SHAHEED BENAZIR BHUTTO WOMEN UNIVERSITY PESHAWAR

AGENDA FOR THE MEETING OF BOARD OF STUDIES
DEPARTMENT OF GEOGRAPHY

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TABLE OF CONTENTS

ITEM # I: APPROVAL OF DEPARTMENT MISSION,VISION & GOALS STATEMENT

SHAHEED BENAZIR BHUTTO WOMEN UNIVERSITY PESHAWAR

DEPARTMENT OF GEOGRAPHY

INTRODUCTION TO DEPARTMENT OF GEOGRAPHY

The Department of Geography is a newly established department in Shaheed Benazir Bhutto Women University. Geography is the most interdisciplinary subject and it is also the most integrated discipline on campus, insofar as the material taught in our classes about environmental processes can be found in other disciplines, but are only put together as a whole story in Geography. Above all, Geography is "spatial"—virtually everything has a spatial component, from the distribution of subatomic particles to the choices we make when we buy groceries. Therefore, as a Geographer, one can choose to study an enormous range of subjects. Geography is also an extremely hands-on discipline with a strong emphasis on using computer–based tools and participating in field studies. Knowing where things are, why they got there, and how they work is critical to understanding our world today and how it is changing—this is Geography!

The Department of Geography is represented by Three Crosscutting Themes

Earth System Science: the physical and biological processes of the environment

Human Geography: the way humans perceive, interact with, and modify the environment

Modeling, Measurement, and Computation: techniques for the collection, analysis, and interpretation of geospatial data using tools such as GIS, remote sensing, and spatial statistics.

With roots in exploration, map making, and accounts for differences from place to place, modern geography investigates the spatial organization and material character of planet Earth and the physical and human processes that shape its places and landscapes. Geographers study many different topics and places, but they share a concern with what can be learned from analyzing spatial arrangements (both perceptual and actual) and the changing characteristics of places and landscapes. In pursuit of their work, geographers employ a wide range of tools including field exploration, map making, geographic information analysis, textual analysis, and modeling. The teaching and research undertaken in Geography explores biophysical changes (global and local)

shaping the planet; the prospects and challenges of fostering sustainability; the nature and implications of geopolitical, economic, and cultural shifts in different parts of the world; and the nature, use, and understanding of maps and geospatial technologies.

The study of Geography is exciting, challenging and relevant to today's world. Geographers study the natural processes of the physical environment, as well as the activities and consequences of humans in this environment. Some geographers specialize in coastal, glacial or fluvial processes and landforms, climatology, biogeography, hydrology or environmental change. Others study regional economics, population change, and the problems of rural or urban areas. Still others, specializing in spatial analysis, bring the power of geographic information science to bear on a wide range of research problems. Increasingly, these varied interests are coming together in the study of environmental problems and Geographers lead the way in resource management.

VISION

"To provide quality education with the latest and advanced techniques and matters of research in order to equip the students for enabling them to take the challenges of current lives and work for the well being of the society. "

MISSION

The Department's mission is

To provide a complete understanding of the range and depth of interdisciplinary and technical approach which signifies the human and physical spheres of geography. This understanding enables the students to utilize their full potential as skilled professionals and well-qualified technical experts in various fields like companies and government organizations to promote fruitful careers, active life-long knowledge, and desire to contribute positively towards society.

ITEM#II: APPROVAL OF BS-GEOGRAPHY MISSION, VISION & GOALS STATEMENT

SHAHEED BENAZIR BHUTTO WOMEN UNIVERSITY PESHAWAR

DEAPRTMENT OF GEOGRAPHY

BS 4-YEAR GEOGRAPHY

Geographers study the earth's features but with a strong appreciation for the human-environment relations that shape and are shaped by the distributions of these features across the landscape. Geography is an interdisciplinary field that connects ecological, atmospheric, hydrologic, and geologic sciences to understanding the impacts of a dynamic and changing landscape.

With the B.S. in Geography, students can focus on specific areas such as climate change, fire history, biogeography, arid lands, or other topics that bridge the physical sciences. They will learn to analyze data, use cartographic and geographic information systems, and work in the field and in remote-sensing laboratories. Internships are integral to the major and credit can be earned for internships in the public private and non-profit sectors.

PROGRAMME OBJECTIVES

The BS Program objectives are to ;

1. learn how human, physical and environmental components of the world interact.
2. discover geographic theory and its use in understanding real world processes.
3. acquire geographic analytical skills that can be applied to a variety of research and professional tasks where the analysis of spatial information is required.

LEARNING OUTCOMES OF THE PROGRAMME

The students shall be able to :

1. articulate the theories, philosophies, and concepts in the discipline of geography, the inter-relationship between people and places, and the interactions between nature and society.
2. understand the concepts of urbanization and sub-urbanization, including the variety of forms and structures that cities take around the world.
3. understand the fundamental concepts of spatial interaction and diffusion, which explain how human activities are influenced by the concept of distance.

SHAHEED BENAZIR BHUTTO WOMEN UNIVERSITY PESHAWAR

ITEM # III: APPROVAL OF 4 YEARS-BS GEOGRAPHY CURRICULUM SESSION 2021-ONWARDS

SHAHEED BENAZIR BHUTTO WOMEN UNIVERSITY PESHAWAR
DEAPRTMENT OF GEOGRAPHY

ADMISSION REQUIREMENT

ELIGIBILITY

Intermediate or equivalent (all disciplines) not less than 45% marks.

DURATION

Four years program spread over 8 semesters, two semesters per year.

COURSE AND CREDIT REQUIREMENTS

As per the University Revised Semester Regulations, a total number of 132- 144 Credit hours.

EVALUATION

For uniformity in the evaluation system, NCRC recommends that the minimum CGPA required for award of degree is 2 out of 4.0 at undergraduate level subject to meet all requirements of the university.

CURRICULUM FOR BS 4 YEARS DEGREE IN GEOGRAPHY

STRUCTURE

S.NO	CATEGORIES	NO. OF COURSES MIN- MAX	CREDIT HOURS MIN- MAX
1	Compulsory Requirement (No Choice).	9-9	25-25
2	General Courses to be chosen from other departments	7-8	21-25
3	Discipline Specific Foundation Courses	9-10	27-30
4	MAJOR COURSES INCLUDING RESEARCH PROJECT/INTERNSHIP	11-13	36-42
5	ELECTIVE COURSES WITHIN THE MAJOR	4-4	12-12

Total numbers of Credit Hours	134
Duration	4 YEARS
Semester Duration	16 WEEKS
Semesters	8
Course Load Per Semester	15-18 CREDIT HOURS
Number of Courses Per Semester	5-7
9-9 compulsory courses	25 Credits
7-8 general courses	21-25 Credits
9-10 discipline specific foundation courses	27-30Credits
11-13 Major courses including research project/internship	36-42 credit hours
4-4 Elective Courses within the Major	12-12 credit hours

LAYOUT

Sr.No	Compulsory Requirements (the student has no choice),course contents are in annexure-A	
	9 Courses	
	25 Credit Hours	
	Subject	**Credit Hours**
1	English-I	3
2	English-II	3
3	English-III	3
4	Pakistan Studies	2
5	Islamic studies/Ethics	2
6	Basic Mathematics	3
7	Inferential Statistics	3
8	Descriptive Statistics	3
9	Introduction to Information and Communication Technologies	3
	Total Credit Hours	**25**

S.No	General and Foundation Courses to be chosen from other departments. Note: In addition to the below, the university can offer any other which they feel necessary subject to the availability of resources.(course contents are in annexure-B)	
	7-8 Courses	
	21-24 Credit Hours	
	Subject	**Credit Hours**
1	Zoogeography and planetology	3
2	Principles of Sociology	3
3	Basic Concepts in Political Science	3
4	Understanding Psychology	3
5	Everyday Science	3
6	A Survey Course of World Civilizations	3
7	Basic Concept of History	3
8	Fundamentals of Economics	3
9	Introduction to Management	3
10	Economy Of Pakistan	3

11	Environmental Chemistry	4
12	General Chemistry	4
13	Essentials of Biology	3
14	Biodiversity of Animal life	3
15	Plant Ecology	3

Sr.No	**Discipline Specific Foundation courses**	
	9-10 Courses	
	27-30 Credit Hours	
	Subject	**Credit Hours**
1	Fundamentals of Geography	3
2	Physical Geography	3
3	Human Geography	3
4	Map Work	3
5	Geography of Pakistan	3
6	History & Development of Geographic Thought	3
7	Land Surveying	3
8	Principles of Cartography	3
9	Population Geography	3
10	Quantitative Geography	3
	Total Credit Hours	**30**

S.No	**Major courses including research project/internship**	
	11-13 Courses	
	36-42 Credit Hours	
	Subject	**Credit Hours**
1	Geomorphology	3
2	Introduction to Climatology	3
3	Oceanography	3
4	Economic Geography	3
5	Environmental Geography	3
6	Geographical Information Sciences	3
7	Remote Sensing and Image Processing	3
8	Research Methodology	3
9	Political Geography	3
10	Geodesy and Navigation Satellite System	3

11	Region and Regional concept	3
12	Settlement Geography	3
13	Research Project/Internship& Optional subject	6
	Total Credit Hours	42

Elective Courses within the major
4 Courses
12 Credit Hours
Any four of the courses may be opted from the following elective courses(course contents are in annexure-C).

Group 'A' Physical Geography

Course Code	**Title**	**Credit Hours**
GEOG-6XX	Pleistocene Geomorphology	3
GEOG-6XX	Quaternary Geomorphology	3
GEOG-6XX	Coastal Morphology	3
GEOG-6XX	Fluvial Morphology	3
GEOG-6XX	Glaciology	3
GEOG-6XX	Desert Morphology	3
GEOG-6XX	Soil Geography	3
GEOG-6XX	Meteorology	3
GEOG-6XX	Climate Change Studies	3
GEOG-6XX	Hydro Geography	3
GEOG-6XX	Plant Geography	3
GEOG-6XX	Zoo Geography	3
GEOG-6XX	Sedimentation and Stratigraphy	3

Group 'B' Human Geography

Course Code	**Title**	**Credit Hours**
GEOG-6XX	Cultural Geography	3
GEOG-6XX	Social Geography	3
GEOG-633	Population Geography	3
GEOG-6XX	Geography of Migration and Regional	3
GEOG-6XX	Development	3
GEOG-6XX	Behavioural Geography	3

GEOG-6XX	Historical Geography	3
GEOG-6XX	Geography of Religions	3
GEOG-6XX	Geography of Crimes	3
GEOG-6XX	Geography of Recreation and Tourism	3
GEOG-6XX	Gender Geography	3
GEOG-613	Transportation Geography	3
GEOG-612	Agricultural Geography	3
GEOG-6XX	Geography of Manufacturing	3
GEOG-6XX	Geography of Marketing	3
GEOG-6XX	Industrial Geography	3
GEOG-6XX	Urban Geography	3
GEOG-6XX	Rural Settlement Geography	3
GEOG-6XX	Urban and rural land use Studies	3
GEOG-6XX	Regional Planning and Development	3
GEOG-6XX	Geography of Housing	3
GEOG-6XX	Political Geography	3
GEOG-6XX	Medical Geography	3
GEOG-6XX	Geography of Health Care	3
GEOG-6XX	Geography of Nutrition	3
GEOG-6XX	Military Geography	3
GEOG-6XX	Geography of Administration	3
GEOG-6XX	Geography of resource conservation	3
GEOG-6XX	Geo-Archaeology	3
GEOG-6XX	Geography of prehistoric cultures and civilizations	3
GEOG-6XX	Anthro-Geography	3

Group 'C' Applied Geography

Course Code	**Title**	**Credit Hours**
GEOG-6XX	Environmental perceptions in Geography	3
GEOG-6XX	Quantitative Geography	3
GEOG-6XX	Geography of Natural Hazards and Disasters	3
GEOG-6XX	Applied Geomorphology	3
GEOG-6XX	Development Planning	3
GEOG-6XX	Sustainable Development of Natural Resources	3
GEOG-6XX	Environmental Impact Assessment (EIA)	3
GEOG-6XX	Applied Cartography	3
GEOG-6XX	Social Impact Assessment (SIA)	3

GEOG-6XX	Mountain Geography	3
GEOG-6XX	Geography of Retailing	3
GEOG-6XX	Urban Environmental Planning and management	3
GEOG-6XX	Geography of Wetlands	3
GEOG-634	Urban Planning	3
GEOG-6XX	Urban and Landscape Ecology	3
GEOG-6XX	Geography of Boundaries and Conflicts	3
GEOG-6XX	Natural Resources Research Others	3

Group 'D' Regional Geography

Course Code	**Title**	**Credit Hours**
GEOG-6XX	East Asia	3
GEOG-6XX	South and South East Asia	3
GEOG-6XX	South West Asia	3
GEOG-6XX	Central Asia	3
GEOG-6XX	Western Europe	3
GEOG-6XX	Eastern Europe	3
GEOG-6XX	North America	3
GEOG-6XX	Latin America	3
GEOG-6XX	North Africa	3
GEOG-6XX	Sub Saharan Africa	3
GEOG-6XX	Australia	3
GEOG-6XX	Muslim World	3
GEOG-6XX	Russian Federation	3

Group 'E' Geo-informatics

Course Code	**Title**	**Credit Hours**
GEOG-6XX	Geographical Analysis	3
GEOG-6XX	Geodesy and Satellite Navigation System	3
GEOG-6XX	Digital Image Processing	3
GEOG-6XX	Spatial Data Visualization	3
GEOG-6XX	Spatial Modelling	3
GEOG-6XX	Photogrammetry	3
GEOG-6XX	Spatial Data Management	3
GEOG-6XX	Cyber Cartography	3

Group 'F' Techniques

Course Code	**Title**	**Credit Hours**
GEOG-6XX	Mathematical Geography	3
GEOG-6XX	Geodesy and Advanced surveying	3
GEOG-6XX	Cartographic Techniques	3
GEOG-6XX	Digital Cartography	3
GEOG-6XX	Advanced Quantitative Analysis	3
GEOG-6XX	Computer Modelling & Simulation	3
GEOG-6XX	Techniques in Geography	3

Course codes for the remaining subjects will be assigned subject to the availability of teacher for the upcoming session.

SHAHEED BENAZIR BHUTTO WOMEN UNIVERSITY PESHAWAR

SCHEME OF STUDIES OF BS 4 YEARS DEGREE IN GEOGRAPHY SESSION 2021 AND ONWARDS

S.NO	SEMESTER	COURSE TITLE	COURSE CODE	CREDIT HOURS
1.	1st	English-I	ENG-301	3
2.		Islamic Studies / Ethics	ISL-301	2
3.		Basic Mathematics	MTH-303	3
4.		Introduction to Information and Communication Technologies	CSC-301	3
5.		Descriptive Statistics	STAT-302	3
6.		Foundation-I: Fundamentals of Geography	GEOG-301	3
			Total Credit Hours	**17**
S.NO	**SEMESTER**	**COURSE TITLE**	**COURSE CODE**	**CREDIT HOURS**
7.	2nd	English-II	ENG-302	3
8.		Pakistan Studies	PST-323	2
9.		Inferential Statistics	STAT-311	3
10.		General Chemistry	CHM-300	4(3+1)
11.		Basic concepts of History	HIS-301	3
12.		Foundation-II: Physical Geography	GEOG-311	3
			Total Credit Hours	**18**
S.NO	**SEMESTER**	**COURSE TITLE**	**COURSE CODE**	**CREDIT HOURS**
13.	3rd	English-III	ENG-410	3
14.		Basic concepts in Political Science	PSC-401	3
15.		Principles of Sociology	PSC-404	3
16.		Essentials of Biology	ZOL-401	3
17.		Foundation-III: Human Geography	GEOG-411	3
18.		Foundation-IV: Map Work	GEOG-412	3
			Total Credit Hours	**18**
S.NO	**SEMESTER**	**COURSE TITLE**	**COURSE CODE**	**CREDIT HOURS**
19.	4th	Plant Ecology	BOT-522	3
20.		Fundamental of Economics	ECO-404	3
21.		Zoogeography and Paleontology	ZOL-631	3
22.		Foundation-V: Geography of Pakistan	GEOG-413	3
23.		Foundation-VI: History & Development of Geographical Thought	GEOG-414	3
24.		Foundation-VII: Land Surveying	GEOG-415	3
			Total Credit Hours	**18**

S.NO	SEMESTER	COURSE TITLE	COURSE CODE	CREDIT HOURS
25.	5th	Foundation-VIII: Principles of Cartography	GEOG-511	3
26.		Foundation-IX: Population Geography	GEOG-512	3
27.		Major-I: Geomorphology	GEOG-513	3
28.		Major-II: Introduction to Climatology	GEOG-514	3
29.		Major-III: Oceanography	GEOG-515	3
30.		Major-IV: Economic Geography	GEOG-516	3
			Total Credit Hours	**18**
S.NO	**SEMESTER**	**COURSE TITLE**	**COURSE CODE**	**CREDIT HOURS**
31.	6th	Foundation-X: Quantitative Geography	GEOG-521	3
32.		Major-V: Environmental Geography	GEOG-522	3
33.		Major-VI: Geographical Information Science	GEOG-523	3
34.		Major-VII: Remote Sensing and Image Processing	GEOG-524	3
35.		Major-VIII: Research Methodology	GEOG-525	3
			Total Credit Hours	**15**
S.NO	**SEMESTER**	**COURSE TITLE**	**COURSE CODE**	**CREDIT HOURS**
37.	7th	Major-IX Political Geography	GEOG-631	3
39.		Major-X: Geodesy and Satellite Navigation System	GEOG-632	3
40.		Elective-I *		3
41.		Elective-II *		3
		Major-XI ** Research Project/ Internship/***Optional Subject	GEOG-699 Internship GEOG-689	3
			Total Credit Hours	**15**
S.NO	**SEMESTER**	**COURSE TITLE**	**COURSE CODE**	**CREDIT HOURS**
43.	8th	Major-XII: Region & Regional Concept	GEOG-611	3
44.		Major-XIII: Settlement Geography	GEOG-621	3
46.		Elective-III*		3
47.		Elective-IV*		3
49.		Major-XIV ** Research Project/ Internship/***Optional Subject	GEOG-699 Internship GEOG-689	3
			Total Credit Hours	**15**
Total Credit Hours of the Program				**134**
Research Project/Internship: ** Research Project is comprised of total 6 credit hours and is spread over two semesters i.e. 7 & 8.				**3**

* Students are allowed to select any four electives from the given groups. Selection of at least one elective is mandatory from the given groups. *** To be selected from the elective subjects.	

SHAHEED BENAZIR BHUTTO WOMEN UNIVERSITY PESHAWAR

DETAILED COURSE OUTLINE OF BS 4 YEARS DEGREE IN GEOGRAPHY SESSION 2021 AND ONWARDS

SEMESTER – I

Course Name: English – I	**Course Code: ENG-301**
Course Structure: Lectures: 3	**Credit Hours:** 3
Prerequisites: None	
Objectives: **Course Contents:** **Recommended Books:**	

Course Name: Islamic Studies	**Course Code: ISL-301**
Course Structure: Lectures: 3	**Credit Hours: 2**
Prerequisites: None	
Objectives: **Course Contents:** **Recommended Books:**	

Course Name: Basic Mathematics	**Course Code: MTH-303**
Course Structure: Lectures: 3	**Credit Hours:** 3
Prerequisites: None	
Objectives: **Course Contents:**	

Recommended Books:

Course Name: Introduction to Information and Communication Technologies	**Course Code: CSC-301**
Course Structure: Lectures: 3	**Credit Hours:** 3
Prerequisites: None	
Objectives: **Course Contents:** **Recommended Books:**	

Course Name: Descriptive Statistics	**Course Code:STAT-302**
Course Structure: Lectures: 3	**Credit Hours:** 3
Prerequisites: None	
Objectives: **Course Contents :** **Recommended Books:**	

Course Name: Fundamentals of Geography	**Course Code: GEOG-301**
Course Structure: Lectures: 3	**Credit Hours:** 3
Prerequisites: None	
Objectives: To expose students with the founding principles of Geography and geographical knowledge. **Course Contents** ➢ Introduction	

o Definitions, scope and branches of Geography

o Roots of the discipline and basic geographic concepts

o Themes and traditions of Geography

o Tools of Geography

- The Universe

o Galaxies and solar system

- The Earth as a planet

o Celestial positions, its shape and size

o Rotation, revolution and related phenomena

- Spheres of the earth

o Lithosphere

o Atmosphere

o Hydrosphere

o Biosphere

- Man-environment interaction

o Population

o Major Economic activities

o Settlements

o Pollution

Lab. work: Comprehension of atlases, map reading skills, location of places, features and relevant work related to topics of the theoretical section.

Recommended Books:

1. Arbogast, A. F. (2007) Discovering Physical Geography, John Wiley and Sons, London.
2. Christopherson, R. W. (2009) Geo systems: An introduction to Physical Geography, Pearson Prentice Hall, New Jersey.
3. De Blij, H. J and Muller, P. O. (1996) Physical Geography of the Global Environment, USA, John Wiley and sons Inc., New Jersey.

4. Guinness, J. P. & Nagle, G. (2011) Geography, Hodder Education, London.
5. King, C. (1980) Physical Geography, Basil Blackwell, Oxford.
6. Miller, G. T. (2008) Living in the Environment, Principles, connections and Solutions, Wadsworth, USA.

SHAHEED BENAZIR BHUTTO WOMEN UNIVERSITY PESHAWAR

DETAILED COURSE OUTLINE OF BS 4 YEARS DEGREE IN GEOGRAPHY SESSION 2021 AND ONWARDS

SEMESTER – II

Course Name: English – II	**Course Code: ENG-302**
Course Structure: Lectures: 3	**Credit Hours:** 3
Prerequisites: None	
Objectives: **Course Contents:** **Recommended Books:**	

Course Name: Pakistan Studies	**Course Code: PST-323**
Course Structure: Lectures: 2	**Credit Hours: 2**
Prerequisites: None	
Objectives: **Course Contents:** **Recommended Books:**	

Course Name: Inferential Statistics	**Course Code: STAT-311**
Course Structure: Lectures: 3	**Credit Hours:** 3
Prerequisites: None	
Objectives: **Course Contents:** **Recommended Books:**	

Course Name: General Chemistry	**Course Code:CHM-300**
Course Structure: Lectures: 3	**Credit Hours:** 3
Prerequisites: None	
Objectives: **Course Contents:** **Recommended Books:**	

Course Name: Basic Concepts Of History	**Course Code: HIS-301**
Course Structure: Lectures: 3	**Credit Hours:** 3
Prerequisites: None	
Objectives: **Course Contents:** **Recommended Books:**	

Course Name: Physical Geography	**Course Code:GEOG-311**
Course Structure: Lectures: 3	**Credit Hours: 3**
Prerequisites: None	

Objectives

To create understanding about the physical characteristics of the earth

Course Contents

- Introduction

o Definition, scope and major branches

o Realms of the physical environment

- Lithosphere

o Internal structure of earth

o Rocks–origin, formation and types: Igneous, Sedimentary and Metamorphic Rocks

o Plate tectonics, mountain building forces

o Geomorphic processes – endogenic and exogenic processes and their resultant landforms

o Earthquakes and volcanic activity, folding and faulting

o Weathering, mass wasting, cycle of erosion, erosion and deposition

o Landforms produced by running water, ground water, wind and glaciers

- Atmosphere

o Composition and structure of atmosphere

o Atmospheric temperature and pressure, global circulation

o Atmospheric moisture and precipitation

o Air masses and fronts

o Cyclones and other disturbances

- Hydrosphere

o Hydrological cycle

o Ocean composition, temperature and salinity of ocean water

o Movements of the ocean water; waves, currents and tides

- Biosphere

o Eco-systems

o Formation and types of soils

Lab. Work: Identification of rocks and minerals, study and identification of landform using Satellite imageries and Topographic Sheets. Construction and applications of models showing various types of landforms. Observation and recording of weather data from a mini weather station.

