

**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

#### Semester I:

	Course Code	Subject	Credit hrs.
Core Subjects	Geog 551	Geographical Thought –I	3
	Geog 553	Geomorphology – I	3
	Geog 555	Human Geography-I	3
Compulsory Subjects	Geog 563	GIS-I	3
	Geog 565	RS – I	3
<b>Total</b>			<b>15</b>

#### Semester II:

	Course Code	Subject	Credit hrs.
Core Subjects	Geog 552	Geographical Thought –II	3
	Geog 554	Geomorphology – II	3
	Geog 556	Human Geography-II	3
Compulsory Subjects	Geog 561	Research Methods in Geography-I	3
	Geog 564	GIS-II	3
	Geog 566	RS – II	3
<b>Total</b>			<b>18</b>

**Semester III:**

	<b>Course Code</b>	<b>Subject</b>	<b>Credit hrs.</b>
Core Subjects	Geog 557	Region, Regionalism and Regional Analysis	3
Compulsory Subjects	Geog 558	Climate, Hydrology and Bio-Geography	3
	Geog 562	Research Methods in Geography-II	3
Optional Subjects		Optional I	3
		Optional II	3
		Optional III	3
<b>Total</b>			<b>18</b>

**Semester IV:**

	<b>Course Code</b>	<b>Subject</b>	<b>Credit hrs.</b>
Compulsory Subjects	Geog 559	Geographical Problems of Nepal	3
	Geog 560	Thesis	9
<b>Total</b>			<b>12</b>

**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

# GEOGRAPHIC THOUGHT – I

Semester – First

Course No: Geog. 551

Credit hours – 3

Lecture hour – 48

Internal Assessment – 20

End Semester Examination - 30

## 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

7

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

7

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

7

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

<b>Unit 4: Paradigms and Revolutions</b>	<b>7</b>
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	
<b>Unit 5: Major Geographic Ideas/Concepts that changed the World</b>	<b>7</b>
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	
<b>Unit 6: Some Geographical Binaries and their Deconstruction</b>	<b>7</b>
6.1 Nature: Culture	
6.2 Man: Women	
6.3 Global: Local	
6.4 Time: Space	
<b>Unit 7: Processes in Space and Place</b>	<b>6</b>
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

- Agnew, J. and Duncan, J.S. (eds.) (2011). *Companion to Human Geography*. London: Wiley Blackwell.
- Castree, N. (2005). *Nature*. London: Routledge.
- Cloke, P.J and Johnston, R. (2005). *Spaces of Geographical Thought: Deconstructing Human Geography's Binaries*. SAGE Publication.
- Dixhit, R.D. (1997). *Geographical Thought: A Contextual History of Ideas*. New Delhi: Prentice Hall of India.
- Elden, S. (2009). *Philosophy and Human Geography* (the philosophical tradition: early Greek thought, Aristotle, medieval philosophy, Descartes and Modern Philosophy – Kant, Positivism, Humanism and Marxism, Positivism in contemporary geography).
- Hanson, S. (ed.) (1997). *Ten Geographic Ideas That has Changed the World*. New Jersey: Rutgers University Press.
- Holt-Jensen, A. (1999). *Geography – History and Concepts: A Student's Guide*. USA: SAGE Publications.
- James, P.E. and Martin, G.F. (1981). *All Possible Worlds: A History of Geographical Ideas*. New York: John Wiley & Sons.
- Johnston, R.J., Taylor, P.J. and Watts, M.J. (1995). *Geographies of Global Change: Remapping the world in the Late Twentieth Century*. Oxford, UK: Blackwell Publishers.
- Pattison, W. D. (1964). The four traditions of geography. *Journal of Geography*: 211-216.
- Peet, R. (1998). *Modern Geographical Thought*. Oxford: Blackwell Publications, Ltd.
- NRC (1997), *Rediscovering Geography: New Relevance for Science and Society*. Washington DC: National Academy Press.
- Robinson, J.L. (.....). *A New look at the Four Traditions of Geography*. Vancouver: University of British Columbia Press.
- Woodward, D. (1985). Reality, symbolism, time and space in medieval world maps. *Annals of the Association of American Geographers* 75(4): 510-521.
- Young, R.W. (2008). Paradigms in Geography: Implications of Khun's Interpretation of Scientific Inquiry, *Australian Geographical Studies*: 204-209.

# Geo-morphology-I

Semester – First

Credit hours – 3

Course No: Geog. 553

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

4

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

5

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

5

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	
<b>Unit 4:</b>	<b>Hillslope Process and Forms</b>	<b>4</b>
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	
<b>Unit 5:</b>	<b>Drainage Basin and Morphometry</b>	<b>5</b>
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	
<b>Unit 6:</b>	<b>Fluvial Processes and Landforms</b>	<b>7</b>
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**

**15**

(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**

- Chorley, R.J., Schumm, S.A., Sugden, D.E. (1985). *Geomorphology*. London: Methuen.
- Ritter D.E., Kochel R. C., and Miller J.R. (2002). *Processes Geomorphology*. Fourth Edition. New York: McGraw-Hill Higher Education.
- Selby, M.J. (1993). *Hillslope Materials Processes*, Second Edition. Oxford: Oxford University Press.

### **References**

- Burbank, D.W., Anderson, R.S., (2001). *Tectonic Geomorphology*. 611 Malden. Blackwell Science.
- Reineck H.-E. and Singh I. B., (1980). *Depositional Sedimentary Environments with Reference to Terrigenous Clastics*. Berlin Heidelberg, New York: Springer-Verlag.
- Hengl, T., Reuter, H.I. (Eds.), (2009). *Geo-morphometry: Concepts, software, applications. Developments in Soil Science, 33*. Amsterdam: Elsevier (Unit 6)
- Knighton, A.D. (1998). *Fluvial Forms and Processes: A New Perspective*. London: Arnold.
- Vestappen, H.T, (1983). *Applied Geomorphology: Geomorphological Survey Environmental Developer*, Amsterdam-Oxford-New York: Elsevier.

### **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

Course No: Geog. 555

Credit hours – 3

Lecture hour – 48

Internal Assessment – 20

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.

	<b>Teaching Hours</b>
<b>Unit 1: General Introduction</b>	<b>6</b>
1.1 Human Geography, Ecology, and Human Ecology	
1.2 Culture and cultural landscape	
1.3 Changing attribute of place and region	
<b>Unit 2: Human Population Ecology</b>	<b>10</b>
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	
<b>Unit 3: Interactions between People and Environment</b>	<b>13</b>
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	
<b>Unit 4: Cultural Ecology and Adaptation Pattern in the Himalayas</b>	<b>5</b>
4.1 Agro-ecology and cultural zones	
4.2 Adaptation strategies and patterns	
<b>Unit 5: Case Study On Resource Management and Adaptation Pattern (Practical)</b>	<b>10</b>
a detail study of a selected region i.e. Annapurna, Arun Valley, Karnali, Chitwan valley, Helambu, Panchkhal Valley	
<b>Unit 6: Sustainability: Concept, Issues and Challenges</b>	<b>4</b>

### Required References

- Fellman, J.D; Getis, A; Getis, J. (1999). *Human Geography: Landscape of Human Activities* (6<sup>th</sup>ed). WCB/McGraw-Hill.
- Zurick, D and Karan, P. P. (1999). *Himalaya: Life on the edge of the World*. Baltimore and London: The Johns Hopkins University Press.
- Sharma, P. (2008). *Unravelling the Mosaic: Spatial Aspects of Ethnicity in Nepal*. Lalitpur: Himal Books.
- Marten, G.G. (2001). *Human Ecology: Basic Concepts for Sustainable Development*. London: Earthscan.
- Fellman, J.D; Getis, A; Getis, J. (1999). *Human Geography: Landscape of Human Activities* (6<sup>th</sup>ed). WCB/McGraw-Hill.
- Zurick, D and Karan, P. P. (1999). *Himalaya: Life on the Edge of the World*. Baltimore and London: The Johns Hopkins University Press.
- Ives, J.D. (2006) (2<sup>ND</sup> Ed.). *Himalayan Perception: Environmental Change and the Well-being of Mountain Peoples*. Lalitpur: Himalayan Association for the Advancement of Sciences (HimaAAS).
- Mitchell, B. 2002 ( 2<sup>ND</sup> Ed.). *Resource and Environmental Management*. Harlow: Pearson.
- David Guillet, D. (1983). Toward a cultural ecology of mountains: The Central Andes and the Himalayas compared. *Current Anthropology* ,Vol. 24 (5): 561-574.
- Chaudhary, R.P.; Aase, T.H.; Vetaas, O.R, and Subedi, B.P. (Eds) (2007). *Local Effects of Global Changes in the Himalayas. Manang, Nepal*. Kathmandu: TU and UiB.
- Bishop, B. (1990). *Karnali Under Stress*. Chicago: Department of Geographic Research Publications.
- Mitchell, B. (2002). *Resource and Environmental Management*\_(2<sup>ND</sup> Ed.). Harlow: Pearson.

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

Course No: Geog. 563

Credit hours – 3(1 Theory+2 Practical)

Lecture hours – 48(16 Theory+32 Practical)

Internal Assessment – 20

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

Total Credit: 1 credit  
Total Teaching Hours: 16

### Teaching Hours

<b>Unit 1: Fundamentals of GIS</b>	<b>3</b>
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	
<b>Unit 2: Representing Real World in GIS</b>	<b>2</b>
2.1. Types of Geographic/Spatial data,	
2.2. Nature and Sources of Spatial Data	
<b>Unit 3: GIS and Cartography</b>	<b>3</b>
3.1. Idea of Map	
3.2. Mapping concepts and techniques	
3.3. Map projections	
<b>Unit 4: GIS Data Structure</b>	<b>4</b>
4.1. GIS data structure: Vector, Raster and TIN data structure	
4.2. GIS Data Modeling (Conceptual and logical modeling and implementation)	
<b>Unit 5: GIS Data Processing and Management</b>	<b>2</b>
5.1. GIS Data Input methods	
5.2. Data Quality: measurements, representation and accuracy	
5.3. Spatial and Attribute Queries	
<b>Unit 6: Thematic Mapping (Spatial and Attribute mapping)</b>	<b>2</b>
6.1 Data Integration for Mapping	
6.2 Map Design	

## Required Readings

Lo, C.P. and Yeung, K.W. Albert (2002), *Concepts and Techniques of Geographical Information Systems*. London: Prentice Hall.

