Tribhuvan University
Faculty of Humanities and Social Sciences
Central Department of Geography

Semester Based Courses of Study for
Master of Art in Geography

Prepared By:
Geography Subject Committee
2014
Introduction:
Tribhuvan University (TU) is the elder and the leading University devoted to higher education in Nepal, Central Department of Geography (TUCDG) was established in 1959 with an objective to produce sound and competent professionals of geography who can help address local, national, regional as well as global challenges related to geographical issues. Functioning under Faculty of Humanities and Social Sciences, the Department offers academic programmes Master of Arts (MA) and Doctor of Philosophy (PhD) in Geography. Its course contents and activities are designed to equip the students with professional knowledge, skills and techniques necessary to understanding geography and geographical issues, undertake research studies, promote education, and contribute for sustainable development.

MA in Geography is two-year (Four Semester) academic course. The syllabus has been designed to cover major components of the physical geography, human geography, and spatial planning and management including techniques and tools of geography. Nature and human activities are rapidly changing and issues are growing in size and becoming complex. Hence, TUCDG has made regular revision and updating of the syllabus. Present syllabus is an outcome of recent exercises involving faculties and experts to incorporate contemporary issues of Physical, human and spatial aspects including the techniques and tools of geography. It is envisaged that these courses will enable our students to deal with various aspects of natural, and human geography and spatial planning.

The syllabus is spread over three groups (i) Core, (ii) Compulsory and (iii) Optional group of 63 credit hours and four semester. This syllabus for semester system targets to meet the need of quality education in geography by making it more competitive and research oriented in accordance with national and international practices. All the students are required to take core and compulsory courses but they will choose optional courses in consultation with the Department.

Eligibility and Criteria for Admission
Candidates having bachelor degree in geography or any other subjects recognized by Tribhuvan University are eligible to apply for admission in MA Geography. An applicant seeking admission to MA in Geography must appear and pass the entrance examination conducted by Dean's Office/CDG, Faculty of Humanities and Social Science. The applicant who fails to appear in the Entrance Examination or to obtain the minimum qualifying score will not be given admission. The admission of students will be based strictly on merit list and the enrollment capacity of Central Department of Geography/Campus.

Medium of Instruction
English will be the medium of instruction at Master's level.
Duration of the Program
Four semesters is completed in the period of two academic years. Eighty percent attendance is compulsory.

Hours of Instruction and the Credit Calculation
Working Days: Each semester will be of six months or 90 working days will be total 63 credits hours in Four semesters.

Theory
One credit hour is equivalent to 16 lecturer hours. One theory paper of one credit will have one hour of lecture per week.

Practical
One practical paper is equivalent to 32 hours. One credit will have two hours practical class per week.

Evaluation
Students must obtain pass marks in all theory and practical subjects separately, in order to award the degree. There will be internal examinations in each semester carrying a weightage of 40% of the total marks. Appearing in and passing the internal examinations is mandatory to take the final examinations. The pass marks of all theory, practical, research work, field work is 50%. TU-FOHSS/Controller of Examinations will conduct the final examinations, while the internal examinations will be conducted by the Department.

Course Distribution

<table>
<thead>
<tr>
<th>Semester I:</th>
<th>Course Code</th>
<th>Subject</th>
<th>Credit hrs.</th>
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<tbody>
<tr>
<td>Core Subjects</td>
<td>Geog 551</td>
<td>Geographical Thought –I</td>
<td>3</td>
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<td></td>
<td>Geog 553</td>
<td>Geomorphology – I</td>
<td>3</td>
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<td>Geog 555</td>
<td>Human Geography-I</td>
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<td>Compulsory Subjects</td>
<td>Geog 563</td>
<td>GIS-I</td>
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<td>Geog 565</td>
<td>RS – I</td>
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<td>Geog 552</td>
<td>Geographical Thought –II</td>
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<td>Geomorphology – II</td>
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<td>Geog 556</td>
<td>Human Geography-II</td>
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<td>Compulsory Subjects</td>
<td>Geog 561</td>
<td>Research Methods in Geography-I</td>
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<td>Geog 564</td>
<td>GIS-II</td>
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<td>Geog 566</td>
<td>RS – II</td>
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<td>Core Subjects</td>
<td>Geog 557 Region, Regionalism and Regional Analysis</td>
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<tr>
<td>Compulsory Subjects</td>
<td>Geog 558 Climate, Hydrology and Bio-Geography</td>
<td>3</td>
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<td>Geog 562 Research Methods in Geography-II</td>
<td>3</td>
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<td>Optional Subjects</td>
<td>Optional I</td>
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<td>Compulsory Subjects</td>
<td>Geog 559 Geographical Problems of Nepal</td>
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<td>Geog 560 Thesis</td>
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### Optional Courses

- **Geog 517.** Applied Fluvial and Glacial Geomorphology (Practical)
- **Geog 518.** Climate Modeling
- **Geog 519.** Soil Geography and Land Use
- **Geog 520.** Environmental Impact Assessment
- **Geog 521.** Disaster Risk Management
- **Geog 522.** Peri-Glacial Geomorphology
- **Geog 523.** Natural Resource Management
- **Geog 524.** Watershed Management
- **Geog 525.** Environmental Geography
- **Geog 526.** Global Change and Adaptation
- **Geog 527.** Water Resources Management
- **Geog 528.** Regional Development Planning
- **Geog 529.** Land Use Planning
- **Geog 530.** Development Planning
- **Geog 531.** Geography of Development
- **Geog 532.** Urban Development Planning
- **Geog 533.** Rural Development Planning
- **Geog 534.** Agriculture and Food Security
- **Geog 535.** Geography of Tourism
- **Geog 536.** Eco-Tourism and Sustainable Development
- **Geog 537.** Gender and Development
- **Geog 538.** Advanced Political Geography
- **Geog 539.** Geography of Transportation
- **Geog 540.** Population and Development
- **Geog 541.** Social Geography
- **Geog 542.** Economic Geography
- **Geog 543.** Geography of Nepal
- **Geog 544.** Geography of Social Wellbeing
- **Geog 545.** Migration and Urbanization
- **Geog 546.** Geography of Human Resources
- **Geog 547.** Spatial Planning
- **Geog 548.** Geography of Health
- **Geog 549.** Cultural Geography
- **Geog 550.** Ethno Geography
- **Geog 551.** Public Policy and Governance
- **Geog 552.** Industrial Geography
- **Geog 553.** Digital Cartography (Practical)
- **Geog 554.** Advanced Applied GIS/RS (Practical)
- **Geog 555.** Surveying
Aims and Objectives of the Courses

This is one of the two core courses in Geographical Thought offered in Masters Degree in Geography. The main aim of this course is to familiarize students with the nature of geography with particular reference to understanding the nature, key geographic ideas, critical issues and the binaries in geography. Exploring the historical aspect of development of geography together with examination of contemporary development will be part of the syllabus in understanding of geography. In addition, students are also expected to be familiar with approaches and methodologies that evolved in the discipline of geography over the years.

Teaching Hours

Unit 1: Nature of Geography

1.1 Knowledge of nature, nature and Geography
1.2 Nature of Geography and Nature in Geography
   i) Geographic Perspectives: Geography’s way of looking at the World; Domains of Synthesis Spatial Representation; Geographic epistemologies
   ii) Critical Issues in Geography: Environmental degradation; Population dynamics; Ethnic issues; Education; Global Change

Unit 2: Historical Development of Geography

2.1 The beginnings of classical geography
2.2 Geography in the middle ages
2.3 The age of exploration
2.4 The impacts of discoveries
2.5 Four traditions of geography
2.6 Schools of Geographical thought: German, French, British, American, Arabian, and others

Unit 3: Philosophies and Approaches in Geography

3.1 Empirical-analytical approaches: empiricism and positivism
3.2 Historical-hermeneutic approaches: behavioralism, phenomenology, existentialism, idealism, pragmatism
3.3 Critical approaches: Marxist, structuration, realism, post-modernism, post-structuralism
Unit 4: Paradigms and Revolutions

4.1 Induction, deduction and abduction
4.2 Application of Khun’s paradigms in Geography
4.3 An idiographic or nomothetic science
4.4 Revolutions in geography
4.5 Spatial science and its critics
4.6 Emergence of humanistic geography

Unit 5: Major Geographic Ideas/Concepts that changed the World

5.1 Introduction to ten major Geographic Ideas
5.2 Human adjustment
5.3 Spatial organization and inter dependence
5.4 Sense of place
5.5 Megalopolis

Unit 6: Some Geographical Binaries and their Deconstruction

6.1 Nature: Culture
6.2 Man: Women
6.3 Global: Local
6.4 Time: Space

Unit 7: Processes in Space and Place

7.1 Geography at the turn of the millennium
7.2 Place, Space and Territory
7.3 Geographies of Exclusion
7.4 Towards Pluralism
7.5 Explanation and description
7.6 Geographical futures
Required Readings


Robinson, J.L. (…….). *A New look at the Four Traditions of Geography*. Vancouver: University of British Columbia Press.


Geo-morphology-I

Course No: Geog. 553
Semester – First
Credit hours – 3

Lecture hour – 30
Practical hours: 15
Internal Assessment – 20
End Semester Examination - 30

Course objectives:
The main aim of this course is to increase students' knowledge and skills on Geo-morphology and shifting paradigms; Role of tectonics, geology, weathering, mass wasting and fluvial processes in landform development; Field and laboratory methods and techniques for geomorphic investigation; Reviewing, pioneering scientific papers on Geo-morphology.

Teaching Hours

Unit 1: Geo-morphologic Development and Shifting Paradigms

1.1 Geo-morphology in the context of Physical Geography
1.2 Geomorphic concepts and approaches
   i. Uniformitarianism and rock cycle
   ii. Concept of morphogenetic landforms
   iii. W. Powel, G.K Gilbert, and C.E. Dutton’s geomorphic idea
   iv. Classical landform evolution theories (Davis, Penck, and King)
   v. Recent trends: focus, approaches and methods
1.3 Process Geo-morphology
   i. Geomorphic system and equilibrium
   ii. Force, processes and resistance (lithology and structure)
   iii. Threshold and complex response
   iv. Geomorphic scale

Unit 2: Role of Tectonics and Geology

2.1 Diastrophism, tectonic processes and landforms
   I. Diastrophism
   II. Plate tectonics theory and landforms
   III. Expression of tectonics at earth surface
   IV. Uplift rates and erosion
2.2 Structure and landform
2.3 Lithology and landform

Unit 3: Weathering and Mass Movement

3.1 Weathering
   I. Factors affecting weathering
   II. Weathering types, processes, and rates
III. Landform from weathering processes
IV. Weathering profiles, soil horizon and classification

3.2 Mass Movement
I. Classification schemes
II. Types, process and landform features
   a) Heave and creep
   b) Slides, fall, avalanche and flow
III. Morphology and morphometric indices

3.3 Slope Stability Analysis
I. Factors of safely
   a) Driving force
   b) Resisting force
II. Stability analysis
   a) Translational slide
   b) Rotational slide

Unit 4: Hillslope Process and Forms
4.1 Hillslope hydrology
   I. Role of water in slopes
   II. Hillslope and hydrological cycle
   III. Hillslope erosion process
4.2 The Evolution of Hillslopes
   I. Hillslope profile
   II. Hillslope evolution

Unit 5: Drainage Basin and Morphometry
5.1 Introduction of drainage basin
5.2 Initiation of channels and the drainage network
5.3 Basin morphometry: measures, controls and geomorphic significance
5.4 Basin evolution: ergodic hypothesis and physical measurement
5.5 Basin hydrology
5.6 Basin denudation

Unit 6: Fluvial Processes and Landforms
6.1 Fluvial processes
   I. The river channel
   II. Sediments in Channel
   III. Hydraulic geometry
   IV. Channel patterns and stability
   V. River, equilibrium and time
6.2 Fluvial landforms
   I. Valley fills
      a) Floodplains, bar deposits
      b) Fluvial terraces
   II. Piedmont environment
      a) Fans
      b) pediments
   III. Delta

Unit 7: Practical Geo-morphology

(INCLUDING laboratory work, three days field work and presentations)
7.1 Introduction and overview of applied geomorphology
7.2 Areas of geomorphologic application
7.3 Techniques of topographic and geological map analysis
7.4 Recognition of landform: measurements, inventory and mapping
   I. Landslides, and land degradation features,
   II. Fluvial erosion and depositional landform features
      (Materials and tools: field work, topographic and geological maps, GPS,
      Laser range meter, and camera)
7.5 Soil characteristics (soil profile, texture, color, structure, porosity)
7.6 Geo-morphometric analysis
   I. River ordering and bifurcation
   II. Watershed boundary delineation
   III. Derivation of planar and relief variables
   IV. River profile

Note:
- In Theory, Paper review covering aspects of each unit will be performed and Students will
  be encouraged to review the research papers published on peer review journals.
- Three days compulsory field visit is mandatory to introduce student about hillslope, mass
  wasting, and fluvial processes
- Laboratory work: Topographic and geological map analysis, interpretation of landform
  features, and geomorphometric analysis.
- Practical examination will be taken after the field and laboratory work. It will include tools
  and techniques introduced and instructed in laboratory, and field work.