Field visits: Ground truthing and identification of various types of rocks, fluvial, glacial, desert landform, type of soils. Visit to any suitable area to observe and appreciate the characteristics of physical features (recommended areas: Mountainous, Plains, Plateaus, deserts and coastal areas). Visit to any national park/biosphere reserves; Soil Survey of Pakistan, Geological survey of Pakistan, Meteorological station/observatory and National Institute of Oceanography (NIO) and SUPARCO. Observations about the clouds and identification of their types

Recommended Books:

1. King, C. A. M. (1980) Physical Geography, Basil Blackwell, Oxford.
2. Mcliveen, J. F. R. (1992) Fundamentals of Weather and climate, Prentice Hall, New Jersey.
3. Monkhouse, F. J. (1996) Principles of Physical Geography, Hodder & Stoughton, London.
4. Peterson, J. F., Sack, D. & Gabler, R. E. (2011) Physical Geography, Brooks Cole.
5. Scott, R. C. (1996) Introduction to physical geography, West Publishing Co,New York.
6. Small, R. J. (1989) Geomorphology and Hydrology, Longman, London.
7. Strahler, A. (2013) Introduction to Physical Geography, John Wiley & Sons,New Jersey.
8. Strahlar, A. N., Strahlar, A. H. (2004) Physical Environment, John Wiley, New York.
9. Stringer, E. T. (2004) Modern Physical Geography, John Wiley, New York.
10. Taylor, J. (1993) Integral Physical Geography, Longman, London.
11. Thornbury, W. D. (2004) Principles of Geomorphology, John Willy & Sons,New York.
12. Thurman, H. V. & Trujillo, A. P. (2013) Essentials of Oceanography,Prentice-Hall, Inc, New York.

SHAHEED BENAZIR BHUTTO WOMEN UNIVERSITY PESHAWAR

DETAILED COURSE OUTLINE OF BS 4 YEARS DEGREE IN GEOGRAPHY
SESSION 2021 AND ONWARDS

SEMESTER – III

Course Name: English – III	**Course Code: ENG-410**
Course Structure: Lectures: 3	**Credit Hours:** 3
Prerequisites: None	
Objectives: **Course Contents:**	
Recommended Books:	

Course Name: Basic concepts in Political Science	**Course Code: PSC-401**

Course Structure: Lectures: 3	**Credit Hours:** 3
Prerequisites: None	
Objectives: **Course Contents:** **Recommended Books:**	

Course Name: Principles of Sociology	**Course Code: PSC-404**
Course Structure: Lectures: 3	**Credit Hours:** 3
Prerequisites: None	
Objectives: **Course Contents:** **Recommended Books:**	

Course Name: Essentials of Biology	**Course Code:ZOL-401**
Course Structure: Lectures: 3	**Credit Hours:** 3
Prerequisites: None	
Objectives: **Course Contents:** **Recommended Books:**	

Course Name: Human Geography	**Course Code: GEOG-411**
Course Structure: Lectures: 3	**Credit Hours:** 3

Prerequisites: None

Objectives:

This course attempts to impart knowledge about the relationship between man and environment including natural resources and related human activities.

Course Contents

- Introduction
  - Definition, scope and branches
- Basic approaches
  - Environmental determinism
  - Possibilism
  - Probabilism
  - Cognitive behaviourism
  - Coupled nature-human systems
- Population and its characteristics
  - Population distribution
  - Population structure and composition
  - Population dynamics (fertility, mortality, migration etc.)
- Economic activities
  - Classification of Economic Activities
  - Agriculture, mining, forestry, animal husbandry and poultry
  - Industries: cottage, light and heavy
  - Trade, transport and services
  - Tourism
- Settlements
  - Theories of human settlement
  - Types of settlements
  - Rural settlements
- dispersed, nucleated and Ribbon settlements
  - Urban Settlements
- Urban hierarchy and functions
  - Urbanization
  - Process of urbanization
  - Urban structure, morphology and theories
  - Land use and land cover patterns
- Environmental issues, causes and remedies

Field visits:

To explore economic activities in the context of natural environment of relevant area/region. To study rural and urban settlements, industrial areas and national parks**.**

Recommended Books:

1. Ahmed, Q. S. (2001) Fundamentals of Human Geography, Royal Book Company, Karachi.
2. Becker, A. & Secker. (2002) Human Geography: Culture, Society, and Space, John Wiley and Sons, New Jersey.
3. Becker, A. & Secker. (2002) Human Geography: Culture, Society, and Space, New York; John Wiley and Sons, New Jersey.
4. Benko, G. & Shorhmay. (2004) Human Geography: A history for the 21st century, Hodder Arnold, London.
5. Blij, H. J. D. (2002) Human Geography: Culture, Society, and Space,John Wiley and Sons, New Jersey.
6. Cloke, P. & Crang, P. (2005) Introducing Human Geographies, 2nd edition,Hodder Arnold, London.
7. Fouberg, E. H. (2012) Human Geography People, Place and Culture,John Wiley & Sons, Inc., Hoboken.
8. Getis, A. & Getis, J. (2005) Human Geography: Landscape of Human Activities, McGraw-Hill, Higher Education, Boston.
9. Harper, H. L. (2003) Environment and Society: Human Perspectives on Environmental Issues. Prentice Hall, New York.
10. Knox, P. L. & Marston, S. A. (2012) Places and Regions in Global Context: Human Geography, Prentice Hall, New York.
11. Lewis, C. P., Mitchell F. & Dyer, C. (2001) Village, Hamlet and Field:Changing Medieval Settlements in Central England, Windgather Press,London.
12. Neuwirth, R. (2006) Shadow Cities: A Billion Squatters, A New Urban World,Routledge, London.
13. Rubenstein, J. M. (2012) Contemporary Human Geography, PHI LearningPrivate Limited, New Delhi.

Course Name: Map Work	**Course Code: GEOG-412**
Course Structure: Lectures: 3	**Credit Hours:** 3
Prerequisites: None	
Course Objectives: To train students in map drawing, reading and its use for geographical analysis. **Course Contents** ➢ Maps: its elements and types	

➢ Principles and methods of map making, reading and reproduction ➢ Scale: types and their use, grid reference and indexation, ➢ Map projections: choice, construction, characteristics, and uses ➢ Enlargement and reduction of maps ➢ A study of the Survey of Pakistan maps ➢ Physical and cultural features to be described and interpreted ➢ Interpretation of weather maps of Pakistan **Field visits:** Visit to Survey of Pakistan and Pakistan Meteorological Departments.
Recommended Books: 1. Carey, H. H. (1983) How to Use Maps and Globes, Franklin Watts, NewYork. 2. Guljan, R. & Mushtaq, R. (1974) Map Projection, Oxford University Press,Oxford. 3. Kraak, M. J. & Ormelling, F. J. (1996) Cartography: Visualization of Spatial Data Harlow, Longman. 4. Robinson, A. H. (2002) Elements of Cartography, John Willey & Sons, NewYork. 5. Singh. L. & Raghunaadam, S. (1964) Map work and practical Geography,kalyani publishers, New Delhi.

SHAHEED BENAZIR BHUTTO WOMEN UNIVERSITY PESHAWAR

DETAILED COURSE OUTLINE OF BS 4 YEARS DEGREE IN GEOGRAPHY SESSION 2021 AND ONWARDS

SEMESTER – IV

Course Name: Plant Ecology	**Course Code:**BOT-522
Course Structure: Lectures: 3	**Credit Hours:** 3
Prerequisites: None	
Objectives: **Course Contents:**	

Recommended Books:

Course Name: Fundamentals of Economics	**Course Code:** ECO-404
Course Structure: Lectures: 3	**Credit Hours:** 3
Prerequisites: None	
Course Contents:	
Recommended Books	

Course Name: Zoogeography and Paleontology	**Course Code:** ZOL-631
Course Structure: Lectures: 3	**Credit Hours:** 3
Prerequisites: None	
Objectives **Course Contents**	
Recommended Books	

Course Name: Geography of Pakistan	**Course Code:** GEOG-413
Course Structure: Lectures: 3	**Credit Hours:** 3
Prerequisites: None	
Objective: This course attempts to impart knowledge about the relationship between man and physical, socio-economic and cultural environment with special reference to Pakistan, including land, population, human settlements, resources and related human activities. **Course Contents:** ➢ Introduction ➢ Geo-strategic position of Pakistan	

- Location and Geographical significance
- Geo-political Importance
- Administrative setup
- ➢ Land and Physical Environment:
- Physiography
- Climate and climatic regions
- Hydrology
- Soils and vegetation
  - ➢ The People
- Population characteristics: structure, composition and
- distribution
- Population Change
- Urbanization
- ➢ Economy
- Agriculture (crops and livestock)
- Irrigation
- Power and mineral resources
- Industries
- Trade
- Tourism
- ➢ Transport and Communication
- ➢ Major challenges of Pakistan
- Water, power, security and environmental issues

Lab. Work: Survey, data collection and presentation on different thematic maps.
Field visits: To identify various physical regions and study of at least one region's land use, urban structure, mining area, national parks, industrial areas and various rural and urban settlements and other natural resources.

Recommended Books

1. Ahmad, K. S. (1978) Geography of Pakistan, Oxford University Press,Oxford.
2. Burkey, J. S. (1991) Pakistan the continuing search for Nationhood, Western Press Oxford, UK.
3. Davidson, A. P. & Ahmad, M. (2003) Privatization and the Crisis of Agricultural Extension: The Case of Pakistan, King's Soas Studies in Development Geography, Ashgate Publishing, New Delhi.
4. Dichter, D. (1967) Geography of N-W.F.P, Oxford University Press, Oxford.
5. Hameed, A. (1972) Study of the Middle Indus Basin, San Francisco State College, San Francisco.Johnson, B.L.C (198).

6. Khan, F. K. (1991) Geography of Pakistan, Oxford University Press, Karachi
7. Spate, O. H. K. (2004) India and Pakistan, Munshiram Mohoanlal Publications Pvt. Ltd., UK.
8. Tayyeb, A. (1973) A Political Geography of Pakistan, Oxford University Press. Oxford.

Course Name: History & Development of Geographical Thought	**Course Code:** GEOG-414
Course Structure: Lectures: 3	**Credit Hours:** 3
Prerequisites: None	

Objectives: To study the evolution of geographic thought and concepts.

Course Contents:

- Nature of Geography
- Evolution of Geography
- Pre-classical and classical periods: ancient Geography
- Medieval Geography: Muslim contributions, European
- contributions.
- Modern Geography: Humboldt and Ritter, Geography from the middle of the 20th century, Dichotomies-physical and human, systematic and regional. Quantitative Revolution, Geoinformatics and Ecology.
- Established traditions: Earth science, area study, spatial organization,man-land, system analysis and cartographic science.
- Man-environment interaction themes: Environmental Determinism,Possibilism, Probabilism, Cognitive Behaviourism, World views on man-environment relationship.
- Development of Nomothetic traditions: facts, concepts, hypotheses and paradigms, Ideographic vs. Nomothetic.
- Philosophical framework: Positivism: Pragmatism, Phenomenology
- Evolution of modern tools and models in geography
- Development of geography in Pakistan

Lab. Work:

Writing of assignments and construction of maps relating to geographical thought and seminar presentation.
Books Recommended: 1. Creswell, T. (2013) Geographic Thought: A critical Introduction, Wiley-Blackwell, Oxford. 2. Clayton, K. & Johnson, J.H. (Ed.), (1988) Aspects of Geography, Macmillan,London. 3. Dickinson, R. E. (1969) The Makers of Modern Geography, Routledge,London. 4. Dickinson & Howarth, O.J.R. (1933) The Making of Geography, The Clarenden Press, Oxford. 5. James, P. E. & Mailim G. J. (1981) All Possible Worlds, John Wiley & Sons,New York. 6. Johnston, R. J. (1983) Geography and Geographers, Edward Arnold,London. 7. Kenzer, M. S. (Ed.) (1989) On Becoming a Professional Geographer Columbus, Merril Publishing Co., UK. 8. Mayhew, S. (1986) Geography, Harmonds Worth: Penguin London 9. Mitchel, B. (1989) Geography and Resources Analysis, Longman, New York. 10. Tim, U. (1992) The Place of Geography, Longman, London. 11. Unwin, D. (1989) Introductory Spatial Analysis, Methuen, New York.

Course Name: Land Surveying	**Course Code:** GEOG-415
Course Structure: Lectures: 3	**Credit Hours:** 3
Prerequisites: None **Objectives**: To train students in different surveying techniques **Course Outline** Introduction ➢ Instrumental survey and records ➢ Surveying using the following instruments: • o Chain survey • o Plane Table • o Prismatic Compass • o Determination of heights and slopes with Abney Level • o Contouring by Indian Clinometer • o Use of Dumpy level and Theodolite • o Total station • o Global Positioning System (GPS) **Field visits**:	

Visit to Survey of Pakistan and other concerned departments. **Lab. Work**: Preparation of the practical note book is mandatory.

Recommended Books

1. Carey, H. H. (1983) How to Use Maps and Globes, Franklin Watts, New York.
2. Clendinning, J. (1970) Principles of Surveying. Blackie and Sons, New Jersey.
3. Chandra, A. M. (2006) Plane Surveying, New Age International, 2nd edition,New Delhi.
4. Duggal, S. K. (2004) Surveying: Volume-II, Tata McGraw-Hill, New Delhi.
5. El-Rabbany, A. (2006) Introduction to GPS: The global Positioning System,2nd edition; Artech House, Boston.
6. Gopi, S., Kumar, S., & Madu, R. N. (2007) Advanced Surveying: Total Station, GIS and Remote Sensing, Delhi.
7. Guochang, X., (2007) GPS: Theory, Algorithms and Applications, 2nd edition,Springer, New York.
8. Kaplan, (Ed.) (2006) Understanding GPS: Principles and Applications.Artech House, London.
9. Kennedy, M. (2010) The Global Positioning System in ArcGIS, Tyler and Frances Group, New York.
10. Kumar, P. (2007) Dictionary of Global Positioning System, Biotech Books, Delhi.
11. Mc Cormac, J. (2004) Surveying, New York, John Willey & Sons, 5th edition.
12. Roy, S. K. (2010) Fundamentals of Surveying. Ph I learning Prinate Limited,New Delhi.
13. Taylor, G. & Blewit, G. (2006) Intelligent Positioning: GIS-GPS Unification.John Wiley & Sons, New Jersey.

SHAHEED BENAZIR BHUTTO WOMEN UNIVERSITY PESHAWAR

DETAILED COURSE OUTLINE OF BS 4 YEARS DEGREE IN GEOGRAPHY SESSION 2021 AND ONWARDS

SEMESTER – V

Course Name: Principles of Cartography	**Course Code:** GEOG-511
Course Structure: Lectures: 3	**Credit Hours:** 3
Prerequisites: None	

Objectives:

To familiarize students with map-making science and its applications.

Course Contents:

- Evolution of Cartography
- Basic geodesy, spherical, ellipsoidal and geoidal earth, geographical and planer coordinates, properties of the graticule and geodetic position.
- Map projections: Major types, merits and demerits of commonly used map projections.
- Map Datum
- Symbolization, symbol types and graphic variables, the symbolization problems, symbolizing graphic features.
- Lettering principles.
- Mapping statistical surfaces: Thematic map, choropleth, dot map, isolines, area cartograms.
- Principles of cartographic design, general design problems; design of map symbols. Basic procedure and designing of the thematic maps such as topographic, climatic, economic, population, settlements, urban morphology etc.
- Map production, form of map output, construction material, output options, composing separations, proofing.
- Introduction to Digital Cartography
- Terrain data (Digital Elevation Model/ Digital Terrain Model)

Lab. Work:

Drawing of various thematic maps and other relevant exercises in cartography and mapping.

Recommended Books:

1. Bygot, J. (1960) An Introduction to Map Work & Practical Geography,Tutorial Press, London.
2. Campbell, J. B. (2010) Introduction to Remote Sensing, The Guilford Press,London.
3. Clarke, K. (2010) Getting started with Geographic Information System,Prentice Hall, New York.
4. Foresman, T. (1997) The history of Geographic Information System,Prentice Hall, New York.
5. Grampton, J. W. (2010) Mapping: A critical introduction to Cartography & GIS. John Wiley & Sons, New York.
6. Heywood, I. C. S. & Carver, S. (2003) An introduction to GeographicInformation System, Addison Wesley Longman, New York.
7. McDonald, R. & Burrough, P. (2001) Principles of Geographic Information Systems, Oxford University Press, Karachi.

8. Maguire, D. J. (1991) Geographic Information System. Longman, London.
9. Mather, P. M. (2004) Computer Processing of Remotely Sensed Images,John Wiley and Sons, New Jersey.
10. Robinson, A. N., Morrison, J. L., Muehrcke, P.C., Kimerling, A. J., & Guptill,
11. S.C. (2002), Elements of Cartography, John Wiley, New York.

Course Name: Population Geography	**Course Code:** GEOG-512
Course Structure: Lectures: 3	**Credit Hours:** 3
Prerequisites: None	

Objectives: To make students understand the dynamics of population characteristics; Relationship between man, environment and resources. To highlight the importance of demographic data in planning and decision-making**.**

Course Contents

- Introduction
- Population theories
- Sources and methods of population data collection and associated Problems
- Population distribution and density
- Urban and rural population
- Population composition: gender composition, age structure, marital status, families and households, languages, religions, ethnic groups etc.
- Population dynamics: Patterns of fecundity and fertility, morbidity and mortality
- Migration and its types
- Demographic transition
- Population growth and change
- Population Projections

Lab. Work:

Consultation of the Population Census of Pakistan and representation of population data on maps.

Recommended Books

1. Ardagh, M. (2013) Textbook of Population Geography, Random Exports,New Delhi

2. Beayheu,G. J. (1966) Geography of Population. Prentice Hall, UK.
3. Beshers, J. M. (1967) Population Processes in Social System, New York.
4. Glenn, T. (1969) A Geography of Population World Pattern, John Wiley &Sons. New York & London.
5. John. I. C. (1997) Population Geography, UK.
6. Majid, H. (1994) Population Geography, Anmol Publications
7. Polunin, N. (1998) Population and global security, Cambridge University Press, UK.
8. Sharma, R. K. (2007) Demography and Population problems, Atlantic Publishers, New Delhi.
9. Waren, C. R. (1967) Studies in Demography of Pakistan, Karachi.
10. William, F. H. & Meluyn, J. (1993) An Introduction to Population Geography. University Press Cambridge, UK.
11. Wrebur, Z. (1970) A Prologue to Population Geography, Prentice Hall, New Jersey.

Course Name: Geomorphology	**Course Code:** GEOG-513
Course Structure: Lectures: 3	**Credit Hours:** 3
Prerequisites: None	

Objective: To make students understand the origin and recognize different types of landform with the help of shape, material and process.

Course Contents:

- Scope and status of geomorphology
- Introduction to geomorphic concepts/principles
- Factors of landform development; structure, process and geological time scale
- Endogenic Processes
  - Isostasy
  - Diastrophism
  - Continental drift
  - Plate tectonic
  - Volcanism
  - Earthquakes
- Exogenic Processes

- Weathering; mass wasting and their types
- Cycle of erosion: fluvial , glacial, eolian and Karst
- Fluvial erosional landforms, transportation mechanisms of running water; fluvial depositional landforms, types of drainage patterns and structure
- Glacier formation, glacier as geomorphic agent: glacial erosion and depositional landforms; glacio-lacustrine and glacio-fluvial features
- Eolian landforms: wind as geomorphic agent; eolian erosional landforms, transportation by wind; Eolian depositional landforms
- Ground water: porosity and permeability of rocks; aquifers
- Karst topography and associated landforms
- Sea wave as geomorphic agent; erosional and depositional landforms
- Soil development: factors of soil formation, physical and chemical properties of soil, soil profile, texture and structure; types of soils

Lab. Work:

Lab. work must be conducted for soil, rocks and minerals recognition where

relevant material is readily available. Geomorphic profiles, use of Remote sensing techniques for the interpretation of landforms and geomorphic features

Field Visit:

Field trips to accessible areas for in-depth geomorphic studies**.**

Recommended Books

1. Burbank, D. W. & Anderson, R. S. (2011) Tectonic Geomorphology: A Frontier in Earth Science, Blackwell Science, New Jersey.
2. Charlton, R. O. (2008) Fundamentals of Geomorphology, Routledge Taylor & Francis Group, London.
3. Clarke, J. I. (1958) The Study of Soils. Oxford University Press: Oxford.
4. Dury, G. H. (1960) The Face of the Earth. Penguin Books. London.
5. Hagget, R. J (2011) Fundamentals of Geomorphology, Routledge, London.
6. King, C. (1976) Techniques in Geomorphology. Edward, London.
7. Leopold, L. B., Wolman, M. G. & Miller, J. P. (1995) Fluvial Processes in Geomorphology, Dover Publications, UK.
8. Ritter, D. F., Kochel, R. C. & Miller, J. R. (2011) Process Geomorphology, McGraw-Hill, New York.
9. Russels. (1959) The World of Soils, Collins Books, London.
10. Spark, B .W. (1986) Geomorphology, Longmans, London /New York.

11. Summerfield, M. (1996) Global Geomorphology, Prentice Hall Inc., New York.
12. Thornbury, W. D. (2004) Principles of Geomorphology, John Wiley & Sons, London .
13. Wooldridge, S. W. & Morgan, R. S. (2009) An Outline of Geomorphology:
14. The Physical Basis of Geography. Longmans. London /New York.

Course Name: Introduction to Climatology	**Course Code:** GEOG-514
Course Structure: Lectures: 3	**Credit Hours:** 3
Prerequisites: None	

Objective: To understand the elements and factors of climate, spatial and temporal variations in weather and climate.

To familiarize students with the major climatic regions of the world and Pakistan.