Demers, M.N. (2000). *Fundamentals of Geographic Information Systems*. John Wiley and Sons.

Lo, C.P. and Yeung, K.W. Albert (2002), *Concepts and Techniques of Geographical Information Systems*. London: Prentice Hall.

Heywood, I. Sarah Cornelius and S Carter(2002). *An Introduction to Geographic Information Systems*. Addison Wesley Longman, Pearson Education Asia

## II. Practical

**Total Credit: 2 credits**  
**Total Teaching Hours: 32**  
**Teaching Hours**

<b>Unit 1. Representing Real World in GIS</b>	<b>3</b>
1.1. Spatial Referencing,	
1.2. Scale and Resolution	
<b>Unit 2. Map scale and Projections</b>	<b>4</b>
2.1. Transformation: Geographic (Spherical, Latitudes and Longitudes) to Projected plane (Planer, Metric),	
<b>Unit 3. GIS Data Structure</b>	<b>4</b>
3.1. Geometry and topology	
3.2. Topological and spatial relationships	
<b>Unit 4. GIS Data Processing and Management</b>	<b>10</b>
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	
<b>Unit 5. Thematic Mapping</b>	<b>8</b>
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	
<b>Unit 6. Project Work</b>	<b>3</b>
6.1. Project work: creation and editing of spatial data, collection of attribute data, data integration and mapping.	
6.2. Project Report.	

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

### **Required Readings**

- Lo, C.P. and Yeung, K.W. Albert (2002), *Concepts and Techniques of Geographical Information Systems*. London: Prentice Hall.
- Heywood, I. Sarah Cornelius and S Carter(2002). *An Introduction to Geographic Information Systems*. Longman, Hong kong: Pearson Education Asia
- Demers, M.N. (2000). *Fundamentals of Geographic Information Systems*. New York: John Wiley and Sons.

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

### **Required Readings**

- Booth, B. and Andy, Mitchell (2001). *Getting Started with ARCGIS: GIS ESRI*. ESRI Press. (ebook free online access available )
- Pradhan, P.K., Shrestha, S. and Sharma, P. (2001), *GIS for Local Development Exercises: A Hands-on Exercise Manual*. Kathmandu: Central Department of Geography, TU.

### **Reference Readings**

- Booth, B. and Andy, Mitchell (2001). *Getting Started with ARCGIS: GIS ESRI*.ESRI Press. (ebook free online access available )
- Demers, M.N. (2000). *Fundamentals of Geographical Information Systems*. John Wiley and Sons.
- Heywood, I. and, Sarah, Cornelius and Steve Carver. (2000). *An Introduction to Geographical Information Systems*. Addison Wesley Longman. Hong Kong: Pearson Education Asia.
- Lo, C.P. and Yeung, K.W. Albert (2002). *Concepts and Techniques of Geographical Information Systems*. London: Prentice Hall.
- Pradhan, P.K., Shrestha, S. and Sharma, P. (2001). *GIS for Local Development Exercises: A Hands-on Exercise Manual*. Kathmandu: Central Department of Geography, TU.
- Aronoff, S. (1989). *Geographic Information Systems: A Management Perspective*. Ottawa: WDL Publications.
- Birkin, M., Clarke G., Clarke M., and Wilson (1996). *An Intelligent GIS: Location Decisions & Strategic Planning*. Cambridge, UK: Geo-information International.
- Burrough, P. (1987). *Principles of Geographical Information Systems for Land Resource Assessment*, Oxford: Clarendon Press.
- Chakraborty, D. and Sahoo, R.N. (2007). *Fundamentals of GIS*. India: Viva Books.



# 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.

	<b>Teaching Hours</b>
<b>Unit 1: Introduction to Remote Sensing</b>	<b>3</b>
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	
<b>Unit 2: Electromagnetic Radiation (EMR) and Interaction</b>	<b>6</b>
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.	
<b>Unit 3: Orbit, Platforms and Resolutions</b>	<b>3</b>
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	
<b>Unit 4: Remote Sensing Types, and Sensors</b>	<b>10</b>
4.1 Multispectral remote sensing	
i. Principles and characteristics	

- ii. Satellites and sensor types
- iii. Application
- 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**

**8**

- 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**

**15**

- (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 parallex 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**

ITC (2000). *Principles of Remote Sensing*. The Netherlands: International Institute for Aerospace Survey and Earth Sciences. (Free digital version available from ITC website).

Jensen, J.R. (2007). *Remote Sensing of the Environment-An Earth Resource Perspective*. Upper Saddle River(2nd ed.), NJ, Prentice Hall. 592 pp. (Free power point and pdf lecture slides are available from websites).

Lillisand T. M. and Keifer, R.W. (1994). *Remote Sensing and Image Interpretation*. New York: John Willey.

### **References**

Campbell, J.B. (2007). *Introduction to Remote Sensing*. (4<sup>th</sup> ed). Guilford Press.

Sabins. F.F. (1997). *Remote Sensing and Principles of Image Interpretation*. New York: W.H. Freeman.

### **Website links**

[http://geography.tamu.edu/class/aklein/geog361/lecture\\_notes.html](http://geography.tamu.edu/class/aklein/geog361/lecture_notes.html)

*The Remote Sensing Tutorial* - <http://rst.gsfc.nasa.gov/>

*Various websites suggested by tutors*

Remote Sensing Journals (National and International)

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



**Semester Based Courses of Study for**  
**Master of Art in Geography**  
**Second Semester**

**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

#### Semester I:

	Course Code	Subject	Credit hrs.
Core Subjects	Geog 551	Geographical Thought –I	3
	Geog 553	Geomorphology – I	3
	Geog 555	Human Geography-I	3
Compulsory Subjects	Geog 563	GIS-I	3
	Geog 565	RS – I	3
<b>Total</b>			<b>15</b>

#### Semester II:

	Course Code	Subject	Credit hrs.
Core Subjects	Geog 552	Geographical Thought –II	3
	Geog 554	Geomorphology – II	3
	Geog 556	Human Geography-II	3
Compulsory Subjects	Geog 561	Research Methods in Geography-I	3
	Geog 564	GIS-II	3
	Geog 566	RS – II	3
<b>Total</b>			<b>18</b>

**Semester III:**

	<b>Course Code</b>	<b>Subject</b>	<b>Credit hrs.</b>
Core Subjects	Geog 557	Region, Regionalism and Regional Analysis	3
Compulsory Subjects	Geog 558	Climate, Hydrology and Bio-Geography	3
	Geog 562	Research Methods in Geography-II	3
Optional Subjects		Optional I	3
		Optional II	3
		Optional III	3
<b>Total</b>			<b>18</b>

**Semester IV:**

	<b>Course Code</b>	<b>Subject</b>	<b>Credit hrs.</b>
Compulsory Subjects	Geog 559	Geographical Problems of Nepal	3
	Geog 560	Thesis	9
<b>Total</b>			<b>12</b>

**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



## **GEOGRAPHICAL THOUGHT – II**

Semester – Second

Course No: Geog. 552

Credit hours – 3

Lecture hour – 48

Internal Assessment – 40

End Semester Examination - 60

### **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.

	<b>Teaching Hours</b>
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:

- Adhikari, J. (2010). *Geography Education and Research in Nepal*. Kathmandu: Baha Occasional Paper 3, Social Science Baha and Himal Books.
- Bonnett, A. (2004). Geography on the world discipline: Connecting popular and academic geographic imagination. *Area*. Vol 35: 55-63.
- CNAS. (.....). *Social Studies in Nepal*. Kathmandu: Centre for Nepal and Asian Studies (CNAS).
- Crang (2009). *Methodology*. In Gregory, Johnston, Pratt, Watts &Whatmore, West Sussex (eds.), UK: Wiley-Blackwell: 457-459.
- Cresswell, T. (2004). *Place –A Short Introduction*. Australia: Blackwell.
- Cutter, S. I., Golledge, R. and Graf, W. I. (2002). The big question in geography. *Professional Geographers*. Vol 54: 305-317.
- Dikshit, R. D. (1997). *Geographical Thought: A Contextual History of Ideas*. New Delhi: PHI Learning Pvt. Ltd.
- Harvey, D. (1984). The history and present condition of geography. *Professional Geographers*. Vol 36: 1-11.
- Holt-Jensen, A. (2006). *Geography, History and Concepts: A Students' Guide*. London, Thousand Oaks and New Delhi: SAGE Publications.
- Hussain, M. (2004). *Evolution of Geographical Thought*. 5<sup>th</sup> Edition, Rawat Publication.
- Karan, P. P. (1992). Development of Geographical Thought in India. *The National Geographical Journal of India*. Vol 34: 179-193.
- Low, S. M. & Altman, I. (1992). *Place Attachment: A Conceptual Inquiry*. New York and London: Plenum Press. 1–12.
- NCCR, NGS & CDGTU (2005). *Geography and Geographers' Work in Nepal*. Kathmandu: NCCR, Nepal Geographical Society and Central department of Geography, Tribhuvan University.
- Peet, R. (1998). *Modern Geographical Thought*. Oxford: Wiley-Blackwell.
- Shaw, I. G. R., Dixon, D. P. & Jones, J. P. (2010). "Introduction to theorizing our world" In Gomez & Jones (eds.). *Research Methods in Geography*. Oxford, UK: Wiley-Blackwell: 1-25.
- Singh R.L. and Singh Rana, P.B. (eds.) (1992). *The Roots of Indian Geography: Search and Research*. Varanasi: The National Geographical Society of India.