Remarks:
- At least two guest lectures will be provided to students. The resources persons will be a
  professional expert in geology, geomorphology and relevant fields.
- Multimedia is essential for effective teaching and completing lectures in aforementioned
  lecture hours.
- Field instruments equipments: GPS, high quality camera, Laser range meter, Geological
  Hammer, Brunton Compass, Binocular, Soil core machine, and chemicals, and Total station
Required Readings

References

Recommended Journals
1. Geo-morphology, Elsevier
2. Earth surface and Processes. Wiley and Sons
3. Progress in Physical Geography
4. Environment Geology
5. USGS reference reading materials on earth science
Human Geography – I

Semester – First  
Credit hours – 3  
Internal Assessment – 20

Course No: Geog. 555  
Lecture hour – 48  
End Semester Examination - 30

General aim of this course is to make students familiar with the basic concepts of Human Geography and Human Ecology. The course particularly focuses on Human Ecology and aims to develop a critical understanding of the relationship between population and environment in the Himalayas with special focus to Nepal.

Teaching Hours

Unit 1: General Introduction  
1.1 Human Geography, Ecology, and Human Ecology  
1.2 Culture and cultural landscape  
1.3 Changing attribute of place and region

Unit 2: Human Population Ecology  
2.1 Changing size, structure and distribution of Population with special reference to Nepal  
2.2 Spatial pattern of mobility and labor migration  
2.3 Changing social geography of the Himalayas

Unit 3: Interactions between People and Environment  
3.1 Environmental determinism, Possibilism and New Determinism  
3.2 Components and interactions between human social system and ecosystem  
3.3 Relationship between population and environment with special focus on debate of environmental degradation of the Himalayas  
3.4 Gender and environment

Unit 4: Cultural Ecology and Adaptation Pattern in the Himalayas  
4.1 Agro-ecology and cultural zones  
4.2 Adaptation strategies and patterns

Unit 5: Case Study On Resource Management and Adaptation Pattern (Practical)  
a detail study of a selected region i.e. Annapurna, Arun Valley, Karnali, Chitwan valley, Helambu, Panchkhal Valley

Unit 6: Sustainability: Concept, Issues and Challenges
Required References

Note: A few recently published and most relevant articles and book chapters will be recommended by course instructor.
Geographic Information Systems (GIS) - I

Semester – First
Credit hours – 3(1 Theory+2 Practical)
Internal Assessment – 20

Course No: Geog. 563
Lecture hours – 48(16 Theory+32 Practical)
End Semester Examination - 30

Aim and Objectives:
Geographical Information System, GIS I and II as a compulsory course is divided into 2 semesters with total 6 credits course (comprising 3 credit courses for Semester I and 3 credit courses for semester II). The course includes an overview of the theory and principles of GIS and practical application. The practical component involves the use of the desktop GIS software package ArcGIS. Its aim is the integration of theoretical and practical knowledge of GIS for geographical analysis. In the first semester, students will be acquainted with Introductory GIS course focusing on basic GIS concepts, nature and structure of geographical data, and geographic data handling in GIS and mapping. All students must complete an individual project work including a project report in both the semesters.

Course Contents:
I. Theory

Unit 1: Fundamentals of GIS
1.1. Geography and GIS, Basic Concepts,
1.2. Trend and Recent Developments,
1.3. Application of GIS: Physical/Natural and Social, GIS project design and planning

Unit 2: Representing Real World in GIS
2.1. Types of Geographic/Spatial data,
2.2. Nature and Sources of Spatial Data

Unit 3: GIS and Cartography
3.1. Idea of Map
3.2. Mapping concepts and techniques
3.3. Map projections

Unit 4: GIS Data Structure
4.1. GIS data structure: Vector, Raster and TIN data structure
4.2. GIS Data Modeling (Conceptual and logical modeling and implementation)

Unit 5: GIS Data Processing and Management
5.1. GIS Data Input methods
5.2. Data Quality: measurements, representation and accuracy
5.3. Spatial and Attribute Queries

Unit 6: Thematic Mapping (Spatial and Attribute mapping)
6.1 Data Integration for Mapping
6.2 Map Design
Required Readings

II. Practical
Total Credit: 2 credits
Total Teaching Hours: 32
Teaching Hours

Unit 1. Representing Real World in GIS
1.1. Spatial Referencing,
1.2. Scale and Resolution
3

Unit 2. Map scale and Projections
2.1. Transformation: Geographic (Spherical, Latitudes and Longitudes) to Projected plane (Planer, Metric),
4

Unit 3. GIS Data Structure
3.1. Geometry and topology
3.2. Topological and spatial relationships
4

Unit 4. GIS Data Processing and Management
4.1. Spatial data and attribute data creation
4.2. Editing Spatial and attribute data
4.3. Integration Data from Different sources
4.4. Spatial and Attribute Queries
10

Unit 5. Thematic Mapping
5.1. Attribute mapping (socio-economic data Integration, social mapping)
5.2. Spatial data mapping ( mapping surfaces, Point/Line and Area features)
5.3. Map Layout
8

Unit 6. Project Work
6.1. Project work: creation and editing of spatial data, collection of attribute data, data integration and mapping.
3

Note: Students are required to carry out individual project work and submit individual project reports.
Required Readings

Material: Stand alone high end desktop computer with ARCGIS software 10 is essential for each individual student to carry out GIS practical.

Required Readings

Reference Readings
Remote Sensing – I

Semester – First
Course No: Geog. 565
Credit hours – 3(1 Theory+2 Practical)
Lecture hour – 45(15 Theory+30 Practical)
Internal Assessment – 20
End Semester Examination - 30

Course objectives:
At the end of the course, students are expected to increase their knowledge and skills on Remote sensing and history; Principles of satellite remote sensing and aerial photography; Platforms, sensors and areas of application; Skills on processing and interpreting remote sensing data.

Teaching Hours

Unit 1: Introduction to Remote Sensing
1.1 Overview
1.2 History and evolution of remote Sensing
1.3 Applications of remote sensing
1.4 Stages and processes in remote sensing

Unit 2: Electromagnetic Radiation (EMR) and Interaction
2.1 Concepts and characteristics
   i. Terms and definition
   ii. Laws of EMR
   iii. Electromagnetic spectrum
   iv. Sources of EMR
2.2 EMR’s interaction with matter and atmosphere
   i. Interaction with earth surface: Reflection, absorption and transmission
   ii. Interaction with atmosphere: Atmospheric windows and scattering
   iii. Ideal versus real remote sensing
2.3 Spectral reflectance: physical basis of various objects, e.g., soil and lithology, vegetation, water and snow and other features.

Unit 3: Orbit, Platforms and Resolutions
3.1 Remote sensing platforms
3.2 Satellite orbit and sensor swath
3.3 Resolution: Spatial, spectral, radiometric and temporal
3.4 Various satellites and resolutions

Unit 4: Remote Sensing Types, and Sensors
4.1 Multispectral remote sensing
   i. Principles and characteristics
4.2 Thermal remote sensing
   i. Principles and characteristics
   ii. Satellites and sensor types
   iii. Application

4.3 Microwave remote sensing
   i. Principles and characteristics
   ii. Platform and sensors types
   iii. Application

4.4 Hyperspectral remote sensing
   i. Principles and characteristics
   ii. Platform and sensor types
   iii. Application

4.5 LIDAR remote sensing
   i. Principles and characteristics
   ii. Platform and sensors types
   iii. Application

Unit 5: Aerial Photography

5.1 Basics of aerial photographs
   i. Characteristics and acquisition of aerial photographs
   ii. Physics of light: principle of recording image
   iii. Aerial camera and platforms
   iv. Types of aerial photographs

5.2 Geometric characteristics of aerial photographs
   i. Geometric elements of aerial photographs, relief and tilt displacements
   ii. Photo scale and measurement
   iii. Stereoscopy and parallax
   iv. Use of parallax concept in height measurement

5.3 Elements of aerial photograph interpretation
   i. Interpretation keys
   ii. Photo interpretation elements

Unit 6: Practical and Tutorial

   (including laboratory exercises and 2 days field survey)

6.1 Study of satellite image: spectral bands and reflectance
6.2 Feature interpretation by using spectral and image characteristics of visual and infrared imagery
6.3 Study of thermal images and measurement of radiant temperatures
6.4 Interpretation of SAR data for feature identification
6.5 Stereo test and determination of photo scale
6.6 Locating nadir point and principal points on aerial photo
6.7 Orientation of stereo model under mirror stereoscope
6.8 Visual interpretation of aerial photos
6.9 Tracing details from stereo-pair photos/imageries
   (land use and land cover, cultural features and geomorphic features)
6.10 Use of parallax bar and determination of heights
6.11 Georeferencing and orthorectification

Note: Compulsory field visit for two days aims to introduce students about Laboratory work: Demonstration, measuring and interpreting elements of aerial photo and imagery.

