage of India, pilgrimages, Religious tourism, and geo-tourism, temples; Indian Contribution to Geography: The universe, Akshansh and Deshantra, Earthquakes (Bhukampa) Atmosphere, weather and climate Geography, Dwipas, contribution of Varahamihira, Bramhagupta, Bhaskracharya, Aryabhata.

References

1. Textbook on the knowledge system of Bharata by Bhag Chand Chouhan.
2. Introduction to Indian knowledge system concept and application, B.mahadevan Vinayak Rajat Bhat, Nagendra Pavana, R.N. 2022.
3. Knowledge traditions and practices and practices in India in India Kapil Kapoor A.K. Singh Vol.1 2025
4. http://upted.al.in/course/121/06003
5. Text book for Environment studies by UGC, New Delhi
6. Dubey B,1997 Geographical concept in ancient India, NGS India BHU Varanasi

SKILL ENHANCEMENT COURSE [ECGEO302]

ENVIRONMENT GEOGRAPHY AND DISASTER MANAGEMENT

Marks: 30 (MSE: 20 Th. 1 Hr + 5 Attd. + 5 Assign.) + 70 (ESE: 3 Hrs) = 100 **Pass Marks: (MSE: 17 + ESE: 28) = 45**

(Credits: Theory-04, 60 Hours)

Course Objectives:

On completion of this course, the students will be able to understand:

1. Perspective of disasters and various dimensions of disaster management
2. Comprehensive knowledge of various natural and manmade disasters in India
3. Examine the response and mitigation measures of disasters

Learning Outcomes:

After the completion of course, the students will have ability to:

4. Gain a perspective of disasters and various dimensions of disaster management
5. Have comprehensive knowledge of various natural and manmade disasters in India
6. Examine the response and mitigation measures of disasters

Course Contents:

Unit 1- Environmental Geography: Concepts and Approaches; Ecosystem – Concept, Structure and Functions; Ecological successions: stages and climax; Man-Environment Relationship in Equatorial, Desert, Mountain and Coastal Regions

Unit 2- Environmental Problems and Management: Air Pollution; Solid and Liquid Waste; Biodiversity Loss, Environmental Programmes and Policies – Global, National and Local levels,

Unit-3- Hazards and disasters: Meaning, concepts; Disaster management- methods and approaches; Earthquake, Tropical Cyclone, Landslide, Flood Hazards, Drought and famine; Localized weather related hazards;, Anthropogenic Disasters.

Unit-4 Disaster mitigation Programme- Institutional organization and policy framework of disaster management in India: - Disaster management in India- Histogenesis, NDMA, National Policy on Disaster Management, Disaster management act; disaster management strategies, mitigation and prevention; Disaster response, Relief and rehabilitation; Disaster management and environmental laws, National Forest Policy of India, Economic and financial aspect of disaster management

References-

1. Singh, Savindra and Singh Jitendra (2014): Disaster management, Prawalika Publication, Allahabad
2. Govt of India (2005), Disaster management act 2005, The Gazette of India, New Delhi, Ministry of law and justice
3. Govt of India, MHA (2009), National Policy on Disaster management 2009, National disaster management authority,
4. Govt of India, MHA (2010), Disaster management division: Standard operating procedure for response to natural disasters
5. Gupta, A.: Current status of tropical cyclone track prediction: techniques and forecast errors, Mausam, Vol-57
6. Hyndman, Donale, David (2011): Natural Hazards and disasters, Brooks, Canada
7. IMD (1997-2002): Disastrous weather events, Pune
8. ISDR (2004): Living with risk, Geneva, UN Inter agencies secretariat
9. Max, D. E. P. at el (2005): Natural disaster hotspots: A global risk analysis, disaster management
10. Raw D.P. (2005) : Drought: Disaster management, University press, India

II. CORE COURSE [CCGEO303]
TRANSPORT AND TOURISM GEOGRAPHY

Marks: 30 (MSE: 20 Th. 1 Hr + 5 Attd. + 5 Assign.) + 70 (ESE: 3 Hrs) = 100 **Pass Marks: (MSE: 17 + ESE: 28) = 45**

(Credits: Theory-04, 60 Hours)

Course Objectives:

The Learning objective of this course are as follows-

1. To be aware of the various dimensions of Tourism Geography and make the students aware about various types of tourism
2. To assess sustainable ecotourism and other contemporary forms of tourism
3. To critically evaluate the infrastructure in tourism in India along with reviewing the tourism policy

Course Learning Outcomes:

After the completion of course, the students will have ability to:

1. Learn the concept of transport, its types and factors
2. Equip with a basic understanding of nature and scope, trends and patterns of various types of tourisms
3. Apply the principles of Geo-tourism and analyse the prospects and problems associated with pilgrimage tourism.

Contents:

Unit- 1 Nature, scope, significance of and Development of Transport Geography, factors of Development: Physical, Economic, Social, Economic and transport and regional Modes development, relative significance of transport (railways, roadways, Waterways).

Unit- 2 Accessibility and flow models; network structure, measurement of accessibility, Models of network change, Function, pattern of movement and transport Development.

Unit- 3 Nature, scope and extent, concept of tourism, Relationship between geography and Tourism, Eco- tourism, Geo-tourism, Agro-tourism, Heritage Religions tourism and Adventure tourism. Types of tourism- Domestic and the international, Adventure, wildlife, Pilgrimage, Business, Leisure, Pleasure, and cultural tourism, Local, National and international, Socio-Economic impact of tourism.