- Subedi, B. P. & Joshi, B.D. (1997). Geography in Nepal: An Outline for Discussion. In: Khatri, P.K. (ed.), *Social Sciences in Nepal*. Kathmandu: CNAS.
- Subedi, B. P. (2014). *State of Geography Teaching and Research in Nepal: A Review and Reflection*. Martin Chautari and Himal Books.
- Subedi, B.P. & Poudel, P.C. (2005). Geography and geographers work in Nepal: An introduction. In B.P. Subedi and P.C. Poudel (eds.), *Geography and Geography Work in Nepal: Reflection on Mountain Environment and Human Activities*. Kathmandu: Nepal Geographical Society, Central Department of Geography and NCCR: 1-10.
- Yi Fu Tuan (1977). *Space and Place: The Perspective of Experience*. London: University of Minnesota Press.

## Geomorphology-II

Semester – Second

Course No: Geog. 554

Credit hours – 3

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 intend to cover interrelationship between climate and landforms as well as tool and techniques of applied geomorphology to the students.

	<b>Teaching Hours</b>
Unit 1. Glacier Processes and Landform	8
1.1 Glaciers and glacial mechanics	G
a) Glacial origin and types	
b) The Mass balance	
c) Movement of glaciers	
d) Ice structures	
1.2 Erosion processes and features	
a) Minor subglacial features	
b) Cirques	
c) Glacial troughs	
1.2 deposits and depositional features	D
a)	D
rift types	
b)	T
the depositional framework	
c)	M
marginal ice contact feature	
d)	I
interior ice contact features	
e)	P
periglacial features	
1.3 geomorphological effects of former glaciation	G
1.4 hazards in glacier environment	H

Unit 2. Periglacial Processes and Landforms	6
2.1 Introduction and characteristics	
2.2 Permafrost and ground ice	
a) Definition and thermal characteristics	D
b) Distribution thickness and origin	D
c) Periglacial hydrology	P
d) Frost action and types	F
e) Erosion and mass movements	N
2.2 Periglacial landforms	P
a) Landforms associated with permafrost	L
b) Patterned ground	P
c) Landforms associated with mass movement	L
d) Elicited periglacial features and their significance	R
2.3 Hazards, environmental and engineering considerations	H
Unit 3. Aeolian Environment: Geomorphic Processes and Landform	3
3.1 Driving force and resisting environment	D
3.2 Wind erosion and landform features	W
3.3 Transportation and depositional features	T
3.4 Aeolian hazards	A
Unit 4. Karst Processes and Landform	5
4.1 Definition and characteristics	D

4.2		P
	rocesses and their controls	
4.3		K
	arst hydrology and drainage characteristics	
4.4		K
	arst landforms	
	a)	S
	urficial landform	
	b)	L
	imestone caves	
4.5		H
	azards and environmental consideration	
Unit 5. Climate and Landforms		8
4.1		M
	orphogenetic landform	
	a)	H
	umid topical	
	b)	T
	ropical wet dry landform	
	c)	A
	rid and semiarid landform	
	d)	C
	old region landform	
4.2		C
	limate change and polygenetic landform	
	a)	T
	ertiary climate changes	
	b)	P
	leistocene climate changes	
	c)	H
	olocene and historical climate changes	
4.3		G
	geomorphic affect of climate change	
Unit 6. Practical Geomorphology		15
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**

Ritter D.E., Kochel R. C., and Miller J.R. (2002). *Processes Geomorphology*. Fourth Edition. New York: McGraw-Hill Higher Education.

Selby, M.J. (1993). *Hillslope Materials Processes*. Second Edition. London: Oxford University Press.

Chorley, R.J., Schumm, S.A., Sugden, D.E. (1985). *Geomorphology*. Methuen London

M. Gutierrez Elorza (2005). *Climatic Geomorphology*. Elsevier

Vestappen, H.T. (1983). *Applied Geomorphology: Geomorphological Survey Environmental Developers*. Amsterdam-Oxford-New York: Elsevier.

Bridge, J.S. (2005). *Rivers and Floodplains: Form, Processes and Sedimentary Records*. United States: Blackwell Publishing Company.

Hengl, T., Reuter, H.I. (Eds.) (2009). *Geomorphometry: Concepts, Software, Applications*. 671 *Developments in Soil Science. Vol 33*. Amsterdam:Elsevier.

**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.

<b>Course Units</b>	<b>Teaching Hours</b>
Unit 1. Settlement Concepts: Geography and Settlement, Approaches to settlement studies, Settlement and Perception, Site and Situation	2
Unit 2. The Classification of Human settlement: Rural and Urban	12
2.1 Rural settlements	
a) ural-urban dichotomy	R
b) lassification and types of rural settlement	C
c) istribution and pattern of rural settlement	D
– he distribution of rural settlement with special reference to Nepal	T
– attern of rural settlement	P
– actors of favouring nucleation and dispersion	F
– erits and demerits of nucleated and dispersed settlement	M
d) orphology of rural settlement with special reference to Nepal	M
e) ural settlement and resources use	R
f) ural market centers - periodic markets: concepts and issues	R
g) ural settlement planning: policies and programmes	R
2.2 Urban Settlements	18



a)	conceptual/definitional issues of urban areas including urban ecology and territoriality	C
b)	causes of urbanization	C
c)	trend of urbanization with particular reference to Nepal	T
d)	size and spacing of urban places: models and theories	S
–	– the rank size rule	T
–	– the primate city model, Kathmandu: The primate city	T
–	– functional hierarchy and the settlement system	F
–	– the central place theory	T
e)	urban morphology: Central Business District (CBD) and its internal structure	U
f)	theories of urban structure/land use	T
–	– the concentric zone model by E.W. Burgess	T
–	– the wedge or sectoral model by Homer Hoyt and M.R. Davis	T
–	– the multiple nuclei model by C.D. Harris and E.L. Ullman	T
g)	land and economics and urban land use	L
h)	urban social and environmental issues	U
–	– social problems of cities: Slums and squatter settlements and crime	S
–	– urban environmental issues: Different forms of pollution, solid waste management, ecological footprints in cities	U
i)	urbanization strategies and policies in Nepal	U

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) 16

### 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

- Aitken Stuart and Valentine Gill (Ed.) (2006). *Approaches to Human Geography*. New Delhi: SAGE Publications.
- Breeze Gerald. (1966). *Urbanization in Newly Development Countries*. USA: Englewood Cliff.
- Carter, H. (1981). *Urban Geography*. 3rd edition, New Delhi: Arnold-Heinemann.
- Chisholm, M. (1967). *Rural Settlements and Land Use*. New York: John Wiley.
- Daniels, Peter, Bradshaw, Michael, Shaw, Denis and Sidaway, James (eds), (2008). *An Introduction to Human Geography: Issues for the 21st Century*. Third Edition. U.K.: Pearson Education Limited.
- Ghosh, S. (1998). *Settlement Geography*. Kolkata: Orient Longman Ltd.
- Hudson F. S. (1976). *A Geography of Settlements*. London: Mac Donald and Evans.
- Husain, Majid (2009). *Models in Geography*. India: Rawat Publications.
- Johnston, R.J. (1984). *Urban Geography*. London: Penguin.
- Karen, P. P., Ishii, H., Kobayashi, M., Bajracharya, C., David Zuric (eds). (1994). *Nepal Development and Change in a Landlocked Himalayan Kingdom*. Tokyo: Tokyo University of Foreign Studies.
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- Singh R. L. (1972). *Rural Settlements in Monsoon Asia*. Varanasi: Banaras Hindu University,

Singh, R. Y. (1994). *Geography of Settlements*. New Delhi: Rawat Publishing Company.

## 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

	<b>Total Credit: 1 credit</b>
	<b>Total Teaching Hours: 16</b>
	<b>Teaching Hours</b>
Unit 1: GIS Database and Database Management System (DBMS): -	4
1.1 Database management	D
1.2 Types of database management system	T
1.3 Data documentation	
1.4 Geodatabase: Rules, topology and versioning	
Unit 2: Spatial Data Modelling:-	3
2.1 Modelling of spatial data	
2.2 Modelling dimensions	
Unit 3: Spatial Analysis in GIS:-	6
3.1 Vector based spatial analysis and applications	
3.2 Raster based spatial analysis and applications	
Unit 4: GIS Project Design and Implementation:-	3
4.1 Problem identification	
4.2 Data modeling	
4.3 Project implementation and management	

#### II. Practical

	<b>Total Credit: 2 credits</b>
	<b>Total Teaching Hours: 32</b>
	<b>Teaching Hours</b>
Unit 5: GIS Database Management and Management Systems: -	5

5.1 Geodatabase creation and editing	
5.2 Data documentation/metadata creation	
Unit 6: Spatial Data Modelling: -	5
6.1 Modeling networks (Route)	
6.2 Modelling surfaces (TIN/3D Raster)	
Unit 7: Spatial Analysis in GIS (Vector based Specific applications ): –	8
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
8.1 Reclassification	
8.2 Spatial interpolation	
8.3 Analyzing surfaces	
8.4 Overlay analysis(Grid)	
Unit 9: Project Work -	6
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:**

- Albert, C.T.L. and Yeung, K.W. (2002). *Concepts and Techniques of Geographical Information Systems*. New Delhi: Prentice Hall.
- Booth B and Andy Mitchell (2001). *Getting Started with ARCGIS: GIS ESRI*. ESRI Press. (ebook-free online access)
- Chakraborty, D. and Sahoo, R.N. (2007). *Fundamentals of GIS*. India: Viva Books.
- Demers, M.N. (2000). *Fundamentals of Geographical Information Systems*. New York & England: John Wiley and Sons.
- Heywood, I and, Sarah Cornelius and Steve Carver. (2000). *An Introduction to Geographical Information Systems*. Addison Wesley Longman. Pearson Education Asia.