Practical examination will be taken after the field and laboratory work. It will include tools and techniques of interpretation and measurements introduced and instructed in laboratory as well as through field visit and verification

Remarks:
A Paper review of remote sensing development and application will be done. Students will be encouraged to review the research papers published on peer review journals.
At least two guest lectures will be provided to students. The resource persons will be professional experts in various fields of remote sensing.
Multimedia is essential for effective teaching and completing lectures in the aforementioned lecture hours.
Field instruments equipments: GPS, high quality camera, maps and imageries
Lab instruments and equipments: Computer (fast processing and good graphic quality), Softwares (ERDAS Lieca photogrammetry or Envi or Idrisi or Geomatica or ILWIS) Pocket and mirror stereoscope, Parallex measuring bar, Digital imageries, Hard copy aerial photos, Uninterrupted power supply
Required Readings


References


Website links
http://geography.tamu.edu/class/aklein/geog361/lecture_notes.html


Various websites suggested by tutors

Remote Sensing Journals (National and International)
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<td>Geog 553</td>
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<td>Geog 555</td>
<td>Human Geography-I</td>
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<td>Geog 563</td>
<td>GIS-I</td>
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<tbody>
<tr>
<td>Core Subjects</td>
<td>Geog 552</td>
<td>Geographical Thought –II</td>
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<td>Geog 554</td>
<td>Geomorphology – II</td>
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<td>Geog 556</td>
<td>Human Geography-II</td>
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<tr>
<td>Compulsory Subjects</td>
<td>Geog 561</td>
<td>Research Methods in Geography-I</td>
<td>3</td>
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<td>Geog 564</td>
<td>GIS-II</td>
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<td>Geog 566</td>
<td>RS – II</td>
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### Semester III:

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<tr>
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<tbody>
<tr>
<td>Geog 557</td>
<td>Region, Regionalism and Regional Analysis</td>
<td>3</td>
</tr>
<tr>
<td>Geog 558</td>
<td>Climate, Hydrology and Bio-Geography</td>
<td>3</td>
</tr>
<tr>
<td>Geog 562</td>
<td>Research Methods in Geography-II</td>
<td>3</td>
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<tr>
<td>Optional I</td>
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<td>3</td>
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### Semester IV:

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<tr>
<th>Course Code</th>
<th>Subject</th>
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<tbody>
<tr>
<td>Geog 559</td>
<td>Geographical Problems of Nepal</td>
<td>3</td>
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<td>Geog 560</td>
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<td><strong>Total</strong></td>
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</table>

### Optional Courses

- Geog 517. Applied Fluvial and Glacial Geomorphology (Practical)
- Geog 518. Climate Modeling
- Geog 519. Soil Geography and Land Use
- Geog 520. Environmental Impact Assessment
- Geog 521. Disaster Risk Management
- Geog 522. Peri-Glacial Geomorphology
- Geog 523. Natural Resource Management
- Geog 524. Watershed Management
- Geog 525. Environmental Geography
- Geog 526. Global Change and Adaptation
- Geog 527. Water Resources Management
- Geog 528. Regional Development Planning
- Geog 529. Land Use Planning
- Geog 530. Development Planning
- Geog 531. Geography of Development
- Geog 532. Urban Development Planning
- Geog 533. Rural Development Planning
- Geog 534. Agriculture and Food Security
- Geog 535. Geography of Tourism
- Geog 536. Eco-Tourism and Sustainable Development
- Geog 537. Gender and Development
- Geog 538. Advanced Political Geography
- Geog 539. Geography of Transportation
- Geog 540. Population and Development
- Geog 541. Social Geography
- Geog 542. Economic Geography
- Geog 543. Geography of Nepal
- Geog 544. Geography of Social Wellbeing
- Geog 545. Migration and Urbanization
- Geog 546. Geography of Human Resources
- Geog 547. Spatial Planning
- Geog 548. Geography of Health
- Geog 549. Cultural Geography
- Geog 550. Ethno Geography
- Geog 551. Public Policy and Governance
- Geog 552. Industrial Geography
- Geog 553. Digital Cartography (Practical)
- Geog 554. Advanced Applied GIS/RS (Practical)
- Geog 555. Surveying
Aim and Objectives of the Course

This is one of the two core courses in Geographical Thought offered in Master’s Degree in Geography. The main aim of this course is to familiarize students with the nature of geography with particular reference to understanding the concept of place attachment, genealogy of place, methods in geographic analysis, future of geography, development of geography in South Asia as well as the development of geography in Nepal. Exploring the historical aspect of development of geography in Nepal together with examination of contemporary development will be part of the syllabus in understanding of geography. In addition, students are also expected to be familiar with approaches and methodologies that evolved in the discipline of geography over the years.

Teaching Hours

Unit I: Place in Geography 10
  1.1 The Concept of place attachment
  1.2 Genealogy of place

Unit II: Methodologies in Geographic Analysis 6
  2.1 Ontology
  2.2 Epistemology
  2.3 Methodology
  2.4 Research paradigm

Unit III: The future of Geography in General 3

Unit IV: Historical Development of Geography in South Asia 5

Unit V: Development of Geography in Nepal 24
  5.1 Development of geography
    a) Historical development of geographic ideas: from Vedic period to formation of nation-state
    b) Development of geography as a discipline
  5.2 Curriculum and institutional development
    a) Geography at high school
    b) Geography at higher secondary school
    c) Geography at university level
  5.3 Research and methodological development in geography
    a) Geography in before 1960
    b) Geography in 1960 – 1980
    c) Geography in 1980 – 1990
    d) Geography after 1990 (the entry of qualitative research in geography)
5.4 Major contributors in nepalese geography
   a) Geographers of formative period
   b) Systematic development of geography and its contributors
      - Empiricist/positivist school
      - Marxist school
      - Humanistic school
   c) Contribution of foreign geographers in Nepalese Geography

5.5 Geographical societies and their contribution in the development of geography

References:


Geomorphology-II

Semester – Second
Credit hours – 3

Course No: Geog. 554
Lecture hour – 48
Practical hours: 15
Internal Assessment – 40
End Semester Examination - 60

Course objectives
This course aims to impart knowledge on the role of geomorphic process and landforms in glacial, periglacial, aeolian, and karst environment. The course also intends to cover interrelationship between climate and landforms as well as tools and techniques of applied geomorphology to the students.

Teaching Hours

Unit 1. Glacier Processes and Landform 8
  1.1  G
   Glaciers and glacial mechanics
   a) Glacial origin and types
   b) The Mass balance
   c) Movement of glaciers
   d) Ice structures
  1.2  D
   Erosion processes and features
   a) Minor subglacial features
   b) Cirques
   c) Glacial troughs
  1.3  G
   Geomorphological effects of former glaciation
  1.4  H
   Hazards in glacier environment

 1.2  D
   Deposits and depositional features
   a) Rift types
   b) The depositional framework
   c) Marginal ice contact feature
   d) Interior ice contact features
   e) Proglacial features

 1.4  H
Unit 2. Periglacial Processes and Landforms

2.1 Introduction and characteristics

2.2 Permafrost and ground ice
   a) Definition and thermal characteristics
   b) Distribution thickness and origin
   c) Periglacial hydrology
   d) Frost action and types
   e) Erosion and mass movements

2.2 Periglacial landforms
   a) Landforms associated with permafrost
   b) Patterned ground
   c) Landforms associated with massmovement
   d) Recess periglacial features and their significance

2.3 Hazards, environmental and engineering considerations

Unit 3. Aeolian Environment: Geomorphic Processes and Landform

3.1 Driving force and resisting environment

3.2 Wind erosion and landform features

3.3 Transportation and depositional features

3.4 Aeolian hazards

Unit 4. Karst Processes and Landform

4.1 Definition and characteristics
4.2 Processes and their controls

4.3 Karst hydrology and drainage characteristics

4.4 Karst landforms
   a) Surficial landform
   b) Limestone caves

4.5 Hazards and environmental consideration

Unit 5. Climate and Landforms

4.1 Morphogenetic landform
   a) Humid topical
   b) Tropical wet dry landform
   c) Arid and semiarid landform
   d) Cold region landform

4.2 Climate change and polygenetic landform
   a) Tertiary climate changes
   b) Pleistocene climate changes
   c) Holocene and historical climate changes

4.3 Geomorphic affect of climate change

Unit 6. Practical Geomorphology

6.1 Introduction
   a) Pure and applied geomorphology
   b) Areas of geomorphologic application

6.2 Geomorphological mapping and techniques
   a) Geomorphic process map
   b) Geomorphic unit map
c) Snow and glacier inventory
d) Geological map interpretation

Unit 7. Morphometric Analysis of Landforms in Glacial and Periglacial Environment
a) Dimension: length, width, height
b) Material Characteristics
c) Slope gradient relative relief
d) Slope aspect,
e) Slope curvature
f) Flow contributing area

Unit 8. Hazard and risk assessment with (focus on process)
a) Snow avalanche, rock fall
b) Flashflood (Glacial Lake Outburst Flood)

Key Readings

Recommended Journals
1. Geomorphology
2. Earth surface and Processes
3. Progress in Physical Geography
4. Environment Geology
5. USGS materials
Human Geography – II

Semester – Second
Course No: Geog. 556
Credit hours – 3
Lecture hour – 48
Internal Assessment – 40
End Semester Examination - 60

General aim of this course is to make students familiar with the basic concepts of Human Geography and Human Settlement. The course particularly focuses on Human Settlement and aims to develop a critical understanding of the human settlement with special focus to Nepal.

**Course Units**

<table>
<thead>
<tr>
<th>Course Units</th>
<th>Teaching Hours</th>
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<tbody>
<tr>
<td>Unit 1. Settlement Concepts: Geography and Settlement, Approaches to settlement studies, Settlement and Perception, Site and Situation</td>
<td>2</td>
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<tr>
<td>Unit 2. The Classification of Human settlement: Rural and Urban</td>
<td>12</td>
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<tr>
<td>2.1 Rural settlements</td>
<td></td>
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<tr>
<td>a) rural-urban dichotomy</td>
<td>R</td>
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<tr>
<td>b) classification and types of rural settlement</td>
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<tr>
<td>c) distribution and pattern of rural settlement</td>
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<tr>
<td>– the distribution of rural settlement with special reference to Nepal</td>
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<tr>
<td>– pattern of rural settlement</td>
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<td>– actors of favouring nucleation and dispersion</td>
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<tr>
<td>– merits and demerits of nucleated and dispersed settlement</td>
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<td>d) morphology of rural settlement with special reference to Nepal</td>
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<tr>
<td>e) rural settlement and resources use</td>
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<tr>
<td>f) rural market centers - periodic markets: concepts and issues</td>
<td>R</td>
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<tr>
<td>g) rural settlement planning: policies and programmes</td>
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<tr>
<td>2.2 Urban Settlements</td>
<td>18</td>
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</tbody>
</table>
a) Conceptual/definitional issues of urban areas including urban ecology and territoriality
b) Causes of urbanization
c) Trend of urbanization with particular reference to Nepal
d) Size and spacing of urban places: models and theories
   - The rank size rule
   - The primate city model, Kathmandu: The primate city
   - Functional hierarchy and the settlement system
   - The central place theory
e) Urban morphology: Central Business District (CBD) and its internal structure
f) Theories of urban structure/land use
   - The concentric zone model by E.W. Burgess
   - The wedge or sectoral model by Homer Hoyt and M.R. Davis
   - The multiple nuclei model by C.D. Harris and E.L. Ullman
g) Land economics and urban land use
h) Urban social and environmental issues
   - Social problems of cities: Slums and squatter settlements and crime
   - Urban environmental issues: Different forms of pollution, solid waste management, ecological footprints in cities
i) Urbanization strategies and policies in Nepal
Unit 3. Case Studies (students spend about 3 days in the field on their own expenses and share their experiences through discussions in the class)

3.1 Functions of settlement
   a) Analysis of occupational diversity and specialization
   b) Functional base analysis of market centres by preparing tools for market inventory
   c) Analysis of morphology of the Urban area

3.2 Origin and development of settlements:
   a) Collect and observe time series maps, aerial photo, and google image of a selected settlement area.
   b) Observe selected settlement and identify locational characteristics and resource bases including physical, economic and social.

3.3 Settlement type
   a) Settlement classification on the basis physical characteristics of shape, size, pattern and morphology.
   b) Settlement classification on the basis of functions like agriculture, religion, administration, education etc.

References
Geographic Information Systems (GIS) - II

Semester – Second  
Course No: Geog. 564
Credit hours – 3(1 Theory+2 Practical)  
Lecture hours – 48(16 Theory+32 Practical)
Internal Assessment – 40  
End Semester Examination - 60

Aim and Objectives:
The course includes an overview of the theory and principles of GIS and practical application. The practical component involves the use of the desktop GIS software package ArcGIS. Its aim is the integration of theoretical and practical knowledge of GIS for geographical analysis. In the second semester, students will be acquainted with GIS database management and applications. Focus will be on spatial data modeling and spatial analysis. Students will design a GIS project and complete an individual project work including a project report in this semester.