Unit-4 Infrastructural approach for the development of tourism, Govt. policies for Planning and Promotion of tourism in India, prospect and manning of tourism in India. Case studies: Hill Station – Mount Abu, Shimla, Ooty, Beach points- Kwalum, Goa and Mariano Beach, Historical Centre – Mysore, Jaipur, Delhi, Religious- Puri, Deoghar Tirupati, Kedarnath, Mahakal (Ujjain); Dams- Tehri, Hirakud, Masanjor National Parks-Palamu Tiger reserve, Kaziranga and Gir.

References-

1. Hagget, F and Chorley; R.J.Network analysis, Edward Arnold, London.1973
2. Raza, M and Agrawal, Y.P., Transport Geography in India. Concept Publication New Delhi, 1985.
3. White, H.P. and Senior, M.L; Transport- Longmon London, 1983.
4. Ulman, E.L. American Commodity flow, University of Washington press, 1957.
5. Bhatia, A.K. (1996) Tourism Development sterling Publisher, New Delhi.
6. Singh, R.L. and Kashi Nath Singh; Reding in Rural Settlement, Geographers.
7. Sharma , J.K. (2000) Tourism, Plannings, and Development – A New perspective Kanishks

CORE COURSE [CCGEO304]

POLITICAL & ELECTORAL GEOGRAPHY

Marks: 30 (MSE: 20 Th. 1 Hr + 5 Attd. + 5 Assign.) + 70 (ESE: 3 Hrs) = 100 **Pass Marks: (MSE: 17 + ESE: 28) = 45**

(Credits: Theory-04, 60 Hours)

Course Objectives

The Learning objective of this course are as follows-

1. To familiarize the concept of Political Geography and Geopolitics
2. To make students learn about the Geo-Strategic views
3. To make student understand about Electoral Geography, its concepts and spatial factors

Course Learning Outcomes:

After the completion of course, the students will have ability to:

1. Understand the concept of nation and state and geopolitical theories
2. Understand the different dimensions of electoral geography and resource conflicts
3. Have sound knowledge of geopolitics and Political Geography of India

Course Content:

Unit-1- Political Geography: Definition, Nature and Scope; History and Development of political Geography; Approaches to the Study of Political Geography; Evolution of the Modern State; Organization & Structure of State; Unitary and Federal Forms of Governance

Unit-2- Concept of Nation, State and Nation- State; Cores and Capitals, Nation Building, Nationalism; Frontier and Boundaries; Geopolitics; Global Geo-Strategic Views: Mahan, Mackinder, Spykman & Seversky with other Views Related to Heartland and Rimland; Cohen's Views

Unit-3- Maritime Boundaries, delimitations: principles and problems, International law of the sea; Changing Political Map of India; Political geography of SAARC Region; Inter-State Disputes (related to water and others); Problems of Border States of India; and Emergence of New States & their Demands;

Unit-4- Electoral Geography: Concept, Definition, Scope; Types of Electoral Systems; Geographical influence in voting; Gerrymandering, Electoral Reforms in India, Determinants of Electoral Behaviour, polity as an agent of landscape change.

References-

1. Adhikari, S. (2007): Political Geography, Rawat Publication, NewDelhi.
2. Adhikari, S. (2013): Political Geography of India –Sharda Pustak Bhawan, Allahabad.
3. Agnew, J., (2002): Making Political Geography, Arnold.
4. Agnew, J., Mitchell K. and Total G., (2003): A Companion to Political Geography, Blackwell.
5. Cox, K. R., Low M. and Robinson J., (2008): The Sage Handbook of Political Geography, Sage Publications.
6. Cox, K., (2002): Political Geography: Territory, State and Society, Wiley-Blackwell
7. Gallaher, C., et al, (2009): Key Concepts in Political Geography, Sage Publications.
8. Glassner, M., (1993): Political Geography, Wiley.
9. Hodder, Dick, Sarah, J, Llyod and Keith, S, McLachlan., (1998): Land Locked States of Africa and Asia (vo.2), Frank Cass

III. CORE COURSE [CPGEO305]
PRACTICAL-III - INSTRUMENTAL SURVEY

Marks: 30 (MSE: 20 Viva + 5 Attd. + 5 Record) + 70 (ESE Pr: 6 Hrs) = 100 **Pass Marks = 45**

(Credits: Practical-04, 120 Hours)

Instruction to Question Setter for

End Semester Examination (ESE Pr):

There will be one Practical Examination of 6Hrs duration. Evaluation of Practical Examination may be as per the following guidelines:

Experiment/Lab work	*= 70 marks*
Practical record notebook	*= 05 marks*
Attendance	*= 05 marks*
Viva-voce	*= 20 marks*

Practical:

Course Objectives:

The Learning objective of this course are as follows-

1. To familiarise students about various Instruments, methods, tools and techniques of ground survey
2. To make student learn and apply project development,

Course Learning Outcomes:

After the completion of course, the students will have ability to:

1. Understand the importance of field work, types of survey and application of instruments for leveling
2. Handle and apply the instrument to measure height, spot height determination techniques
3. Synthesis and develop the idea of project work on the basis of secondary and primary survey.

Course Content:

Unit 1: Importance of field work, Scope and purpose, Types of survey, Principles and applications of selected survey instruments, Plane Table, Plan preparation, Resection method: two point problem, three point problem, Tracing paper method.