**Reading References**

- Aronoff. S. (1989). *Geographic Information Systems: A Management Perspective*. Ottawa: WDL Publications.
- Birkin, M., Clarke G., Clarke M., and Wilson (1996). *An Intelligent GIS: Location Decisions & Strategic Planning*. Cambridge, UK: Geoinformation International.
- Burrough, P. (1987). *Principles of Geographical Information Systems for Land Resource Assessment*. Oxford: Clarendon Press.
- Pradhan, P.K., Shrestha, S. and Sharma, P. (2001). *GIS for Local Development Exercises: A Hands-on Exercise Manual*. Kathmandu: Central Department of Geography, TU.
- Shrestha, S. (2014). *Spatial Analysis: A GIS Approach*. Kathmandu, Nepal: Shristi Publications.

## 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.

	<b>Teaching Hours</b>
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)	8
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)	8
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)	9
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 truthing 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, Parallax measuring bar, Digital imageries, Hard copy aerial photos,

Uninterrupted power supply

**Required Readings**

ITC (2000). *Principles of Remote Sensing*. The Netherlands: International Institute for Aerospace Survey and Earth Sciences. (Free digital version available from ITC website).

Jensen, J.R. (2005). *Introductory Digital Image Processing*. 3rd Edition, Prentice Hall

Mathews, P.M. (2004). *Computer Processing of Remotely-Sensed Images: An Introduction*. England: John Wiley and Sons LTD.

Lillisand T. M. and Keifer, R.W. (1994). *Remote Sensing and Image Interpretation*. New York: John Willey.

**References**

Campbell, J.B. (2007). *Introduction to Remote Sensing*.(4<sup>th</sup>ed).Guilford Press.

Sabins.F.F. (1997).*Remote Sensing and Principles of Image Interpretation*. New York: W.H. Freeman.



**Website links**

[http://geography.tamu.edu/class/aklein/geog361/lecture\\_notes.html](http://geography.tamu.edu/class/aklein/geog361/lecture_notes.html)

*The Remote Sensing Tutorial* - <http://rst.gsfc.nasa.gov/>

*Digital Image Processing*: <http://www.commsp.ee.ic.ac.uk/~tania/teaching/dip.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

## Teaching Hours

Unit 1. Geographical Research	3
1.1 Nature and types	
1.2 Cycle of research activities	
1.3 Trends of geographical researches in Nepal	
Unit 2. Foundation of Geographical Research	3
2.1 Scientific methods in geographical research	
2.2 Deductive, inductive and adductive approaches	
2.3 Concepts, hypothesis, model, law, theory and perceptions in geographic research	
2.4 Paradigms and its relationship with theory and philosophy	
Unit 3. Philosophy and Methodology	3
3.1 Philosophy, its components and major types (empiricism, positivism, humanism, structuralism and postmodernism)	
3.2 Methodology: Linkages of philosophy with methodology	
Unit 4. Review of Literature	3
4.1 Importance and sources	
4.2 Evaluating the literature	
Unit 5. Research Methods	10
5.1 Qualitative and quantitative methods & their relationship	
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	
5.3 Survey tools: Inventory/observation sheets, questionnaire (structured, semi-structured and unstructured, open ended and closed ended) and checklist	

Unit 6. Data Analysis and Interpretation	8
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	3
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	15
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**

- CDG and NCCR (2009). *Manual on Research Methodology*. Kathmandu: Central Department of Geography and National Centre of Competence in Research.
- Harvey, D.H. (2003). *Explanation in Geography*. Jaipur: Rawat Publications.
- Hay, I. (2000). *Qualitative Research Methods in Human Geography*. New York: Oxford University Press.
- Kitchin, R. and Tate, N.J. (2000). *Conducting Research in Human Geography: Theory, Methodology and Practice*. London: Pearson Education Limited.
- Punch, K.F. (2005). *Introduction to Social Research: Quantitative and Qualitative Approaches*. London: Sage Publications.

#### **Reading References**

- Clifford, N. French, S. and Valentine, G. (Eds.) (2012). *Key Methods in Geography*. London: SAGE.
- Flowerdew, R. and Martin, D. (Eds.) (2005). *Methods in Human Geography: A Guide for Students Doing a Research Project*. England: Pearson Education Limited.
- Harvey, M. E. and Holly, B.P. (Eds.) (1981). *Themes in Geographic Thought*. London: Croom-Helm.
- Johnston, R.J. (1984). *Philosophy and Human Geography: A Contemporary Approaches*. London: Edward Arnold.

**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:

	Course Code	Subject	Credit hrs.
Core Subjects	Geog 551	Geographical Thought –I	3
	Geog 553	Geomorphology – I	3
	Geog 555	Human Geography-I	3
Compulsory Subjects	Geog 563	Geographic Information System (GIS)-I	3
	Geog 565	Remote Sensing (RS) – I	3
<b>Total</b>			<b>15</b>

#### Semester II:

	Course Code	Subject	Credit hrs.
Core Subjects	Geog 552	Geographical Thought –II	3
	Geog 554	Geomorphology – II	3
	Geog 556	Human Geography-II	3
Compulsory Subjects	Geog 561	Research Methods in Geography-I	3
	Geog 564	Geographic Information System (GIS)-II	3
	Geog 566	Remote Sensing (RS) – II	3
<b>Total</b>			<b>18</b>

**Semester III:**

	<b>Course Code</b>	<b>Subject</b>	<b>Credit hrs.</b>
Core Subjects	Geog 557	Region, Regionalism and Regional Analysis	3
Compulsory Subjects	Geog 558	Climate, Hydrology and Bio-Geography	3
	Geog 562	Research Methods in Geography-II	3
Optional Subjects		Optional I	3
		Optional II	3
		Optional III	3
<b>Total</b>			<b>18</b>

**Semester IV:**

	<b>Course Code</b>	<b>Subject</b>	<b>Credit hrs.</b>
Compulsory Subjects	Geog 559	Geographical Problems of Nepal	3
	Geog 560	Thesis	9
<b>Total</b>			<b>12</b>

**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 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.

	<b>Teaching Hours</b>
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 (Scale, Culture, Natural, Environment, Space & Population, Political Economic Development)	6
Unit 4. Nature of Regional Geography	5
Unit 5. Concept and Types of Regions 5.1. Formal – Geographical, ecological, geological, climatic 5.2. Functional- Political, administrative, development, economic, agricultural	6
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**

- Claval Paul translated by Thompson Ian (1993). *An Introduction to Regional Geography*. Oxford, UK: Blackwell.
- De Blij, H.J. and P.O. Muller (1992) *Geography: Regions and Concepts*. New York: John Wiley & Sons, Inc.
- Gurung Harka (1989). *Nepal: Dimensions of Development*. Kathmandu: Saroj Gurung.
- Minshull Roger (1967). *Regional Geography: Theory and Practice*. London: Hutchinson and Company Ltd.
- Panta, Y.P. and Jain, S.C. (1980). *Regional Imbalances and the Process of Development in Nepal*. New Delhi: Development Publisher.
- Sharma Pitambar (1973-74). Growth pole as a regional strategy in Nepal. *The Himalayan Review, Vol.6*: 50-57.
- Shrestha, C.B.(1969-70). Problem of regionalization in Nepal. *The Himalayan Review, Vol. 2*: 13 -21.
- Shrestha, R. K. (1978). Imbalance in socio-economic development in Nepal. *The Himalayan Review, Vol.10*: 33-41.
- Subedi , B. P. (1999). Which inequalities are greater in Nepal ? Regional or socio-economic? Lesson from national sample. *The Himalayan Review, Vol.30*: 19-31.

### **Reference Readings**

- Ahmad, E. and Singh, D. K. (1980). *Regional Planning with Particular Reference to India*. New Delhi: Oriental Publishers and Distributors.
- Heryshorne Richard ( 2000). *The Nature of Geography*. Jaipur, India: Rawat Publications (reprinted)
- Karan, P. P., Ishii H., Kobayachi, M., Shrestha, M., Vajrarharya, C., and Zurick David (eds.) (1994). *Nepal: Development and Change in a Landlocked Himalayan Kingdom*. Tokyo: Tokyo University of Foreign Studies.
- Sharma Bikas (1989-92). Regional inequality in the size distribution of income in Nepal. *The Himalayan Review, Vol.20-23*: 35-58.

# 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.

	<b>Teaching Hours</b>
Unit 1. Climate	11
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	11
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 (over view)	
2.5. Stream flow measurement and analysis	
2.6. Snow and snowmelt runoff: processes, measurements and analysis	
Unit 3. Biogeography	11
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	

- 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 metrological and biological hazards and human adaptation
  - 4.3.3. Issues of conservation of species and population, communities and ecosystem.

### Required Readings

- Hugget, R. H. (2004). *Fundamentals of Biogeography*. Routledge. New York
- Barry, Roger. G. (2006). *Mountain Weather and Climate*, (Third Edition). Cambridge: Cambridge University Press
- De Jong, C, Collins, D., Ranzi, R (Eds) (2006). *Climate and Hydrology in Mountain Areas*. John Wiley & Sons, Inc.'
- Davie, Tim. (2008). *Fundamentals of Hydrology*. Routledge. New York
- Lambin, E. F. and Geist, H. J. (Eds) (2006). *Land-Use and Land-Cover Change: Local Processes and Global Impacts*. Springer.

### Reference Readings

- Dingman, S. L. (2002). *Physical Hydrology*, Second Edition. Waveland press Inc.
- Cox, P. T., Moore, P. T. (2003). *Biogeography: An Ecological and Evolutionary Approach* (Eight Edition). John Wiley & Sons, Inc.
- UNFCC. (2007). *Climate Change: Impact, Vulnerabilities, and Adaptation in Developing Countries*, Germany: Bonn.
- IPCC. (2014). *Climate Change Fifth Assessment Reports*. IPCC Working Group II Contribution to AR5.
- IPCC. (2000). Robert T. Watson, Ian R. Noble, Bert Bolin, N. H. Ravindranath, David J. Verardo and David J. Dokken (Eds.). *Land Use, Land-Use Change, and Forestry*. Cambridge University Press, UK: 375.