Course Contents:

- Introduction.
- Key concepts in climatology and meteorology.
- Structure and composition of atmosphere.
- Elements and factors of climate.
- Insolation and Terrestrial heat budget.
- Temperature distribution.
- Humidity and its types; Condensation and their forms, Precipitation, formation and their types.
- Atmospheric Pressure and global pressure belts.
- Atmospheric Circulation: (Upper and Lower) air stability and instability,
    - storms; Cyclones (hurricanes, typhoons) and tornadoes.
- Air masses and fronts.
- Classification of climates; critical study of the Koppen, Miller and
    - Thornthwaite classifications of major climates.
- Climate variability and climate change: Natural and anthropogenic;
    - Green house gasses; global warming; acid rain, ozone layer depletion
    - El-Niño and La-Niña, impact on precipitation distribution.
- Climatic regions of Pakistan and their characteristics
- Climatic data: sources, collection, analysis and presentation.

- Problems associated with data quality (spatial, temporal).

Lab. Work:

Recording and analysis of weather data, interpretation of weather maps and synoptic charts. Visit to local office of Pakistan Meteorological Department and hands on exercises.

Recommended Books

1. Ackerman, S. A. (2012) Meteorology: Understanding the atmosphere, Jones & Bartlett Learning, Canada.
2. Ahrens, C. D. (2009) Meteorology Today, Brooks/Cole CENGAGE learning, Australia.
3. Barry. R. (2009) Atmosphere, Weather and Climate, Clays St. Davis. ,London.
4. Byers, H. R. (1991) General Climatology, Prentice Hall, New Delhi.
5. Byers, H. R. (1993) General Meteorology, McGraw-Hill, New York.
6. Graedel, T. (1995) Atmosphere, Climate and Change, Scientific American Library, New York.
7. Haurwitz, B. & Austin, J. (1944) Climatology, McGraw Hill, New York.
8. Kendrew, W. G. (1959) Climatology, University Press Oxford, Karachi
9. Lutgens, F. K. & Edward, J. T. (2012) The atmosphere: An introduction to Meteorology, PHI learning, New Delhi.
10. Lamb, H. (1992) Climate History and the Modern World, Methun & Co. Ltd.,London.
11. Maclleveen, J .F. (1991) Fundamentals of Weather and Climate, Chapman & Hall, London.
12. Miller, A. (2001) Climatology, Methuen, New York.
13. Oliver, J. (1981) Climatology: Selected Applications, Edward Arnold, USA.
14. Sellers, A. & Henderson, A. (1986) Contemporary Climatology, Longman,London.
15. Shamshad, K. M. (1988) The Meteorology of Pakistan, Royal Book Co.,Karachi
16. Shapley, H. (1960) Climatic Change, Evidence, Causes & Effects, Harward University Press, Cambridge.
17. Thompson, R. (1997) Applied Climatology, Principles and Practice, Routledge, Canada.
18. Trenberth, K. (1992) Climate System Modelling, McGraw-Hill, New York.
19. Trewartha, G. T. (1996) Climate System Modelling, McGraw, New York.
20. Whyte, I. (1999) Climatic Change and Human Society, Arnold Division,London

Course Name: Oceanography	**Course Code:** GEOG-515

Course Structure: Lectures: 3	**Credit Hours:** 3
Prerequisites: None	

Objectives: To develop a comprehension of the origin of oceans, geomorphology, circulation and resultant physical characteristics of the oceans among the students.

Course Contents:

- Introduction
- Origin of oceans and seas: major water masses and their distribution.
- Morphology of the ocean basins.
- Ocean floor deposits, their characteristics and classification.
- Temperature, salinity and density of ocean water; distribution, causes and effects
- Oceanic circulation: waves, currents and tides, their nature, causes,effects and impact on environment.
- Special phenomena: tropical storms; Tsunami.
- Oceanography of Arabian Sea with special reference to Exclusive Economic Zone.

Lab. Work:

Drawing features of the Ocean floor, mapping of the ocean currents, tides and associated phenomena.

Field visit:

Visit to any coastal area to study the various coastal morphological features.

Recommended Books

1. Garrison, T. (2005) Oceanography: An invitation to Marine Sciences, Thomson Brooks/Cole, Australia.
2. Murry. (2000) The Ocean, McGraw-Hill, New York.
3. Thurman, H. V. & Trujillo, A. P. (2010) Essentials of Oceanography. Prentice Hall, Canada.
4. Thurman, H. V. (2003) Introductory Oceanography. Prentice Hall, Canada

Course Name: Economic Geography	**Course Code:** GEOG-516
Course Structure: Lectures: 3	**Credit Hours:** 3
Prerequisites: None	

Objectives: To create an understanding of Spatial variations of Economic resources and activities with reference to global and national scenarios.

Course Contents:

- Introduction
- Evolution of world economic systems: Medieval feudal economics, economic impacts of colonialism. Modern world economic systems
- Concept of natural resources and reserves
- Human resource and its development
- Classification of economic activities
- Primary activities; gathering, hunting, herding, subsistence, Intensive and extensive farming, commercial grain farming, livestock farming, dairying, mixed farming, plantation farming, lumbering, fishing and mining
- Green revolution and its implications
- Secondary activities: Industrial revolution and manufacturing industries
- Tertiary activities
- Trade and service functions
- Transport systems.
- Quaternary and Quinary activities
- Regional inequalities, sustainable development and poverty alleviation
- Impacts of Globalization

Lab. work:

Collection and presentation of data from Economic Survey of Pakistan,Agricultural Statistics of Pakistan etc. pertaining to economic activities on maps with the help of different cartographic methods.

Recommended Books

1. Aoyama, Y., James T. M. & Susan H. (2012) Key Concepts in Economic Geography, SAGE, Singapore.
2. Alnwick, H. (2012) A Geography of Commodities, Harrap, London.

3. Hartshorne, T. A. & Alexander J. W. (1988) Economic Geography, Prentice Hall, Inc. Englewood Cliffs, New York.
4. Jarrett, H. R. (1969) Geography of Manufacturing, MacDonald & Evans Ltd. London.
5. Jones, C. F. & Darken. (1965) Economic Geography, Macmillan New York.
6. Khan, F.K. (1998), An Introduction to Economic Geography. Oxford Publishers, Karachi.
7. Knox, P & Agnew, J. (2008), The Geography of the World Economy. ,Edward Arnold, London.
8. Luckas, M. R. (1991) Economic Activity., Longman group, UK Limited Sadhukhan, S. K. (1986) Economic Geography, An Appraisal of Resources,
9. S. Chand and Company Ltd., New Delhi. Smith, J. R., Phillips, M. O. & Smith, T. S. (2013)
10. Industrial and Commercial Geography. Hott, Rinehart and Winston, New York.
11. Thoman, C. & Yeats. (1988) The Geography of Economic Activity, McGraw- Hill Book Company, New York, Inc
12. Thomes, R. S. & Hagget, R. J. (1980) Models in Geography. Harper and Row Publishers, London.
13. Truman, A. & Jhon, W. A. (1992) Economic Geography. Prentice-Hall of India.
14. Williams, T. R. (1991) Economic Geography., Longman group, New York.

SEMESTER – VI

Course Name: Quantitative Geography	**Course Code:** GEOG-521
Course Structure: Lectures: 3	**Credit Hours:** 3
Prerequisites: None	

Objectives:
To train students in collection, analysis, interpretation and presentation of quantitative spatial data and to enable them to organize and conduct independent research.
To use database software for the analysis of both Spatial and Temporal data**.**

Course Contents:

- Introduction
- Quantitative revolution and its impact on Geography
- Parametric and non-parametric statistics
- Nature of geographical data and measurement scales.
- Data summarizing techniques: theory of central tendency, dispersion, and variability.
- Time Series: graphs, growth and decline, index numbers, logarithmic scales, trends and fluctuations, components of time series.
- Methods of drawing trend lines for linear and exponential series scatter diagrams, standard errors and probability, correlation and regression.
- Quantitative models in Geography

Lab. Work:
Introduction to EPI-Info SPSS E-view, MS Excel, MiniTab and other relevant software database for quantitative analysis.

Recommended Books:

1. Haring, L. L. (2002) Introduction to Scientific Geographic Research, Oxford:
2. ECB Levin, J. (2006) Elementary Statistics in Social Research, Pearson,New Delhi.
3. Maguire, D. J. (1989) Computers in Geography, London: Longman. Matthew, H. & Foster, I. (1991) Geographical Data. Sources, Presentation and Analysis, Oxford University Press: London.
4. Mckillup, S. & Melinda, D. D. (2010), Geostatistics Explained, Cambridge University Press, Cambridge.
5. Walford, N. (2011) Practical Statistics for Geographers and earth Science,Wiley-Blackwell, Singapore.

Course Name: Environmental Geography	**Course Code:** GEOG-522
Course Structure: Lectures: 3	**Credit Hours:** 3
Prerequisites: None	

Objectives: To impart basic environmental knowledge to the students and enhance their awareness regarding global and local environmental issues.
Course Contents:

- Introduction
- Evolution of Environmental Studies in Geography
- Comparative Advantage of Geography
- Concept of environmental management
- Environment and Man
- Ecosystem
- Resources
- Important Cycles
- Population explosion
- The human impact on the environment
- Environmental hazards
- Types of Hazards
- Geophysical
- Quasi-Natural
- Biological
- Technological
- Human Response Parameters
- Risk assessment and perception
- Adjustment to Hazards
- Major Environmental hazards and Problems in Pakistan:
- Floods
- Earthquake; Tsunami
- Cyclones
- Landslides
- Droughts
- Deforestation and Desertification
- Water-logging and Salinity

- Soil Erosion
- Global Warming and ozone depletion
- Environmental Pollution
- Waste Management
- Control and Mitigation Measures
- Technology
- Awareness
- Legislation
- Ethics
- Pakistan Environmental Act
- National Conservation Strategy
- National Environmental Quality Standards

Lab. Work:

Field visits of urban and rural areas to identify local environmental problems and documentation of these problems through GIS and SRS data.

Recommended Books

1. Arms, K. (1991) Environmental Science, Asunders College Publishing:Philadelphia.
2. Basak, A. (2009) Environmental Studies, Pearson, New Delhi.
3. Botkin, D. B. & Edward A. K. (2012) Environmental Science, John Wiley & Sons. Inc., Hoboken.
4. Burton, I. R., W. Kates & Gilbert. F. W. (1978) The Environment as Hazard,Oxford University Press, Karachi.
5. Cunningham, W. P. (2007) Environmental Science: A Global Concern,McGraw-Hill Higher Education, Boston.
6. Dasgupta, S. (Ed.) (2009) Understanding the Global Environment, Pearson Longman, New Delhi.
7. Enger, E. D. (2004) Environmental Science, McGraw-Hill Higher Education,London.
8. Freedman, B. (1998) Environmental Science: A Canadian perspective, Scarborough Prentice Hall: Canada.
9. Goude, A. (1986) The Human Impact on the Natural Environment, Basil Blackwell, Oxford.
10. Greenburg, M. R. (1978) Environmental Impact Statement, Resource Paper No. 78-3, Association of American Guha, R. (2000)

11. Environmentalism: A global history, Longman, New York, pp. 69 – 97, http://hdr.undp.org/en/. Geographers, Washington, DC.
12. Kjellstrom, T. (1988) Health Hazards of the Environment: Measuring the Harm, World Health, pp. 2-5.
13. Lackey, R. T. (2005) Economic growth and salmon recovery: an irreconcilable conflict, Fisheries 30(3): 30-32.
14. Lead, J. R. & Smith, E. (2009) Environmental and human health impacts of nanotechnology. John Wiley & Sons, New York. Marsh, W. M. & John, G. (2005) Environmental Geography, John Wiley & Sons, Inc. Hoboken.
15. Raven., Peter, H. & Linda R. B. (2004) Environment, John Wiley & Sons, Inc., Hoboken.
16. Singh, L. (2010) Environmental Geography. A.P.H. Publishing Corporation.
17. Slocombe, S. (2004) Applying an Ecosystem Approach' in B. Mitchell:Resource and Environmental
18. Stokstad, E. (2005) Taking the pulse of Earth's life support systems,Science, 308, 41 – 43.
19. United Nations (2009) Sustainable Agriculture and Food Security in Asia and the Pacific. United Nations Publications. Water International 25(1), 127– 138
20. Weng, Q. (Ed.) (2011) Advances in Environmental Remote Sensing, Taylor and Francis Group, Boca Raton
21. Wright, R. T. (2008) Environmental Science, Pearson Prentice Hall, New Delhi
22. Bennet, R. & Estall, R. (1991) Global Change and Challenges: Geography for the 1990s, Routledge: London.

Course Name: Geographical Information Science	**Course Code:** GEOG-523
Course Structure: Lectures: 3	**Credit Hours:** 3
Prerequisites: None	

Objectives: The course aims to equip students with an understanding of GIS, evolution and applications of spatial data through Geo-spatial technologies.

Course Contents:

- Introduction:

Definitions, key components, functional subsystem, Raster data model, vector data model, attribute data model, Data acquisition techniques, data sources, data capturing techniques and

procedures, data transformation, visualization of spatial data, layers and projections and datums

- Map design: symbols to portray points, lines, polygons and volumes, graphic variables, visual hierarchy, Data classification graphic approach, mathematical approach.
- Spatial analysis: neighborhood functions, network, and overlay analysis, buffering, spatial data quality: components of data quality, micro level components, macro level components, usage components, sources of errors, accuracy and resolution and uncertainty.
- GIS Applications

Lab. Work:

Introduction to GIS Lab (hardware/ software), Raster/ Vector/ Attribute Data Display, Scanning, Digitization, coordinate based point mapping, Raster/Vector Conversion, Data layer integration and display of different projections, Map layout, Data Classification and Thematic Mapping, Handling of Topological Errors, Overlay and network analysis.

Recommended Books

1. Aronoff, S. (2004) Geographic Information Systems, A Management Perspective WDL Publications, Ottawa.
2. Burrough, P. (2002) Principles of Geographic Information Systems for Land Resources Management., Oxford University Press, Oxford
3. Bygot, J. (1960) An Introduction to Map Work & Practical Geography,Tutorial Press, London.
4. Campbell, J. B. (2002) Introduction to Remote Sensing, The Guilford Press, New York
5. Carey, H. H. (1983) How to Use Maps and Globes, Franklin Watts, NewYork.
6. Clarke, K. (2004) Getting started with Geographic Information System,Prentice Hall , New York.
7. Demers, M.N. (2008) Fundamentals of Geographical Information Systems.Fourth Edition. John Wiley & Sons, New Jersey.
8. Foresman, T. (1997) The history of Geographic Information System,Prentice Hall, New York.
9. Heywood, I., Cornelius, S., & Carver, S. (2011) An Introduction to Geographical Information System, Fourth Edition. Prentice Hall, New Jersey.
10. Jensen, J. R. (2006) Remote Sensing of the Environment: An Earth Resource Perspective. Second Edition, Prentice Hall, New Jersey.
11. Kimerling, J., Buckley, A. R., Muehrcke, P. C., & Muehrcke, J. O. (2011) Map Use: Reading, Analysis, Interpretation. Seventh Edition. ESRI Press. USA.

12. Krygier, J., & Wood, D. (2011) Making Maps: A Visual Guide to Map Design for GIS. Second Edition. The Guilford Press, New York.
13. Lillesand, T. M. & Kiefer, R. W. (2004) Remote Sensing and Image Interpretation, John Wiley and Sons, New Jersey.
14. Longley, P. A., Goodchild, M., Maguire, D. J. & Rhind, D. W. (2010)
15. Geographic Information Systems and Science. Third Edition. John Wiley& Sons, UK.
16. Maguire, D. J. (1991) Geographic Information System, Longman, London.
17. Mather, P. M. (2004) Computer Processing of Remotely Sensed Images,John Wiley and Sons, New Jersey.
18. McDonald, R. & Burrough, P. (2001) Principles of Geographic Information Systems, Oxford University Press, Oxford.
19. Monkhouse, F. J. & Wilkinson, H. R. (1994) Maps and Diagrams, , Methuen,London.
20. Nathanson, J. A., Lanzafama, M., & Kissam, P. (2010) Surveying
21. Fundamentals and Practices. Sixth Edition. Prentice Hall, New York.
22. Riasz, E. (1979) General Cartography, , McGraw Hill, New York
23. Robinson, A. N. (1995) Elements of Cartography, , John Wiley, New York
24. Robinson, A. N. (1979) An Introduction to the Study of Map Projections.University of London Press, London.
25. Slocum, T. A., McMaster, R. B., Kessler, F. C. & Howard, H. H. (2008)
26. Thematic Cartography and Geo visualization. Third Edition. New York.

Course Name: Remote Sensing and Image Processing	**Course Code:** GEOG-524
Course Structure: Lectures: 3	**Credit Hours:** 3
Prerequisites: None	

Objectives

- To introduce knowledge of recording earth's surface features from space-borne platforms and different ways in which images can be analyzed.
- To enable students to develop an understanding of common remote sensing products such as, earth resources satellite images, aerial photographs etc.
- To develop a comprehension regarding ground-truthing aided by GPS

Course Contents

- Introduction
- History and Development

- Concepts and Foundation of Remote Sensing
- Electromagnetic spectrum
- Visible Spectrum
- Colour Theory
- Atmospheric Attenuation
- Types of Remote Sensing Systems
- Active Remote Sensing
- Passive Remote Sensing
- Type of Sensors
- RBV, MSS, TM,HRV, HRPT/APT/AVHRR, MODIS (Terra and Aqua) non-imaging systems (RADAR)
- Types of Satellites
- Manned Satellites (Gemini, Mercury, Apollo, Space Shuttles)
- Unmanned Satellites (Metrological, Earth Resources,
- Telecommunication, Spy, Scientific etc.)
- Platforms (Orbits)
- Ground Receiving Stations (Reception of Data)
- Image Processing
- Image Classification
- Image Interpretation
- Image Interpretation Methods
- Image Interpretation Elements
- Image Interpretation Tasks
- Image Measurements
- Global Positioning System (GPS)
- Applications (Hydrology, Geology, Climatology, Environmental
- Application, Planning, Agricultural, Forestry, Socio-economic,
- Health etc.)
- Remote Sensing in Pakistan: Potential and Prospects

Lab Work:

Introduction to labs., single band image interpretation, false color predictions, false color composite images interpretation, visual interpretation of aerial photographs, various sensors data comparison, thermal infrared image interpretation, introduction to ERDAS imagine, display, geo-linking, identification of targets, field trips.

Recommended Books

1. Aber, J. S., Marzol, F. I., & Ries, J. (2010) Small-Format Aerial Photography:
2. Principles, Techniques and Geoscience Applications, Elsevier, Amsterdam.
3. Aronoff, S. (2004) Geographic Information Systems, A Management Perspective, WDL Publications, Ottawa.
4. Bossler, J. D. (Ed.) (2010) Manual of Geospatial Science and Technology,CRC Press Taylor & Francis Group, Boca Raton.

5. Burrough, P. (2002) Principles of Geographic Information Systems for Land Resources Management, Oxford University Press, Oxford.
6. Campbell, J. B. & Wynne, R. H. (2011) Introduction to Remote Sensing. Fifth Edition. Guilford Press, New York.
7. Carey, H. H. (1983) How to Use Maps and Globes, Franklin Watts, New York.
8. Foresman, T. (1997) The History of Geographic Information System,
9. Prentice Hall, New York. Heywood, I., Cornelius, S. & Carver, S. (2003) An introduction to Geographic
10. Information System, Addison Wesley Longman, New York.
11. Iliffe, J. & Lott, R. (2008) Datums and Map Projections for Remote Sensing,
12. GIS, and Surveying. Second Edition. Whittles Publishing, UK.
13. Jensen, J. (2000) Introductory Remote Sensing: Principles and Concepts,Freeman & Co., New York.
14. Jensen, J. R. (2011) Remote Sensing of the Environment: An Earth Resource Perspective. Second Edition. Prentice Hall, New Jersey.
15. Kraak, M. J. (1996) Cartography: Visualization of Spatial Data, Longman, Harlow.
16. Lillesand, T. M., Kiefer, R. W. & Chipman, J. W. (2007) Remote Sensing and Image Interpretation. Sixth Edition. John Wiley and Sons., New Jersey.
17. Maguire, D. J. (1991) Geographic Information System, Longman, London.
18. Mather, P. M. (2004) Computer Processing of Remotely Sensed Images, John Wiley and Sons, New Jersey.
19. McDonald, R. & Burrough, P. (2001) Principles of Geographic Information Systems, Oxford University Press, Oxford.
20. Reddy, M. A. (2008) Textbook of Remote Sensing and Geographical Information System. Third Edition. BS Publications, Hyderabad.
21. Richard, J. A. & Xiuping, J. (2006) Remote Sensing Digital image Analysis, Springer, Australia.
22. Robinson, A. N. (1979), An Introduction to the Study of Map Projections, University Press London, London.
23. Sabins, F. F. (2007) Remote Sensing: Principles and Interpretation. Third Edition. Waveland Press, Long Grove, Illinois.
24. Weng, Q. (2010) Remote Sensing and GIS Integration: Theories, Methods and applications, McGraw-Hill, New York.
25. Wolf, P., DeWitt, B. & Wilkinson, B. (2012) Elements of hotogrammetry with Application in GIS. Fourth Edition. McGraw-Hill, New York.

Course Name: Research Methodology	**Course Code:** GEOG-525
Course Structure: Lectures: 3	**Credit Hours:** 3
Prerequisites: None	

Objective: To create awareness among students regarding basics of geographical

Research.

Course Outline:

- Introduction
- Research approaches
- Research paradigms in Geography
- Types of research: historical research, qualitative/descriptive research, quantitative/experimental research
- Research design; research topic, formulation and statement of a problem, research questions, research hypotheses, research objectives, research plan
- Literature review; Literature sources: Journals (types) Books, Monographs and web sources
- Data collection, universe and sampling: primary and secondary data, sources of data
- Selection of a sample and measuring instruments, basic considerations in sampling, size of sample, geo-statistical
- considerations, Sampling units and design; points, traverses, random sampling, stratified sampling, systematic sampling
- Field Techniques
- Data analysis and interpretation: pre-analysis considerations, preparing data for analysis: use of the descriptive statistics and quantitative methods.
- Data presentation
- Research report writing; Proposal and Synopsis writing
- Bibliography and references

Lab. Work:

Preparation of Research presentations with the help of software (end note, reference manager etc).