Unit 2: Prismatic Compass: Open and closed traverse, elimination of error by Bowditch Rule. Other smaller instruments: Sextant, Abney Level and Indian Clinometer. Dumpy Level: Traverse Survey, Spot height determination and contour plan preparation,

Unit 3: Theodolite: horizontal and vertical (height) measurement, Accessible and inaccessible method. Survey of selected area, Preparation of base map by the use of surveying instruments.

Unit 4: Measures of Central Tendency, Dispersion, Skewness, Kurtosis, Moments, Correlation, Regression.

References:

1. Monkhouse F.J and Wilkinson HR (1952) Maps and Diagrams, their Compilations and Concentration, Muthuen & Co. London.
2. Harwel JD, Newson MD. (1973)- Techniques in Physical Geography, Mc. Millan Edu. Ltd. London.
3. Sarkar, A: Practical Geography – A Systematic Approach.
4. R.L. Singh (2010) Practical Geography, Sharada Pustak Bhavan, 11, University Road, Allahabad, UP - India
5. Singh RL. (1979) Elements of Practical Geography, Kalyani Publishers, New Delhi.
6. Kaanetkar and Kulkarni: Surveying and Levelling, Part-I and Part-II.
7. R.L. Singh (2010) Practical Geography, Sharada Pustak Bhavan, 11, University Road, Allahabad, UP - India
8. Sharma, J.P. (2011): Prayogik Bhugol, Rastogi Publications, Meeruth
9. Chouhan, P.R. (2005) Prayogik Bhogol, Vasundhara Prakashan, Gorakhpur.
10. Hiralal (2006): Prayogik Bhugol, Radha Publications, New Delhi
11. Tiwari, R.C. & Tripathi, S. (2011): Prayogatamak Bhugol, Prawalika Publications, Allahabad.
12. Khullar, D.R. (2002): Prayogatamak Bhugol Ke Tatwa, New Academic Publishing Company, Jalandhar.

SEMESTER IV

I. ELECTIVE COURSE-A [ECGEO401A]
AGRICULTURAL GEOGRAPHY

Marks: 30 (MSE: 20 Th. 1 Hr + 5 Attd. + 5 Assign.) + 70 (ESE: 3 Hrs) = 100 **Pass Marks: (MSE: 17 + ESE: 28) = 45**

(Credits: Theory-04, 60 Hours)

Course Objectives:
On completion of this course, the students will be able to understand:
1. Nature, scope and development of agriculture geography
2. Determinants of agricultural land use, cropping pattern, theories of agricultural location

Course Learning Outcomes:
On successful completion of this course the student should know:
1. Land reforms, land use policy and planning
2. Classification of agricultural regions, agro-climatic regions of India

Course Content:

Unit 1: Nature and scope, Significance and development of agricultural geography, Approaches to the study of agricultural geography, Origin and dispersal of agriculture, Sources of agricultural data.

Unit 2: Determinants of agricultural land use – Physical, economic, social and technological, Land holding and land tenure systems, Land reforms, Land use policy and planning, Cropping pattern, Intensity of cropping.

Unit 3: Theories of agricultural location based on several multi-dimensional factors, Von Thunen's model and its recent modifications, Whittlesey's classification of agricultural regions, Agro-climatic regions of India.

Unit 4: Agriculture in India – Land use and shifting cropping pattern, New trends in Indian agriculture, Green Revolution, White Revolution, Blue Revolution, Problems of Indian agriculture, Agricultural Policy of India.

References:

1. Mohammad Shafi (2006): Agricultural Geography, Dorling Kindessley (India) Pv. Ltd. New Delhi.
2. Negi. B.S. (2003) Indian Agriculture: problems, Progress & Prospects, Vikas publishing house Pvt. Ltd. S. Ansari Road, Daryagani, New Delhi-2.
3. Majid Hussain (2000): Agricultural Geography, Ed Anmol Publishing Pvt. Ltd. Ansari Road, Daryagani, New Delhi-2.
4. Shafi M. (1999): Agricultural Geography, Kedarnath Ram Nath, 132, College road, Meetat UP-1.
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7. Memonia CB (1998): Aricultural Problems in India: Prayog Pustak Bhavan, 20 A, University road, Allahabad-211002, UP.
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10. The Hindu Publications: 2005 to 2010; Survey of Indian Agriculture.
11. Tiwari, R.C., & Singh, B.N. (2015): Krishi Bhugol, Prawalika Publications, Allahabad
12. Singh, Indira (2007): Krishi Bhugol, Discovery Publishing Home, New Delhi.
13. Lesely Simon (Translated by Shyam Sundar Katare) (1989): Krishi Bhugol, Madhya Pradesh Hindi Granth Academy, Bhopal.

OR ELECTIVE COURSE-B [ECGEO401B]

REMOTE SENSING AND GIS

Marks: 30 (MSE: 20 Th. 1 Hr + 5 Attd. + 5 Assign.) + 70 (ESE: 3 Hrs) = 100 **Pass Marks: (MSE: 17 + ESE: 28) = 45**

(Credits: Theory-04, 60 Hours)

Course Objectives:

The Learning objective of this course are as follows-

1. To explain the meaning, concept, and definition Remote sensing and GIS, as an important tool in the study and explaining geographic phenomenon
2. To familiarise students about satellite remote sensing, data processing and interpretation, classification
3. To aware students about use of GPS and GIS, its principle, working mechanism and applications

Course Learning Outcomes:

After the completion of course, the students will have ability to:

1. Appreciate the strength and application of remote sensing and GIS
2. Map the resources, their location and availability
3. Apply this knowledge for sustainable development

Course Content:

Unit 1: Stages in remote sensing data acquisition; physics of remote sensing; electromagnetic spectrum (ems); EMR and its interaction with atmosphere and earth surface features.