- Ghimire, M., Pathak M., Bhatta, B., Bogati, R. (2008). Situation and trend analysis of Churia area using geographic information and remote sensing. *A Report Prepared for Churia Area Programme Strategy*. Published by Churia Area Program Strategy, Care Nepal.
- Ghimire, M., Poudyal P., Pathak M., Timilsina, T. B., Bogati, R. (2008). Impact of hydro-geological processes and land degradation on livelihood strategy in the Churia and Terai region of Nepal. A study report on hazard mapping and land resources management of the JaladKhola under the Jalad Integrated Watershed and Natural Resources Management (JIWAN) Program. Published by, Care Nepal.
- CDES. (2014). *Hazard and Vulnerability Analysis of Nepal's Chure Area*. Rastrapati (President) Chure Conservation Program, Ministry of Forests and Soil Conservations, Central Department of Environmental Science, Tribhuvan University.

### **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 bi-variate 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	4
7.1. Introduction	
7.2. Utility	
7.3. Components	
7.4. Trend and variation measurements	
Unit 8. Statistical Inferences	6
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	6
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	5
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	5

### Required Readings

- Barber, G.M. (1988). *Elementary Statistics for Geographers*. New York: The Guilford Press.
- Chorley, R.J. and Haggett, P., eds (1967). *Models in Geography*. London: Methuen.
- Clark, W.A.V. and Hosking, P.L. (1986). *Statistical Methods for Geographers*. New York: John Wiley and Sons.
- Jobson, J.D. (1992). *Applied Multivariate Data Analysis. Regression and Experimental Design. Vol. 1*, Springer-Verlag.
- Jobson, J.D. (1992). *Applied Multivariate Data Analysis. Categorical and Multivariate Methods. Vol. 1*, Springer-Verlag.
- Kothari, C.R. (1997). *Quantitative Techniques*. Delhi: Vikash Publishing House Pvt. Ltd.
- Kothari, C.R & Gaurav Garg (2014). *Research Methodology : Methods & Technique* , New Age International P limited Publishers.

- Rayment, R. and Jeroskog, K.G. (1996). *Applied Factor Analysis in the Natural Sciences*. Cambridge University Press.
- Williams, R.B.G. (1984). *Introduction to Statistics for Geographers and Earth Scientists*. London: Macmillan.

### Reference Readings

- Mandal, U. K.(2010). Logit Analysis of Violence Against Women in Marginalized Communities, Eastern Terai Region of Nepal, *TU Journal*. Kirtipur: Research Division , Rector's Office , Tribhuvan University (TU).
- Mandal, U. K.(2010). Agricultural Regionalization in Nepal: Q-Mode Factor Analysis Approach, *Perspective on Higher Education: A Journal of University Campus* Volume 4 & 5. Kirtipur: Nepal University Teacher Association, Central Campus Unit Committee.
- Mandal, U. K.(2009). SPSS Application to Multivariate Data Analysis, *Research Methodology Manual*, Kirtipur: Central Department of Geography, TU Kirtipur & NCCR.
- Mandal, U. K.(2006). Determination of Relative Importance of Periodic Market places in Rural Development in Saptari District, Eastern Nepal: A Multiple Regression Approach. *Nepalese Journal of Development and Rural Studies*. Kirtipur: Central Department of Rural Development, T.U. Kirtipur, Kathmandu, Nepal.
- Mandal, U. K.(2005). A functional Ecological Study of Municipal Town in Nepal: A Factor Analysis Approach. *Tribhuvan University Journal*, Kirtipur: Research Division, T.U. Kirtipur , Kathmandu, Nepal.
- Mandal, U. K.(2005). Identification of Major Components of Relative Importance of Periodic Markets Using Principal Component Analysis: A Case Study of Saptari District, Eastern Terai Region of Nepal. *Proceedings of the National Conference on Geography in Nepal: Mountain Environment and Human Activities*. Kathmandu: Central Department of Geography, TU, Nepal Geographical Society and National Centre of Competence in Research North-South .

## 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)

	<b>Teaching Hours</b>
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	
2.1. Population characteristics	6
(Population growth, distribution, density, migration, ethnic groups, population policy)	
2.2. Settlements Pattern	5
(Rural, urban, patterns of growth)	
2.3. Resources	5
(Human resources-migration, land-use, water resources, mineral resources)	
2.4. Agriculture Patterns and Problems	5
(Characteristics, patterns and productivity, farm-size, land security, land policy)	
2.5. Industry, Trade and Transport	5
(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

12

(The total marks of internal assessment is based on this part)

### **Required Reading**

Amatya, S. L. (1969). Agricultural crops and their distribution in Nepal. *The Himalayan Review*. Vol.1: 21-30.

Central Department of Geography. *The Geographical Journal of Nepal* (Various Issue).

Gurung Harka (1968). Geographic foundation of Nepal. *The Himalayan Review*. Vol.1: 1-10.

Hagen Tony. (1970). *Nepal: The Kingdom in the Himalaya*. Lalitpur, Nepal: Himal Books.

Karan, P. P., Ishii H., Kobayachi, M., Shrestha, M., Vajrarharya, C., and Zurick David (eds.)

(1994). *Nepal: Development and Change in a Landlocked Himalayan Kingdom*. Tokyo: Tokyo University of Foreign Studies.

Nepal Geographical Society. *The Himalayan Review* (Various Issues).

Poffenberger, Mark (1980). *Patterns of Change in the Nepal Himalayas*. Madras: The Macmillan Company of India Ltd.

Shrestha V. P. (2007). *A Concise Geography of Nepal*. Kathmandu: Mandala Publications.

## Soil Geography

Semester - Third (Optional)

Course Code - Geog. 519

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 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.

	<b>Teaching Hours</b>
Unit 1. Concepts and Definitions	4
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	4
2.1. Weathering	
2.2. Soil-forming factors	
2.3. Pedogenesis process	
Unit 3. Soil Morphology and Soil Classification	6
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	10
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	6
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	4
6.1. Geographical /Ecological setting	
6.2. Soil types and distribution	
Unit 7. Remote Sensing Application in Soil Survey and Mapping	4
7.1. Spectral characteristics of soils	
7.2. Retrieval of soil parameters	
Unit 8. Soil Test and Result Analysis	10
8.1. Routine test (N,P,K,P <sup>H</sup> ,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**

- Brady, N.C., and Weil, R. (2010). *Elements of the Nature and Properties of Soils*, Third edition. Prentice Hall (Pearson).
- Soil Survey Staff (1975). *Soil Taxonomy. A Basic System of Soil Classification for Making and Interpreting Soil Surveys*. Washington, DC: USDA Soil Conservation Series.
- USDA – Natural Resources Conservation Service (1998). *Keys to Soil Taxonomy*. Washington, D.C.: US Dept. of Agriculture, Soil Conservation Service. Government Printing Office,
- Brady, Nyle, C. (1990). *The Nature and Properties of Soils*. New York: Tenth Edition. Mac Millan Publishing Company.
- Klingebiel, A.A. and P.H. Montgomery. (1961). *Land Capability Classification*. Washington: U.S. Dept. of Agric. Soil Conserv. Service Agric. Handbook 210.
- Rossiter, D.G. (1996). A Theoretical Framework for Land Evaluation. *Geoderma*, 72: 165-190.
- Jensen, J. R. (2009). *Remote Sensing of the Environment : An Earth Resource Perspective*. Second Edition, Pearson Education in South Asia.
- Singer, M.J. and Munns, D.N. (2002). *Soils, An Introduction*. (6th Ed.) Pearson Education Inc. 446.
- Miller, R. W. and Donahue, R. L. (1990). *Soils*, Delhi: Prentice-Hall of India.
- Pitty, A. F. (1978). *Geography and Soil Properties*. University Press.
- Bridges, E. M. (1986). *Principles and Applications of Soil Geography*, Halsted Press.
- Daji, J. A. (1970): *A Textbook of Soil Science*. India: Asia Pub. House
- Bunting, B. T. (1976). *The Geography of Soils*, London: Hutchinson.
- Brikeland, P. W. (1984). *Soils and Geomorphology*, Oxford: Oxford University Press

## Reference Readings

- LRMP. (1986). Land Capability Maps and Report. Land Resource Mapping Project, Kenting Earth Sciences Limited, Ottawa, Canada.
- LRMP. (1986). Land System Maps Reports . Land Resources Mapping Project, Kenting Earth sciences limited, Ottawa. Canada.
- Mandal, U. K. (1999). Agriculture & Soils Division, IIRS P.G. Diploma Course pilot project report on “ Agroecological Zonation by integrated use of Remote Sensing and GIS – a case study of Bijnor and Hudtwar Districts in Uttar Pradesh, India.
- N.R Patel, U. K. Mandal and L.M. Pande (2000). Agro-ecological Zoning System- A remote sensing and GIS perspective. Journal of Agrometeorology 2(1):1-13 (June 2000) Association of Agrometeorologists, Anand Agriculture Universities, Gujrat, India
- Mandal, U. K. (2011). Land Evaluation For Sustainable Land Use Planning in Central Hill Region of Nepal Using Remote Sensing and GIS Technology: A case study of Maheshkhola Watershed in Bagmati, Makwanpur and Dhading districts. Faculty Research submitted to University Grants Commission (UGC) Nepal.
- Mandal, U. K. (2013). Soil Suitability Analysis for Sustainable Landuse Planning in Maheshkhola Watershed, Central Mountain Region, Nepal, The Himalaya Review Vol-XLIV, 2013 by Nepal Geographical Society.

# 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.

	<b>Teaching Hours</b>
Unit 1. Introduction	3
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	3
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	8
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	7
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	6
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	7
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	6
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
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

- Stoltman, J. P., Lindstone, Jhon and Cechano, L. M (eds). (2004). International Perspectives on Natural Disasters: Occurrence, Mitigation and Consequences (Advances in Natural and Technological Hazard Research). Kluwer Academic Publishers. Dordrecht, The Netherlands.
- Gaillard, JC. (2010). *People's Response to Disasters: Vulnerability, Capacities and Resilience in Philippine Context*. Angeles City, Pampanga: Center for Kapampangan Studies, Holy Angel University.
- Mitchell, Bruce (1979). *Geography and Resource Analysis*. Longman. London and New York
- Bankoff, G. Frerks, G. and Hilhorst, D. (2004). *Mapping Vulnerability: Disasters, Development and People*. London: Earthscan.
- Hyogo Framework for Action. (2005). Building the resilience of nations and communities to disasters World Conference on disaster reduction (A/Conf. 206/6)
- Wishner, B., Blaikie, P., Cannon, T. and Divis, I. (2004). *At risk: Natural Hazards, People's Vulnerability and Disasters*, Oxon: Routledge.