Recommended Books

1. Ackerman, E. A. (1958) Geography as a Fundamental Research Discipline,University of Chicago Press, Chicago

2. Baker, A. R. H. & Billinge, M. (2011) Period and Place: Research Methods in Historical Geography. Cambridge University Press.
3. Blaxter, L., Hughes, C. & Tight, M. (2010) How to Research, Tata, McGraw- Hill Higher Education, New Delhi.
4. Bordens., Kenneth, S. & Bruce B. (2011) Research Design and Methods,McGraw-Hill, Singapore.
5. Bridget, S. & Lewin, C. (Ed.) (2012) Theory and Methods in social Research,SAGE, London.
6. Cohen, L., Manion, L. & Morrison, K. (2011) Research Methods inEducation, Routledge Taylor & Francis Group, London.
7. Ebdon, D. (1977) Statistics in Geography, Basil Blackwell, Oxford.
8. Gee, W. (1950) Social Science Research Method, Appleton Century Crofts,Inc. New York.
9. Gomez, B. & Jones, J. P. (Ed.) (2010) Research Methods in Geography: A Critical Introduction, Wiley-Blackwell, UK.
10. Gregory, S. (1973) Statistical Methods and the Geographers, Longman,London.
11. Gupta, M. & Gupta, D. (2011) Research Methodology, PHI learning, New Delhi.
12. Hammond, R. E. (1978) Quantitative Techniques in Geography, Clarendon Press, Oxford Howard. Hoggart, K., Lees, L. & Davies, A. (2002) Researching Human Geography, Arnold Publishers, London, 1st Edition.
13. Huff, D. (1973) How to Lie with Statistics, Hammonds-worth, Penguin, New York.
14. Jackson, S. L. (2011) Research Methods: A Modular approach, Wadsworth,Australia.
15. K. & Sharp, J A. (1983) The Management of a Student Research Project,Gower Publishing Company, UK.
16. Keelinger, F. N. (1986) Foundation of Behavioural Research, CAB
17. Publications. Kumar, R. (2011) Research Methodology, SAGE, New Delhi.
18. Leary, Z. (2010) The essential Guide to doing your Research Project, SAGE,New Delhi.
19. Montello, D. & Sutton, P. (2012) An Introduction to Scientific Research Methods in Geography & Environmental Studies. SAGE Publications,London.
20. Norcliffe, G. B. (1977) Inferential Statistics for Geographers, Hutchins,London.
21. Plate, R. S. (1959) Field Study in American Geography, University Press Chicago, Illinois Taylor, P. J. (1977) Quantitative Methods in Geography,Houghton Mifflin, Boston.
22. Walker. (1963) The Nature of Scientific Thought, Prentice Hall, New Jersey.

SHAHEED BENAZIR BHUTTO WOMEN UNIVERSITY PESHAWAR

DETAILED COURSE OUTLINE OF BS 4 YEARS DEGREE IN GEOGRAPHY SESSION 2021 AND ONWARDS

SEMESTER –VII

Course Name: Political Geography	**Course Code:** GEOG-631
Course Structure: Lectures: 3	**Credit Hours:** 3
Prerequisites: None	

Objectives:

- To highlight the political phenomena in geographical context.
- To explore the geographical aspect in the emergence and growth of states, frontier and boundaries
- To analyze and highlight the problem of Spatial and contemporary Political/Administrative Institutions and development.

Course Contents

- Definitions, Introduction, scope and Status of Political Geography. Perceptions of Space, Territoriality and the Political World.
- The State: State, Nation, nation-State. The Emergence of States. Modern Theories about states. The Territory of the State. Frontiers and Boundaries. Core Areas and capitals. Unitary, Federal and Regional States. Anomalous Political Units. Power Analysis.
- Political Geography within the State: Internal functions of the state. Constituent parts of the state. Civil divisions and districts with special reference to the context of Pakistan. The Geography of Elections.
- Geopolitics: Historical concepts in Geopolitics. Contemporary Geopolitics. The Geography of War and Peace. Imperialism, Colonialism, Decolonization. The aftermath of colonialism.
- Contemporary International Relations: International Law. International Trade. Land-locked States. Intergovernmental Organizations. The law of the sea. The Political Geography of the Sea. Politics of population, Migration and Food. The Role of Political Geographers in the Future Outer Space.

Recommended Books

1. MARTIN. J., R. JONES & M. WOODS (2004): Introduction to Political Geography: Space, Place and Politics Routledge. New York.

2. CHUCK, F.M. & I. GLASSNER **(**2003**):** Political Geography. John Wiley; New York (3 Edition)
3. KEVIN R. COX (2002): Political Geography: Territory, State, and Society. Blackwell Publishers
4. AGNEW, J.A. & J. AGNEW (2002): Making Political Geography (Human Geography in the Making) Arnold Publishers. New York/London.
5. PETER. T. & C. FLINT (1999): Political Geography: World, Economy, Nation, State and Locality. Prentice Hall; (4th Edition).
6. GLASSNER, M.I (1995): Political Geography, 2nd Edition John Wiley and Sons, New York. (2nd Edition)
7. DIKSHIT, R.D. (1995): Political Geography. The Discipline & its Dimensions. Tata McGraw-Hill Publishing Company Ltd., New Delhi.
8. HUSSAIN MAJID (1994): Political Geography. Annual Publications Pvt. Ltd. New Delhi 110002.
9. GLASSNER, M.I (1993): Political Geography. John Wiley & Sons. Inc. New York.
10. TAYLOR PETER JAM (1993): Political Geography. Longman Scientific and Technical, Longman Group U.K. Ltd., Essex.
11. MUIR RICHARD (1987): Modern Political Geography.
12. MUIR, R. (1975): Modern political geography. Halsted Press
13. PRESCOTT, J.R.V. (1972): Political Geography. Richard Clay (The Chancer Press) Ltd. Bungay, Suffolk, U.K.

Course Name: Geodesy and Navigation Satellite System	**Course Code:** GEOG-633
Course Structure: Lectures: 3	**Credit Hours:** 3
Prerequisites: None	

Objectives: : This course attempts to provide training on the fundamental aspects of GPS and Geodesy, various GPS measurements, their corresponding accuracies and identification of targets.

Course Contents:

- Introduction to Course
- Introduction to Geodesy
- Introduction to Navigation System
- History of Navigation System
- Navigation working mechanism
- Components of Navigation System: Space Segment, Control Segment, User Segment
- Navigation Data, Position and Time , Velocity
- Errors in Navigation System, Sources of Errors
- Navigation Satellite Signals, Pseudo-Range Navigation
- Differential Navigation Techniques
- Tracking and real time system

- Navigation Techniques and Project Costs

Lab Work:

Navigation value reading, Easting Northing & elevation, Map Projections and Datum Settings, Navigation based surveys, tracking, navigation and data processing, Navigation Project.

Recommended Books

1. Michael Kennedy (2002) The Global Positioning System and GIS: An Introduction. 2nd Edition, Taylor & Francis, New York.
2. Heywood, I., Cornelius, S. and Carver, S. (1999) An introduction to Geographic Information System. Addison Wesley Longman, New York, second edition. ISBN: 0 –81-7808 – 982 -3
3. Paul Zarchan (1996) Global Positioning System: Theory and Application. Volume I, American Institute of Aeronautics and Astronautics, Inc., Washington DC.
4. Aronoff, S**. (**1995) Geographic Information Systems: A Management Perspective. WDL Publications, Ottawa, Canada, Forth edition.
5. GPSCO (1992) Getting started with GPS Surveying. GPSCO Land Information Centre, NSW, Australia.

Course Name: Elective-I	**Course Code:**
Course Structure: Lectures: 3	**Credit Hours:** 3
Prerequisites: None	
Objectives. **Course Contents:**	
Recommended Books	

Course Name: Elective – II	**Course Code:**
Course Structure: Lectures: 3	**Credit Hours:** 3
Prerequisites: None	
Objectives: **Course Contents:**	

Books Recommended

Course Name: Research Project/Internship /Optional Subject Internship	Course Code: GEOG-699 Course Code: GEOG-689
Course Structure: Lectures: 3	**Credit Hours:** 3
Prerequisites: None	

Objectives: To expose students to do practical work in a real world situation to bridge the gap between theory and practice by writing a report independently. Learn communication skills by presenting it in a seminar.

Internship project outline: Internship with any public, private sector, district governments, national /international organization, inter university linkages, academic and research institutions, NGO, CBO, CCBs or Group Survey with report and its presentation in a seminar.

Course Contents:

- Introduction
- Background
- The Problem
- Research Questions
- Hypothesis
- Objectives
- Significance
- Historical Context
- Methodological Framework
- Data Sources
- Data Quality
- Data Uncertainty and Limitations
- Methods
- Techniques
- Models

➢ Sampling ➢ Accuracy Assessments ➢ Qualitative data (Questionnaire) ➢ In-situ Observation (Field Records) ➢ Review of Literature • General • Issue Specific • Technique Specific ➢ Results & Discussion ➢ Conclusion • Suggestions/Recommendations ➢ References ➢ Annexure
Recommended Books

SHAHEED BENAZIR BHUTTO WOMEN UNIVERSITY PESHAWAR

DETAILED COURSE OUTLINE OF BS 4 YEARS DEGREE IN GEOGRAPHY SESSION 2021 AND ONWARDS

SEMESTER –VIII

Course Name: Region & Regional Concept	**Course Code:** GEOG-611
Course Structure: Lectures: 3	**Credit Hours:** 3
Prerequisites: None	
Objectives: This course is framed to impart knowledge of the principles underlying the division of the world into geographic regions & to transfer knowledge of the characteristics of regions at global level**.** **Course Contents:** ➢ Introduction to Regional Concepts • Scope, Status, and the significance of the regional approach • Regional approach and its evolution • Criteria for dividing world into regions ➢ Physical Attributes: Location, Physiography, Climate, Soils, Hydrology ➢ and Natural Vegetation ➢ Economic attributes: Human Resources, Mineral and Power esources, ➢ Agriculture, Industry, Communication and Trade ➢ Types of Regions • Physical Regions • Economic Regions • Political Regions • Cultural Regions • Special Purpose Regions	

- Major Regions of the world
- Distinguishing characteristics
- South Asia
- South West Asia
- Far-eastern regions
- Western Europe
- Russia and Central Asia
- North Africa and Anglo-America
- Other Regions
- Role of the Region in Global Development

Lab. Work:

Identification and delimitation of different types of regions on maps

Recommended Books

1. Bradshaw, M. & White, G. W. (2007) Contemporary World Regional
2. Geography: Global connections, local voices, McGraw-Hill Higher Education. Boston.
3. Deblij, H. J. D & Muller, P. O. (2011) The world Today: Concepts and Regions in Geography John Wiley & sons Inc., New York.
4. Hobbs, J. (2010) Fundamentals of World Regional 2nd edition, Cole Cengage learning: Australia.
5. Knox, P. L. & Marston, S. A. (2003) Places and Regions in Global Context:Human Geography, Prentice Hall, New Jersey.
6. James. & Preston, E. (1974) One World Divided Prentice Hall, New Jersey.
7. James. & Jones. (1965) American Geography; Inventory and Prospects.Association of American Geographers. USA
8. Singh, R. L. (2008) Fundamentals of Human Geography, Sharada Pustak Bhawan, Allahabad.
9. Swawy, M. C. K., Bhaskara, R. & Hegde, V. M. (eds.) (2008) Urban Planning and Development at Cross Roads, BC books for Change, Bangalore.

Course Name: Settlement Geography	**Course Code:**GEOG-621

Course Structure: Lectures: 3	**Credit Hours:** 3
Prerequisites: None	

Objectives:

- To explain the process of formation and development of human settlements
- To enable students to develop an understanding regarding the processes of urbanization.

Course Outline

- Introduction
- Significance of settlement geography, basic definitions: Site and situation, hierarchy and types of settlements
- Rural settlements: Dispersed settlements, nucleated and ribbon settlements; their contrasts between More Developed Countries(MDCs) and Less Developed Countries (LDCs)
- Forms and patterns of settlements, house types and their evolution in rural areas
- Commercial functions of rural settlements and their role as a market town
- Infrastructure and services in rural settlements.
- Historical evolution of urban settlements, western and non-western urbanization, rural-urban fringe, suburbs and satellites
- Economic base, urban function and functional classification
- Towns and villages as central places
- Internal structure of the cities and land use pattern
- Theories of urban structure: Concentric Zone theory, Sector theory,
- Multiple Nuclei theory, and social area analysis,
- Urban development: slums and blighted areas.
- City-size, distribution, rank-size rule, primate city

Lab. Work:

Analysis of settlement types from topographic sheets, their centrality as population foci, urban areas etc.

Field Visit:

Field trips to study land use of major cities in Pakistan.

Recommended Books

1. Chisholm, M. (1982) Rural Settlements and Land use, Hutchinson University Library, London.
2. Gerald, B. (1966) Urbanization in Newly Developing Countries, Prentice Hall, London.
3. Gottdiener, M. & Budd, L. (2005) Key concepts in Urban Studies. SAGE Publications, London.
4. Gupta, K. R. (2004) Urban Development debates in the new Millennium,Vol.4, Atlantic Publishers, New Delhi.
5. Hall, T. & Barrett, H. (2012) Urban Geography, Routledge, Taylor & Francis Group, London.
6. Hudson, F. S. (1970) Geography of Settlement. Macdonald & Evans,London.
7. Knapp, B. (1986) Systematic Geography, Allen & Unwin, London.
8. Larice, M. (Ed.) (2013) The Urban Design Reader, Routledge, Taylor & Francis Group, London.
9. LeGates, R.T. (Ed.) (2011) The city Reader, Routledge Taylor and Francis Group, London.
10. Lewis, C. P., Mitchel, F. & Dyer, C. (2001) Village, Hamlet and Field:Changing Medieval Settlements in Central England. Windgather Press,England.
11. Macionis, J. J. & Parrillo, V. N. (2011) Cities and Urban life, PHI learning,New Delhi.
12. Mayer, H. M. & Kohn, C. F. (1959) Readings in Urban Geography, University of Chicago Press, USA.
13. Michael, P. (2002) Urban Geography. A global prospective, Rutledge, New York.
14. Murphy, R. E. (1966) The American City: An Urban Geography. McGraw Hill, New York.
15. Neuwirth, R. (2004) Shadow Cities: A Billion Squatters, A New Urban World,Rutledge, New York
16. Pacione, M. (2009) Urban Geography-A Global Perspective. Third Edition. Routledge, London
17. Rennie, J. & Short, P. (1992) Human Settlement (Illustrated Encyclopaedia of World Geography, Oxford University Press, Oxford.
18. Robert, B. K. (1996) Landscapes of Settlements: Prehistory to Present,Rutledge, London Rykwert, J. (2004) Settlements, University ofPennsylvania Press, University Park, USA.
19. Sidhartha, K. & Mukherjee, S. (2000) Cities-Urbanizations & UrbanSystems. Kisalaya Pub. Pvt. Ltd., New Delhi.
20. Theriault, M. (Ed.) (2011) Modeling Urban Dynamics, John Wiley and Sons,Inc., London.

21. United Nation Development Programme, (1996) Living in Asian Cities,ST/ESCAP/1660 United Nations, New York.
22. United Nation Centre Of Human Settlement (1996) An Urbanizing World:
23. Global Report on Human Settlements. Oxford University Press, Oxford.
24. Wood, M. (2005) Rural Geography: Processes, Responses and Experiences of Rural Restructuring, Sage Publication, London.

Course Name: Elective-III	**Course Code:**
Course Structure: Lectures: 3	**Credit Hours:** 3
Prerequisites: None	
Objectives: **Course Contents:**	
Recommended Books	

Course Name: Elective– IV	**Course Code:**
Course Structure: Lectures: 3	**Credit Hours:** 3
Prerequisites: None	
Objectives: **Course Contents:**	
Recommended Books	

Course Name: Research Project/Internship /Optional Subject Internship	Course Code: GEOG-699 Course Code: GEOG-689
Course Structure: Lectures: 3	**Credit Hours:** 3

Prerequisites: None

Objectives: To expose students to do practical work in a real world situation to bridge the gap between theory and practice by writing a report independently. Learn communication skills by presenting it in a seminar.

Internship project outline: Internship with any public, private sector, district governments, national /international organization, inter university linkages, academic and research institutions, NGO, CBO, CCBs or Group Survey with report and its presentation in a seminar.

Course Contents:

- Introduction
- Background
- The Problem
- Research Questions
- Hypothesis
- Objectives
- Significance
- Historical Context
- Methodological Framework
- Data Sources
- Data Quality
- Data Uncertainty and Limitations
- Methods
- Techniques
- Models
- Sampling
- Accuracy Assessments
- Qualitative data (Questionnaire)
- In-situ Observation (Field Records)
- Review of Literature
- General
- Issue Specific
- Technique Specific
- Results & Discussion
- Conclusion
- Suggestions/Recommendations
- References

➢ Annexure
Recommended Books

ANNEXTURE-A

COURSE CONTENTS OF COMPULSORY COURSES

Course Name: English – I	**Course Code:** ENG-301
Course Structure: Lectures: 3	**Credit Hours:** 3
Prerequisites: None	
Objectives: The main focus of this course is to introduce students to the basic concepts of English grammar and to develop their understanding of English language and effective listening and oral communication skills. Objectives of the course are: 1. Enabling the students to identify grammatical structures/ errors and use correct tenses, spellings, punctuation, and mechanics required for formal and informal communication 2. Enabling students to comprehend language through various listening strategies 3. Preparing students to use presentation skills for effective communication through a variety of classroom activities within specific (given) contexts **Course Contents:** ➢ Tenses ➢ Parts of speech ➢ Sentence structures ➢ Phrase and Clause (Dependent and Independent Clause) ➢ Voices of Verb (Active and Passive) ➢ Punctuation ➢ Word Formation ➢ Idioms and Proverbs ➢ Listening and Speaking Skills (Listening practice+ presentation skills, interview techniques, extempore/prepared unprepared talks)	

Note: Teachers need to include practice activities, exercises and worksheets on the provided topics. Extensive reading is required for vocabulary building

Recommended Books:

1. Howe, D. H, Kirkpatrick, T. A., & Kirkpatrick, D. L. (2004). Oxford English for undergraduates. Karachi: Oxford University Press. •
2. Eastwood, J. (2004). English Practice Grammar (New edition with tests and answers). Karachi: Oxford University Press.
3. Murphy, R. (2003). Grammar in use. Cambridge: Cambridge University Press

Course Name: English – II	**Course Code:** ENG-302
Course Structure: Lectures: 3	**Credit Hours: 3**
Prerequisites: None	

Objectives:

The main focus of this course is the development of effective communication strategies, oral

presentation, and written correspondence within the formal and informal context.

The objectives of this course are:

1. Enabling the students to recognize the components and barriers of oral and written communication
2. Developing students' skills to apply their knowledge of grammar and usage for formal and informal communicative purposes.
3. Enhancing students' language skills to be used in diversified context and audience.

Course Contents:

- Components of Communication
  - Context
  - Sender-Encoder
  - Message
  - Medium
  - Receiver-Decoder
  - Feedback

- Communication Skills (7 C's of Communication)
- Barriers of Communication & Measures to avoid these (Practice with sentences &
- paragraphs)
- Paragraph Writing (Thesis Statement, Topic Sentence and Supporting Sentences)
- Letters (Formal and informal)
- Comprehension Skills (Reading and Understanding within the context)
- Reading strategies (skimming, scanning, speedy)
- Précis Writing (Rules & Practice)

Note: Teachers need to include practice activities, exercises and worksheets on the provided topics. Documentaries to be shown for discussion and review

Recommended Books:

1. Hacker, D. (1992). A Writer's Reference. 2nd ed. Boston: St. Martin's
2. Hamp-Lyons, L. &Heasley, B. (1987). Study writing: A course in written English for academic and professional purposes. Cambridge: Cambridge University Press. Practical English Grammar by A.J. Thomson and A.V. Martinet. Exercises 2. Third edition. Oxford University Press 1986. ISBN 0 19 431350 6.
3. Writing. Intermediate by Marie-ChrisitineBoutin, Suzanne Brinand and Francoise Grellet. Oxford Supplementary Skills. Fourth Impression 1993. ISBN 019 435405 7 Pages 45-53 (note taking).
4. Upper-Intermediate by Rob Nolasco. Oxford Supplementary Skills. Fourth Impression 1992. ISBN 0 19 435406 5 (particularly good for writing memos, introduction to presentations, descriptive and argumentative writing).

Course Name: English – III	**Course Code:** ENG-410
Course Structure: Lectures: 3	**Credit Hours: 3**
Prerequisites: None	

Objectives:

This course aims to develop the formal writing skills of the students. The main objectives are:

1. Acquainting students' with various writing strategies

2. Enabling the students to make official (formal) correspondence
3. Developing students' skills of report writing

Course Contents:

- Essay Writing:
  - Essay Structure, Developing a Thesis, Outlining, Transitioning,
- Revising the Draft, Conclusion
  - Kinds: Argumentative, Discursive, Analytical, Descriptive,
- Expository, Persuasive
- Revising Paragraphs
- Resume Writing
- Letters (Various formats)
  - Business Letter
  - Cover Letter
  - Personal Statements
- Memorandum
  - Parts of a memo
  - Format
- Report writing:
- Purpose of writing a Report
- Structure of a Report
- Major components of a Report

Note: A report (following the proper format) will be practiced as an assignment upon instructor's discretion.

Recommended Books:

Smazler, W. R. (1996). Write to be Read: Reading, Reflection and Writing. Cambridge: Cambridge University Press.

1. Wallace, M. (1992). Study Skills. Cambridge: Cambridge University Press.
2. Writing. Advanced by Ron White. Oxford Supplementary Skills. Third Impression 1992. ISBN 0 19 435407 3 (particularly suitable for discursive, descriptive, argumentative and report writing).
3. College Writing Skills by John Langan. Mc=Graw-Hill Higher Education. 2004. The Mercury Reader. A Custom Publication. Compiled by norther Illinois
4. University. General Editiors: Janice Neulib; Kathleen Shine Cain; Stephen Ruffus and Maurice Scharton. (A reader which will give students exposure to the best of twentieth-century literature, without taxing the taste of engineering

students).

Course Name: Pakistan Studies	**Course Code:** PST-323
Course Structure: Lectures: 2	**Credit Hours: 2**
Prerequisites: None	

Objectives:

To develop vision of historical perspective, government, politics, contemporary Pakistan, ideological background of Pakistan.

To study the process of governance, national development, issues arising in the modern age and posing challenges to Pakistan.