Unit 2: Remote sensing - platforms: types and their orbital characteristics; sensors types: active and passive; sensors systems: whiskbroom and push broom; satellite series: IRS, SPOT, IKONOS and Quick Bird.

Unit 3: Digital image processing: digital data formats; image restoration: geometric, radiometric, and atmospheric corrections; Filtering; Image enhancement: linear and nonlinear, contrast stretch; band combinations; image classifications: supervised and unsupervised.

Unit 4: Geographic information system and global positioning system:
Components of GIS; Data Structures; Data Base Management System (DBMS); Data Models; spatial data analysis and applications; Fundamentals of GPS; Segments of GPS; GPS Applications.

References:

1. Lillesand T.M and Keifer R.W. 2008(6th edition). Remote Sensing and Image Interpretation. John Wiley and Sons, New York.
2. Joseph George. 2005(2nd edition). Fundamentals of Remote Sensing. University Press. Hyderabad
3. Sabins, F.F. 1986. Remote Sensing: Principles and Interpretation. Freeman, New York
4. Rashid S.M. and Mazhar A.K. 1993. Dictionary of Remote Sensing. Manak Publishing House, Delhi
5. Lo, C.P.and Yeung AKW. 2006(2nd edition). Concepts and Techniques of GIS, Prentice – Hall of India, New Delhi.
6. Masood, A.S . 2006. Introduction to GIS, Allahabad.
7. Fazal S. and Rahman A. 2007. GIS Terminology. New Age International Publishings, New Delhi
8. Leick. A. 2003(2nd edition). GPS Satellite Surveying. John Wiley and Sons, New York.
9. N.K.Agarwal. 2004. Essentials of GPS, Spatial Network Pvt. Ltd.

OR ELECTIVE COURSE-C [ECGEO401C]

URBAN GEOGRAPHY

Marks: 30 (MSE: 20 Th. 1 Hr + 5 Attd. + 5 Assign.) + 70 (ESE: 3 Hrs) = 100 **Pass Marks: (MSE: 17 + ESE: 28) = 45**

(Credits: Theory-04, 60 Hours)

Course Objectives:

The Learning objective of this course are as follows-

1. To familiarise students about Urbanization, its patterns and theories
2. To make student learn about urban functions, urban sprawl, urban renewal-policies, Master plan

Course Learning Outcomes:

After the completion of course, the students will have ability to:

1. Understand the fundamentals and patterns of urbanization process
2. Learn the functional classification of cities and Central Place Theory
3. Know about policies of urban development of India

Course Content:

Unit 1: Nature and scope of Urban Geography-Definition of Urban Settlements (Towns, Cities and Metro etc.), Attributes of urban places during ancient, medieval and modern period, Classification of urban settlements on the basis of size and function, Urban growth and theories, Central Place theory of Christaller and Losch, Contribution of Indian scholars to the studies of urban settlements.

Unit 2: Urban Population Density and Land Value Curves- Urban Land Use – Vertical and Horizontal Growth of Cities, Concentric, Zonal and Multiple Nuclei Theories of Urban Structure.

Unit 3: Urban Functions- Basic and Non-Basic- Urban Hierarchy- Rank-Size Rule – Central Place Theory – Functional Classification of Towns by C.D. Harris and H.J. Nelson. Urban Issues & Challenges: Water supply, traffic congestion, solid waste, smog, sewage and drainage system.

Unit 4: Concept of City, Region and Urban Hinterland – Urban Sprawl- Urban Slums – Urban Crimes and their Trend s with reference to India- Concept and Issues of Peri-Urbanization. Elements of Urban Planning – Urban Renewal – Policies of Urban Development in India – Master Plans of Ranchi City.

References:

1. Beanjen-Garnier J&G. Chabot (1967) Urban Geography, John wiley, New York.
2. Northham Ray M. (1975) Urban Geography, Jhon Wiley & Sons, Inc. New York
3. Ranan Paddison (2001) Hand Book or Urban Studies, University of Glasgow, U.K., Sage Publications, N. Delhi.
4. Peter Roberts (2000) Urban Regeneration, University of Dundee, U.K., Sage Publication, New Delhi.
5. Saskia Sassen (2000) Cities in a World Economy, University of Chicago, USA, Sage Publications, New Delhi.
6. Stephen Ward (2004) Planning and Urban Change, Sage Publications, New Delhi
7. Karen Stromme Christensen (1999) Cities and Complexity, University of California, Berkely USA, Sage Publication, New Delhi.
8. Mayer H.M. & Kohn CF (1967) Urban Geography, Central Depot, Allahabad, India
9. King Leslie J. & Regionald G. Golledge (1978) Cities, Space and Behaviour 0 The Elements of Urban Geography, Pentice-Hall, Inc. Englewood Cliffs, New Jersey, USA.
10. Mandal R.B. (2002) Urban Geography – A Text Book, Concept Publishing Company, New Delhi.
11. Siddartha K & S. Mukherjee (1996). Cities, Urbanization and Urban Systems, Transworld Media and Communication Pvt. Ltd. New Delhi
12. Johnson James H (1966) Urban Geography – An Introductory Analysis, Pergamon Press Oxford, London.
13. Bansal, S.C. (2011): Nagariya Bhogol. Meenakshi Publication, Meeruth.
14. www.geography.about.com/cs/cities/urbanl/geo/
15. www.brixworth.demon.co.ur/leeds/