## Reference Readings

- Khanal N. R., Shrestha, M. and Ghimire M. (2007). *Preparing for Flood Disaster: Mapping and Assessing Hazard in the Ratu Watershed, Nepal*. Kathmandu: ICIMOD.
- Khanal, N. R. (2005). Water Induced Disasters: Case Studies from Nepal Himalayas. Braunschweig: Landschaftsokologie Und Umweltforschung. 48: 83-90.
- Khanal, N. R. (1996). Assessment of Natural Hazards in Nepal, Research report submitted to Research Division, Tribhuvan University, Kirtipur.
- Tianchi, L; Chalise, S. R.; and Upreti, B. N. (eds) (2001). *Landslide Hazard Mitigation in the Hindu Kush-Himalayas*. Kathmandu: ICIMOD.

## Development Planning

Semester - Third (Optional)

Course Code - Geog. 530

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 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	3
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
6.1. Dimension of development	
6.2. Growth pole as development strategy	
6.3. Regional development planning	
<b>Practical</b>	
Unit 7. Problem and Means End Analysis	6
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	4
8.1. Concepts and characteristics	
8.2. Specifying indicators of monitoring and achievement	
8.3. Generating information	

### **Required Readings**

- Dale Reidar (2004). *Development Planning: Concepts and Tools for Planners, Managers and Facilitators*. London and New York: Zed Books.
- Glasson, J. (1975). *Introduction to Regional Planning*. London: Hutchison and Co.
- Gurung, H. (1968). *Regional Development Planning for Nepal*. Kathmandu: National Planning Commission.
- Gurung, H. (1989). Regional Dimension in National Development. *Nepal: Dimension of Development*. Kathmandu: Saroj Gurung: 14-27.
- Hussian Majid (1994). Patterns of Development. *Human geography*. New Delhi: Rawat Publications: 205-252.
- Luis Dupont (1996). *Development Planning: The Test of Facts*, Boston: University Press of America.

Sharma Pitambar (1973-74). Growth Pole as a Regional Development Strategy in Nepal. *The Himalayan Review*. Vol. 6: 50-57.

Waterston, A. (1971). *Development Planning: Lessons of Experience*, Baltimore: John Hopkins.

### **Reference Readings**

Keeble, D. E. (1968). Agropolitan Development: An Alternative for Regional Development in Asia. *The Himalayan Review*. Vol. 13:37-71.

Nepal, Govind (2008). *Development Planning in the Era of Globalization*. Kathmandu: Himalaya Book Stall.

Rondinelli, D. (1985). *Applied Methods of Regional Analysis: The Spatial Dimensions of Development Policy*. London: Westview Press.

## 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 developemnt	
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	7
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	7
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	7
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	6
3.1. Regional planning in Nepal	
3.2. Strategic framework for development	

### **Required Readings**

- Chant, S. and McIlwaine, (2009). *Geographies of Development in the 21<sup>st</sup> century: An Introduction to the Global South*, London: Edward Elgar Pub.
- Desai, V. and Potter, R.B. (eds.). (2008). *The Companion to Development Studies*, London: Arnold.
- Hettne, B. (1995). *Development Theory and the Third Worlds: Towards an International Political Economy of Development*, England: Addison Wesley Longman Limited.
- Kothari, (2005). *A Radical History of Development Studies*, London: Zed Books.
- Morris, A. (1998). *Geography and Development*, London: UCL Press.
- Peet, R. and Hartwick, E. (2009). *Theories of Development: Contentions, Arguments, Alternatives*, New York: The Guildford Press.

Pieterse, J. N., (2010). *Development Theory: Deconstructions/Reconstructions*, London: SAGE Publications.

Potter, R.B., Binns, T., Elliott, J.A. and Smith, D.W., (2008). *Geographies of Development*, Pearson Prentice Hall.

Pyakural, K. &Suvedi, M. (2000). Understanding Nepal's Development.

Upadhaya, P. P. (2010). A Study on Spatial Planning, Regional Development and Federalism in Nepal, CCD Policy Research Papers (Regional Studies), Kathmandu: Centre for Constitutional Dialogue (CCD).

Willis, (2011). *Theories and Practices of development* (2<sup>nd</sup> edn), London: Routledge. (Context, Interventions and People's Aspirations), Department of Agriculture and Natural Resources, Education and Communication Systems, Michigan State University, East Lansing, MI.

Hettne, Bjorn, (1996). *Development Theory and the Three Worlds*, England: Addison Wesley Longman Limited.

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

World Bank [www.worldbank.org](http://www.worldbank.org)

ID21 Research [www.id21.org](http://www.id21.org)

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

United Nations Development Programme <http://www.undp.org/>

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.

	<b>Teaching Hours</b>
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

- Robinson, Guy. (2004). *Geography of agriculture: Globalization, restructuring and sustainability*, England: Pearson Education Limited (Selected chapters).
- ICIMOD.(2003). *Mountain Agriculture in the Hindu Kush Himalayan Region*, Kathmandu: ICIMOD (selected chapters)
- Jones, Gareth and Hollier, Graham. (1997). *Resources, society and environmental management*, London: Paul Chapman Publishing Ltd ( Chapter 6: food resources).
- Daniels, Peter; Bradshaw, Michael; Shaw, Denis; Sidaway, James. (2001). *Human Geography: Issues for the 21<sup>st</sup> century*, England: Pearson Education Limited ( Chapter 9).
- Norman E. Borlaug and Christopher R. Dowsell. (2003). Feeding a World of Ten Billion People: A 21st Century Challenge  
([http://www.dista.unibo.it/doublehelix/proceedings/SECTION\\_I/HELIX%20pp%20003-023.pdf](http://www.dista.unibo.it/doublehelix/proceedings/SECTION_I/HELIX%20pp%20003-023.pdf))
- H. Charles, J and Godfray, et al. (2010). Food Ssecurity: The challenge of feeding 9 billion people. *Science*, 327, 812. DOI:10.1126/science,1185383.
- Eriksen, Polly J. (2008). Conceptualizing food systems for global environmental change research. *Global Environmental Change* 18 (2008) 234–245.
- Shiva, V. (1998). *Staying Alive: Women, Ecology and Survival in India*. London: Zed Books Ltd. (Chapter 5).
- It is recommended to consult recently published different journal articles.

## Reference Readings

- Adhikari, Jagannath. (2008). *Food Crisis in Karnali: A Historical and Politico-Economic Perspecti.*, Kathmandu: Martin Chautari.
- Sharma, Shiva. (1997). *Agricultural Transformation Processes in the Mountains of Nepal: Empirical Evidences from Ilam Districts*. Kathmandu: ICIMOD.
- Shiva V. (1993). *Monocultures of the Mind: Perspectives on Biodiversity and Biotechnology*. London: Zed Books.

## 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.

	<b>Teaching Hours</b>
Unit 1. Introduction	5
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	10
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	8
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 --	8
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	 7
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 tourism and 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	 4
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 forecasting the future of tourism development	
 Unit 7. Planning and Policies	 5
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.
- Baud-Bovy, M. and Lawson, F. (1977). *Tourism and Recreation Development*. London: The Architectural Press Ltd.
- Collier Alen (1998). *Principles of Tourism* Newzeland: Pitman Publishing.
- Hall, C. M. and Page, S. J. (2002). *The Geography of Tourism and Recreation: Environment, Place & Space*. London and New York: Routledge.
- Leiper Neil (1995). *Tourism Management*. Victoria: TAFE Publication.
- Matieson, A. and Wall, G. (1982). *Tourism: Economic, Social and Physical Impacts*. London: Longman
- Murphy, P.E. (1985). *Tourism: A Community Approach*. New York and London: Routledge.
- Sharply, R. and Telfer, D. J. (eds) (2006). *Tourism and Development: Concepts and Issues*. New Delhi: Viva Books Private Limited.

### **Reference Readings**

- Smith, S.L.J. (1998). *Tourism Analysis: A Hand Book*. New York: John Wiley & Sons, Inc.
- The Himalayan Review* (Tourism Special Issue). (1998). Kathmandu: Nepal Geographical Society.
- Tourism and Recreation Research*. Lucknow India: Centre for Tourism Research and Development.
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- NTB.2011. *Nepal: Tourism and Development Review*. Vol. 1. Issue 1.
- Bell,D. and William, S.W. (eds). (1995). *Tourism Geography*. London: Routledge.
- Sharpley, R. and Telfer, D.J. (eds). (2006). *Tourism and Development: Concepts and Issues*. New Delhi: Viva Books Pvt. Ltd.
- Saul, G. and Williams, A.M. (1994). *Critical Issues in Tourism: A Geographical Perspective*. Oxford, London: Blackwell.