Course Contents:

I. Theory

Total Credit: 1 credit
Total Teaching Hours: 16

Teaching Hours
Unit 1: GIS Database and Database Management System (DBMS): -
   1.1 database management
   1.2 types of database management system
   1.3 Data documentation
   1.4 Geodatabase: Rules, topology and versioning

Unit 2: Spatial Data Modelling: -
   2.1 Modelling of spatial data
   2.2 Modelling dimensions

Unit 3: Spatial Analysis in GIS: -
   3.1 Vector based spatial analysis and applications
   3.2 Raster based spatial analysis and applications

Unit 4: GIS Project Design and Implementation: -
   4.1 Problem identification
   4.2 Data modeling
   4.3 Project implementation and management

II. Practical

Total Credit: 2 credits
Total Teaching Hours: 32

Teaching Hours
Unit 5: GIS Database Management and Management Systems: -
5.1 Geodatabase creation and editing
5.2 Data documentation/metadata creation

Unit 6: Spatial Data Modelling: -
6.1 Modeling networks (Route)
6.2 Modelling surfaces (TIN/3D Raster)

Unit 7: Spatial Analysis in GIS (Vector based Specific applications): –
7.1 Neighborhood analysis (Proximity)
7.2 Network analysis
7.3 Overlay analysis (Point, Line, Polygon)

Unit 8: Spatial Analysis in GIS (Raster based Specific applications): –
8.1 Reclassification
8.2 Spatial interpolation
8.3 Analyzing surfaces
8.4 Overlay analysis(Grid)

Unit 9: Project Work -
9.1 Project work includes; project design, conceptual framework
9.2 Spatial and attribute data integration and analysis in specific application
9.3 Project report

Required readings:
Booth B and Andy Mitchell (2001). Getting Started with ARCGIS: GIS ESRI.ESRI Press. (ebook-free online access)

Reading References
Remote Sensing – II
Semester – Second
Course No: Geog. 566
Credit hours – 3 (1 Theory + 2 Practical)
Lecture hour – 45 (15 Theory + 30 Practical)
Internal Assessment – 40
End Semester Examination - 60

Course objectives:
At the end of the course, students are expected to increase their knowledge and skills on, digital image processing and photogrammetry, and on various remote sensing application case studies.

Teaching Hours

Unit 1. Introduction to Digital Image (Theory and Practical) 5
  1.1 Digital image data formats and statistics
  1.2 Image compression and storage
  1.3 Digital image processing hardware considerations and software
  1.4 Image display

Unit 2. Image Rectification (Theory and practical) 7
  2.1 Geometric corrections
    a) Systematic distortions and correction
    b) Random distortions and correction
    c) Georeference and ortho-rectification
    d) Image re-sampling
  2.2 Radiometric corrections
    a) Radiometric correction for errors in sensor system
    b) Radiometric correction for atmospheric effect

Unit 3. Digital Image Processing (Theory and Practical) 8
  3.1 Contrast enhancement
    a) Linear contrast
    b) Nonlinear contrast
  3.2 Spatial Filtering
    a) Low frequency filtering
    b) High frequency filtering
    c) Edge enhancement
  3.3 Image transformation
    a) Calculation environmental indices (e.g., Vegetation index, soil moisture index)
    b) Image ratio
    c) Principal component analysis
    d) Fourier transformation
3.4 Image fusion methods
a) Principal component method
b) Multiplicative method
c) Brovey transformation
d) Wavelet method

Unit 4. Digital Image Classification (Theory and practical)
4.1 Introduction to image classification
a) Visual method of image classification
b) Pixel based image classification
c) Object based image classification
4.2 Supervised image classification
a) Stages of supervised image classification
b) Classification methods and evaluation
c) Accuracy assessment
4.3 Unsupervised image classification
a) K-Means clustering
b) Isodata clustering
c) Post classification filtering
4.4 Object based classification method

Unit 5. Digital Photogrammetry (Theory and practical)
5.1 Introduction to photogrammetry
a) Principles of photogrammetry
b) Development of photogrammetry
c) Digital photogrammetry work station
5.2 Digital photogrammetric techniques and Products
a) Anaglyph viewing
b) Exterior and interior orientation
c) Aerial triangulation, control and tie points
d) Photogrammetric products
5.3 Photogrammetric methods of digital terrain model (DTM) generation
a) Introduction to digital terrain model
b) Stereo model
c) Image matching
d) Steps of generating DTM (Using ERDAS Imagine)

Unit 6. Application of Remote Sensing (integration with GIS) and case studies(Practical : Project work and Field work)
6.1 Land cover and land use cover classification and suitability assessment
6.2. Flood hazard mapping,
6.3. Landslide and debris flow hazard mapping
6.4. Snow and glacier inventory
6.5. Forest status and type assessment
6.6. Crop status and yield estimation

(Students will produce a project report from any one of the above applications)

**Note:** Compulsory field visit for two days aims to introduce students ground trothing and other field techniques in remote sensing

**Remarks:**
A paper review of remote sensing development and application will be done. Students will be encouraged to review the research papers published on peer review journals. At least two guest lectures will be provided to students. The resource persons will be professional experts in various fields of remote sensing.
Multimedia is essential for effective teaching and completing lectures in the aforementioned lecture hours.
Field instruments equipments: GPS, high quality camera, maps and imageries
Lab instruments and equipments: Computer (fast processing and good graphic quality), Softwares (ERDAS Lieca photogrammetry or Envi or Idrisi or Geomatica or ILWIS) Pocket and mirror stereoscope, Parallex measuring bar, Digital imageries, Hard copy aerial photos, Uninterrupted power supply

**Required Readings**

**References**
Website links
http://geography.tamu.edu/class/aklein/geog361/lecture_notes.html


Remote sensing application in soil erosion and land degradation in Nepal:
http://www.itc.nl/personal/shrestha/research.html#lnote

*Various websites suggested by tutors*

Remote Sensing Journals (National and International)
Research Techniques in Geography I

Semester – Second
Course No: Geog. 561
Credit hours – 3
Lecture hour – 48
Internal Assessment – 40
End Semester Examination - 60

Objectives

This course provides basic knowledge on the issues, the processes, methods and techniques involve in geographical research. It also intends to enhance the students in developing research proposals in geographical issues.

Course Units

<table>
<thead>
<tr>
<th>Course Units</th>
<th>Teaching Hours</th>
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<tr>
<td>Unit 1. Geographical Research</td>
<td>3</td>
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<tr>
<td>1.1 Nature and types</td>
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<tr>
<td>1.2 Cycle of research activities</td>
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<tr>
<td>1.3 Trends of geographical researches in Nepal</td>
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</tr>
<tr>
<td>Unit 2. Foundation of Geographical Research</td>
<td>3</td>
</tr>
<tr>
<td>2.1 Scientific methods in geographical research</td>
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<tr>
<td>2.2 Deductive, inductive and adductive approaches</td>
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<tr>
<td>2.3 Concepts, hypothesis, model, law, theory and perceptions in geographic research</td>
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<tr>
<td>2.4 Paradigms and its relationship with theory and philosophy</td>
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<tr>
<td>Unit 3. Philosophy and Methodology</td>
<td>3</td>
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<tr>
<td>3.1 Philosophy, its components and major types (empiricism, positivism, humanism, structuralism and postmodernism)</td>
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<tr>
<td>3.2 Methodology: Linkages of philosophy with methodology</td>
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<tr>
<td>Unit 4. Review of Literature</td>
<td>3</td>
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<tr>
<td>4.1 Importance and sources</td>
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<td>4.2 Evaluating the literature</td>
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<tr>
<td>Unit 5. Research Methods</td>
<td>10</td>
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<tr>
<td>5.1 Qualitative and quantitative methods &amp; their relationship</td>
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<tr>
<td>5.2 Survey methods: Interview, focus group discussion, RRA and PRA, observation, participant observation, key informants, category, content analysis, event analysis, ethnography, case study, field methods and diaries as a research method</td>
<td></td>
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<tr>
<td>5.3 Survey tools: Inventory/observation sheets, questionnaire (structured, semi-structured and unstructured, open ended and closed ended) and checklist</td>
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</tbody>
</table>
Unit 6. Data Analysis and Interpretation

6.1 Analyzing and interpreting qualitative data including
grounded theory, narratives, metaphors and discourse
analysis - analyzing qualitative data quantitatively
6.2 Computers in the analysis of qualitative data
6.3 Analyzing and interpreting quantitative data: cause and
effects, temporal, spatial, functional and system analysis

Unit 7. Designing a Geographical Research

7.1 Formulation of the research questions
7.2 Linking theory and practice
7.3 Appropriate method(s) to generate data
7.4 Analyzing and processing of the data
7.5 Ethical issues need to consider
7.6 Practicalities of doing research

Unit 8. Proposal and Format for Research Report

8.1 Elements of research proposal
8.2 Development of research proposal*
8.3 Format of research report and citation techniques

*Students are required to develop research proposal on any topic of their interest.

Required References

Reading References
Tribhuvan University
Faculty of Humanities and Social Sciences
Central Department of Geography

Semester Based Courses of Study for
Master of Art in Geography
Third & Fourth Semester

Geography Subject Committee
2015
Introduction

Tribhuvan University (TU) is the elder and the leading University devoted to higher education in Nepal, Central Department of Geography (TUCDG) was established in 1959 with an objective to produce sound and competent professionals of geography who can help address local, national, regional as well as global challenges related to geographical issues. Functioning under Faculty of Humanities and Social Sciences, the Department offers academic programmes Master of Arts (MA) and Doctor of Philosophy (PhD) in Geography. Its course contents and activities are designed to equip the students with professional knowledge, skills and techniques necessary to understanding geography and geographical issues, undertake research studies, promote education, and contribute for sustainable development.

MA in Geography is two-year (Four Semester) academic course. The syllabus has been designed to cover major components of the physical geography, human geography, and spatial planning and management including techniques and tools of geography. Nature and human activities are rapidly changing and issues are growing in size and becoming complex. Hence, TUCDG has made regular revision and updating of the syllabus. Present syllabus is an outcome of recent exercises involving faculties and experts to incorporate contemporary issues of Physical, human and spatial aspects including the techniques and tools of geography. It is envisaged that these courses will enable our students to deal with various aspects of natural, and human geography and spatial planning.

The syllabus is spread over three groups (i) Core, (ii) Compulsory and (iii) Optional group of 63 credit hours and four semester. This syllabus for semester system targets to meet the need of quality education in geography by making it more competitive and research oriented in accordance with national and international practices. All the students are required to take core and compulsory courses but they will choose optional courses in consultation with the Department.

Eligibility and Criteria for Admission

Candidates having bachelor degree in geography or any other subjects recognized by Tribhuvan University are eligible to apply for admission in MA Geography. An applicant seeking admission to MA in Geography must appear and pass the entrance examination conducted by Dean's Office/CDG, Faculty of Humanities and Social Science. The applicant who fails to appear in the Entrance Examination or to obtain the minimum qualifying score will not be given admission. The admission of students will be based strictly on merit list and the enrollment capacity of Central Department of Geography/Campus.

Medium of Instruction

English will be the medium of instruction at Master's level.
Duration of the Program
The duration of Masters program will be two years (four semesters). Eighty percent attendance is compulsory.

Hours of Instruction and the Credit Calculation
Working Days: Each semester will be of six months or 90 working days. Candidates should complete a total of 63 credits hours in Four semesters. One credit hour is equivalent to 16 lecturer hours.

Theory
One theory paper of one credit will have one hour of lecture per week.

Practical
One practical paper is equivalent to 32 hours. One credit will have two hours practical class per week.

Evaluation
Students must obtain pass marks in all theory and practical subjects separately, in order to obtain the degree. There will be internal examinations in each semester carrying a weightage of 40% of the total marks. Appearing in and passing the internal examinations is mandatory to appear in the final examinations. The pass marks of all theory, practical, research work, field work is 50%. TU-FOHSS/Controller of Examinations will conduct the final examinations, while the internal examinations will be conducted by the Department.