II. ELECTIVE COURSE-A [ECGEO402A]
SOIL GEOGRAPHY

Marks: 30 (MSE: 20 Th. 1 Hr + 5 Attd. + 5 Assign.) + 70 (ESE: 3 Hrs) = 100	Pass Marks: (MSE: 17 + ESE: 28) = 45

(Credits: Theory-04, 60 Hours)

Course Objectives:

On completion of this course, the students will be able to understand:

1. Significance of soil geography
2. Soil forming factors, process of soil formation and soil development
3. Physical properties of soil, texture, air, temperature and other properties

Course Learning Outcomes:

On successful completion of this course the student should know:

1. Spatio-temporal dimensions of soil formation
2. Soil organisms, soil erosion, degradation and conservation
3. Evaluation of land and soil

Course Content:

Unit 1: Nature, scope and significance of Soil Geography; its relationship with Pedology, Definition and Soil forming factors: parent material, organic, climatic, topographic, Spatio-temporal dimensions, Processes of soil formation, soil development and Soil profile.

Unit 2: Soil organism, macro-animals (earthworms, sowbugs, mites, centipedes, rodents and insects), Micro-animals and plants-Nematodes, Protozoa, Rotifers, Fungi, Bacteria, algae and Actinomyces.

Unit 3: Physical properties of soils: Morphology, Texture, Structure, Water, Air, Temperature and other properties of soil, Chemical properties of soil and soil reaction, Soil erosion, Degradation and Conservation

Unit 4: Evaluation of land and soil: Parametric and non-parametric systems, Land capability classification, Soil reclamation and management: soil survey and landforms in environmental management, Sustainable development of soil resources with reference to India.

References:

1. Miller, R. W. and Donahue, R. L. (1992): Soils: An Introduction to Soils and Plant Growth, Prentice-Hall of India, New Delhi
2. Brady, N. C., and Weil, R. R. (2008): The Nature and Properties of Soils, Prentice Hall,New Jersey
3. Pitty, A. F. (1978): Geography and Soil Properties, Methuen and Co., London
4. Bridges, E. M. and Davidson, D. A. (1982): Principles and Applications of Soil Geography, Longman Group, London
5. Daji, J. A. (1970): A Textbook of Soil Science, Asia Publication House, New York
6. Birkeland, P. W (1999): Soils and Geomorphology, Oxford University Press, New York
7. Govinda Rajan, S.V. and Gopala Rao, H.G.: Studies on soils of India, Vikas, New Delhi, 1978.
8. Raychoudhuri, S.P.: Soils of India, ICAR, New Delhi, 1958.
9. Bunting, B.T.: The Geography of Soils, McGraw Hill, New York.
10. Clarke, G.R.: Study of the Soil in the Field, Oxford University Press, Oxford, 1957.
11. Foth H.D. and Turk, L.M.: Fundamentals of Soil Science, John Wiley, New York, 1972.
12. Bennet, B.T.: Soil Conservation, McGraw Hill, New York.

OR ELECTIVE COURSE-B [ECGEO402B]

APPLICATION OF REMOTE SENSING & GIS

Marks: 30 (MSE: 20 Th. 1 Hr + 5 Attd. + 5 Assign.) + 70 (ESE: 3 Hrs) = 100	Pass Marks: (MSE: 17 + ESE: 28) = 45

(Credits: Theory-04, 60 Hours)

Course Objectives:

On completion of this course, the students will be able to understand:

1. Application of remote sensing and GIS in natural resource monitoring and management
2. Application of Geo-spatial tools in Agriculture, environmental monitoring, Hazards and disaster management
3. Application of remote sensing in Urban planning and land use planning

Course Learning Outcomes:

On successful completion of this course the student should know:

1. Concept and classification techniques of land use land cover
2. Application of remote sensing and GIS in urban planning

Course Content:

Unit-1- Application of remote sensing for natural resources monitoring and management: Geomorphology and structural mapping; Fluvial mapping, Drainage network and patterns, description and analysis of landforms, water resources mapping, land use, land cover and urban sprawl//mapping

Unit-2- Application in agriculture: content of moisture in the soil, determining crop types and classifications, crop condition assessment, crop damage and progress, water content determination, mapping soil; management and crop health, Application in Environment monitoring and management: Land Use Land Cover change, environmental impact assessment, biodiversity conservation

Unit-3- Application in hazards and disaster management: hazard assessment, vulnerability assessment (Degree of loss of population), building infrastructure, economic activities, risk assessment; quantifying number of lives, cost damage to property, preparation of map

Unit-4- Application in urban planning: land use pattern, Green zones, Residential areas, coastal cities Disasters and transport planning

References:

1. Lillesand T.M and Keifer R.W. 2008(6th edition). Remote Sensing and Image Interpretation. John Wiley and Sons, New York.
2. Joseph George. 2005(2nd edition), Fundamentals of Remote Sensing. University Press. Hyderabad
3. Sabins, F.F. 1986. Remote Sensing: Principles and Interpretation. Freeman, New York
4. Rashid S.M. and Mazhar A.K. 1993. Dictionary of Remote Sensing. Manak Publishing House, Delhi
5. Lo, C.P.and Yeung AKW. 2006(2nd edition). Concepts and Techniques of GIS, Prentice – Hall of India, New Delhi.
6. Masood, A.S . 2006. Introduction to GIS, Allahabad.
7. Fazal S. and Rahman A. 2007. GIS Terminology. New Age International Publishings, New Delhi
8. Leick. A. 2003(2nd edition). GPS Satellite Surveying. John Wiley and Sons, New York.
9. N.K.Agarwal. 2004. Essentials of GPS, Spatial Network Pvt. Ltd.