## 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.

	<b>Teaching Hours</b>
Unit 1. Introduction	8
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	
Unit 2. Issues in Eco-tourism and Development	7
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	
Unit 3. Eco-tourism and the Impacts	5
3.1. Environmental impact	
3.2. Socio-cultural Impact	
3.3. Economic Impact	
Unit 4. Policies and Planning of Protected areas	5
4.1. Importance and approaches	
4.2. National, regional, local plan and tourism planning	
4.3. Eco-tourism policy and planning of Nepal	
Unit 5. Creating and Managing Tourism in Protected Areas	5
5.1. Management Strategy	

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	5
6.1. Environment impact assessment	
6.2. Carrying capacity and limits of change	
Unit 7. Sustainable Development and Eco-tourism	10
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	3

### Required Readings

- Annals of Tourism Research (Various Year & Issue) : A Social Science Journal.* Boulder, USA.
- Banskota, K and Sharma, B. (1998). *Mountain Tourism for Local Community Development in Nepal. MEI Series No. 98/1.* Kathmandu: ICIMOD.
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- Ceballos-lascurain, H. (1996). *Tourism, Ecotourism and Protected Areas.* IUCN and Eco-tourism Society.
- Cohen Eric, (1987). Alternative tourism: A Critique. *Tourism Recreation Research.* Vol.12(2): 13-18.
- Fennell, D.A. and Smale, Bryan J. A. (1992). Eco-tourism and Natural Resource Protection: Implications of an Alternative form of tourism for Host Nations. *Tourism Recreation Research.* Vol.17(1): 21-32.
- Inskeep Edward. (1994). *National and Regional Tourism Planning.* London: Rutledge.
- Kruk Ester. Kreutzmann, H., & Richter, J. (Eds) (2009). *Proceedings of the Regional Workshop on Integrated Tourism Concepts to Contribute to Sustainable Mountain Development in Nepal.* Kathmandu: GIZ., ICIMOD., BMZ.
- Linderberg, K. and Hawkins, D. E. (1993). *Eco-tourism: A Guide for Planners and Managers.* North Bennington: the Eco-tourism Society.
- Sharma, Pitambar (1995). *A Framework for Tourism carrying Capacity Analysis. MEI Series No.95/1.* Kathmandu: ICIMOD.
- Saw, G. & Willians, A.M. (1994). *Critical Issues in Tourism: A Geographical Perspective,* oxford, London: Blackwell.

## Reference Readings

- Shrestha, T.B. (1995). *Mountain Tourism and Environment in Nepal*. MEI Series No. 95/4. Kathmandu: ICIMOD.
- Watanabe, T., Sicroff, S., Khanal, N.R., Gautam, M. P.(eds.) (2001). *Proceedings of the International Symposium on the Himalayan Environment: Mountain Sciences and Eco-tourism/Biodiversity*. Kathmandu: Hokkaido University, T.U., The United Nations University.
- Braun, B.M. and Soskin, M. D. (1999). Theme –Park competitive strategies. *Annals of Tourism Research*.Vol. 26(2) 438-441.
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- WECED. (1987). *Our Common Future*. World Commission on Environment and Development. (WECED), Oxford: Oxford University Press.
- Zurick, D. N. (1992). Adventure travel and sustainable tourism in the peripheral economy of Nepal. *Annals: Association of American Geographers*. 82(4): 608-628.

## 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.

	<b>Teaching Hours</b>
Unit 1. Gender and Development: Theoretical Conceptualization	8
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	8
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	6
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	8
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	10
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
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 *	2
<i>*Students are required to prepare a project report on any topic of their interest from Unit 5: Gender and Geography</i>	

### **Required Readings**

- BRIDGE. (2008). *Gender and Climate Change: Mapping the Linkages. A Scoping Study on Knowledge and Gaps*. Brighton, UK: Institute of Development Studies.
- Buckingham, Susan (2000). *Gender and Environment*. NewYork, USA: Routledge.
- Dankleman, I. & J. Davidson. (1988). *Women and Environment in the Third World -Alliance for the Future*, Earthscan.
- Kabeer, N. (1994). *Reversed Realities: Gender Hierarchies in Development Thought*, London: Verso.
- Masika, Rachel (eds) (2002). *Gender, Development, and Climate Change*. Oxfam: Oxfam Publishing.
- Moser, C. O. (1993). *Gender Planning and Development: Theory, Practice and Training*, London: Routledge.
- Sen, Amartya (2000). *Development as Freedom*. New Delhi: Oxford University Press.

Shiva, V. (1989). *Staying Alive: Women, Ecology and Survival in India*. London: ZED.  
Shrestha, S. L. (1994). *Gender Sensitive Planning: What, Why and How in Nepal*. Kathmandu:  
WACN.

### **Reference Readings**

- Acharya, M. (1994). *The Statistical Profile on Nepalese Women: An Update in the Policy Context*. I  
IDS. Ahmed, I. (ed.), *Technology and Rural Women*, ILO, London: George Allen &  
Unwin, 1985.
- Bajracharya, Bijaya (2009). *Overcoming Exclusion in Agriculture*. Kathmandu Nepal: Natural  
Resource Management and Environment
- Boserup, E. (1970). *Women's Role in Economic Development*, New York: St. Martin's Press.
- Hess, Beth. B. & Myra Marx-Ferree (eds) (1987). *Analysing Gender. A Handbook of 'Social  
Science Research*. Sage Publication, Inc.
- Selvaraju, Ramasamy (2014). *Managing climate Risks and Adapting to Climate Change in the  
Agriculture Sector in Nepal*. FAO Rome: NRC Publications,.
- Tinker, I. (ed.) (1990). *Persistent Inequalities*, Oxford: Oxford University Press.
- Young, K. (1993). *Planning Development with Women: Making AWorld of Difference*,  
Macmillan.



## Social Geography

Semester - Third (Optional)

Course Code - Geog. 541

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 enable students to understand and examine the concept of social geography. In addition to that the students are able to understand and identify 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	7
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	7
2.1. The split between “economic” and “social” life	
2.2. Geographical production, process and patterns	
Unit 3. Power, Identity and Social Geography	9
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	7
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	10
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	

6.1. Ethnic diversification in the country

6.2. Urbanization and ethnic diversification with out to capital city

**Required Readings**

Jackson, P. (1981). Phenomenology and Social Geography, *Area*, 13 (4), pp. 299-305.

Pain, R. (2003). Social research: An Action Oriented Research, *Progress in Human Geography*, 27 (5), pp. 649-657.

Pain, R. (2004). Social Geography: Participatory Research, *Progress in Human Geography*, 28 (5), pp. 652-663.

Pain, R., Barke, M., Fuller, D., Gough, J., MacFarlane, R., Mowl, G., (eds). (2001). *Introducing Social Geography*, London: Arnold Publishers.

Panelli, R. (2003). *Social geographies: from difference to action*. London: Sage.

Smith, S.T., (1981). Humanistic Method in Contemporary Social Geography, *Area*, 13 (4), pp. 293-298

Subedi, Bhim P. (2010), Ethnic/caste diversification in Kathmandu metropolitan: Changing social landscape of a capital city, *Journal of Geography and Regional Planning*, 3(8), pp. 185-199, August 2010

Sunderland, E. (1973). *Elements and Social Geography: Some Anthropological Perspectives* (Pergamon Oxford Geographies), Elsevier Ltd, Pergamon Press.

Vincent J. Del Casino Jr., Mary E. Thomas, Ruth Panelli, and Paul Cloke (eds). (2011). *A Companion Social Geography*, United Kingdom: Blackwell.

## 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	14
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	
Unit 2. Human Geography	24
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	
Unit 3. Society and Development	10
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	

## Required Readings

- Bista, D.B. (2052 BS). Peoples of Nepal. Kathmandu: Ratna Pustak Bhandar.
- Dahal, Dilli Ram (2003). Social Composition of Population. *Population Monograph of Nepal, Volume I*. Kathmandu, CBS:. 87-136.
- Hagen, T. (1998). *Nepal: The Kingdom in the Himalayas*. Lalitpur, Nepal: Himal Books
- Karan, P. P., Ishii H., Kobayachi, M., Shrestha, M., Vajrarharya, C., and Zurick David (eds.) (1994). *Nepal: Development and Change in a Landlocked Himalayan Kingdom*. Tokyo: Tokyo University of Foreign Studies.
- Karan, P.P. and Jenkins, W.M. (1960). *Nepal: A Cultural and Physical Geography*. USA: Lexington: University of Kentucky .
- NGS. *The Himalayan Review Various Vol*. Kathmandu: Nepal Geographical Society.
- Pandey, R. K. (2066 BS). *Nepal: Human Geography (in Nepali)*. Kathmandu: Ratna Pustak Bhandar.
- Sharma, C. K. (1978). *Natural Resources of Nepal*. Kathmandu: Mrs. Sangita Sharma.
- Sharma, C. K. (1979). *Nepal and the Nepalese*. Kathmandu: Mrs. Sangita Sharma.
- Sharma, C. K. (1981). *Geology of Nepal*. Kathmandu: Mrs. Sangita Sharma.
- Sharma, C. K. (1981). *River Systems of Nepal*. Kathmandu: Mrs. Sangita Sharma.
- Shrestha, C. B. (1981). *Cultural Geography of Nepal*. Bhaktapur.
- Shrestha, S. H. (1998). *Economic Geographic of Nepal*. Kathmandu: Educational Enterprises.

## Reference Readings

- Adhikari, J. (1996). The Beginings of Aggrarian Change: A Case Study in Central Nepal. Kathmandu: Tirupati Publication.
- CBS.. *Population Monograph of Nepal*. (Various Issue). Kathmandu: Central Bureau of Statistics.
- CBS. Population Census of Nepal. (Various Year). Kathmandu: Central Bureau of Statistics.
- CDG. *Geographic Journal of Nepal*. (Various Vol.). Kathmandu: Central Department of Geography.
- Chaudhary, R.P., Aase, T., Vetaas, O. R., Subedi, B.P. (eds.), (2007). *Local Effects of Global Changes in the Himalayas: Manang, Nepal*. Kathmandu: Central Department of Botany, Central Department of Geography, and UNIFOB-Global University, Bergen, Norway.
- Communication Ministry. (2031 BS). *Mechi to Mahakali in 4 vol. (in Nepali)*. Kathmandu: HMGN.
- Majpuria, T.C. and Majpuria, R.K (eds.) (1999). *Nepal Nature's Paradise*. Gwalior, India: M Devi.
- Malla, U.M. (2021 BS). *Hamro Bhougolik Sampati (in Nepali)*. Kathmandu: Educational Enterprises.
- Pokhrel, B.P. (2064 BS). *Physical, Economic and Cultural Geography of Nepal (in Nepali)*. Pokhara: Mrs. Ranju Acharya, Mrs. Nira Pokhrel, Mrs. Sunita Pokhrel.
- Shrestha, V. P. (2007). *A Concise Geography of Nepal*. Kathmandu: Mandala Publications.