Course Distribution

Semester I:

<table>
<thead>
<tr>
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<tr>
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<td>Geog 551</td>
<td>Geographical Thought –I</td>
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<td>Geog 553</td>
<td>Geomorphology – I</td>
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<td>Geog 555</td>
<td>Human Geography-I</td>
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<td>Geographic Information System (GIS)-I</td>
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<td>Geog 565</td>
<td>Remote Sensing (RS) – I</td>
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Semester II:

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<td>Geog 552</td>
<td>Geographical Thought –II</td>
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<td>Geog 554</td>
<td>Geomorphology – II</td>
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<td>Geog 556</td>
<td>Human Geography-II</td>
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<td>Geog 561</td>
<td>Research Methods in Geography-I</td>
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<td>Geog 564</td>
<td>Geographic Information System (GIS)-II</td>
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<td>Geog 566</td>
<td>Remote Sensing (RS) – II</td>
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<td>Region, Regionalism and Regional Analysis</td>
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<tr>
<td>Geog 558</td>
<td>Climate, Hydrology and Bio-Geography</td>
<td>3</td>
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<tr>
<td>Geog 562</td>
<td>Research Methods in Geography-II</td>
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<tr>
<td>Geog 559</td>
<td>Geographical Problems of Nepal</td>
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<td>Geog 560</td>
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### Optional Courses

- **Geog 517. Applied Fluvial and Glacial Geomorphology (Practical)**
- **Geog 518. Climate Modeling**
- **Geog 519. Soil Geography and Land Use**
- **Geog 520. Environmental Impact Assessment**
- **Geog 521. Disaster Risk Management**
- **Geog 522. Peri-Glacial Geomorphology**
- **Geog 523. Natural Resource Management**
- **Geog 524. Watershed Management**
- **Geog 525. Environmental Geography**
- **Geog 526. Global Change and Adaptation**
- **Geog 527. Water Resources Management**
- **Geog 528. Regional Development Planning**
- **Geog 529. Land Use Planning**
- **Geog 530. Development Planning**
- **Geog 531. Geography of Development**
- **Geog 532. Urban Development Planning**
- **Geog 533. Rural Development Planning**
- **Geog 534. Agriculture and Food Security**
- **Geog 535. Geography of Tourism**
- **Geog 536. Eco-Tourism and Sustainable Development**
- **Geog 537. Gender and Development**
- **Geog 538. Advanced Political Geography**
- **Geog 539. Geography of Transportation**
- **Geog 540. Population and Development**
- **Geog 541. Social Geography**
- **Geog 542. Economic Geography**
- **Geog 543. Geography of Nepal**
- **Geog 544. Geography of Social Wellbeing**
- **Geog 545. Migration and Urbanization**
- **Geog 546. Geography of Human Resources**
- **Geog 547. Spatial Planning**
- **Geog 548. Geography of Health**
- **Geog 549. Cultural Geography**
- **Geog 550. Ethno Geography**
- **Geog 551. Public Policy and Governance**
- **Geog 552. Industrial Geography**
- **Geog 553. Digital Cartography (Practical)**
- **Geog 554. Advanced Applied GIS/RS (Practical)**
- **Geog 555. Surveying**
Region, Regionalism and Regional Analysis

Semester - Third (Core subject)  Course Code - Geog. 557
Credit Hours – 3  Lecture Hours- 48
Internal Assessment – 40 Marks  End Semester Examination- 60 Marks

Aims and Objectives of the Course
This course is the core subject offered in the third semester in Masters Degree in Geography. The main aim of the course is to schooling students on the concept of region, regionalism and methods of regional classification. Also, this course focuses on the problems and issues related to regions, regionalization and development of Nepal. With the completion of this course students will be knowledgeable on how physical and social factors of a geographic area interplay to give a unique spatial identity as a region.

Teaching Hours

Unit 1. Philosophy of Regionalism and Regional Approach  5

Unit 2. History of Development of Regionalism and Place of Regional Studies in Contemporary Geography  4

Unit 3. The Regional Method of Description and Classification  6
(Scale, Culture, Natural, Environment, Space & Population, Political Economic Development)

Unit 4. Nature of Regional Geography  5

Unit 5. Concept and Types of Regions  6
  5.1. Formal – Geographical, ecological, geological, climatic
  5.2. Functional- Political, administrative, development, economic, agricultural

Unit 6. Regional Studies and Ranking of Regions  3

Unit 7. Regional Culture, Consciousness, and Coherence  3

Unit 8. Contemporary Issues and Challenges in Regional Studies  3

Unit 9. Critical Analysis of Regional Approach  5

Unit 10. Regional Dimensions and Inequality in National Development of Nepal  3

Unit 11. Problems and Prospects of Regionalization in Nepal  5
**Required Reading**


**Reference Readings**


**Climate, Hydrology and Biogeography**

Semester - Third (Core subject)  
Course Code - Geog. 558  
Credit Hours – 3  
Lecture Hours- 48  
Internal Assessment – 40 Marks  
End Semester Examination- 60 Marks

**Aims and Objectives of the Course**

This course aims to enrich the students’ knowledge on fundamental aspects and interdisciplinary approach of climate, hydrology and biogeography. This will enable students to investigate and address the issues of man-environment relationship.

**Teaching Hours**

**Unit 1. Climate**  
1.1. Scope and approaches of climate studies in geography  
1.2. Geographical controls of meteorological elements - latitude and topography  
1.3. Circulation system related to orography - planetary, synoptic and local gravitational  
1.4. Climatic characteristics of mountains – energy budget, temperatures, cloudiness, precipitation, evaporation, other hydrometeors  
1.5. Climatic types and their distribution in Nepal

**Unit 2. Hydrology**  
2.1. Hydrological cycle and hydrologic budget  
2.2. Hydrologic inputs: drainage basin precipitation  
2.3. Water storage, runoff, and subsurface flow  
2.4. Basin characteristics and flow, erosion, and sediment yield (overview)  
2.5. Stream flow measurement and analysis  
2.6. Snow and snowmelt runoff: processes, measurements and analysis

**Unit 3. Biogeography**  
3.1. Concepts and approaches of biogeography: biogeographical processes, speciation, diversification, extinction dispersal  
3.2. Global biographical patterns and distributions  
3.3. Habitats, environment and niches  
3.4. Climate, topography and life  
3.5. Disturbance, population, communities and community change  
3.6. Biogeography of Nepal  
   i. Physiographic and ecological diversity  
   ii. Ecological divisions  
   iii. Vegetation types and distribution
Unit 4. Human Dimensions of Climate, Hydrology and Biogeography

4.1. Climate change vulnerability and human adaptation
   4.1.1. Current climate change trend and future scenario including extreme events
   4.1.2. Assessment of impact and adaptation to climate change
   4.1.3. Vulnerability to climate change

4.2. Water sources, use, availability & quality, and management
   4.2.1. Spring water
   4.2.2. River and streams
   4.2.3. Lakes and pond
   4.2.4. Ground water

4.3. Human activities and Chure ecosystem (Hills and Tarai) (case studies)
   4.3.1. Land use and land cover dynamics, drivers and impacts
   4.3.2. Hydro meteorological and biological hazards and human adaptation
   4.3.3. Issues of conservation of species and population, communities and ecosystem.

Required Readings


Reference Readings


**Journals and relevant publications**

- Progress in Physical Geography
- Natural Hazards
- Mountain Research and Development
- Journal of the Hydrology and Meteorology (Nepal)
- Journal of Hydrology
- Journal of Climate
- International Journal of Biogeography
- Journal of Mountain Science
- The Himalayan Review (Nepal)

Relevant publications of UNFCC, IPCC, UNEP, ICIMOD and International Geosphere and Biosphere (IGBP).
Research Method in Geography-II

Semester - Third (Core subject)  Course Code - Geog. 562
Credit Hours – 3  Lecture Hours - 48
Internal Assessment – 40 Marks  End Semester Examination- 60 Marks

Aims and Objectives of the Course
This course provides the basic knowledge of quantitative techniques including spatial and non-spatial (statistical) tools and techniques for geographic research. It further includes bivariate and multivariate data analysis method along with statistical and spatial modeling in geographic science. It focuses on concept, process and application of each and every tool and technique for geo-spatial science research.

Teaching Hours

Unit 1. Overview of Quantitative Techniques  2

Unit 2. Sampling Design, Methods and Estimation  5
  2.1. Probability samplings: random, stratified-cum-random, systematic, and cluster-cum-random
  2.2. Non-probability samplings: purposive, judgmental, quota & snow-ball

Unit 3. Spatial Descriptive Measures of Geographic Data  3

Unit 4. Characteristics of Sample Distribution  3
  4.1. Outliners
  4.2. Normality & transformation
  4.3. Graphical representation: quantile plot & box–whisker plot

Unit 5. Characteristics of Theoretical Distribution  3
  5.1. Binomial
  5.2. Poisson
  5.3. Normal Distribution

Unit 6. Simple, Partial and Multiple  6
  6.1. Correlation and Regression
  6.2. Rank correlation
  6.3. Logistic regression
  6.4. Significant test
Unit 7. Analysis of Time Series Data

7.1. Introduction
7.2. Utility
7.3. Components
7.4. Trend and variation measurements

Unit 8. Statistical Inferences

8.1. Hypothesis testing & estimation: point and interval
8.2. Parametric test: Student t-distribution, z-distribution, F-distribution, analysis of variance: one-way, two-way and more than two way (MANOVA)
8.3. Non-parametric test: $\chi^2$-distribution, Mann Whitney U test, Kruskal Wallis Test

Unit 9. Multivariate Data Analysis

9.1. Factor analysis: Q and R-mode
9.2. Principal component analysis
9.3. Cluster Analysis: Hierarchical, multivariate, and other clustering methods
9.4. Canonical correlation Analysis
9.5. Discriminant Analysis

Unit 10. Statistical and Spatial Model Building

10.1. Models with single and double quantitative independent variables and model testing
10.2. Models with one qualitative independent and quantitative variables
10.3. Model building: stepwise regression

Unit 11. Data Analysis using statistical software: SPSS

Required Readings


**Reference Readings**


Geographic Problems of Nepal

Semester - Four (Core subject)  
Course Code - Geog. 559
Credit Hours – 3  
Lecture Hours - 48
Internal Assessment – 40 Marks  
End Semester Examination- 60 Marks

Aim and Objectives of the Course
The main objective of this course is to provide knowledge to students on physical and human geography related problems and issues of Nepal with a particular emphasis on preparing and presenting scientific seminar paper based on secondary information. This course is divided into two parts. The first part includes lectures by resource person/faculties and the second part is the preparation and presentation of seminar paper by the students on the problems and issues determined by the assigned faculties.

Part (A)

Teaching Hours
Unit 1. Physical Geography 5
   1.1. Physiography
   1.2. Climate
   1.3. Natural vegetation
   1.4. Soil and related issues
Unit 2. Human Resources and Settlement Pattern 5
   2.1. Population characteristics
       (Population growth, distribution, density, migration, ethnic groups, population policy)
   2.2. Settlements Pattern
       (Rural, urban, patterns of growth)
   2.3. Resources
       (Human resources-migration, land-use, water resources, mineral resources)
   2.4. Agriculture Patterns and Problems
       (Characteristics, patterns and productivity, farm-size, land security, land policy)
   2.5. Industry, Trade and Transport
       (Tourism, internal and international trade, transport)

Unit 3. Development and Planning in Nepal 5
   (Regional, rural, urban)
Part B (Practical)
Unit 4. Preparation and Presentation of Seminar Paper on Geographic Problems and Issues of Nepal
(The total marks of internal assessment is based on this part)

Required Reading
Aims and Objectives of the Course

This course aims to provide students the concept of soil geography, pedology, soil genesis, soil formation, classification and soil survey and interpretation and hands-on experience with soils and basic soil laboratory techniques. Students will also learn basic soil survey field methods. This course enables students designing soil survey, laboratory test and analyse the issues related to soil degradation.