OR ELECTIVE COURSE-C [ECGEO402C]

RURAL DEVELOPMENT

Marks: 30 (MSE: 20 Th. 1 Hr + 5 Attd. + 5 Assign.) + 70 (ESE: 3 Hrs) = 100	Pass Marks: (MSE: 17 + ESE: 28) = 45

(Credits: Theory-04, 60 Hours)

Course Objectives

The Learning objective of this course are as follows-

1. To familiarise students about the rural development, and its concept
2. To make student learn about programme and plans for the development of rural development

Learning Outcomes:

After the completion of the course, the students will have the ability to:

1. Appreciate the concepts, needs and various approaches to rural development;
1. Understand the strong economic bases of rural areas of India;
2. Appreciate the area based and target group based approaches and provision of services to rural development.

Course Content:

Unit-1- Rural Development: Definition types, areas, parameters, progress and development, Development and growth, development and change, indicators of development. Theories of Rural Development: Economic theory, welfare theory, quality of life theory, human rights theory, sustainable development theory, LPG theory, Gandhian Concept of Rural Development. Models of Rural development: Agriculture labour, skill and education development, local self-governance, Panchayati Raj

Unit-2- Rural Livelihood and Resources: Livelihood- Types, Approach- meaning and principles, livelihood framework, assessment of livelihood reality, livelihood policy and programmes. Resource-Resources-ownership, Access and use- Rural environment: Environmental conservation, Climatic change and its impact on Rural livelihood.

Unit-3- Rural Development Programmes in India: History of Rural Development Programmes, Changing model and approaches of Rural Development Programmes in different plan period, Barrier of Rural Development Programmes, Cultural, Social Geographical educational, Communications.

Unit-4- Evaluation of Rural Development Programmes- MNREGA, PMGSY, SJSY, Jan Dhan Yojana, Millets Mission

References:

1. Anand, Subhash.,(2013): Dynamics of Rural Development, Research India Press, Delhi
2. Gilg, A. W., (1985): An Introduction to Rural Geography, Edwin Arnold, London.
3. Krishnamurthy, J.,(2000): Rural Development - Problems and Prospects, RawatPubls., Jaipur
4. Lee, D. A. and Chaudhri, D. P., (eds.)(1983): Rural Development and State, Methuen, London.
5. Misra, R. P., and Sundaram, K. V., (eds.)(1979): Rural Area Development: Perspectives and Approaches, Sterling, New Delhi.
6. Misra, R. P., (ed.), (1985): Rural Development: Capitalist and Socialist Paths, Vol. 1, Concept, New Delhi.

CORE COURSE [CCGEO403]

MINING AND INDUSTRIAL GEOGRAPHY

Marks: 30 (MSE: 20 Th. 1 Hr + 5 Attd. + 5 Assign.) + 70 (ESE: 3 Hrs) = 100 **Pass Marks: (MSE: 17 + ESE: 28) = 45**

(Credits: Theory-04, 60 Hours)

Course Objectives:

On completion of this course, the students will be able to understand:

1. Distribution of economic mineral, mineral deposits
2. Origin, occurrence and formation of mineral deposits
3. Concept of Industrial geography, trends of industrialisation, problems and prospects in Jharkhand

Course Learning Outcomes:

On successful completion of this course the student should know:

1. Process of mineralization, magmatic concentration
2. Mineral exploitation, conservation, trade and sustainable development in Jharkhand

Course Content:

Unit-1- Mining Geography: Concept, Definition and scope, Distribution of economic mineral, regional surveying mineral deposits, investigation and exploitation; Origin, Occurrences and formation of mineral deposits: origin of minerals, mineral thermometer, process of mineralization, magmatic concentration, contact metasomatism, Hydro thermal process, Cavity filling and metasomatic replacement; residual and mechanical concentration, sedimentation, oxidation and secondary processing, metamorphism and sublimation

Unit-2- Origin of some important metallic (Iron, Gold, Platinum, Silver, Lead, Zinc and Nickel; Non Metallic- Coal, petroleum; Granite quarries and sand mining, causes and consequences of mining; Mineral exploitation, Conservation, Trade and sustainable development in Jharkhand

Unit-3- Industrial Geography: meaning, nature and scope, industrial growth in India and Jharkhand, present trends of industrialization in Jharkhand. Bases of Industrial development in Jharkhand- a case study of important industry- Iron ore, Manufacturing; Footloose industry

Unit-4- Industrialization- causes and consequences, Industrial regions, Industrial revolutions, problems and prospects of Industrialization in Jharkhand, trends and trade of Industrial products, industrialization and sustainable resource development

Reference-

1. Maurya, S.D (2020)- Audyogik bhugol, Pravalika Publication, Prayagraj
2. Maurya, S.D-(2020) Industrial geography, Prawalika Prakashan, Prayagraj
3. Sinha and Singh (2009), Jharkhand: Land and People, Rajesh Publication
4. Baghela, Sunil, Industrial Geography
5. Prasad, Umeswar – Bihar- Arthik bhu-vigyan ewam bharat ki khaneej sampada: Bihar Hindi Granth Akadami
6. Dunn, J.N- Economic Geography of Bihar