To make students understand the dynamics of population characteristics; Relationship between man, environment and resources. To highlight the importance of demographic data in planning and decision-making

Course Contents:

- Historical Perspective:
- **A** Land and People
  - Indus Civilization
  - Advent of Muslim
  - Location and geo-physical features.
- **B** Ideological rationale with special reference to;
  - Sir Syed Ahmed Khan
  - Allama Muhammad Iqbal
  - Quaid-e-Azam Muhammad Ali Jinnah.
- **C.** Factors leading to Muslim separatism
  - Religious factors
  - Social and Cultural Factors
  - Political factors
  - Economic factors
  - Government and Politics in Pakistan

- Independence Act 1947 as Interim Constitution of Pakistan
- Objective Resolution
- Salient Features of the constitutions of ;

➢ Constitution of 1956
➢ Constitution of 1962
➢ Constitution of 1973

▪ Pakistan in the 21st Century;
  - Economic institutions and issues
  - Foreign policy of Pakistan and challenges

▪ Population Dynamics in Pakistan.
  - Population characteristics:

➢ Physical, Social and Economic
  - Population dynamics:

➢ Patterns of fecundity and fertility, morbidity and mortality
➢ Population growth and change through pyramids,
➢ Population policies, current population situation,
➢ Family planning and Islam

Recommended Books:

1. Burki, Shahid Javed. State & Society in Pakistan, The Macmillan Press Ltd 1980.
2. Akbar, S. Zaidi. Issue in Pakistan's Economy. Karachi: Oxford University Press, 2000.
3. S.M. Burke and Lawrence Ziring. Pakistan"s Foreign policy: An Historical analysis. Karachi: Oxford University Press, 1993.
4. Mehmood, Safdar. Pakistan Political Roots & Development. Lahore, 1994.
5. Wilcox, Wayne. The Emergence of Banglades., Washington: American Enterprise, Institute of Public Policy Research, 1972.
6. Mehmood, Safdar. Pakistan KayyunToota, Lahore: Idara-e-Saqafat-e-Islamia, Club Road, nd.
7. Amin, Tahir. Ethno - National Movement in Pakistan, Islamabad: Institute of Policy Studies, Islamabad.
8. Ziring, Lawrence. Enigma of Political Development. Kent England: WmDawson& sons Ltd, 1980.
9. Zahid, Ansar. History & Culture of Sindh. Karachi: Royal Book Company, 1980.
10. Afzal, M. Rafique. Political Parties in Pakistan, Vol. I, II & III. Islamabad: National Institute of Historical and cultural Research, 1998.
11. Sayeed, Khalid Bin. The Political System of Pakistan. Boston: Houghton Mifflin, 1967.
12. Aziz, K. K. Party, Politics in Pakistan, Islamabad: National Commission on Historical and Cultural Research, 1976.

13. Muhammad Waseem, Pakistan Under Martial Law, Lahore: Vanguard, 1987.
14. Haq, Noor ul. Making of Pakistan: The Military Perspective. Islamabad: National Commission on Historical and Cultural Research, 1993.

Course Name: Islamic Studies	**Course Code:** ISL-301
Course Structure: Lectures: 2	**Credit Hours: 2**
Prerequisites: None	

Objectives:

This course is aimed at:

1 To provide Basic information about Qur'an & Hadith.

2 To provide information to the students about social & ethical

system of Islam through the verses of the Holy Qur'an & Holy seerah.

3 To enhance student understands regarding Islamic Civilization, Economical & political

system of Islam.

4 To provide information to the students about the glorious history of Islam**.**

Course Contents:

- Introduction to Quranic Studies
  - Basic Concepts of Quran
  - History of Quran
  - Uloom-ul -Quran
- Study of Selected Text of Holy Quran
  - Verses of Surah Al-Baqra Related to Faith(Verse No-284-286)
  - Verses of Surah Al-Hujrat Related to Adab Al-Nabi(Verse No-1-18)
  - Verses of Surah Al-Mumanoon Related to Characteristics of faithful (Verse No-1-11)
  - Verses of Surah al-Furqan Related to Social Ethics (Verse No.63-77)
  - Verses of Surah Al-Inam Related to Ihkam(Verse No-152-154)
- Study of Selected Text of Holy Quran

- Verses of Surah Al-Ihzab Related to Adab al-Nabi (Verse No.6,21,40,56,57,58.)
- Verses of Surah Al-Hashar (18,19,20) Related to thinking, Day of Judgment
- Verses of Surah Al-Saf Related to Tafakar,Tadabar (Verse No-1,14)

- Seerat of Holy Prophet (S.A.W) I
  - Life of Muhammad Bin Abdullah (Before Prophet Hood)
  - Life of Holy Prophet (S.A.W) in Makkah
  - Important Lessons Derived from the life of Holy Prophet in Makkah
- Seerat of Holy Prophet (S.A.W) II
  - Life of Holy Prophet (S.A.W) in Madina
  - Important Events of Life Holy Prophet in Madina
  - Important Lessons Derived from the life of Holy Prophet in Madina
- Introduction To Sunnah
  - Basic Concepts of Hadith
  - History of Hadith
  - Kinds of Hadith
  - Uloom –ul-Hadith
  - Sunnah & Hadith
  - Legal Position of Sunnah
- Selected Study from Text of Hadith
- Introduction To Islamic Law & Jurisprudence
  - Basic Concepts of Islamic Law & Jurisprudence
  - History & Importance of Islamic Law & Jurisprudence
  - Sources of Islamic Law & Jurisprudence
  - Nature of Differences in Islamic Law
- Islam and Sectarianism
- Islamic Culture & Civilization
  - Basic Concepts of Islamic Culture & Civilization
  - Historical Development of Islamic Culture & Civilization
  - Characteristics of Islamic Culture & Civilization
  - Islamic Culture & Civilization and Contemporary Issues
- Islam & Science
  - Basic Concepts of Islam & Science
  - Contributions of Muslims in the Development of Science
  - Quranic & Science
- Islamic Economic System
  - Basic Concepts of Islamic Economic System

- Means of Distribution of wealth in Islamic Economics
- Islamic Concept of Riba
- Islamic Ways of Trade & Commerce

➢ Political System of Islam
- Basic Concepts of Islamic Political System
- Islamic Concept of Sovereignty
- Basic Institutions of Govt. in Islam

➢ Social System of Islam
- Basic Concepts of Social System of Islam
- Elements of Family
- Ethical Values of Islam

Recommended Books:

1. Hameed ullah Muhammad, "Emergence of Islam" , IRI,Islamabad
2. Hameed ullah Muhammad, "Muslim Conduct of State"
3. Hameed ullah Muhammad, 'Introduction to Islam
4. Mulana Muhammad Yousaf Islahi,"
5. Hussain Hamid Hassan, "An Introduction to the Study of Islamic Law" leaf Publication Islamabad, Pakistan.
6. Ahmad Hasan, "Principles of Islamic Jurisprudence" Islamic Research Institute, International Islamic University, Islamabad (1993)
7. Mir Waliullah, "Muslim Jurisprudence and the Quranic Law of Crimes" Islamic Book Service (1982)
8. H.S. Bhatia, "Studies in Islamic Law, Religion and Society" Deep & Deep Publications New Delhi (1989)
9. Dr. Muhammad Zia-ul-Haq, "Introduction to Al Sharia Al Islamia" Allama, Iqbal Open University, Islamabad (2001)

Course Name: Basic Mathematics	**Course Code:** MTH-303
Course Structure: Lectures: 3	**Credit Hours:** 3
Prerequisites: Mathematics at secondary level	
Course Contents: ➢ Preliminaries: Real-number system, complex numbers, introduction to sets, set operations, functions, types of functions.	

- Matrices: Introduction to matrices, types, matrix inverse, determinants, system of linear equations, Cramer's rule.
- Quadratic Equations: Solution of quadratic equations, qualitative analysis of roots of aquadratic equations, equations reducible to quadratic equations, cube roots of unity, relation between roots and coefficients of quadratic equations.
- Sequences and Series: Arithmetic progression, geometric progression, harmonic progression.
- Binomial Theorem: Introduction to mathematical induction, binomial theorem with rational and irrational indices.
- Trigonometry: Fundamentals of trigonometry, trigonometric identities.

Recommended Books:

1. Dolciani MP, Wooton W, Beckenback EF, Sharron S, Algebra 2 and Trigonometry, 1978,Houghton & Mifflin, Boston (suggested text)
2. Kaufmann JE, College Algebra and Trigonometry, 1987, PWS-Kent Company, Boston
3. Swokowski EW, Fundamentals of Algebra and Trigonometry (6th edition), 1986, PWSKent Company, Boston

Course Name: Descriptive Statistics	**Course Code:** STAT-302
Course Structure: Lectures: 3	**Credit Hours:** 3
Prerequisites: None	

Objectives:

The objective is to provide a basic understanding of data analysis using statistics and to

use computational tools on problems of applied nature.

Indented Learning Outcomes

After completion of this course, the student will be:

1.Demonstrate their understanding of descriptive statistics.

2.Effectively visualize the data. Carry out the practical application of data visualization.

3.Carry out data analysis

Course Contents:

- INTRODUCTION

- Introduction to descriptive statistics.
- Types of variables
- Measurement scales
- Data collection principles

➢ PRESENTATION OF DATA
- Examining and visualizing numerical and categorical data
- Tabulation of data
- Graphical methods
- Histograms
- Frequency polygon
- Frequency curve
- Ogive
- Bar plots
- Box plot

➢ MEASURES OF CENTRAL TENDENCY FOR GROUPED AND
➢ UNGROUPED DATA
- Measure of central tendency
- Arithmetic Mean
- Median
- Mode

➢ MEASURES OF DISPERSION FOR GROUPED AND UNGROUPED
➢ DATA

Range

Variance

➢ Standard Deviation
➢ Co-efficient of variation
➢ Properties of variance and standard deviation
➢ Moments
➢ Introduction to Sampling and sampling distributions
    - Introduction to Sampling
    - Importance of sampling
    - Types of sampling
    - Statistics vs. parameters
    - Sampling and non-sampling errors
    - The probability and non-probability sampling
    - Sampling distribution
    - Sampling distribution of sample mean
➢ Correlation and regression
    - Introduction to regression
    - Simple linear regression
    - Properties and model fitting

- Co-efficient of Determination
- Correlation

Recommended Books:

1. Clark, G.M. and Cooke, D. (1998), "A Basic Course in Statistics" 4th ed, Arnold, London.
2. Chaudhry. S.M. (2006), "Introduction to Statistical Theory" Parts I & II, Ilmi Kitab Khana, Lahore, Pakistan.
3. Mclave, J.T., Benson, P.G. and Snitch, T. (2005) "Statistics for Business & Economics" 9th ed.Prentice Hall, New Jersey.
4. Spiegel, M.R., Schiller, J.L. and Sirinivasan, R.L. (2000) "Probability and Statistics", 2nd ed. Schaums Outlines Series. McGraw Hill. NY.
5. Walpole, R.E., Myers, R.H and Myers, S.L. (1998), "Probability and Statistics for Engineers and Scientist" 6th edition, Prentice Hall, NY.

Course Name: Inferential Statistics	**Course Code:** STAT-311
Course Structure: Lectures: 3	**Credit Hours: 3**
Prerequisites: None	

Objectives:

The objective is to provide a basic understanding of data analysis using statistics and to use computational tools on problems of applied nature.

Indented Learning Outcomes

At the conclusion of this course, the student will be:

- Demonstrate their understanding of descriptive statistics.
- Effectively visualize the data. Carry out practical application of data visualization.
- Carry out data analysis.

Course Contents:

Sampling and Sampling Distribution

- Introduction to Sampling
- Importance of sampling
- Types of sampling

- Statistics vs. parameters
- Sampling and non-sampling errors
- The probability and non-probability sampling
- Sampling distribution
- Sampling distribution of sample mean

Estimation

- Estimate
- Estimation
- Estimator
- Types of estimation
- Point estimation
- Properties of a good point estimator
- Interval estimation
- Confidence interval for population mean
- Examples

Testing of Hypothesis

- Hypothesis
- Types of hypothesis
- Simple and composite hypothesis
- Exact and inexact hypothesis
- Null and alternative hypothesis
- Type-I and type-II error
- General outline for testing a null hypothesis
- Hypothesis testing for population mean using Z-Statistic
- Hypothesis testing for population mean using t-Statistic
- Testing hypothesis for the difference between two population means
- using Z-statistic
- Hypothesis testing for the difference between two population means
- using t-Statistic

Analysis of Variance(ANOVA)

- One way ANOVA
- Two way ANOVA
- Testing of hypothesis about the regression and correlation coefficient
- Testing of hypothesis about α
- Testing of hypothesis about β
- Testing hypothesis about the correlation coefficient
- Testing hypothesis when correlation coefficient is zero

Recommended Books:

1. Clark, G.M. and Cooke, D. (1998), "A Basic Course in Statistics" 4th ed, Arnold, London.
2. Chaudhry. S.M. (2006), "Introduction to Statistical Theory" Parts I & II, Ilmi Kitab Khana, Lahore, Pakistan.
3. Casella G. & Berger, R.L (2008). Statistical Inference, cengage learning, New York, USA.
4. Ross, S. (2017). A first course in probability, 9th edition. Pearson Education Limited.
5. Walpole, R.E., Myers, R.H and Myers, S.L. (1998), "Probability and Statistics for Engineers and Scientist" 6th edition, Prentice Hall, NY

Course Name: Introduction to Information and Communication Technologies	**Course Code:** CSC-301
Course Structure: Lectures: 3	**Credit Hours:** 3
Prerequisites: None	

Objectives:

This is an introductory course on Information and Communication Technologies. The topics include ICT terminologies, hardware and software components, the internet and world wide web, and ICT based applications.

After the completion of this course, the student will be able to:

- Understand different terms associated with ICT
- Identify various components of a computer system
- Identify the various categories of software and their usage
- Understand different terms associated with the Internet and World Wide Web.
- Use various web tools including Web Browsers, E-mail clients and search utilities.
- Use text processing, spreadsheets and presentation tools
- Understand the enabling/pervasive features of ICT

Course Contents:

- Introducing Computer Systems, Types of computer and history of computer
- Basic Definitions & Concepts, Hardware: Computer Systems & Components. Interacting with the Computer, input and output devices
- Storage Devices, Number Systems, Software: Operating Systems, Programming and Application Software, Introduction to Programming, Databases and Information Systems, Database, Introduction to RDBMS, Uses of Databases, Management information systems
- Computer Programmes, hardware-software interaction, compilers and interpreters, Input-Processing-Output charts, algorithms, flowcharts, generations of language

- Networks, uses of networks, Types of networks, network topologies and protocols
- Networks, Data Communication, The Internet, Browsers and Search Engines, The Internet: Email, Collaborative Computing and Social Networking, The Internet: E-Commerce, IT Security and other issues, threats, identity theft, online spying tools, threats to hardware hacking
- Taking protective measures
- Project Week, Review Week

Recommended Books:

1. Norton, P.(6th ed.). *Introduction to Computers* .McGraw Hill .
2. Williams, S.(6th ed.). *Using Information Technology: A Practical Introduction to Computer & Communications* .McGraw Hill.
3. Sarah ,E., Hutchinson., Stacey, C., Sawyer.(6th ed.).*Computers, Communications & information: A user's introduction*.
4. Leon,A., Leon.M. *Fundamentals of Information Technology*. Leon press.

ANNEXTURE-B

COURSE CONTENTS OF GENERAL COURSES

Course Name: Zoogeography and Paleontology	**Course Code:** ZOL-631
Course Structure: Lectures: 3	**Credit Hours: 3**
Prerequisites: None	
Objectives: The course imparts knowledge and concepts of evolution mainly based on the past fossil records. The fossil records also provide information regarding the distribution of animals in the past eras.	

This course provides information on the distribution of animals and their associations in the past; thus, to rationalize their relationship in the present time.

Course Contents:

Zoogeography: Branches of zoogeography (descriptive, chorology, faunistics, systematic, biocoenotic, causal, ecological, historical, experimental and applied zoogeography). Animal distribution (cosmopolitan distribution, discontinuous distribution, isolation distribution, bipolar distribution and endemic distribution) Barriers and dispersal. Zoogeographical regions (division, geographic ranges, physical features, climates, faunas and affinities of Holarctic (Palaearctic, Nearctic regions), Oriental, Ethiopian, Australian, and New tropical Regions. Palaeogeography (Theories of Continental drift and Plate tectonics).

Principles of Paleontology: Earth, Shells of earth; (atmosphere, hydrosphere, biosphere and lithosphere). Rock, types of rocks (lgneous rocks, sedimentary rocks and metamorphic rocks) Fossil, types and uses of fossils, nature of fossils. Processes of fossilization. Geological time scale. Pre-Cambrian life. Post Cambrian life (Palaeozoic life, Mesozoic life, Cenozoic life). Geochronometry (Uranium/Lead dating, radiocarbon dating, methods), evolutionary history of man, elephant, horse and camel, Paleoecology, Paleomagnetism

Recommended Books:

Zoogeography:

1. Darlington, P. J. Jr. ZOOGEOGRAPHY, 1963. John Wiley and Sons.
2. DeBeaufort, L. F. ZOOGEOGRAPHY OF THE LAND AND INLAND WATERS. 1951. Sidgwick and Jackson.
3. Ali, S.S. PALAEONTOLOGY, ZOOGEOGRAPHY AND WILDLIFE MANAGEMENT. 1999. Nasim Book Depot, Hyderabad, India

Paleontology:

1. Dunbar C.O. HISTORICAL GEOLOGY, 1969. John Wiley and Sons Inc. New York.
2. Brouwer, A. GENERAL PALAEONTOLOGY, 1977. Oliver and Boyed, London.
3. Gilbert, L. I. and Colbert, E.H. EVOLUTION OF VERTEBRATES, 1980. John Wiley and Sons Inc. New York.
4. Ali, S.S. PALAEONTOLOGY, ZOOGEOGRAPHY AND WILDLIFE MANAGEMENT. 1999. Nasim Book Depot, Hyderabad, India.

Course Name: Principles of Sociology	**Course Code:** PSC-404

Course Structure: Lectures: 3	**Credit Hours: 3**
Prerequisites:	

Objectives:

The course is designed to introduce the students with sociological concepts and discipline. The focus of the course shall be on significant concepts like social systems and structures, socioeconomic changes and social processes. The course will also cover characteristic features of Pakistan's society and social processes of the country**.**

Objective and Learning Outcomes

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

1) Demonstrate an understanding of the role sociology plays in contributing to our understanding of social reality.
2) Understand the connection between the individual and society and apply the sociological perspective in creating social change

Course Contents:

- Introduction: Definition, Scope, and Subject Matter, Sociology as a Science, Historical back
- ground of Sociology
- Basic Concepts: Group, Community, Society, Associations, Organization, Social Interaction
- Social Groups
- Culture and Socialization
- Deviance and Social Control
- Collective Behaviour
- Social Change: Modern and Postmodern Societies.
- Society in Pakistan: Characteristics of Pakistani Society , Social Stratification, Cast, Class & Ethnicity Social Institutions in Pakistan, urban and rural division of Pakistan, Minorities, major social problems

Recommended Books:

1. Anderson, Margaret and Howard F. Taylor. Sociology the Essentials. Australia: Wadsworth, 2001.
2. Gidden, Anthony. Introduction to Sociology. UK: Polity Press, 2002
3. Frank N Magill. International Encyclopedia of Sociology. U.S.A: Fitzroy Dearborn Publishers, 2003.
4. Macionis, John J. Sociology 10th ed. South Asia: Pearson Education, 2005.
5. Koening Samuel. Sociology: An Introduction to the Science of Society. New York: Barnes and Nobel, 1957.
6. Raza Rumi, Being Pakistani: Society, Culture and the Arts, Harper Collins, 2018.

Course Name: Basic Concepts in Political Science	**Course Code:** PSC-401
Course Structure: Lectures: 3	**Credit Hours: 3**
Prerequisites:	

Objectives:

The objective of this course is to introduce the students with the fundamentals of the subject of Political Science. The very basic concepts and terminology commonly used in Political science is taught to make the students friendly with the subject**.**

Course Contents:

- Definition, Nature, Scope and Sub-fields of Political Science.
- Approaches to the study of Political Science: Traditional and behavioural approach.
- State: its origin and evolution;
- Nation, National Interest and Sovereignty.
- Basic concepts of Political Science: Power, Authority, Legitimacy
- Organs of Government: Legislature, Executive, Judiciary.
- Federalism and Unitary Government
- Brief description of Forms of Government: Parliamentary, Presidential
- Governance
- Globalization
- Political Violence
- Terrorism and counter-terrorism

Recommended Books:

1. Haq, Mazher ul, Theory and Practice in Political Science, Lahore Bookland, 1996.
2. Ian Mackenzi (Ed.), Political Concepts: A Reader and Guide, Edinburgh, University Press,2005.
3. Mohammad Sarwar, Introduction to Political Science, Lahore Ilmi Kutub Khana, 1996

Course Name: Understanding Psychology	**Course Code:** PSY-301
Course Structure: Lectures: 3	**Credit Hours: 3**
Prerequisites: None	

Objectives:

1. To describe psychology with major areas in the field,
2. To identify the parameters of this discipline. Distinguish between the major perspectives on human thought and behavior.

3. To gain insight into human behavior and into one's own personality or personal relationships. Explore the ways that psychological theories are used to describe, understand, predict, and control or modify behavior.

Intended Learning Outcomes

Students will have the basic knowledge of psychology, human behavior, methods used in testing of human behavior.

Course Contents:

- Introduction to Psychology:
  - Definition and brief history of Psychology.
- Biological Basis of Behavior
  - Neuron: Structure and Functions
  - Central Nervous System and Peripheral Nervous System
- Sensation, Perception and Attention
  - Sensation
  - Characteristics and Major Functions of Different Sensations
  - Perception
  - Definition of Perception
  - Factors affecting Perception: Subjective, Objective
  - Attention
  - Factors: Subjective and Objective
  - Span of Attention
  - Fluctuation of Attention
  - Distraction of Attention
- Motives
  - Definition of motives
  - (Biogenic) Motives:
  - Sociogenic Motives
- Emotions
  - Definition
  - Theories of Emotion : James Lange Theory; Canon-Brad Theory, SchechterSinger Theory
- Learning
  - Definition of Learning
  - Types of Learning: Classical and Operant Conditioning,
  - Definition and Types of Reinforcement
- Memory
  - Definition
  - Sensory memory, short term memory, long term memory
  - Forgetting and theories of forgetting: decay theory, interference theory,
- motivational forgetting theory

- Thinking
    - Definition
    - Problem Solving: strategies and obstacles

Recommended Books:

1. Atkinson R. C., & Smith E. E. (2000). Introduction to psychology (13th ed.). Harcourt Brace College Publishers.
2. Fernald, L. D., & Fernald, P. S. (2005). Introduction to psychology. USA: WMC Brown Publishers.
3. Glassman, W. E. (2000). Approaches to psychology. Open University Press.
4. Hayes, N. (2000). Foundation of psychology (3rd ed.). Thomson Learning.
5. Lahey, B. B. (2004). Psychology: An introduction (8th ed.). McGraw-Hill Companies, Inc.
4. Leahey, T. H. (1992). A history of psychology: Main currents in psychological thought. New Jersey: Prentice-Hall International, Inc.
5. Myers, D. G. (1992). Psychology. (3rd ed.). New York: Wadsworth Publishers.
6. Ormord, J. E. (1995). Educational psychology: Developing learners. Prentice- Hall, Inc

Course Name: Everyday Science	**Course Code:** PSC-304
Course Structure: Lectures: 3	**Credit Hours: 3**
Prerequisites: None	

Objectives:

Students will understand the international nature of science and the interdependence of science, technology and society, including the benefits, limitations and implications imposed by social, economic, political, environmental, cultural and ethical factors.

Course Contents:

- **Physical Sciences:**
    - Universe, Galaxy, Light Year, Sun, Solar System, Earth
    - Sources of Energy (Renewable i.e. LED Energy, Solar Energy, Wind Energy and Non-Renewable,
    - Energy conservation and its sustainable use.
    - Natural Hazards and Disasters:- Earth Quake, Volcanic Eruption, Tsunami, Floods, Avalanche, Travelling Cyclone , Drought, Wildfire, Urban Fire.
- **Biological Sciences:**
    - The Basis of Life- Cell Structures and Functions (Subcellular Organelles such as
    - Nucleus, Mitochondria and Ribosomes).