Teaching Hours

Unit 1. Concepts and Definitions
1.1. Soil geography
1.2. Pedology
1.3. Soil science and pedometrics
1.4. Soil, pedon and taxa and polypedon

Unit 2. Soil Constituents, Formation and Pedogenesis Process
2.1. Weathering
2.2. Soil-forming factors
2.3. Pedogenesis process

Unit 3. Soil Morphology and Soil Classification
3.1. Soil properties: physical, chemical and biological properties
3.2. Soil morphology: diagnostic, horizon, epipedon, endopedon
3.3. Soil classification/taxonomy

Unit 4. Soil Survey and Mapping
4.1. Methods of soil survey and mapping
4.2. Land system and soil mapping unit
4.3. Soil survey and result analysis

Unit 5. Land Evaluation And Soil Conservation Planning
5.1. Concepts and approaches of land evaluation
5.2. Land capability classification
5.3. Soil suitability evaluation for crop growth
5.4. Soil erosion and conservation
Unit 6. Soils of Nepal

6.1. Geographical /Ecological setting
6.2. Soil types and distribution

Unit 7. Remote Sensing Application in Soil Survey and Mapping

7.1. Spectral characteristics of soils
7.2. Retrieval of soil parameters

Unit 8. Soil Test and Result Analysis

8.1. Routine test (N,P,K,P\textsuperscript{H},OM, Texture)
8.2. Micronutrients

**Note:**
- There will be field investigations (Unit 4) for soil survey and laboratory exercise (Unit 8) for soil sample analysis

**Required Readings**


Reference Readings
Disaster Risk Management

Semester - Third (Optional)  
Course Code - Geog. 521
Credit Hours – 3  
Lecture Hours- 48
Internal Assessment – 40 Marks
End Semester Examination- 60 Marks

Aims and Objectives of the Course
The objectives of this course is to schooling students about different types of hazard and risk and impart the knowledge on the concepts, approaches and methods and enable student to asserts hazard, vulnerability and risk.

Teaching Hours

Unit 1. Introduction  
1.1. Types of hazard by casual factors  
1.2. Disaster management cycle  
1.3. Steps of risk assessment and management

Unit 2. Disaster Risk Management  
2.1. Concept  
2.2. Objectives and importance  
2.3. Steps and processes  
2.4. Mainstreaming DRM into development

Unit 3. Review and Analysis of Existing Policies and Legislative Provisions for Disaster Risk Management  
3.1. Hyogo framework and DRR flagship program  
3.2. Institutional arrangement  
3.3. Standard/guidelines/tools/procedures  
3.4. SWOT analysis on policies  
3.5. Legislative provisions and programs  
3.6. Standard/guidelines and institutional provisions (formal/informal)

Unit 4. Landslide  
4.1. Introduction  
4.2. Landslide causing factors  
4.3. Landslide mechanics  
4.4. Classification of landslides  
4.5. Landslide hazard mapping approaches and techniques  
4.6. Landslide hazard mapping (both statistical and deterministic techniques)  
4.7. Mitigation and adaptation measures including indigenous knowledge and practices
Unit 5. Flood
5.1. Types of floods
5.2. Flood hazards
5.3. Flood hazard mapping techniques
5.4. Mitigation and adaptation measures including indigenous knowledge and practices

Unit 6. Drought, Fire and Earthquakes
6.1. Definition and causes
6.2. Classification of drought
6.3. Drought mitigation and adaptation measures
6.4. Fire disaster and its losses
6.5. Fire risk management
6.6. Introduction to earthquakes
6.7. Mitigation and adaptation measures

Unit 7. Losses
7.1. Types (tangible/intangible/direct/indirect)
7.2. Components and parameters used in vulnerability and risk assessment (exposure, sensitivity, adaptive capacity);
7.3. Exercise for preparation of vulnerability index (district level)

Unit 8. Community Based Hazard
8.1. Concept of community based hazard mapping and assessment
8.2. Steps for community based hazard
8.3. Vulnerability and risk mapping
8.4. Technique and tools for resource mapping
8.5. Technique and tools for hazard and risk mapping
8.6. Technique and tools for institutional mapping
8.7. Exercise for resource mapping and institutional mapping.
Required Readings


Reference Readings


Development Planning

Semester - Third (Optional) 
Credit Hours – 3
Internal Assessment – 40 Marks

Course Code - Geog. 530
Lecture Hours- 48
End Semester Examination- 60 Marks

Aims and Objectives of the Course
This course aims to provide student knowledge of development planning process and analysis and links theoretical construct of development and developmental works with practical application. It greatly helps to clarify and make operational central concepts in current development, institution building and planning process. Further, the course helps to bridge the gap between development planning theory and planning practice with a promotion of more value based, action centered and organization inclusive, approach to development planning requirements of developing countries.

Teaching Hours

Unit 1. Principle, Role and Nature of Development Planning 4
1.1. Concepts, needs, types, process of developing planning
1.2. Problems of development planning

Unit 2. Approaches and Theories of Development Planning 13
2.1. Approaches: Growth versus development, Agriculture versus industrial development, Urban versus rural development, Capital intensive versus labour intensive, Centralization versus de-centralization, Modern versus traditional development, Socio-economic versus physical planning
2.2. Theories: Core-periphery model, Rostow’s model of development, growth pole theory, main stream and alternative development theories, Economic base theory

Unit 3. Strategic Planning for Development 6
3.1. Strategy formulation and analysis of variables
3.2. Identifying and analyzing stakeholder and conceptualizing organizational complexity
3.3. Variable and linkages in comprehensive strategic planning

Unit 4. Perspective on Development Planning 6
4.1. Linkage to general concepts of value and intent
4.2. Strategic versus operational and adjustive planning
4.3. Long range planning to continuous strategic planning
4.4. Process versus blue-print planning
4.5. Level of Planning (Formal/Functional)
4.6. Concept of project planning
4.7. Development works and organizations building

Unit 5. Tools of Prioritization
5.1. Introduction, negotiation and voting
5.2. Technique of ranking
5.3. Prioritization—economic and other criteria

Unit 6. Development planning in Nepal
6.1. Dimension of development
6.2. Growth pole as development strategy
6.3. Regional development planning

Practical
Unit 7. Problem and Means End Analysis
7.1. Conceptualizing development problems
7.2. Generating information
7.3. Ranking and course
7.4. Ranking of cause effect charting
7.5. Problem, abilities, opportunities, constraints and threat analysis

Unit 8. Formulating Indicators of Monitoring and Achievement
8.1. Concepts and characteristics
8.2. Specifying indicators of monitoring and achievement
8.3. Generating information

Required Readings


**Reference Readings**


Geography of Development

Semester - Third (Optional)  Course Code - Geog. 531
Credit Hours – 3  Lecture Hours- 48
Internal Assessment – 40 Marks  End Semester Examination- 60 Marks

Aims and Objectives of the Course
To provide a knowledge and understanding of the students on the key theories and policy debates which inform poverty and development ideas and strategies, as well as the empirical context of different regions of the world. The course also encourages critical thinking and wide reading.

Teaching Hours
Unit 1. Conceptualizing Development  7
  1.1. The geographic scale
  1.2. From development to anti development
  1.3. Thinking about development, history of development, conventional development
  1.4. Critiques of development
  1.5. Spatializing development
  1.6. Relative poverty and inequalities at the global scale
  1.7. Review and assignment

Unit 2. Spatial Planning and Regional Development: Theoretical Contexts/Specilizing Development  7
  2.1. Introduction to development theories: Conventional and non-conventional
  2.2. Conventional theories of development
  2.3. Non-conventional theories of development
  2.4. The globalization of development theory
  2.5. Spatial Inequality
  2.6. Growth Center and Growth Pole Approach
  2.7. Urban Rural Linkages
  2.8. Spatial Change and Equilibrium
  2.9. Review and assignment

Unit 3. Critical Modernism and Social Development  7
  3.1. Critical modernism
  3.2. Radical views
  3.3. Social movements
  3.4. Ethics
3.5. World system approach and development
3.6. Review and assignment

Unit 4. Understandings and Measurements of Poverty
4.1. Key institutions involved in formulating and implementing development policy
4.2. Current policy debates regarding development (e.g. NGOs, civil society, aid, participation, environment, gender)
4.3. Review and assignment

Unit 5. Contemporary Development Issues in Nepal
5.1. Socio-economic issues
5.2. Political Issues
5.3. Environmental Issues
5.4. Women and Gender Issues
5.5. Ethnic Issues
5.6. Review and assignment

Unit 6. Development Intervention
6.1. Forest resources development
6.2. Agricultural development
6.3. Water resources development
6.4. Health and education development
6.5. Review and assignment

Unit 7. Regional Development Efforts in Nepal
3.1. Regional planning in Nepal
3.2. Strategic framework for development

Required Readings


(HContext, Interventions and People’s Aspirations), Department of Agriculture and Natural Resources, Education and Communication Systems, Michigan State University, East Lansing, MI.


The following websites also offer a useful introduction to the course:

World Bank www.worldbank.org

ID21 Research www.id21.org

Institute of Development Studies http://www.ids.ac.uk/ids/researchgateway/index.html


Department for International Development http://www.dfid.gov.uk/

Overseas Development Institute http://www.odi.org.uk/

DFID Developments Magazine http://www.developments.org.uk/

Eldis Gateway to Development Information http://www.eldis.org/
Agriculture and Food Security

Semester - Third (Optional)  
Course Code - Geog.  534
Credit Hours – 3  
Lecture Hours - 48
Internal Assessment – 40 Marks  
End Semester Examination- 60 Marks

Aims and objectives of the course
The major objective of the course is to enable students to the critical view on mountain agriculture, its changing direction and their factors and processes in the context of global changes. Further, it has aims to make them aware on food security situation in Himalayas and adaptation strategies in the changing situation.

Teaching Hours

Unit 1. Introduction to Agriculture Geography  
2

Unit 2. Changing Focus of Agriculture Geography  
5

Unit 3. Mountain Agriculture System  
15
  3.1. Land use change, land fragmentation, labor, market, production and productivity,
  3.2. Agricultural stagnation vs changes
  3.3. Factors and processes of agricultural change
  3.4. Problems and prospects of mountain agriculture in the context of uncertainty (market, climate etc) and adaptation strategies

Unit 4. Population Growth and the Issue of Commercial vs Ecological Agriculture  
5

Unit 5. Food Security  
2
  5.1. Meaning and concept

Unit 6. Dimension of Food Security  
5

Unit 7. Geographical Analysis of Food Production and Food Security  
6

Unit 8. Food Security Situation in Nepal  
8
Required Readings


It is recommended to consult recently published different journal articles.

Reference Readings


**Geography of Tourism**

Semester - Third (Optional)  
Course Code - Geog. 535

Credit Hours – 3  
Lecture Hours- 48

Internal Assessment – 40 Marks  
End Semester Examination- 60 Marks

**Aims and Objectives of the Course**

The objective of the course is to enable the students to understand the basic concepts of tourism and make them able to analyze and evaluate tourist resources and activities. The course will also develop in them skill for planning, development and create awareness in the context of tourism.