## Migration and Urbanization

Semester - Third (Optional)

Course Code - Geog. 545

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 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.

	<b>Teaching Hours</b>
Unit 1. Conceptualizing Territorial Mobility and Migration	5
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 <i>Ghumphir</i> and <i>Basai Sarai</i> )	
1.4. Key issues and debates in migration	
Unit 2. Theories of Migration	6
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	5
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
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	6
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	 5
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)	 6
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	 5
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	 6
9.1. Pattern and trends	
9.2. Caste and ethnicity	
9.3. Ethnic diversity in urban area	

### **Reference Readings**

- De Jong, G. F. and Gardner, R. W. (eds). (1981). *Migration Decision Making*. New York: Pergamon Press.
- Goldstein, S. and Goldstein, A. (1981). *Surveys of Migration in Developing Countries: A Methodological Review (Papers of the East-West Population Institute No.71)*. Honolulu: East-West Center, USA.
- Gould, WTS. (1993). *People and Education in the Third World*. Essex, England: Longman Scientific and Technical.
- Gurung, H. (1989). *Regional Patterns of Migration in Nepal (Papers of East-West Population Institute, No. 113)*. Honolulu: East-West Center, U.S.A.

- KC, B. K. (1998). *Trends, Patterns and Implications of Rural to Urban Migration in Nepal*. Kathmandu: Tribhuvan University.
- Palen, J. John (1992). *The Urban World*. New York: Mc-Grow Hill Inc.
- Samers, Michael (2010). *Migration*, New York: Routledge
- Sharma, Pitamber (1989). *Urbanization in Nepal* (Papers of East-West population Institute No.110) Honolulu: East West population Institute.
- Subedi, B.P. (2006). Migration Issues in Nepal: The local worldview of *ghara* (home) and *para* (other world/s) as a framework of understanding short-term territorial mobility in Nepal, *Nepal Population Journal*. 12 (11): 1-18.
- Subedi, Bhim, P. (2010). Ethnic/caste Diversification in Kathmandu Metropolitan: Changing Social Landscape of a Capital City, *Journal of Geography and Regional Planning* Vol. 3(8): 185-199.  
Available online at <http://www.academicjournals.org/JGRP>. ISSN 2070-1845 ©2010 Academic Journals
- Subedi, Bhim, P. (2013). Key issues of migration and status of external migration from Nepal based on evidences from census 2011. In Population Division, Ministry of Health and Population, GoN, (eds) *Population and Development Issues in Nepal 2013*. Kathmandu: Population Division, MoHP: 1-19.
- Subedi, Bhim, P. (2014). Urbanization in Nepal: Spatial pattern, social demography and development. In CBS (ed) *Population Monograph of Nepal Vol. III (Economic Demography)*. Kathmandu: CBS, National Planning Commission, GoN: 95-154.
- Standing, G. (1982). *Conceptualizing Territorial Mobility in Low Income Countries*. Geneva: ILO
- Shrestha, N.R. (1990). *Landlessness and Migration in Nepal*. Boulder: Westview Press.
- 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.

	<b>Teaching Hours</b>
<b>A. Theory</b>	<b>16</b>
Unit 1. Introduction to Cartography	2
1.1. Introduction	
1.2. History of cartography	
1.3. Cartographic principles	
1.4. Map elements	
Unit 2. Map Projections	2
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
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	2
4.1. Function of lettering	
4.2. Nature of typography	
4.3. Lettering the map	
4.4. Geographical name	
Unit 5. Selection and Generalization	2
5.1. Selection	
5.2. Concept of generalization	
5.3. Classification, simplification, exaggeration	
5.4. Manipulations	



Unit 6. Symbolization (point, line and area)	2
6.1. Symbolization problems	
6.2. Symbolizing geographic features	
Unit 7. Symbolization (volume)	3
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**

Robinson, A. H., Morrison, J. L., Muehrcke, P. C., Kimerling, A. J. and Guptil, S. C. (2002). *Elements of Cartography* (Sixth edition). Singapore: John Wiley and Sons (ASIA) Pvt. Ltd.

Kraak, M. J. and Ormeling, F. (2005). *Cartography: Visualization of Geospatial Data* (Second Edition). Delhi: Pearson Education (Singapore) Pvt. Ltd.

Kraak, M. J. and Ormeling, F. (1996). *Cartography: Visualization of Geospatial Data* (Second Edition). Harlow: Addison Wesley Longman Limited.

Raisz, E. (2007). *Principles of Cartography*. Delhi: Surjeet Publication.

Shrestha, B., Bajracharya, B. and Pradhan, S. (2001). *GIS for Beginners*. Kathmandu: International Centre for Integrated Mountain Development (ICIMOD).

Lewis P. (1977). *Maps and Statistics*. Cambridge: University Printing House.

# Surveying

Semester – Third (Optional)

Course Code - Geog. 555

Credit hours – 3

Lecture hour – 48

Internal Assessment – 20 Marks

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	3
1.1. Basic concepts of surveying	
1.2. Types, trend and recent developments,	
1.3. Application of GIS surveying	
Unit 2. Triangulation	2
Unit 3. Leveling	2
3.1. Direct	
3.2. Indirect	
Unit 4. Traversing	3
4.1. Open	
4.2. Closed	
Unit 5. Contouring	2
Unit 6. Global Positioning System	2
6.1 Introduction	
6.2 Use in mapping and map updating	
Unit 7. Tachometric Surveying	2
7.1 Introduction	
7.2 Use in mapping and map updating	

### Required Readings

Banister, A. and Raymond, S. (1992). *Surveying*. ELBS with Longman.

Punmia, B. C. Jain, A. K. and Jain, A. K. (1994). *Surveying*. Vol. I New Delhi: Laxmi Publication.

GARMIN, (2008). GPS Beginner's Guide. USA: GARMIN.

### II. Practical

Total Credit: 2 credits

Total Teaching Hours: 32

#### Teaching Hours

Unit 1. Triangulation	3
Unit 2. Leveling	4
Unit 3. Contouring	4
Unit 4. Global Positioning System	10
Unit 5. Tachometric Surveying	8
Unit 6. Project Work	3
6.1. Project work: Preparation of topographical map of the field study area.	
6.2. Project Report.	

**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)

Credit hours – 3

Internal Assessment – 40 Marks

Course Code - Geog. 517

Lecture hours- 48

End Semester Examination- 60 Marks

## **Climate Modeling**

(To be developed)

Semester - Third (Optional)

Credit hours – 3

Internal Assessment – 40 Marks

Course Code - Geog. 518

Lecture hours- 48

End Semester Examination- 60 Marks

## **Environmental Impact Assessment**

(To be developed)

Semester - Third (Optional)

Credit hours – 3

Internal Assessment – 40 Marks

Course Code - Geog. 520

Lecture hours- 48

End Semester Examination- 60 Marks

## **Peri-Glacial Geomorphology**

(To be developed)

Semester - Third (Optional)

Credit hours – 3

Internal Assessment – 40 Marks

Course Code - Geog. 522

Lecture hours- 48

End Semester Examination- 60 Marks

## **Natural Resource Management**

(To be developed)

Semester - Third (Optional)

Credit hours – 3

Internal Assessment – 40 Marks

Course Code - Geog. 523

Lecture hours- 48

End Semester Examination- 60 Marks

## **Watershed Management**

(To be developed)

Semester - Third (Optional)

Credit hours – 3

Internal Assessment – 40 Marks

Course Code - Geog. 524

Lecture hours- 48

End Semester Examination- 60 Marks

## **Environmental Geography**

(To be developed)

Semester - Third (Optional)

Credit hours – 3

Internal Assessment – 40 Marks

Course Code - Geog. 525

Lecture hours- 48

End Semester Examination- 60 Marks

## **Global Change and Adaptation**

(To be developed)

Semester - Third (Optional)

Credit hours – 3

Internal Assessment – 40 Marks

Course Code - Geog. 526

Lecture hours- 48

End Semester Examination- 60 Marks

## **Water Resources Management**

(To be developed)

Semester - Third (Optional)

Credit hours – 3

Internal Assessment – 40 Marks

Course Code - Geog. 527

Lecture hours- 48

End Semester Examination- 60 Marks

## **Regional Development Planning**

(To be developed)

Semester - Third (Optional)

Credit hours – 3

Internal Assessment – 40 Marks

Course Code - Geog. 528

Lecture hours- 48

End Semester Examination- 60 Marks

## **Land Use Planning**

(To be developed)

Semester - Third (Optional)

Credit hours – 3

Internal Assessment – 40 Marks

Course Code - Geog. 529

Lecture hours- 48

End Semester Examination- 60 Marks

## **Urban Development Planning**

(To be developed)

Semester - Third (Optional)

Credit hours – 3

Internal Assessment – 40 Marks

Course Code - Geog. 532

Lecture hours- 48

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)

Semester - Third (Optional)

Credit hours – 3

Internal Assessment – 40 Marks

Course Code - Geog. 546

Lecture hours- 48

End Semester Examination- 60 Marks

## **Spatial Planning**

(To be developed)

Semester - Third (Optional)

Credit hours – 3

Internal Assessment – 40 Marks

Course Code - Geog. 547

Lecture hours- 48

End Semester Examination- 60 Marks

## **Geography of Health**

(To be developed)

Semester - Third (Optional)

Credit hours – 3

Internal Assessment – 40 Marks

Course Code - Geog. 548

Lecture hours- 48

End Semester Examination- 60 Marks

## **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)

Credit hours – 3

Internal Assessment – 40 Marks

Course Code - Geog. 552

Lecture hours- 48

End Semester Examination- 60 Marks

## **Advanced Applied GIS/RS (Practical)**

(To be developed)

Semester - Third (Optional)

Credit hours – 3

Internal Assessment – 40 Marks

Course Code - Geog. 554

Lecture hours- 48

End Semester Examination- 60 Marks