- Common Diseases and Epidemics: Asthma, Polio, Diarrhea, Malaria, Hepatitis, Dengue
- Causes and Prevention.
- Blood Types
- Hormones and Endocrine Glands

➢ **Food Sciences:**
- Concept of Balance Diet: Vitamins, Carbohydrates, Protein, Fats and oil,
- Minerals, Fiber.
- Food Preservation

➢ **Environmental Sciences:**
- Definition of the Atmosphere, Hydrosphere, Biosphere and Lithosphere
- Types of Pollution: Water Pollution, , Land Pollution, Atmospheric Pollution
- Ozone Depletion, Greenhouse Effect and Global Warming

➢ **Information Technology & Telecommunications:-**
- Computers, Social Media Websites. Basics of Wireless Communication (Mobile, Satellite, GPS and Fiber Optic)

Recommended Books:

1. Dr Rabnawaz Samo, Encyclopedic Manual of everyday science, Karachi: Maktab e Faridi, 2005

Course Name: A Survey Course of World Civilizations	**Course Code:** HIS-401
Course Structure: Lectures: 3	**Credit Hours: 3**
Prerequisites:	

Objectives:

1. Discuss for the evolution of the major civilizations of the ancient world and their education
2. Discuss their contributions to the present day world
3. To dig out the roots of their termination

Course Contents:

➢ Indus Valley Civilization
- Background
- Discovery
- Location
- Religion
- Priest King

- Administration
- Economy
- Culture
- Art and Architecture
- Contributions

➢ Gandhara Civilization
- Background
- Discovery
- Location
- Religion
- Administration
- Economy
- Culture
- Contributions

➢ Mesopotamian Civilization
- Background
- Discovery
- Location
- Religion
- Administration
- Code of Hmurabi
- Economy
- Culture
- Contributions

➢ Egyptian Civilization
- Background
- Discovery
- Location
- Religion
- Status of Pharaoh
- Administration
- Economy
- Culture
- Status of Women
- Mummification
- Contributions

Recommended Books:

1. Burkitt, M.C. Our Early Ancestors. Cambridge: 1929.
2. Burns, E.M. and Ralph, P. L. World Civilizations, Latest Edition.
3. Easton, Stard C. The Heritage of the Past Earliest times to 1500. USA: 1970.

4. Frankfort, Henri. The Art and Architecture of the Ancient Orient. London: 1958.
5. Geddes and Grosset, Atlas of World History, Scotland, 1997.
6. Gibb, H. A. R., Studies on the Civilization of Islam, ed. Stanford J. Slaw, London, 1962.
7. Graig, A.M., The Heritage of World Civilizations, II Vols, New York, 1986.
8. Hamilton, Edith. The Echo of Greece. New York: 1957.
9. Hornblow, Leonora. Cleopatra of Egypt. New York: 1961
10. Kosambi, D. D., The Culture and Civilization in Ancient India: An Historical Outline, New Delhi, 1982.
11. Langer, W.L., AnEncyclopaedia of World History, 1972.
12. Masson-Oursel, Paul HD WillmanGrabowska, Philippe Stern. Ancient India and Indian Civilization. London: 1951.
13. Reither, J., World History: A Brief Introduction, 1973.
14. Roberts, J.M. Huntington, World History, Latest Edition.
15. Tannebaum, Edward R. A History of World Civilisations. USA: 1973.
16. Toynbee, Arnold J. Hellenism: The History of a Civilization. Oxford: 1959
17. Wallbank, T. W. and A. M. Taylor, Civilization: Past and Present, Vol. 1, 3rd ed., Chicago, 1954.
18. Wells, H.G., An Outline of World History, Latest Edition
19. Wooley, Sir Leonard. Excavations at Ur. London: 1955

Course Name: Basic Concept of History	**Course Code: HIS-301**
Course Structure: Lectures: 3	**Credit Hours: 3**
Prerequisites: None	

Objectives:

The aim and objective of this course is to:

1. Introduce to the students the subject matter and basic concepts of history.
2. Familiarize students with historical evolution of human knowledge.
3. Develop an ability among the students to understand the themes of historical knowledge.
4. Develop critical and rational faculty in the students.

Course Contents:

- What is History?
  - Nature
  - Scope
  - Significance
  - Nature and scope of History

- Role of Historian in writing of History:
- Branches of History
  - Political History
  - Cultural History
  - Social History
  - Economic History
- Relationship of History with other social sciences
- Causation in History
- Mono Causal ,Multi Causal, Accidents in History
- Basic research questions
  - History and Objectivity
  - History and Subjectivity
  - Sources of History Primary and Secondary sources
  - Ancillary/Documentary Sources and Their Kinds
  - Auxiliary/Non-documentary Sources and Their Kinds
- Difference between Myths, Fiction, and Reality or Objective Truth in History Oral History
- Historical Criticism
  - External Criticism (Textual Criticism, Critical/Historical Scholarship, Critical Investigation of Authorship)
  - Internal Criticism (Interpretative Criticism, Determination of Facts)

Recommended Books:

1. Arnold, John H. History: A very short Introduction. New York: Oxford University Press, 2000.
2. Bernard Cohn. An Anthropologist among Historians and Other Essay, Oxford University Press, 1988
3. Burke, Peter. Varieties of Cultural History. New York: Cornell University Press, 1977.
4. Caroline Steedman. Dust: The Archive and Cultural History, Manchester University Press, 2002
5. Carlo, Ginzburg. Clues. Myths, and the Historical Method, John Hopkins: University Press, 1992
6. Carr, E. H., What is History? Harmondsworth: Penguin, 1961.
7. Cohn, Bernard. An Anthropologist among Historian and Other Essay. London: Oxford University Press, 1988.
8. Collingwood, R. G. The Idea of History. Oxford: Oxford University Press, 1978.
9. G. W. G. Hegel. Elements of the Philosophy of Right. Cambridge University Press, 1991
10. Gertrude Himmalfarb. The New History and the Old, Cambridge: Harvard University Press, 1987
11. Ginzburg, Carlo. Clues, Myths and Historical Method. Maryland: John Hopkins University Press, 1992
12. Govranski. History Meaning and Methods, USA, 1969
13. Guha, Ranjit. The Small Voice of History: Collected Essays. Delhi: Permanent Black, 2010.

14. John Struart Mill. On Liberty and Other Essay, Oxford University Press, 2008
15. Qureshi, Muhammad Aslam. A Study of Historiography. Lahore: Pakistan Book Centre, Latest Edition.
16. Peter Burke. Varieties of Cultural History, Cornell University Press, 1977
17. Steetman, Carolyn Kay. Dust: The Archieve and Cultural History (Encounters: Cultural Histories). New Jersey: Rutgers University Press, 2002.
18. Stern Fritz. Varieties of History: from Voltaire to the Present, Vintage, 2nd Edition

Course Name: Fundamentals of Economics	**Course Code: ECO-404**
Course Structure: Lectures: 3	**Credit Hours: 3**
Prerequisites: None	

Objectives:

This module provides students with a broad introduction to, and overview of, introductory economics, covering both microeconomics and macroeconomics. The course will enable the students to explain and apply basic economic terminology and to some extent articulate economic reasoning.

Course Contents:

- Introduction to economics
  - what do economist study
  - Scarcity choice and economic systems
  - The nature of economic reasoning
  - Branches of economics (Micro & Macro)
- Demand & Supply
  - Demand
  - Supply
  - Price & Output determination
  - Elasticity
  - Time Dimension (short run & long run)
- Microeconomics – Background to Demand
  - Utility Analysis
  - Indifference curve
- Microeconomics-Background to Supply
  - Background to cost (short & long run theory of production)
  - Cost of production

- Revenue under different Market structure (only basics and definitions, not adv
- theory)
- Profit maximization

➢ Macroeconomic Issues-I
- The Scope of Macroeconomics
- Unemployment (definition & types)
- Inflation (definition & types)

➢ Macroeconomic Issues-II
- National income accounts (concepts and measurements of national income)
- Circular flow of income
- The Balance of payments

Recommended Books:

1. Sloman, John (2012), Economics, New York: Pearson Prentice Hall
2. Robert Frank and Ben S Bernanke, (2009), Principles of Economics,McGraw- Hill; Fourth Edition (2009)
3. Paul A. Samuelson, (latest ed), Economics. Tata McGraw-Hill Education
4. Other Readings:
5. Begg, David, Gianluigi Vernasca, Stanley Fischer, and Rudiger Dornbusch,(2011), Economics, 10th edition, London: McGraw and Hill.
6. Mankiw, N.G. and Taylor, Mark, (2014), Economics, Cengage Learning,Third Edition
7. Richard Lipsey and Alex Chrystal, (2011), Economics, Oxford University Press, 12th ed,
8. Michael Parkin, Melanie Powell and Kent Matthews, (2012), Economics,Addison-Wesley, Pearson Education, 8th ed
9. 'The Economic Review', Philip Allan, quarterly periodical

Course Name: Introduction to Management	**Course Code: MS-304**
Course Structure: Lectures: 3	**Credit Hours:** 3
Prerequisites: None	

Objectives:

The main objective of this course is to understand students the role of successful managers in the 21st century and what style will help them achieve their organizational goals.

Intended learning outcomes of course (ILOs)

1. Students may learn the theoretical aspects of management with the help of practical examples,which may help them, handle situations in the future.

2. Students will also learn how to manage various resources of the organization efficiently and effectively.
3. Students will be able to understand the concept of planning and decision-making, organizing, leading and controlling.

Course Contents:

- Introduction to Management
- What is an Organization
- The Management Process
- History and Evolution of Management
- The Organization Culture
- The Organization Environment
    - Internal Environment
    - External Environment
- Planning
- Goals and their kinds
- Organizational Goals and their types
    - Strategic Plans
    - Tactical Plans
    - Operational Plans
- Decision Making
    - Rational Decision Making Process
- Strategic Management
    - Components of Strategy
    - Types of Strategic Alternatives
    - Strategic Management Process
- Organizing
- Organization Structure
    - Tall Vs Flat
    - Narrow Vs Wide
    - Centralized Vs Decentralized
- Strategy and Organization Design
    - Corporate Level Strategy
    - Business Level Strategy
    - Organizational Functions
- Motivation and its theories
    - Content Perspective of Motivation (Maslow Hierarchy, ERG, 2 Factor Theory)
    - Process Perspective of Motivation (Expectancy Theory, Equity Theory)
    - Reinforcement Perspective (Types of Reinforcement, Reinforcement Theory)
- Groups and Teams in Organization
- Types of Groups and Teams
- Group and Team Development Process

- Leadership and Power
    - Leadership Styles
    - Charismatic
    - Transformational
    - Strategic
    - Cross Cultural
    - Ethical
- Control
    - Types of Control
    - Levels of Control
    - The Control Process

Recommended Books:

1. Introduction to Management by Ricky W. Griffin

Course Name: Economy Of Pakistan	**Course Code: ECO-05**
Course Structure: Lectures: 3	**Credit Hours: 3**
Prerequisites: None	

Objectives:

The course aims at the understanding of national and international financial systems it covers all the aspects of various financial transactions.

Intended Learning Outcomes:

By the end of this course it is expected that the student will be able to understand the economy of Pakistan, development planning and resource mobilization, emerging issues, sector development, debt, poverty and many other issues.

Course Contents:

- **Overview of Pakistan Economy**
  Development Experience, Approaches, Policies and Outcomes, Identification of Issues: The era of 1950's, 1960's, 1970's, 1980's 1990's and 2000's.Structural Change and Sources of Growth, Emergence of Economic Issues, Human Resource Development, Unemployment, Poverty, Income Distribution, Debt, Deficit etc Growth with limited development in Pakistan
- **Agriculture and Industrial Development: Emerging Issues**

The pattern of Agricultural and Industrial Development, Land Reforms and Its Impacts, the Role of Green Revolution and its Impacts: Present Status. Agricultural Price Policy and Income Tax, Sectoral Terms of Trade, Industrial Development Policies and Strategies, Development of Large and Small Industries, Value Added: Manufacturing Goods Vs. Primary Goods Production, Agriculture Vs. Industry: Development Debate**.**

- **Sectoral Development, Employment Pattern and Unemployment**

  Sectoral Priorities and Development Issues, Human Resource Development and Emerging Issues: Population Growth, Labor Force Participation Rate and Employment Pattern, Unemployment and Underemployment, Forecasting Manpower Needs and Employment. Strategies to combat unemployment, Criteria to Measure Unemployment / Underemployment: Time Criterion, Productivity Criterion and New Index of Unemployment: Application to Pakistan and Empirical Evidences. Good Governance, Social Action Plan and its Impact. Role of Institution in Development, Social Sectors development Vs. High Return Sectors: Growth trade off.

- **International Debt and Dependency**

  Concepts of Foreign Aid and Debt, Borrowing Vs. Domestic Reserve Mobilization (failure), Size of Foreign Debt, Debt Saving and its Impacts. Strategies to combat with High Debt: Saving Policy, Foreign Trade Promotion, Cutting non-development Expenditures, Rescheduling and its Impacts. Debt Management in Pakistan and Its Impacts Debt Modeling and Future Implications

- **Poverty and Income Distribution**

  Pattern of Income Distribution: Rural and Urban. Definitions and Approaches to Measure Poverty: Income Approach, Expenditure Approach, Basic Needs Approach, Poverty of Participatory Index (POPI). How to Combat Poverty; Growth Strategy, Basic Needs, Labor Intensive Investment: Education / Training etc. and Social Action Plan (SAP), its Role and Critical Review, Evasion of Policies / Strategies to Combat Poverty and Improving Income Distribution: Critical Evaluation. Neglect of Human Resource Development, Child Labor, Factors Productivity Issues

Recommended Books:

1. Aslam M., (2001-2002). Perspective on Development Planning In Pakistan, Lahore :
2. Allied Book Centre.
3. Chaudhary M.Aslam and Ahmad Eatzaz., (2004).Globalization, WTO and
4. Trade Liberalization in Pakistan, Lahore: FerozSons.
5. Chaudhary M. Aslam,.(1989).Human Resource Development and Management in
6. Pakistan, Lahore: Ferozsons.
7. Khan, Shahrukh R., (2000). 50 Years of Pakistan's Economy – Traditional Topics
8. And Contemporary Concerns. Karachi: Oxford Univ. Press.
9. Mahbool-ul-Haq Centre for Human Development (MHCHD),.
10. (1989).Poverty Profile of Pakistan, Karachi: Oxford University Press.
11. Human Development in South Asia, Annual Report.
12. Saeed, Khawaja Amjad,. (2004).The Economy of Pakistan, Karachi: Oxford
13. University Press.

14. Zaidi, Akbar, (1999), Issues in Pakistan Economy, Oxford Univ., Press, Karachi.
15. World Development Reports, World Bank.

Course Name: Environmental Chemistry	**Course Code: CHM-402**
Course Structure: Lectures: 3	**Credit Hours: 4**
Prerequisites: None	

Objectives

Course Contents

- **Atmospheric Chemistry:**

The air around us, atmospheric temperature and pressure profile, Temperature inversion and photochemical smog, particulate matter in the atmosphere, Industrial pollutants, radioactivity, atmospheric aerosols, Acid rain –major sources, mechanism, control measures and effects on buildings and vegetation, Global warming – major green house gases, mechanism, control measures and global impact, The stratospheric ozone – the ozone hole, CFCs, ozone protection, biological consequences of ozone depletion.

- **Water Pollution and Water Treatment:**

Sources of water pollution-industrial sources and agricultural sources, heavy metals contamination of water, Eutrophification, detergents and phosphates in water, water quality criteria, Water purification – primary, secondary and advanced treatment, Removal of nitrogen and phosphorous compounds from polluted water, organic matter in water and its decomposition.

- **Soil Pollution:** Soil and mineral resources, general principles of metal extraction, heavy metals contamination of soil, toxicity of heavy metals, bio-accumulation of heavy metals, organic matter in soil, macro- and micro-nutrients in soil, ion-exchange in soil, soil pH and nutrients availability.
- **Energy Production and Environment:**
  Liquid and gaseous fuel, hydrogen economy

CHM-402 Environmental Chemistry Lab. (Cr.3)

i. Safety Rules and Regulations, Techniques in solution preparation.
ii. The pH and Buffer Capacity of Environmental Waters.
iii. Inorganic and Organic Profiles of Soil and Sediment Cores.
iv. Alkalinity of Water Samples.
v. Conductivity of Various Water Samples
vi. Metals Determination in water samples by Electrogravimetry.
vii. Determination of Chloride Ion in Natural Waters.
viii. Determination of the Temporary and Permanent Hardness of Waters by
ix. Complexometric and Precipitation Titration respectively.
x. Determining Iron and Manganese in Natural Waters and Sediments.

xi. Determination of the DO, BOD and Chemical Oxygen Demand of Natural Water
xii. and Waste water Using Standard Method.
xiii. Introduction to Air Sampling: Particulates in Urban Air.
xiv. Determination of the Concentration of Carbon Dioxide in the Atmosphere.

Recommended Books

1. Weiner, E.R., "Applications of Environmental Chemistry: A Practical Guide for Environmental Professionals", CRC Press, 2010.
2. Vowles, P.D., Connell, D.W., "Experiments in Environmental Chemistry A Laboratory Manual Book", Elsevier, Vol. 4, 2013.
3. Gopalan, R., Anand, A.., & Sugumar, R.W.,, "A Laboratory Manual for Environmental Chemistry", IK International Pvt Ltd., 2010.
4. Bleam, W.F., "Soil and Environmental Chemistry", Academic Press, 2nd Ed., 2016.

Recommended Books

1. Baird, C., "Environmental Chemistry", W. H. Freeman and Company, New York, 1995.
2. Moore, J.W., Moore, E.Z., "Environmental Chemistry", Academic Press Inc., New York, 1976.
3. Neill, P.O., Environmental Chemistry, Chapman and Hall, London, 1993.
4. Elsom, D.M., "Atmospheric Pollution, Blackwell Publishers", Oxford, 1992.
5. Lean, G., Hinrichsen, D., "Atlas of the Environment", Helicon Publishing Ltd., Oxford, 1992.
6. De, A.K., "Environmental Chemistry", Wiley Eastern Ltd. New Delhi, 1989.
   12
7. Manahan, S.E., "Fundamentals of Environmental Chemistry", 3rd Ed., CRC Press, Taylor & Fancis Group, New York, 2008.

Course Name: General Chemistry	**Course Code: CHM-300**
Course Structure: Lectures: 3	**Credit Hours: 4**
Prerequisites: None	

Objectives

Course Contents

- The Periodic Law and Periodicity:
  Development of Periodic Table; Classification of elements based on s, p, d and f orbitals, group trends and periodic properties in s, p, d and f block elements, i.e.,

atomic radii, ionic radii, ionization potential, electron affinities, electronegativities and redox potential.

- Principles of Chemical Bonding:
  Types of chemical bonding; Lewis structures and prediction of shapes using VSEPR model, the localized bond approach: VB theory, hybridization and resonance; the delocalized approach to bonding: molecular orbital theory as applied to diatomic and polyatomic molecules, three center bonds, bonding theory of metals and intermetallic compounds; conductors, insulators and semiconductors; bonding in electron deficient compounds; hydrogen bonding.
- Acids and Bases:
  Concepts of acids and bases including SHAB concept, relative strength of acids and bases, significance of pH, pKa, pKb and buffer solutions. Theory of indicators, solubility, solubility product, common ion effect and their industrial applications.
- Thermodynamics:
  Thermodynamic system, surrounding, zeroth law of thermodynamics, concept of equilibrium, first law of thermodynamics, concept of internal energy, enthalpy, thermodynamic processes under different conditions (isothermal, adiabatic, reversibility concept), second law of thermodynamics, concept of entropy, Gibb's free energy.
- Chemical Kinetics:
  Rate of reactions, order of reactions, molecularity, extent of reaction, rate law, rate laws of zero-order and first-order reactions and differential and integrated 8 forms, examples, concept of half-life and mean-life, factors affecting rates (Arrhenius equation).
- Functional Group Chemistry:
  A brief introduction to the chemistry of hydrocarbons, alkyl halides, alcohols, phenols, ethers, aldehydes, ketones, amines, and carboxylic acids and their derivatives.

CHM-300 General Chemistry Lab. (Cr. 1)

1. Laboratory Ethics and Safety Measures: Awareness about the toxic nature of chemicals and their handling, cleaning of glassware, safe laboratory operations.
2. Qualitative Analysis: Analysis of four ions (two anions and two cations) from mixture of salts.
3. Qualitative Organic Analysis: Systematic identification of organic compounds (monofunctional and simple bifunctional) and preparation of their derivatives
4. Determination of heat of neutralization of an acid with a base.

Recommended Book

1. Vogel, A. I., "A Textbook of Micro and Semi-micro Qualitative Inorganic Analysis" Longman Green & Co., 1995.

Recommended Books

1. Ralph H. Petrucci, R.H., Herring, F.G., Madura, J.D., Bissonnette, C., "General
2. Chemistry: Principles and Modern Applications", 11th Ed., Pearson Education, 2017.

3. Cotton, F. A., Wilkinson, G. and Gaus, P. L., “Basic Inorganic Chemistry”, 3rd Ed., Wiley, New York, 1995.
4. Huheey, J. E., Keiter, E. A. and Keiter, R. L., “Inorganic Chemistry: Principles of Structure and Reactivity”, 4th Ed., Harper and Row, New York, 2001.
5. P.W. Atkins, and J. de Paula. Physical Chemistry, 8th ed., Freeman & Co., New York (2006).
6. R.A. Alberty and R.J. Silby. Physical Chemistry, John Wiley, New York (1995).
7. I. N. Levine. Physical Chemistry, McGraw Hill, New York (2002).
8. L.G. Wade, Organic Chemistry, 8thEd., Pearsons, 2012.
9. T.W. Graham Solomons and Graig B. Fryhle, Organic Chemistry, 10th Ed., John Wiley & Sons, 2011.
10. 9. J.G. Smith, Organic Chemistry, 3rdEd., McGraw-Hill Companies, 2012

Course Name: Essentials of Biology	**Course Code: ZOL-401**
Course Structure: Lectures: 3	**Credit Hours:** 3
Prerequisites: None	

Objectives

The objectives of the course are:

1. To explain the basic concepts of cell biology
2. To understand cellular structure, composition of the organelles, cell growth and cellular division.
3. To explain how macromolecules and organelles govern the dynamic organization, function of living cells.

Learning Outcomes:

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

1. Acquire the basic knowledge of levels of organization in life
2. Understand the metabolic processes of cells in terms of cellular organelles, membranes, and biological molecules.
3. Ability to understand the role of macromolecules regulating cellular processes.