**Teaching Hours**

Unit 1. Introduction  
1.1. Concept, Nature, Scope and Approaches  
1.2. Typology of tourism and tourists  
1.3. Relationship between tourism and recreation  
1.4. Relation between geography and tourism  
1.5. Components of tourism

Unit 2. Motivations, Demand and Supply of Tourism  
2.1. Motivational factors, Determinants, Characteristics of tourism demand  
2.2. Methods and problem of measuring recreational demand  
2.3. Measuring the attractiveness of a destination area  
2.4. Tourism product and its characteristics (service orientation, perishability, rigidity, unmovability)  
2.5. The tourist destination and the product (attractions, accessibility, accommodation, and amenities)  
2.6. Factors influencing supply  
2.7. Tourism services, facilities and organizations.  
2.8. Geographers approach in the analysis of recreational supply

Unit 3. Concepts, Models and Theories  
3.1. Concepts (Eco-tourism, Alternative tourism, Sustainable tourism, Pilgrimage tourism, Adventure tourism, Carrying capacity)  
3.2. Models (Maslow’s hierarchy model)  
3.3. Theories (System Theory, Butler’s evolution of tourist destination: Tourism and development theories - Modernization, Dependency, Economic neo-liberalism, Alternative, Scale and control)  
3.4. Tourism and Recreational Development
Unit 4. Factors Influencing Tourism --  
  4.1. Economic: (Positive and negative/direct and indirect, the multiplier, income and expenditure, employment, balance of payment, gross domestic product, investment and development, government revenue etc.)
  4.2. Social: (Congestion, demonstration effect, ownership & employment, commercialization of activities, crime, recognition & defame, health, moral conduct, gambling, religion, language etc.)
  4.3. Cultural: (Inter culturization, commoditization of culture, material form of culture, renaissance of traditional art forms, deterioration of traditional forms, non material form off culture, cultural arrogance etc.)
  4.4. Physical: Environmental, vegetational, water quality, air quality, wild life, geology, eco system, man made environment etc.)

Unit 5. Urban and Rural Tourism  
  5.1. Urban Tourism Experience & Development  
    a. Geographers approach and behavioural issues  
    b. Service quality issues in urban tourism  
    c. Visitor management techniques in urban areas  
  5.2. Rural tourismand Experience and Development  
    a. Conceptualising rural tourism  
    b. Geographer’s approach and contribution  
    c. Rural tourism in historical perspective

Unit 6. Techniques in Tourism Geography  
  6.1. GIS application in tourism analysis and research  
  6.2. Methods selecting a sites for tourism development (checklist, analaque, analysis of residents, inductive reasoning)  
  6.3. Delphi: technique of forcasting the future of tourism development

Unit 7. Planning and Policies  
  7.1. Tourism planning concern with space, place and time  
  7.2. Approaches to tourism planning (Traditional: physical, economic policies), PASOLP (Product’s analysis sequence for outdoor Leisure planning)  
  7.3. Elements in the turism policy making  
  7.4. Tourism and globalization
Required Readings

Annals of Tourism Research (Different Year): A Social Science Journal. Boulder, USA.

Reference Readings

Tourism and Recreation Research. Lucknow India: Centre for Tourism Research and Development.
Eco-tourism and Sustainable Development

Semester - Third (Optional)  
Course Code - Geog. 536
Credit Hours – 3  
Lecture Hours- 48
Internal Assessment – 40 Marks  
End Semester Examination- 60 Marks

Aims and Objectives of the Course
The objective of the course is to enable the students to understand the concepts of eco-tourism and sustainable development, and make them able to analyze, plan and evaluate eco-tourism and sustainability issue and principles.

Teaching Hours

Unit 1. Introduction  
1.1 Definition, Evolution and current status  
1.2. Definition, evolution and current status  
1.3. Linkage of tourism and eco-tourism  
1.4. Protected areas and relationship  
1.5. Mutual benefit of ecotourism and the environment  
1.6. Concepts of Alternative Tourism  
8

Unit 2. Issues in Eco-tourism and Development  
2.1. Sustainable development & tourism  
2.2. Eco-tourism and community Development  
2.3. Eco-tourism and the facilities  
2.4. Eco-tourism and local participation  
2.5. Economic Issues in eco-tourism management  
2.6. New interpretation of Tourism, Environment and Development  
7

Unit 3. Eco-tourism and the Impacts  
3.1. Environmental impact  
3.2. Socio-cultural Impact  
3.3. Economic Impact  
5

Unit 4. Policies and Planning of Protected areas  
4.1. Importance and approaches  
4.2. National, regional, local plan and tourism planning  
4.3. Eco-tourism policy and planning of Nepal  
5

Unit 5. Creating and Managing Tourism in Protected Areas  
5.1. Management Strategy  
5
5.2. Key elements of management plan
5.3. Operators and local community
5.4. Selection of development sites

Unit 6. Technique of Assessment, Monitoring and Management
6.1. Environment impact assessment
6.2. Carrying capacity and limits of change

Unit 7. Sustainable Development and Eco-tourism
7.1. Principles of sustainable development and eco-tourism development
7.2. Partners for sustainable tourism development
7.3. Sustainable tourism planning and management
7.4. Sustainability as a barrier of tourism development

Unit 8. Eco-tourism development and practices in Nepal

Required Readings
Annals of Tourism Research (Various Year & Issue) : A Social Science Journal. Boulder, USA.
Reference Readings


Gender and Development

Semester – Third (Optional)  
Course Code - Geog. 537
Credit hours – 3  
Lecture hour – 48
Internal Assessment – 40 Marks  
End Semester Examination – 60 Marks

Aim and Objectives of the Course
This course aims to provide students conceptual underpinnings for a better understanding of Gender Issues and critical areas of concern in Development, critical analysis of gender and environment relationship, to give a clear understanding of Gender and Resource relations and approaches and methods of Gender Analysis for sustainable development and project formulation. Emphasis is placed also on critical evaluation and analysis of women’s situation and development strategies based on experiences of other countries.

Teaching Hours

Unit 1. Gender and Development: Theoretical Conceptualization  
1.1. Gender and development: An overview of issues,  
1.2. Paradigm shift - WID, GAD, WAD as evolving perspectives and practices,  
1.3. Social and cultural dynamics of gender relations  
1.4. Course review and assignment  

Unit 2. Gender and Development: Policies and Planning  
2.1. Gender planning and development: theory and practice  
2.2. Gender planning in development agencies  
2.3. Women development programs: an overview  
2.4. Gender and technology  
2.5. Course review and assignment  

Unit 3. Development Approaches  
3.1. Welfare approach  
3.2. Basic needs approach  
3.3. Efficiency approach  
3.4. Self-reliance approach  
3.5. Equality- equity and empowerment approach  

Unit 4. Gender Analysis  
4.1. Gender division labor (ascribed and prescribed role of women and man)  
4.2. Classic gender analysis questions  
4.3. Gender analysis steps  
4.4. Gender analytical framework  
4.5. Course review and assignment
Unit 5. Gender and Environment: Capacities, Vulnerabilities, Resources and Livelihoods

5.1. Gender roles in natural resource management
5.2. Gender and disaster
5.3. Gender dimension of climate change
5.4. Gender and climate change analysis
   5.4.1. Context analysis
   5.4.2. Livelihood analysis
   5.4.3. Stakeholder analysis
5.5. Gender and climate change: research tools
   5.5.1. Village resources map
   5.5.2. Seasonal calendar
   5.5.3. Daily activity clocks
   5.5.4. Farming system diagram
   5.5.5. Capacity and vulnerability analysis matrix (CVA Matrix)
5.6. Course review and assignment

Unit 6. Gender and Geography

6.1. The rural environment and gender concerns
6.2. The urban environment and gender concerns
6.3. Eco-region, diversity and gender (mountain, hill and tarai)
6.4. Course review and assignment

Unit 7. A Project on Gender *

*Students are required to prepare a project report on any topic of their interest from Unit 5: Gender and Geography

Required Readings


**Reference Readings**

Aims and Objectives of the Course
This course aims to enable students to understand and examine the concept of social geography. In addition to that the students are able to understand and identity several contemporary inequalities from geographical perspectives. At the end of the course, the students will be able to understand and apply the issues of social and spatial inequalities in examining the situation in Nepal.

Teaching Hours

Unit 1. Conceptual Ideas on Social Geography
  1.1. Concept of social geography
  1.2. Theoretical framework of social geography
  1.3. Social geographical turns
  1.4. Contemporary social geographies

Unit 2. Society, Material Life and Geography
  2.1. The split between “economic” and “social” life
  2.2. Geographical production, process and patterns

Unit 3. Power, Identity and Social Geography
  3.1. Race and ethnicity
  3.2. Geographies of gender and sexuality
  3.3. Age, generation and life course
  3.4. Social organization, system and structure

Unit 4. Social Geography and Social Problems
  4.1. Society, nature and landscape
  4.2. Housing, space and society
  4.3. Crime, space and inequality
  4.4. Geography of poverty

Unit 5. Some Research Approaches in Social Geography
  5.1. An action oriented research in social geography
  5.2. Participatory research in social geography
  5.3. Phenomenology and social geography
  5.4. Humanistic methods in social geography
Unit 6. Changing Social Geography of Nepal

6.1. Ethnic diversification in the country

6.2. Urbanization and ethnic diversification with out to capital city

Required Readings
Geography of Nepal

Semester - Third (Optional) 
Course Code - Geog. 543
Credit Hours – 3 
Lecture Hours- 48
Internal Assessment – 40 Marks 
End Semester Examination- 60 Marks

Aims and Objectives of the Course
The objective of the course is to enable students to understand physical, human and cultural geography of Nepal. The course will familiarize students on various aspects and issues relating to geography of Nepal.

Teaching Hours

Unit 1. Physical Geography
1.1. Making Nepal through geologic times
1.2. Structure, relief and physical divisions
1.3. Climatic characteristics & mechanism of monsoon
1.4. Drainage system & watersheds
1.5. Forest types, distribution and utilization
1.6. Natural resources- soil, water and minerals

14

Unit 2. Human Geography
2.1. Population- characteristics, structures & composition, growth, distribution, migration, occupational characteristics
2.2. Settlement- pattern, growth, distribution, density and associated problems
2.3. Agricultural patterns & problems- characteristics & trends, landholdings, agricultural regions, changing scenario, major crops, agricultural infrastructures and problems
2.4. Industries- Major industries, growth, distribution, problem and prospects, industrial policy
2.5. Tourism- resources, types, development, tourism frontiers, impact, prospect and problem, tourism policy and planning
2.6. Trade and transport – nature & direction

24

Unit 3. Society and Development
3.1. Caste/ethnicity types and distribution
3.2. Geographic pattern of language and language shifts
3.3. Nature of Nepalese society
3.4. Development and planning
3.5. Periodic planning approaches and planning
3.6. Regional, rural and urban planning

10
Required Readings

Reference Readings
CDG. *Geographic Journal of Nepal*. (Various Vol.). Kathmandu: Central Department of Geography.
Migration and Urbanization

Semester - Third (Optional)  
Credit Hours – 3  
Internal Assessment – 40 Marks  

Course Code - Geog. 545  
Lecture Hours- 48  
End Semester Examination- 60 Marks

Aims and objectives of the course
This course aims to enable students to understand and examine the concept, processes and theories of migration and urbanization. The main objective is to facilitate students in understanding the complexity of migration issues, urbanization issues and the links between the two processes. At the end of the course the students will be able to understand and apply the issues of migration and urbanization in examining the situation in Nepal.