ELECTIVE COURSE-A [EPGEO404A]

PRACTICAL-IVA - SOIL GEOGRAPHY

Marks: 30 (ESE: 20 Viva + 5 Attd. + 5 Record) + 70 (ESE Pr: 6 Hrs) = 100 **Pass Marks = 45**

(Credits: Practical-04, 120 Hours)

Instruction to Question Setter for

End Semester Examination (ESE Pr):

There will be one Practical Examination of 6Hrs duration. Evaluation of Practical Examination may be as per the following guidelines:

Experiment/Lab work	*= 70 marks*
Practical record notebook	*= 05 marks*
Attendance	*= 05 marks*
Viva-voce	*= 20 marks*

Practical:

Course Objectives:

On completion of this course, the students will be able to understand:

1. Land capability, agricultural efficiency, cropping intensity
2. Soil profiles, composition of soil
3. Stream ordering, drainage density

Course Learning Outcomes:

On successful completion of this course the student should know:

1. Crop combination, Cropping intensity
2. Finding stream order, soil pH and soil nutrients

Course Content:

Unit 1:

Land capability, Agricultural Efficiency, Cropping Intensity. Crop Combination.

Unit 2:

Study of Soil pH Value, Nitrogen Content, Phosphorus and Construction of Soil Profiles.

Unit 3:

Stream Ordering, Drainage Density, Drainage Texture, Thalweg, Channel Profiles, Hypsometric Curve, Area-height Diagram.

Unit: 4

Water Budget, Rainfall Dispersion Diagram, Ergo graph, Climatograph.

References-

1. Miller, R. W. and Donahue, R. L. (1992): Soils: An Introduction to Soils and Plant Growth, Prentice-Hall of India, New Delhi
2. Brady, N. C., and Weil, R. R. (2008): The Nature and Properties of Soils, Prentice Hall,New Jersey
3. Pitty, A. F. (1978): Geography and Soil Properties, Methuen and Co., London
4. Bridges, E. M. and Davidson, D. A. (1982): Principles and Applications of Soil Geography, Longman Group, London
5. Daji, J. A. (1970): A Textbook of Soil Science, Asia Publication House, New York
6. Birkeland, P. W (1999): Soils and Geomorphology, Oxford University Press, New York
7. Govinda Rajan, S.V. and Gopala Rao, H.G.: Studies on soils of India, Vikas, New Delhi, 1978.
8. Raychoudhuri, S.P.: Soils of India, ICAR, New Delhi, 1958.
9. Bunting, B.T.: The Geography of Soils, McGraw Hill, New York.
10. Clarke, G.R.: Study of the Soil in the Field, Oxford University Press, Oxford, 1957.
11. Foth H.D. and Turk, L.M.: Fundamentals of Soil Science, John Wiley, New York, 1972.
12. Bennet, B.T.: Soil Conservation, McGraw Hill, New York.

OR ELECTIVE COURSE-B [EPGEO404B]

PRACTICAL-IVB REMOTE SENSING AND GIS

Marks: 30 (ESE: 20 Viva + 5 Attd. + 5 Record) + 70 (ESE Pr: 6 Hrs) = 100 **Pass Marks = 45**

(Credits: Practical-04, 120 Hours)

Instruction to Question Setter for

End Semester Examination (ESE Pr):

There will be one Practical Examination of 6Hrs duration. Evaluation of Practical Examination may be as per the following guidelines:

Experiment/Lab work	*= 70 marks*
Practical record notebook	*= 05 marks*
Attendance	*= 05 marks*
Viva-voce	*= 20 marks*

Practical:

Course Objectives:

On completion of this course, the students will be able to understand:

1. Satellite image analysis, recognition of elements and interpretation keyes
2. Creation of spatial data- vector data model
3. Using GPS, finding location, tracking

Course Learning Outcomes:

On successful completion of this course the student should know:

1. Creation of point, line and polygons to represent geographical features
2. Linking spatial and non-spatial data, creating map layout
3. Finding location, marking waypoints or location of GPS

Course Content:

Unit 1: Image analysis: Principles of visual image interpretation, recognition elements and interpretation keys for visual interpretation (Shape, size, colour, tone, texture, association), Interpretation of Satellite Image (Landsat, LISS III, LISS IV, Cartosat etc.)

Unit 2: Photographs Identification of Spatial Data: point, line and Polygon Features, Representation of Spatial Features: Raster and Vector Data Model, Data Structure, Overlay analysis, Change Analysis and Buffer Analysis.

Unit 3: Introduction GIS Software, Geo-referencing and Projection Spatial data entry, editing, query building and executing, Topology creation and linking spatial and non-spatial data, Spatial data visualization and output Map Generation.

Unit 4: Introduction to GPS, Finding latitude, longitude and altitude, Tracking in GPS, Routing in GPS.