Course Contents

- Biology and its major fields of specialization
- The Cell: Emergency and Implication of Cell Theory, Organelles of cell
- Biological Molecules: Protein, carbohydrates, lipids and nucleic acids i.e DNA and RNA, Mechanism of Enzymes action and factors affecting enzymatic activity
- Chromosomes and DNA: Types and composition of chromosomes, Chemical nature of DNA and gene, DNA duplication, Transcription and translation (protein synthesis), Mutation.

- Cell Cycle and Cell division: Mitosis and Meiosis, Variation and Genetics, definition of Alleles, Gene pool, Law of segregation, Law of independent Assortment and sex Determination
- Bioenergetics: Difference Between Photosynthesis and Respiration, Light and Dark Reactions Aerobic and anaerobic Respiration and glycolysis, Kreb's Cycle and Electron Transport Chain
- Biotechnology: Gene cloning, Analyzing DNA (polymerase chain reaction) and biotechnology products, Gene therapy and gene culture.
- Variety of life: General Characteristics of: Kingdom Prokaryota, Kingdom Protista, kingdom Fungi, Kingdom Plantae, Kingdom Animalia
- The concept of Homeostasis: Osmoregulation in plants and animals, Excretion in animals, Thermoregulation in animal, Growth and Development in plants and animals, Reproduction in plants and animals, Plant Movements and Plant Hormones, Coordination in Animals
- Evolution: Evolution and its theories, Speciation
- Ecosystem and energy flow: Major ecosystems, Biochemical cycles, Man and his environment, Renewable and non-renewable resources, Degradation and Depletion of resources, Global Warming and Conservation biology.

Recommended Books

1. Biology: A course for O-Level. Lam Peng Kwan, Eric YK Lam. (2000). Pub. Federal Publishers.
2. Jane B. Reece (Author), Martha R. Taylor (Author), Eric J. Simon (Author), Jean I. Dickey. (2011). Campbell Biology: Concepts and Connections (7th Edition). Benjamin Cummings ISBN-13; 978-0321742582.
3. Ceice Starr, Christine Evers Lisa Starr. (2010). Biology; Concepts and Applications without Physiology 8th ISBN-10:0538729258; ISBN-13: 978-0538739252.

Course Name: Biodiversity of Animal life	**Course Code: ZOL-302**
Course Structure: Lectures: 3	**Credit Hours:** 3
Prerequisites: None	

Objectives

The objectives of the course are:

1. To provide the knowledge of evolutionary/phylogenetic relationship (from simple to the complex organisms).
2. To impart the basic taxonomic characteristics and classification of all the invertebrate phyla.
3. To provide understanding of body organization, Feeding and Digestive system; Other Organ System.

Course learning outcomes:

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

1. Acquire the basic concepts of invertebrates with explanation of evolutionary origin and

diversification.
2. Understand invertebrate organismal concepts in laboratory and field.
3. Demonstrate major evolutionary innovations for invertebrates with functional importance.
4. Understand how reproduction and development occurred and able to breed animal in the laboratory/field
5. Analyze economic and ecological importance of invertebrates.

Course Contents

1. Classification of animal kingdom, Definition of classification, Major division invertebrates and vertebrates; Classification of invertebrates
2. Phylum protozoa including general features, classification of Ameoba, Paramecium, Volvox and chlamydomonas
3. Phylum Porifera; some general features, classification including important species; Sycon, Spongilla, Euplectella, Spongia.
4. Phylum Coelentrates; some general features, Classification including important species; Hydra, Obelia, Physalia, Aurilaaurita, Metridium.
5. Phylum Platyhelminthes; some general features, classification including Planaria, Liver fluke and tapeworm.
6. Phylum Aschelminthes; some general features, classification upto orders. Classes; 1. Gastrotricha, 2. Rotifera, 3.Nematoda with examples.
7. Phylum Annelida; general features, classification: Class Polychaeta, Class Oligochaeta, Class Hirudinea.
8. Phylum Mollusca; general features, classification:
classes; 1. Amphineura, 2.gastropoda,3. Pelecypoda,4.Scaphopoda, 5. Cephalopoda.
9. Phylum Arthropoda: some general features, classification: Class Crustaceans, Class Insecta, Class Chilopoda, Class Diplopoda, Class Arachnids with examples.
10. Phylum Echinodermata (General features; classification)

PRACTICALS:

1. Study of Ameoba, Paramecium, Volvox and chlamydomonas
2. Study of representatives of classes of Phylum Porifera.
3. Study of principal representatives of classes of Phylum Coelenterate.
4. Study of principal representatives of classes of Phylum Platyhelminthes.
5. Study of representatives of phylum Rotifer, Phylum Nematode.
6. Study of principal representatives of classes of Phylum Mollusca.
7. Study of principal representatives of classes of Phylum Annelida.
8. Study of principal representatives of classes of groups of Phylum Arthropoda
9. Study of representatives of classes of phylum Echinodermta.

Recommended Books

1. Miller, A.S. and Harley, J.B. ; 1999 , 2002., 2007, 2009, 2012 & 2016 Zoology, 4th ,5th, 6th, 7th, 8th , 9th& 10th Edition (International), Singapore : McGraw Hill.
Additional Readings:
2. Hickman, C.P., Roberts, L.C/, AND Larson, A., 2018. INTEGRATED PRINCIPLES OF ZOOLOGY, 15th Edition (International), Singapore: McGRAW Hill.
3. Hickman, C.P., Roberts, L.C/, AND Larson, A., 2007. INTEGRATED PRINCIPLES

OF ZOOLOGy, 12th& 13th Edition (International). Singapore: McGraw Hill.
4. Pechenik, J.A., 2015. BIOLOGY OF INVERTEBRATES, 7th Edition, (International), Singapore: McGraw Hill.
5. Kent, G. C. and Miller, S., 2001. COMPARATIVE ANATOMY OF VERTEBRATES New York: McGraw Hill.
6. Campbell, N.A., 2002; BIOLOGY Sixth Edition, Menlo Park, California; Benjamin Cummings Publishing Company, Inc.

BOOKS FOR PRACTICAL

7. Miller, S.A., 2002. GENERAL ZOOLOGY LABORATORY MANUAL. 5th Edition (International), Singapore : McGraw Hill.
4. Hickman, C.P. and Kats, H.L., 2000. Laboratory Studies in integrated principal of zoology. Singapore : McGraw Hill.

Course Name: Plant Ecology	**Course Code:** BOT-522
Course Structure: Lectures: 3	**Credit Hours:** 3
Prerequisites: None	

Objectives

The objectives of the course are:

To enable the students to assess the effects of various environmental factors on plant growth and development.

Course Contents

- Introduction, aims and applications of ecology.
- Soil: Physical and Chemical properties of soil (texture. pH, and organic matter etc) and their relationships to plants.
- Water: Field capacity and soil water holding capacity. Characteristics of xerophytes and hydrophytes.
- Population Ecology: Introduction. A brief description of seed dispersal
- Community Ecology

i. Ecological characteristics of plant community

ii. Succession.

iii. Major vegetation types of the local area.

- Applied Ecology

i. Causes, effects and control of water logging and salinity with respect to Pakistan

ii. Soil erosion: types, causes and effects (wind and water)

Recommended Books

1. Schultz, J.C. 2005. Plant Ecology. Springer-Verlag, Berlin.

2. Larcher, W. 2003 Physiological Plant Ecology: Ecophysicology and Stress Physiology of Functions Groups – Springer Verlag.

3. Smith, R. L. 2004. Ecology and Field Biology. Addison Wesley Longman, Inc., New York.

4. Manuel Carl Molles, James F. Cahill. 2007. Ecology: Concepts and Applications. Mc Graw-Hill Ryerson Ltd.

5. Gurevitch, Scheiner, and Fox. 2006. The Ecology of Plants. 2nd ed. Sinauer Associates, Sunderland, MA.

6. Krohne T. D. 2015. Ecology: Evolution, Application and Integration. Oxford University Press.

7. Voesenek L. A. C. J., Sasidharan R., Visser E. J. W. and Bailey-Serres J. 2016. Flooding stresssignaling through perturbations in oxygen, ethylene, nitric oxide and light. New Phytologist 209:39-43.

8. De Kroon H & E Jongejans (2016) Chance, Variation and the Nature of Causality in Ecological Communities. Chapter 11, p.197-214. In: Landsman NP & van Wolde EJ (Eds.) The challenge of Chance. A multidisciplinary approach from Science and the Humanities. The Frontiers Collection. Springer International Publishing; 978-3-319-26298-7.

ANNEXTURE-C

COURSE CONTENTS OF ELECTIVE COURSES

Course Name: ***Techniques in Geomorphology***	**Course Code:**
Course Structure: Lectures: 3	**Credit Hours:** 3
Prerequisites: None	

Objectives

The objectives of the course are:

To impart technical knowledge in Geomorphological research and mapping.

Course learning outcomes:

Course Contents

- The scope of geomorphology.
- Methods of research and analysis.
- Field techniques:
  - Observation of forms and character:
    - Slope form
    - Morphological mapping
    - Geomorphological field mapping
  - Observation of surface deposits
  - Observation of processes in action
    - Fluvial, glacial, mass movement, wind action and earth movement.
- Cartographic and morphometric analysis:
  - Profiles.
  - Generalized Contours.
  - Slope Maps.
  - Aerial Photography
  - Glacial Features.
  - Sediment Analysis:
  - Size of Sediment.
  - Shape of Sediment.
  - Chemical analysis and dating methods.
  - Fabric analysis.
  - Lithological analysis.

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Recommended Books

1. KING, C.A.M. (1996): Techniques in Geomorphology, London,
2. BRIGGS, D. (1977): Sources and Methods in Geography Sediments. London,
3. MILLER, A.A. (1953): The Skin of the Earth, London,
4. Leopold, L.B. Wolman, M.G. and Miller, J.P. (1964): Fluvial processed in Geomorphology. New York.
5. DAVIS, W.M. (1941): Landscape, Oxford
6. DAVIS, W.M. (1909): Geographical Essays, Boston
7. BROWN, E.H. (1960): The Relief and drainage of Waves, Cardiff.
8. KING, L.C. (1962): The Morphology of the East, Edinburgh
9. WOOLDRIDGE, S.M. & D.L. LINTON (1955): Structure, Surface and drainage in South East England, London,
10. BLENCH, T. (1957): Regime behavior of canals and rivers, London
11. BAGNOLLD, R.A. (1954): The physics of blown sand and desert dunes, London.

Course Name: ***Quaternary Geology***	**Course Code:**
Course Structure: Lectures: 3	**Credit Hours:** 3
Prerequisites: None	

Objectives

The objectives of the course are:

To familiarize the student with the changes occurred during the quaternary period during the past 3.0 million years in Pakistan and elsewhere.

Course Contents

PART-I

- General features of the Quaternary Period.
- Plio Pleistocene boundary.
- The Pleistocene Period:
  - Glaciation Geology: Glacial periods, glacial and non-glacial sediment.
  - Periglacial features: Geographical distribution of periglacial zone, past and present periglacial deposits permafrost, seasonally frozen ground and the active layer, periglacial structures.
  - Fluvial and interfluvial: General features, climatic floral and faunal characteristics.
- Stratigraphical investigations and classification:

- Classical models i.e. Alpines, North Europe, British, Isles, East Africa, North America.
- The oceanic record.
- Dating methods - relative and chronometric.
- Fossil record, flora and fauna
- Sea level changes
- Correlation of Atlantic deep, sea core and glacial models.

➢ Holocene:

- General features, climatic changes, and climatic sequence, effects on flora and fauna, geomorphic processes.

PART - II

➢ Glacial sequence of the mountain belt of Pakistan.
➢ Geology and Geomorphology of the Soan Valley.
➢ Soan Valley culture and distribution
➢ General pattern of Stone age culture of Pakistan
➢ Techniques of making and function of tools.

Recommended Books

1. ZHISHENG A.N. & Z. WEIJIAN (Eds.) (1997): Quaternary Geology: Proceedings of the 30th International Geological Congress (Proceedings of the 30th International Geological Congress**).** Brill Academic Publishers

2. DER VEEN VON C. J. & J. OERLEMANS (Eds.) (1987): Dynamics of the West Antarctic Ice Sheet: Proceedings of a Workshop Held in Utrecht, May 6-8, 1985 (Glaciology and Quaternary Geology). Kluwer Academic Publishers

3. ABER J.S., DAVID G. CROOT, & MARK M. FENTON (1989): Glaciotectonic Landforms and Structures (Glaciology and Quaternary Geology). Springer; (1st Edition)

4. RICHARD FOSTER FLINT (1971): Glacial and Quaternary Geology. John Wiley & Sons New York.

5. BOWEN, D.Q. (1977): Quaternary Geology: A Stratigraphic Framework for Multidisciplinary Work. Pergamon Prress.

6. ALASTAIR G. DAWSON (1992): Ice Age Earth: Late Quaternary Geology and Climate (Physical Environment). Routledge

~~1.~~7.JOHN A. VAN COUVERING (2004): The Pleistocene Boundary and the Beginning of the Quaternary (World and Regional Geology). Cambridge University Press.

Course Name: ***Regional Planning***	**Course Code: ZOL-302**
Course Structure: Lectures: 3	**Credit Hours:** 3
Prerequisites: None	

Objectives

The objectives of the course are:

To impart spatial planning related knowledge to the students with examples both from Pakistan and other North/South countries of the world.

Course Contents

- Scope and status, importance of Spatial/Regional Planning: Development of Theory of Planning and theories in Planning.
- Regional Concept: Region and its types. Identification and differentiation of Geographical, Administrative, Planning and Special Purpose regions.
- Regional Systems and hierarchy: Delimitation techniques, relationship between National Planning, Regional/Spatial/district and local level with special reference to Pakistan.
- Planning information cycle: Basic Surveys for regional planning: such as Physical, Land use, Demographic, Socio-Economic and other Surveys.
- The Planning process: Planning organizations, Institution and Preparation of Spatial Regional/district plans, their contents, presentation and programming.
- Elements and factors in Regional Planning: Peoples' and other stakeholders participation with special reference to community level planning.
- Spatial imbalances of Economic health: Rich and Poor area, recognition and mapping of regional inequalities with the help of data.
- A comparative study of area development policies/regional or Spatial planning in Pakistan and other countries of the world specially France.
- A critical appraisal of Regional and local level Planning in Pakistan: Major challenges, information gap, technology to suit local needs, social welfare and mobilization of masses with special reference to decentralization/devolution of power, future problems and prospects.

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Recommended Books

1. DUNNETT, N. & J. HITCHMOUGH (Eds.) (2004): The Dynamic Landscape: Design, Ecology and Management of Naturalistic Urban Planting. Spon Press
2. MORSE, S.W. (2004): Smart Communities: How Citizens and Local Leaders Can Use Strategic Thinking to Build a Brighter Future Jossey-Bass.
3. FLYYBJERG, B., N. BRUZELIUS & W. ROTHENGATTER (2003): Mega-projects and Risk: An Anatomy of Ambition. Cambridge University Press
4. HADDOW, G. & J. BULLOCK (2003): Introduction to Emergency Management. Butterworth-Heinemann.
5. HALL, P. (2002) Urban and Regional Planning. Routledge; (4th Edition).
6. FUJITA, M. & J.F. THISSE (2002): Economics of Agglomeration: Cities, Industrial Location, and Regional Growth. Cambridge University Press.
7. HOSACK, W.M. (2001): Land Development Calculations: Interactive Tools and Techniques for Site Planning, Analysis and Design McGraw-Hill Professional.
8. KELLY, E.D., B. BECKER & E.D. KELLY (2000): Community Planning: An Introduction to the Comprehensive Plan. Island Press
9. FREILICH, R.H. (1999): From Sprawl to Smart Growth: Successful Legal, Planning, and Environmental System. American Bar Association
10. ARENDT R.G. (1996): Conservation Design for Subdivisions: A Practical Guide to Creating Open Space Networks Island Press
11. MARRIOTT, B.W. (1997): Environmental Impact Assessment: A Practical Guide. McGraw-Hill Professional.
12. FLAUDI (1978): A Reader in Planning Theory. Pergamon Press New York.
13. DUNNE, T. & L.B. LEOPOLD (1978): Water in Environmental Planning. W. H. Freeman JOHN GLASSON (1972): An Introduction to Regional Planning. Hutchinson, London.
14. Pakistan Journal of Geography, Relevant Issues.
15. GOP (2000): Devolution Plan in 2001. National Reconstruction Bureau Islamabad.
16. GOP (2001): Local Government Ordinance. Islamabad.

Course Name: ***Urban Planning***	**Course Code:**
Course Structure: Lectures: 3	**Credit Hours:** 3
Prerequisites: None	
Objectives The objectives of the course are:	

This course is framed to train the students in Urban planning and other related issues of urban sprawl and urbanization. Examples are gives from Pakistan and elsewhere.

Course Contents

- Scope and Status of Urban Planning, the development of Town Planning theory with particular reference to classic example of planned area and garden city movement of Ebenzer Howard, new town movement and policy of decentralization.
- The role of cities in the economic growth of non-western countries.
- Planning Information cycle: Basic surveys for Urban Planning, Land use, Traffic and Parking, Population and other surveys.
- The Planning Process: Institutions, Preparation of the town and a neighborhood plan. Programming stages of preparation, Development controls and implementation plans.
- Planning Techniques: Distribution and allocation of land for residential, industrial, recreation, open spaces and other facilities.
- Urban environment in Pakistan: Growth of Urbanization, Internal structure of Pakistani Cities. Study of urban residential patterns, slums and squatter formation, their causes and effects, Urban renewal process and policies.
- Planned cities of Pakistan, with brief reference to prehistoric, Gandhara, Mughals, and British Period, Post Partition Planning, New Towns and Satellite towns. . Site and service Schemes including town built for displaced people affected from the mega-projects.
- Management of Urban affairs in Pakistan, current institutional set up with special reference to the local and district level institution, people participation problems and prospects
- Future of Pakistani cities, major challenges to urban planners and search for the ways to cope with them.

Recommended Books

1. SPERLING, B. & P. SANDER (2004): Cities Ranked and Rated: More than 400 Metropolitan Areas Evaluated in the U.S. and Canada. John Wiley & Sons.
2. WASTON, D. (2003): Time-Saver Standards for Urban Design. McGraw-Hill Professional.
3. DUANY, A., E. PLATER-ZYBERK & R. ALMINANA (2003): New Civic Art: Elements of Town Planning. Rizzoli

4. HALL, P.G. & P. HALL (2002): Cities of Tomorrow: An Intellectual History of Urban Planning and Design in the Twentieth Century Blackwell Publishers, (3rd Revised Edition)
5. LEVY, J.M. (2002): Contemporary Urban Planning. Prentice Hall, (6th Edition).
6. LANDRY, C. (2000): The Creative City: A Toolkit for Urban Innovators. Earthscan Publications.
7. CERVERO, R. (1998): The Transit Metropolis: A Global Inquiry. Island Press.
8. SUGRUE, T.J. (1998): The Origins of the Urban Crisis. Princeton University Press, (Reprint Edition).
9. KAISER, E.J., D.R. GODSCHALK, F. STUART & JR. CHAPIN (1995): Urban Land Use Planning. University of Illinois Press, (4th (Edition).
10. MARGARET ROBERTS (1980): An Introduction to Town Planning Techniques. Hutchinson, London.
11. GERALD BREES. (Ed) (1972) The City in Newly Developing Countries. Prentice Hall London.
12. LEWIS KEEBLE (1969): Principles and Practices of Town and Country Planning. The estate Gazette London.
13. Pakistan Geographical Review. Relevant Issues.

Course Name: **Agricultural Geography**	**Course Code:**
Course Structure: Lectures: 3	**Credit Hours:** 3
Prerequisites: None	

Objectives

The objectives of the course are:

To train students in spatial variation in different agricultural practices in the world, the production environment and variations with examples from Pakistan and elsewhere.

Course Contents

- Nature Scope and Status of Agricultural Geography.
- The Origin and Development of Agriculture
- Physical Factors Influencing Agriculture:

(a)Climate (b)Soils (c)Relief

- Social Cultural and Economic Factors Influencing Agriculture:
  - Development of peasant societies.
  - Land Tenure - Land Reforms.
  - Farm Size - Co-operative farming

- Marketing
- Transport
- Tariffs and Restrictions
- Farm Income and Type of Enterprise.
- Labor
- Mechanization
- Specialization of Areas.
- Influence of Government Policies.

➢ Agricultural Enterprises Systems and Types:

- Mixed agriculture in British Isles and New Zealand, Plantation Agricultural in Malaysia.
- State and collective farming in Eastern Europe with special reference to Russia
- Subsistence Agriculture.

➢ Regional Analysis:

  - The Agricultural Regions: Concept and Methodology.
  - Land use and Land potentials.

Recommended Books

1. SAUER, J.D. (1993): Historical Geography of Crop Plants : A Select Roster. CRC-Press; 1st Edition
2. HART, J.F (1998): The Rural Landscape. Johns Hopkins University Press
3. MORGAN, W.B. (1971): Agricultural geography (The field of geography**).** Methuen.
4. STEILA, D. & T.E. POND (1989): Geography of Soils: Formation, Distribution, and Management. Rowman & Littlefield Publishers; Second Edition.
5. GRIGG, D.B. (1988):The agricultural systems of the world: An evolutionary approach (Cambridge geographical studies) Cambridge University Press.
6. ASTROTH, J. H. Jr. (1989): Understanding Peasant Agriculture : An Integrated Land-Use Model for the Punjab (University of Chicago Geography Research Papers) Committee on Geographical Studies
7. SYMONS, L. (September 1, 1979): Agricultural Geography. (Westview advanced economic geographies). Westview Press Rev Edition

8. ILBERY, B.W. (1986): Agricultural Geography: A Social and Economic Analysis . Oxford University Press.

9. LOWE, P., T. MARSDEN & S. WHATMORE (Eds.) (1995): Regulating Agriculture (Critical Perspectives on Rural Change). John Wiley & Sons; New Ed edition

10. MORGAN W.B. & R.J.C. MUNTON (1981): Agricultural Geography. Methuen and Co. Ltd.

~~1.~~11. LAXMI, S. (1991): Agricultural Geography. Scientific Publishers, New Delhi.

Course Name: ***Transportation Geography:***	**Course Code:**
Course Structure: Lectures: 3	**Credit Hours:** 3
Prerequisites: None	

Objectives

The objectives of the course are:

To train student in different aspects of transportation, its importance and relevance to development. To highlight the role of Geography in the development of transport.

Course Contents

- Definition, Types, scope and status and importance for development.
- Historical overview of Transportation and Communication System
- Types of Transportation
- Transport Networks.
  - Network efficiency
  - The Development of Networks:
  - Models of Networks Development.
  - Distortion and Deviation.
  - Networks at Climax.
  - The use of graph theory to study transport Networks.
- The Motion of Accessibility
- Spatial Interaction and Transport Flows:
  - Ways of studying spatial interaction
  - Study of volume of Interaction between areas.
  - The Gravity Model of spatial interaction.
  - Ullman Model.

- A mere General Statement of Curve filtration for spatial interaction.