Teaching Hours

Unit 1. Conceptualizing Territorial Mobility and Migration  
1.1. The concept of territorial mobility and migration  
1.2. Key terms and categories  
1.3. Conceptualization of migration in traditional societies  
   (Categories of Ghumphir and Basai Sarai)  
1.4. Key issues and debates in migration  

Unit 2. Theories of Migration  
2.1. Laws of migration  
2.2. Theory of migration  
2.3. Model of migration  
2.4. Hypothesis of mobility transition  
2.5. System approach  
2.6. Migration decision making

Unit 3. Geographies of Migration and Work  
3.1. Understanding relationship between migration and work  
3.2. Conventional view  
3.3. Dual labor market hypothesis  
3.4. Labor market segmentation theory  
3.5. Variations on labor market segmentation theory

Unit 4. Migration Studies and Governance of Migration in Nepal  
4.1. Migration studies till 1980s  
4.2. Migration studies 1980-1990s  
4.3. Migration studies after 1990s  
4.4. Population redistribution and foreign employment policies and instruments
Unit 5. Migration Situation in Nepal
5.1. Internal migration - general pattern and trends
5.2. Immigration – pattern and trends
5.3. Refugees – general overview
5.4. External labor migration – trends, patterns and drivers

Unit 6. Urbanization
6.1. The process of urbanization
6.2. Defining urban areas
6.3. Urban urbanism and urbanization
6.4. The concept of the city
6.5 Components of urbanization

Unit 7. Theories of Urban Structure (ecology and structure)
7.1. City structure
7.2. Early human ecology
7.3. Zonal hypothesis
7.4. Alternative theories – Sector, Multiple Nuclei
7.5. Contemporary ecology

Unit 8. World Patterns of Urbanization
8.1. Urbanization in developed countries
8.2. Characteristics of third world cities
8.3. Asian urbanization

Unit 9. Urbanization and Ethnic Diversification in Nepal
9.1. Pattern and trends
9.2. Caste and ethnicity
9.3. Ethnic diversity in urban area

Reference Readings


Available online at http://www.academicjournals.org/JGRP. ISSN 2070-1845 ©2010 Academic Journals


Internet Sources, Latest issues of journals related to Migration (e.g. IMR, APMJ, ML, IM) population and development.
Cartography

Semester - Third (Optional)  Course Code - Geog. 553
Credit Hours – 3  Lecture Hours - 48
Internal Assessment – 40 Marks  End Semester Examination- 60 Marks

Aims and objectives of the course
The objective of this course is to increase students knowledge and skill of map making. It helps to design a good map and convey spatial information in scientific way to map user.

Teaching Hours

A. Theory 16

Unit 1. Introduction to Cartography
  1.1. Introduction
  1.2. History of cartography
  1.3. Cartographic principles
  1.4. Map elements

Unit 2. Map Projections
  2.1. Scale factor and transformations
  2.2. Distortion resulting from map transformation
  2.3. Analysis and visualization of distortion
  2.4. Graphic portrayal of distortions
  2.5. Suitable and commonly used map projections

Unit 3. Cartographic Design
  3.1. Objectives of map design
  3.2. Scope of design (process and result)
  3.3. Perceptual considerations (graphic elements, visual variables and classes of symbols)
  3.4. Perceptual properties of visual variables
  3.5. Design principles

Unit 4. Typography and Lettering
  4.1. Function of lettering
  4.2. Nature of typography
  4.3. Lettering the map
  4.4. Geographical name

Unit 5. Selection and Generalization
  5.1. Selection
  5.2. Concept of generalization
  5.3. Classification, simplification, exaggeration
  5.4. Manipulations
Unit 6. Symbolization (point, line and area)

6.1. Symbolization problems
6.2. Symbolizing geographic features

Unit 7. Symbolization (volume)

7.1. Statistical surface
7.2. Mapping statistical surface
   With (point symbols, line symbols and both point and line)
   With line symbols
   With area symbols
   With line and area symbols

B. Practical 32

Students should prepare following digital maps

1. Preparation of topographic generalized map from large scale to small scale.
2. Preparation of four statistical surface maps of point, line, area and mixed.

Required Readings


Surveying

Semester – Third (Optional)
Credit hours – 3
Internal Assessment – 20 Marks

Course Code - Geog. 555
Lecture hour – 48
End Semester Examination – 30 Marks

Aims and Objectives of the Courses
The main objectives of the course is to enable the students with Global Positioning System (GPS) and its use in mapping and map updating, and with the Tachometric Survey. It also enables them to prepares topographic map of a given area with the help of survey instruments.

A. Theory

Total Credit: 1 credit
Total Teaching Hours: 16

Teaching Hours

Unit 1. Fundamentals of Surveying
  1.1. Basic concepts of surveying
  1.2. Types, trend and recent developments,
  1.3. Application of GIS surveying

Unit 2. Triangulation

Unit 3. Leveling
  3.1. Direct
  3.2. Indirect

Unit 4. Traversing
  4.1. Open
  4.2. Closed

Unit 5. Contouring

Unit 6. Global Positioning System
  6.1 Introduction
  6.2 Use in mapping and map updating

Unit 7. Tachometric Surveying
  7.1 Introduction
  7.2 Use in mapping and map updating
**Required Readings**

**II. Practical**

<table>
<thead>
<tr>
<th>Unit</th>
<th>Teaching Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unit 1. Triangulation</td>
<td>3</td>
</tr>
<tr>
<td>Unit 2. Leveling</td>
<td>4</td>
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<tr>
<td>Unit 3. Contouring</td>
<td>4</td>
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<tr>
<td>Unit 4. Global Positioning System</td>
<td>10</td>
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<tr>
<td>Unit 5. Tachometric Surveying</td>
<td>8</td>
</tr>
<tr>
<td>Unit 6. Project Work</td>
<td>3</td>
</tr>
<tr>
<td>6.1. Project work: Preparation of topographical map of the field study area.</td>
<td></td>
</tr>
</tbody>
</table>

**Note:** Survey Camp will not be less than two weeks and is compulsory for the completion of this course.
### Applied Fluvial and Glacial Geomorphology (Practical)  
(To be developed)

- **Semester**: Third (Optional)  
- **Course Code**: Geog. 517  
- **Credit hours**: 3  
- **Lecture hours**: 48  
- **Internal Assessment**: 40 Marks  
- **End Semester Examination**: 60 Marks

### Climate Modeling  
(To be developed)

- **Semester**: Third (Optional)  
- **Course Code**: Geog. 518  
- **Credit hours**: 3  
- **Lecture hours**: 48  
- **Internal Assessment**: 40 Marks  
- **End Semester Examination**: 60 Marks

### Environmental Impact Assessment  
(To be developed)

- **Semester**: Third (Optional)  
- **Course Code**: Geog. 520  
- **Credit hours**: 3  
- **Lecture hours**: 48  
- **Internal Assessment**: 40 Marks  
- **End Semester Examination**: 60 Marks
Peri-Glacial Geomorphology
(To be developed)

Semester - Third (Optional) Course Code - Geog. 522
Credit hours – 3 Lecture hours- 48
Internal Assessment – 40 Marks End Semester Examination- 60 Marks

Natural Resource Management
(To be developed)

Semester - Third (Optional) Course Code - Geog. 523
Credit hours – 3 Lecture hours- 48
Internal Assessment – 40 Marks End Semester Examination- 60 Marks

Watershed Management
(To be developed)

Semester - Third (Optional) Course Code - Geog. 524
Credit hours – 3 Lecture hours- 48
Internal Assessment – 40 Marks End Semester Examination- 60 Marks
Environmental Geography
(To be developed)

Semester - Third (Optional)     Course Code - Geog. 525
Credit hours – 3                Lecture hours - 48
Internal Assessment – 40 Marks  End Semester Examination- 60 Marks

Global Change and Adaptation
(To be developed)

Semester - Third (Optional)     Course Code - Geog. 526
Credit hours – 3                Lecture hours - 48
Internal Assessment – 40 Marks  End Semester Examination- 60 Marks

Water Resources Management
(To be developed)

Semester - Third (Optional)     Course Code - Geog. 527
Credit hours – 3                Lecture hours - 48
Internal Assessment – 40 Marks  End Semester Examination- 60 Marks
Regional Development Planning  
(To be developed)

Semester - Third (Optional)  
Course Code - Geog. 528
Credit hours – 3  
Lecture hours - 48
Internal Assessment – 40 Marks  
End Semester Examination- 60 Marks

Land Use Planning  
(To be developed)

Semester - Third (Optional)  
Course Code - Geog. 529
Credit hours – 3  
Lecture hours - 48
Internal Assessment – 40 Marks  
End Semester Examination- 60 Marks

Urban Development Planning  
(To be developed)

Semester - Third (Optional)  
Course Code - Geog. 532
Credit hours – 3  
Lecture hours - 48
Internal Assessment – 40 Marks  
End Semester Examination- 60 Marks
Rural Development Planning  
(To be developed)

Semester - Third (Optional)  
Credit hours – 3  
Internal Assessment – 40 Marks  
Course Code - Geog. 533  
Lecture hours - 48  
End Semester Examination- 60 Marks

Advanced Political Geography  
(To be developed)

Semester - Third (Optional)  
Credit hours – 3  
Internal Assessment – 40 Marks  
Course Code - Geog. 538  
Lecture hours - 48  
End Semester Examination- 60 Marks

Geography of Transportation  
(To be developed)

Semester - Third (Optional)  
Credit hours – 3  
Internal Assessment – 40 Marks  
Course Code - Geog. 539  
Lecture hours - 48  
End Semester Examination- 60 Marks
Population and Development  
(To be developed)

Semester - Third (Optional)  
Credit hours – 3  
Internal Assessment – 40 Marks  
Course Code - Geog. 540  
Lecture hours - 48  
End Semester Examination- 60 Marks

Economic Geography  
(To be developed)

Semester - Third (Optional)  
Credit hours – 3  
Internal Assessment – 40 Marks  
Course Code - Geog. 542  
Lecture hours - 48  
End Semester Examination- 60 Marks

Geography of Social Wellbeing  
(To be developed)

Semester - Third (Optional)  
Credit hours – 3  
Internal Assessment – 40 Marks  
Course Code - Geog. 544  
Lecture hours - 48  
End Semester Examination- 60 Marks
### Geography of Human Resources

(To be developed)

<table>
<thead>
<tr>
<th>Semester - Third (Optional)</th>
<th>Course Code - Geog. 546</th>
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</thead>
<tbody>
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<td>Credit hours – 3</td>
<td>Lecture hours - 48</td>
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<tr>
<td>Internal Assessment – 40 Marks</td>
<td>End Semester Examination- 60 Marks</td>
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</table>

### Spatial Planning

(To be developed)

<table>
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<th>Course Code - Geog. 547</th>
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<tbody>
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<td>End Semester Examination- 60 Marks</td>
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### Geography of Health

(To be developed)

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<th>Semester - Third (Optional)</th>
<th>Course Code - Geog. 548</th>
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<td>Internal Assessment – 40 Marks</td>
<td>End Semester Examination- 60 Marks</td>
</tr>
</tbody>
</table>
Cultural Geography
(To be developed)

Semester - Third (Optional)
Credit hours – 3
Internal Assessment – 40 Marks
Course Code - Geog. 549
Lecture hours - 48
End Semester Examination- 60 Marks

Ethno Geography
(To be developed)

Semester - Third (Optional)
Credit hours – 3
Internal Assessment – 40 Marks
Course Code - Geog. 550
Lecture hours - 48
End Semester Examination- 60 Marks

Public Policy and Governance
(To be developed)

Semester - Third (Optional)
Credit hours – 3
Internal Assessment – 40 Marks
Course Code - Geog. 551
Lecture hours - 48
End Semester Examination- 60 Marks
Industrial Geography
(To be developed)

Semester - Third (Optional)  Course Code - Geog. 552
Credit hours – 3  Lecture hours - 48
Internal Assessment – 40 Marks  End Semester Examination- 60 Marks

Advanced Applied GIS/RS (Practical)
(To be developed)

Semester - Third (Optional)  Course Code - Geog. 554
Credit hours – 3  Lecture hours - 48
Internal Assessment – 40 Marks  End Semester Examination- 60 Marks