References:

1. Peter A. Burrough and Rachael A. McDonnell (1998) Principles of Geographic Information systems, Oxford University Press, New York.
2. Aronoff S. (1989) Geographic Information System, A Management Perspective, WDL Publications, Ottawa, Canada
3. Ian Heywood, Sarah Cornelius, Steve Carver (2003), An Introduction to Geographic Information System, Pearson Education Ltd., India.
4. Chrisman N.R. (1997) Exploring Geographic Information System, Wiley, New York.
5. www.gisdevelopment.net/tutorials/human008.html
6. www.gisloungue.com/remotesening.html

OR ELECTIVE COURSE-C [EPGEO404C]

PRACTICAL-IVC - URBAN- RURAL GEOGRAPHY

Marks: 30 (ESE: 20 Viva + 5 Attd. + 5 Record) + 70 (ESE Pr: 6 Hrs) = 100 **Pass Marks = 45**

(Credits: Practical-04, 120 Hours)

Instruction to Question Setter for

End Semester Examination (ESE Pr):

There will be one Practical Examination of 6Hrs duration. Evaluation of Practical Examination may be as per the following guidelines:

Experiment/Lab work/Case study = 50 marks
Practical record notebook = 25 marks
Attendance = 05 marks
Viva-voce = 20 marks

Practical:

Course Objectives:

On completion of this course, the students will be able to understand:

1. linear and exponential growth rate of population.
2. Traffic flow cartograms, scatter diagrams to represent geographical data
3. Taking case study and preparing report

Course Learning Outcomes:

On successful completion of this course the student should know:

1. Methods of geographical data representation
2. Preparing Case Study report

Course Content:

Unit-1- Linear and exponential growth rate of population; Standardization of data using "Z" Score

Unit-2- Areal or Stilgen Bauer's method, Volumetric or Sten de Geer's Method, Pie Diagram (Representing urban population, Value-area Cartograms,

Unit-3- Traffic-flow Cartograms, Scatter Diagrams, Spherical Diagrams, Compound pyramid (Growth of rural-urban population), Superimposed pyramid diagram

Unit-4- A case study on evaluation of any selected programme in a village or ward using Secondary and or Primary data to be done by a group of five to ten students. The report should be handwritten on A4 size page in candidate's own words not exceeding 1000 words (excluding references). The report should contain a proper title and incorporate relevant maps, tables, diagrams, and references not exceeding 8 pages, photographs are optional.

References-

1. Basu, P. 2021: Advanced Practical Geography- a laboratory mannual, 4ed, Books and Allied
2. Alviz, 2002, Statistical Geograpy, Method and applications, Rawat Publication
3. Croxton, F.E. Cowden, D.J., 1994: Applied General Statistics, Prentice Hall
4. Mahjmood, A. Raza, M. 1998, Statistical method in Geogrphical Studeies, Rajesh Publication
5. Pal, S.K. 1998. Statistics for Geoscientists: Techniques and applications, Concept publication
6. Sarkar, A. 2015 Practical Geography, A Systematic Approach, 3rd Ed, Orient Blackswan

III. PROJECT [PRGEO405]
DISSERTATION/ PROJECT/ TEACHING APTITUDE

Marks: 30 (MSE: 20 Viva + 5 Attd. + 5 Record) + 70 (ESE Pr: 6 Hrs) = 100 **Pass Marks: = 45**

(Credits: 04, 120 Hours)

Guidelines to Examiners for
End Semester Examination (ESE):

The evaluation of the dissertation will be done in 100 marks (70 marks + 30 marks of the session). The sessional component will be evaluated by the concerned supervisor.

The end term evaluation (70 marks) will be done by a board of examiners. The end term evaluation in 70 marks will include the literary and scientific presentation of the dissertation and the performance in the viva-voce.

Overall project dissertation may be evaluated under the following heads:

- *Motivation for the choice of topic*
- *Project dissertation design*
- *Methodology and Content depth*
- *Results and Discussion*
- *Future Scope & References*
- *Participation in Internship programme with reputed organization*
- *Application of Research technique in Data collection*
- *Report Presentation*
- *Presentation style*
- *Viva-voce*

Course Objectives:

1. To develop research skills and scientific inquiry through independent investigations of a Geographical problem.

Course Outcomes:

On successful completion of this course the student should know:

1. About conducting a research with approve stages of research methodology in Geography. Dissertation will enable student to further investigate and navigate different aspects and events of life through research.

PROJECT WORK

Each student has to submit three copies of hard bound dissertation work (along with the raw data), duly forwarded by the HOD of Department concerned. The forwarded copies will be submitted in the Department of Geography, Ranchi University, for evaluation (one month before the viva voce examination).

The paper may involve:

(a) Laboratory research/ Field work/ Lab work related to the project.

(b) Survey research, Case Study or any other type of Research in Geography

(c) One Large study/ Experiment or several studies/ Experiments depending on the objectives of the research.

(d) The writing of dissertation must be within 80 to 100 pages including references and appendices.

(e) Content must be typed in Font: Times New Roman with Line Spacing: 1.5 and Font Size 14 points.

Presentation of project work in the seminar on the assigned topic in the P.G. Department of Geography, Ranchi University, Ranchi & open viva there on.

Topics: As decided by the Supervisor/Guide

TEACHING APTITUDE: Only selected candidates, in alternative to the Dissertation, may be provided duty to teach the assigned topics in selected colleges. The performance may be evaluated based on the organized feedback for the candidate.

DEPARTMENT OF GEOGRAPHY

ST. XAVIER'S COLLEGE, RANCHI

(An Autonomous College of Ranchi University)

EXAMINATION DEPARTMENT

UG & PG - DEPARTMENT OF GEOGRAPHY

PAPER SETTERS / EXAMINERS FOR SEMESTER EXAMS

IMPLEMENTED FROM ACADEMIC SESSION 2025-2026 & ONWARDS.

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