➢ Transportation Competition and Model choice.
  - Economic Distance.
  - Transport Cost.
  - Non-Cost Factors.

➢ Ports and Sea Transportation:. New Trends in Container Traffic.

➢ Air Transportation.

➢ Transportation and Communication Systems in Pakistan and related problems.

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Recommended Books

1. HARVEY J. M & S. LUNG SHAW (2001): Geographic Information Systems for Transportation: Principles and Applications (Spatial Information Systems. Oxford University Press.

2. BRE, M. (1963): A History of Land transportation; New York.

3. DELL, A. (1971): Railways and Geography, Hutchinson, London.

4. SEDY, K.R. (1948): The Geography of Air Transport, Chicago.

~~1.~~5.BELL, E.M.G. & I. YASUNORI (1997) Transportation Network Analysis. John Wiley & Sons; 1st Edition

Course Name: ***Social Geography***	**Course Code:**
Course Structure: Lectures: 3	**Credit Hours:** 3
Prerequisites: None	

Objectives

The objectives of the course are:

To familiarize the students in spatial variations in social variables and material culture in different parts of the world, with examples from Pakistan and elsewhere**.**

Course Contents

Part: I

Concepts in Social Geography

➢ Definition, Meaning and Nature of Social Geography.

➢ Concepts of Space.
  - Environment, Space and Ecology.

- Sentiments, Symbolism, and Social Space.

- Patterns and their significance in Social Geography
- The Behavioral Approach.
- Processes Determining Social Patterns:
  - Internal Urban Mobility
  - Migration
  - Urbanization as a Social Process.
  - The Rural-Urban Continuum.
- Planning:
  - Concept of Planning
  - Public and Social Planning.
  - People Participation in Planning Process with special reference to the devolution of power and establishment of community development institutions of CBOs and NGOs.

Part: II

Methodology in Social Geography

- Architecture and Housing.
  - Classification of shelters.
  - World-wide Survey of the architectural continuum.
  - Studies of housing in smaller areas with examples from different regions various areas of Pakistan.
- Religion:
  - Eastern Religions
  - Western Religions
  - Animism
  - Regions and Regionalization
- Methodology.
- Language:
  - Spatial aspects of Languages.
  - Process of change in the spatial distribution of languages.
  - Dialect Geography
- Education and Literacy:
  - World Literacy
  - Educational Level within Pakistan.
- Settlement:
  - Definition and Classification

- Location of Settlements.
- Patterns of Settlements.
- The Process of Settlement.

➢ Technology:
  - Definition.
  - Technology as a unifying factor.
  - The spatial Distribution of technology
  - The spread of technology and future implications.

➢ Spatial Interaction:
  - Transport and Communication.
  - Spatial Interaction: Volume.

➢ Spatial Diffusion:
  - Description of the spread of selected phenomena.
  - Diffusion Process.
  - Spatial Diffusions.

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Recommended Books

1. JONES, EMRYS & JONES, EYLES (1979): An Introduction to Social Geography. Oxford University Press.
2. JONES, EMRYS (Ed.), (1975): Readings in Social Geography: Oxford University Press,.
3. KARIEL, H.G. & KARIAL, P.E., (1972): Explorations in Social Geography; Addison-Welsey Publishing Company, (U.S.A.).
4. PAHL, R.E. (1965): Trends in Social Geography. In CHORLEY, R.E. & HAGGET, P (Eds.), Frontiers in Geographical Teaching, Methuen, pp. 81-100.

Course Name: ***Rural Geography***	**Course Code:**
Course Structure: Lectures: 3	**Credit Hours:** 3
Prerequisites: None	

Objectives

The objectives of the course are:

To train the student in different aspects of rural life, its problems and rural development strategies.

Note: This course will be studied with special reference to Pakistan and with general reference to other parts of the world.

Course Contents

- Definition, Nature and Scope.
- Rural Communities:
  - The Concept of Community and Social Capital.
  - Social Change and the rural community.
- Rural Depopulation:
  - Types of Depopulation.
  - Reasons of Depopulation
  - Size and direction.
  - The Selection and Migrants.
  - The Decision to migrate.
  - The changing economic structure of rural settlements.
- Structural Changes in Agriculture:
  - Plot consolidation.
  - Farm Enlargement.
  - Settlement Re-modeling.
  - Land Reforms.
  - Land use changes.
- Patterns and Processes of Settlements:
  - Form and Patterns.
  - Settlement Rationalization in Rural Areas.
- Urbanization of the Rural Areas:
- Passenger Transportation in Rural Areas.
- Rural Development Program, and Strategies with special reference to Pakistan since 1947 up to date.

Recommended Books

1. Chambers, R. (1995): Rural Development : Putting the last first Prentice Hall
2. CLOUT, D. CLOUT (1972): Rural Geography An Introductory Survey: Pargamon Press,.
3. LOWIS, G.T. (1979): Rural Communities: David and Charles, London,.
4. GLIG, A.W (1978): Countryside Planning; Methuen & Co., Ltd., London,.
5. MUSHTAQ-UR-RAHMAN (1982): Pakistan's Rural Development - Policies and Problems; U.S.A.,.

6. SIDDIQI, A. JAMEEL (1980): A Review of Rural Development Programs (1857-1980)., University of Peshawar.

7. UHLIG, H. (Ed.) (1972): Basic material for the terminology of the agricultural landscape Vol. II Giessen Germany.

~~1.~~8. MANDAL R.B. (1988): System of Rural Settlement in developing countries. Concept Publication Company, New Delhi.

Course Name: ***Geography of the Muslim World***	**Course Code:**
Course Structure: Lectures: 3	**Credit Hours:** 3
Prerequisites: None	

Objectives

The objectives of the course are:

To train the student in the geography of the Muslim world

Course Contents

Part I. *General:*

- Origin and Dispersal of Islam, identification of Muslim majority and minority area. Muslim World as a cultural region.
- Relief and landform, major Physical divisions.
- Major Climatic Types and their role on the human and cultural activities.
- Spatial distribution of Resources and Economic Growth in the Muslim World. Principal Crops, Minerals and Industries.
- Communication and Trade.
- Human Resources of the Muslim World. Spatial relationship of population and Resources.
- Urbanization and important cities.
- Future of the Muslim World.

Part II. *Regional*

1.Afghanistan 5.Saudi Arabia

2.Indonesia 6.Turkey

3.Bangladesh 7.Egypt

4.Iran 8.Nigeria

9 Central Asian OIC States.

Recommended Books

1. U.N. Demographic yearbook Latest Edition.
2. I.E. FARUQI & L.L. FAROOQI (1986): The Cultural Atlas of Islam. Macmillan Publishing Company New York.
3. BROOK, J.O.M & J.W. WEBB (1968): A Geography of the Mankind. McGraw hill Books New York.
4. WAZIR AHMAD & K. CHOUDRI (1972): A Commonwealth of the Muslim States. Feroz Sons, Karachi.
5. STAMP, L.D. (1957): Africa: A Study in Tropical Development. John Wiley and Sons, London.
6. STAMP, L.D (1962): A Regional Economic Geography. Methuen, London.
7. SEPENCER, J.E. & THOMAS. W. (1971): Asia, East by South. John Wiley and Sons, London.

Course Name: ***Cultural Geography***	**Course Code:**
Course Structure: Lectures: 3	**Credit Hours:** 3
Prerequisites: None	

Objectives

The objectives of the course are:

To study the way culture works as a tool in man-environment interaction as it varies from area to area.

Course Contents

- Culture: Elements of culture, objectives, scope and status of cultural Geography.
- Main themes of Cultural Geography: Culture and cultural areas, Cultural Landscape, Cultural History and Cultural Ecology, Cultural hearth.
- Cultural Process: Origin and diffusion of Culture, cultural change.
- Man, Nature and Culture
- Culture through ages: Paleolithic, Neolithic, Bronze and Iron age.
- Stages of Socio-economic Development
- The study of the following as cultural phenomena: Religions, Settlements and House types.
- Cultural Regions.

Recommended Books

1. WAGNER, L. & M. HIKESELL (Ed.) (1962): Readings in Cultural Geography.

2. SPENCER & THOMAS (1980): Introducing Cultural Geography.
3. BROEK, J.O.M. & J.W. WEBB (1968): A Geography of Mankind. McGraw Hills.
4. WALTER, P.A.F. (Latest edition). Race and Cultural Relations.
5. CARTRE, G.F. (1980): Man and the Land: a Cultural Geography. New York, Halt,
6. WHITE, L.A. (Latest edition). Evolution of Culture. New York. McGraw Hill.
7. JAMES, P.E. (1974): One World Divided, John Wiley and Sons, New York, London.

Course Name: Population Geography	**Course Code:**
Course Structure: Lectures: 3	**Credit Hours:** 3
Prerequisites: None	

Objectives

The objectives of the course are:

The objective of the course is to make student understand: i) The Dynamics of population characteristics; ii) Relationship between Man and environment and resources; iii) Highlight the importance of demographic data in planning and decision-making.

Course Contents

- Scope and Status of Population Geography
- Difference between demography and population geography
- Methods of population data collection: Problems and its availability
- Characteristics of population data
  - Physical Characteristics
  - Races and their distribution
  - Age structure and composition
- Population ageing and its socio-economic and demographic effects
- Ethnic group and their distribution
- Nature and pattern of Disability

- Measures of population distribution, crude and physiological density
- Distribution of population and controlling factors.
  - Physical Climatic Social and historical
  - Social Characteristics
  - Linguistic attributes
  - Religious composition
  - Marital status and associated patterns
  - Economic Characteristics
  - Active labour force
  - Occupational characteristics
  - Industrial groups and their distribution
- Theories of population
- Population dynamics
- World pattern of fertility, controlling factors
- Pattern and characteristics of mortality and associated aspects
- Urban Population concentration: Rank-size rule and primacy distribution
- Migrations and movement of people; controlling factors
  - Causes of Internal migrations: Seasonal periodic and permanent migrations
  - International migrations causes and consequences
  - Major international migrations
- Growth of Population
  - General trends in demographic development
  - Pattern of world population growth
- Population and resources

- Demographic transition
- Critical review of the population policies

PRACTICALS:
Assignments: Showing of population distribution on world map by dot and shade methods. Construction of population pyramids for developed and developing countries of the world for comparison.

Recommended Books

1. Bashford A. (2014)Global Population: History, Geopolitics, and Life on Earth Columbia University Press. New York London.
2. Castles S. Haas H. and Miller M. J. (2013) The Age of Migration,: International Population Movements in the Modern World. Fifth Edition. Rown and Little field New York London.
3. Clarke J.I. (latest edition), Population Geography. Prentice-Hall. New York London.
4. Jones, H. R. (1990) Population Geography. SAGE Publications. New Dehli
5. Lal K.M. (1988), Population Settlement Development and Planning, Allahbad, India.
6. Majid H. (1994), Population Geography, Anmol Publications. New Dehli
7. Larkin R. P, johnson-Webb k. & Otiso K. M (2013) Population Geography: Problems, Concepts, and Prospects. Kendall Hunt Publishing; 10 edition. New York London.
8. Manning P. (2005) Migration in World History. Psychology Press, London
9. Newbold K. B. (. 2006) Six Billion Plus: World Population in the Twenty-first Century Rowman & Littlefield Publishers; Second Edition. New York London.
10. Newbold K. B. (2013) Population Geography: Tools and Issues Rown and Little field New York London.
11. Pacione M. (Ed.) (1986) Population Geography: Progress & Prospect. Croom Helm. London, New York
12. Peters G. L. and Larkin R.t P. (2010) Population Geography. Kendall Hunt Publishing; 9th editions. New York London.
13. Polunin Nicholas (1998), Population and global security, Cambridge University Press
14. Trewartha G.T. (1969), A Geography of Population World Pattern. John Wiley & Sons .New York & London.
15. Weeks J. R. (. 2011) Population: An Introduction to Concepts and Issues. Cengage Learning; 11 edition New York, London

16. William F.Horrnby and Meluyn Jones (1980), An Introduction to Population Geography. University Press Cambridge
17. Witherick M. E. (1990) Population Geography Longman, London
~~1.~~18. Zelinsky W. (1996) A Prologue to Population Geography, Prentice-Hall. New York London.

Course Name: ***Environmental Geography:***	**Course Code:**
Course Structure: Lectures: 3	**Credit Hours:** 3
Prerequisites: None	

Objectives

The objectives of the course are:

To train the students in the field of environment and its relationship with factors which are apparently changing the present environment.

Course Contents

- Introduction to Environmental Geography:
  - Definition, Scope and Fundamental concepts of Environmental Geography
- Physical and Human Environment, Components of Physical Environment and their interrelationship.
- Man Environment Relationships
  - Environmental Impacts of Economic Activities
- Biosphere, Biomes and ecosystems. Terrestrial, aquatic and atmospheric biomes.
- Food web and food chains: Major Biogeochemical cycles (Carbon, Nitrogen and Hydrogen).
- Natural resources: Utilization and Management
- Environmental Degradation: Causes, Impacts and control mechanisms.
- Natural Hazards and disasters: Meaning and concepts, types, response and management of Environmental hazards and disasters.
- Environmental Planning and Management: National and international Co-Operation and Policy response

- Environmental Issues and Problems: Global, Regional and Local Level.

Assignments:

Mapping of different hazards, resources and problems at Global Regional and Local levels

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Recommended Books

1. Slocombe, S. (2004). Applying an Ecosystem Approach' in B. Mitchell: Resource and Environmental Management in Canada: Addressing Conflict and Uncertainty, 3rd edition, Oxford University press: Toronto , pages 420 - 441
2. Gleick, P. (2000). The Changing Water Paradigm: A look at twenty-first century water resources development, Water International 25(1), 127 – 138
3. Freedman, B. (1998). Environmental Science: A Canadian perspective, Scarborough Prentice Hall: Canada, pp. 182 – 199
4. Ludwig, D., Hilborn, R. and Walters, C. (1993). Uncertainty, resource exploitation, and conservation: Peter Science 260: 36.
5. Arms, Karen. (1991). Envernmental Science, Asunders College Publishing: Philadelphia.
6. Bennet, Robert and Estall, Robert. 1991. Global Change and Challenge: Geogrpahy for the 1990s, Routledge: London.
7. Marsh,W.M, (2005). Environmental Geography, John Willy, U.S.A.
8. Khan M.Z. & Agarwal (2004): Environmental Geography. Prentice Hall, New Delhi.
9. Savindra,S. (1998). Environmental Geography, India.
10. GOP (1992) Pakistan National Conservation Strategy. Environment and Urban Affairs Division Islamabad.
11. Watt, K.E.F. (1992): Understanding the Environment. Allyn and Bacon. London.
12. Jack, G. (1990): Environmental Geography. Longman Ltd. UK.
13. Knapp, B. (1989): Challenge of the Natural Environment. Longman Group, New York.
14. Motter shead & S.J.Harrison (1984): Environmental System. An Introductory Text. Allen & Unwin, London.
15. David, D. (1983) Man-Environmental Process. George Allen & Unwin, London.

Course Name: ***Geography of Resources***	**Course Code:**

Course Structure: Lectures: 3	**Credit Hours:** 3
Prerequisites: None	

Objectives

The objectives of the course are:

To train the student in resource studies and resource management systems

Course Contents

- Introduction to the Study of Resources,
- Concept and Approaches to Natural Resource Management
- Resources and their appraisal.
- Meaning and Nature of Resources,
- Energy and Resources,
- Resource, Aspects: Natural, Human and Cultural,
- Nature and resource,
- Man and resources,
- Culture and Resource.
- Resources, space and People,
- Flora and Fauna, Renewable and non-renewable resources.
    - Agricultural,
    - Industrial,
    - Mineral,
    - Land,
    - Water,
    - Forest,
    - Wildlife,

Recommended Books

1. JOHN, F. & A.S. PITKETHLY (1985): Resources Environment and Policy. PCP Poul Chupman Publishing limited, New York.
2. KHAN, A. (2001): Training Workshop Report on Natural Resource Management (NRM) prepared for SDPI, Islamabad.
   NATIONAL ACADEMY OF SCIENCES (1969). Resources and Man, W.H. Free and Company San Francisco.
3. PATERSON, JH (1973 or latest Edition). Land, Work and Resources: An introduction to Economic Geography, Edward Arnold.
4. PEACH, W.N. & CONSTANTIN, JAMES. (1972 or latest edition): Zimmermann's World Resources and Industries. Harper and Row. New York.
5. RAYMOND, F.D. (1960): Environmental Conservation. John Wiley and Sons, New York.

Course Name: ***Applied Geomorphology***	**Course Code:**
Course Structure: Lectures: 3	**Credit Hours:** 3
Prerequisites: None	

Objectives

The objectives of the course are:

This course is based on the application of geomorphological concepts. The main emphasis is to train the students in identification and recognition of geomorphic processes, their causes and impacts on human being.

Course Contents

- Introduction to Applied Geomorphology
  - Scope and Importance
  - Geomorphology and Environment
  - Geomorphic Change and Man
- Monitoring Geomorphological Changes in the Environment
- Endogentetic Hazards
  - Earthquakes & Volcanicity: Cause, Morphotectonics and Earthquake, Prediction, Damages, Earthquake Hazards Zoning, Environmental Management and Earthquakes, Volcanoes
  - Hydrological Hazards
  - Rivers and Flood Plains, Flooding, Drainage Basin System, Sediment Load and Budgets, Drainage Basin/Watershed Management
  - Drought, Types and Resources, Hydrological Drought

- Glacial and Pariglacial Environment, High-latitude and High altitude Problems. Glacial Hazards, Pariglacial Hacads, Aggradation and Degradation, Forest Hazards, Snow as a Hazard to the Urban System.

➢ Environmental Hazards in the Land Surface

- Soil Erosion by Water and Wind, Nature and Types of Soil Erosion, Raindrop Erosion, Run-off Erosion, Aeolean Erosion, Economic and Productivity Implication
- Weathering of Rocks and Stones, Causes, Implication
- Desertification, Causes and Implication

  Mass Movement Hazards, Concept, Classification, Causes, Snow Avalanches and Associated Problems.

➢ Mapping Geomorphology

- Techniques of Geomorphological Mapping
- Data Sources for Mapping

➢ Geomorphology and Environmental Management

- Geomorphology in Planning and Decision Making
- National Conservation Strategy in the context of Geomorphology.

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Recommended Books

1. Costa, J. E. &V. R. Baker (1981): Surficial Geology: Building with Earth. John Wiley and Sons, New York
2. SABH, M. I. EL & T. S. MURTY (Eds.) (1988): Natural and Man made Hazards. Academic Publisher Group.
3. COOKE, R. U. & J. C. DOORNKAMP (1990): Geomorphology in Environmental Management (New Edition). Clarendon Press Oxford.
4. AMALKAR, K.SEN & (1993): Desertification and its control in the Thar, Sahara and Sahel Regions. Scientific Publishers, Jodpur, India.
5. DONALD A. W. et al (1987): Planning for Drought: Reduction of Societal Vulnerability. West View Press, London.
6. FOSTER H. D (1980): Disaster Planning: The prevention of life and property. Springer Press Berlin.
7. GOP (1992) Pakistan National Conservation Strategy. Environment and Urban Affairs Division Islamabad.
8. BURTAN, et al (1978): The Environment as Hazard. Oxford University Press, London.
9. VERSAPPER H.T. (1983): Applied Geomorphology: Geomorphological Survey for Environmental Development. Elsevier, New York

10. WIJKMAN, ANDERS & TIMBERLAKE, LLOYED (1986): Natural Disasters: Act of God or Act of Man. Earth Scan, London.
11. COOKE, R.U. et al (1982): Urban Geomorphology in Dry Land. Oxford University Press, London.
12. KNAPP, B. (1989): Challenge of the Natural Environment. Longman, New York.
13. ALEXANDER D. (1993): Natural Disaster. UCL Press.
14. HART, M.G. (1986): Geomorphology Pure and Applied. George Allen & Unwin, London.

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SHAHEED BENAZIR BHUTTO WOMEN UNIVERSITY PESHAWAR

ITEM # IV: NOMINATION OF MEMBERS BOARD OF FACULTIES,SELECTION BOARD,SCRUTINY AND QUALIFICATION COMMITTEE,SUBJECT EXPERTS

(1) <u>One member from each board of studies within the faculty to be nominated by board of studies concerned on board of faculties</u>

Proposed Member

Serial Number	Name	Designation
1.	Prof Dr Atta ur Rahman, Chairman, Dept of geography University of Peshawar	Chairman/Professor, Department of Geography, University of Peshawar Contact Number: 03459429184 Email Address: atta-ur-rehman@uop.edu.pk
2.	Assistant Professor Muhammad Jamal Nasir(Ph.D)	Assistant Professor, Department of Geography, University of Peshawar Contact Number: 03339851600 Email Address: drjamal@uop.edu.pk
4.	Ms.Shehla Zahoor	Coordinator Department of Geography, Shaheed Benazir Bhutto Women University Peshawar, Lecturer In Law Department of Law SBBWUP. Contact Number: 03459160576 Email Address: geography@sbbwu.edu.pk shehlazahoor@sbbwu.edu.pk

(2) Standing list of Subject experts recommended by relevant board of studies for selection board, scrutiny and qualification committee, subject experts

Proposed Member:

Serial Number	Name	Designation
1.	Dr.Atta-ur-Rahman	Chairman/Professor, Department of Geography, University of Peshawar Contact Number: 03459429184 Email Address: atta-ur-rehman@uop.edu.pk
2.	Dr.Mohammad Jamal Nasir	Assistant Professor, Department of Geography, University of Peshawar Contact Number: 03339851600 Email Address: drjamal@uop.edu.pk
3.	Dr.Shehla Gul	Lecturer, Department of Geography, University of Peshawar Contact Number: 03349401075 Email Address: sgul@uop.edu.pk
4.	Prof.Dr.Iffat Tabasum	Department of Geography, University of Peshawar Contact number: 03339169547 Email Address: iffattabassum@uop.edu.pk
5.	Prof.Dr.Mahmood-ul-Hassan	Ex Chairman Department of Geography University of Peshawar Contact number: 0919221033 Email address: Profdrmahmoodulhasan@yahoo.com
6.	Prof Dr Shakeel Mahmood	Chairman Department of Geography, Government college University Lahore
7.	Assistant Professor Sami Ullah	Department of Geography, University of Peshawar Contact Number: 03459429484 Email Address: samigeo78@uop.edu.pk

8.	Assistant Professor Ihsanullah	Department of Geography, University of Peshawar Contact Number:03333192240 Email Address: Ihsanullah@uop.edu.pk khattakiu@yahoo.com
9.	Prof Dr Mushahid Anwar	Chairman, Dept of Geography University of Gujrat Contact Number: 0533643117(office) Email Address: chairperson.geosciences@uog.edu.pk
10.	Dr.Atta-ullah-Khan	Associate Professor Department of Geography, Government College LundhKhwar, Mardan
11.	Prof.Dr Safdar Ali Sherazi	Chairman Department of Geography, University of Punjab Contact Number: 92-42-99231239