Subject: Demography and Health

Part A: Demography and Health

1. Objectives

At the end of course, the learners will be able to:

a. Comprehend the concept of demography and health
b. Define and generate information on the population structure, composition and distribution and its application in public health
c. Identify the characteristics and components of population and population growth in relation to public health.
d. Identify the consequences and implication of population growth on public health
e. Describe population theories and principle of population policy
f. Describe the relationship between fertility, mortality and population growth in relation to public health
g. Project the population at national and sub-national level to understand the future health needs
h. Analyze the theories of fertility, mortality and migration
i. Describe the organization of census and survey

2. Course contents

Unit 1: Introduction to demography and health 10hrs

a. Demography and its various terminologies: Demography (formal and social), Population studies, Medical demography, Demography and health, and Public health demography
b. Application of demography in public health programs and research
c. Source of population data and its importance: Population census, Vital registration system, Population register, Sample surveys (Eg. Demographics and health survey), Records from health institution, National and international publications, organization of census and surveys
d. Overview of population structure and characteristics
e. Age, sex structure and sex ratio, Population pyramid, characteristics and its construction and presentation, Concept of young and old population; Median age of population, Aging of population and its Index, Dependency ratio, Population growth rate, Decadal population growth rate, Annual Population Growth Rate (APGR), population dividend
f. Concept on age sex data accuracy methods
g. Single year age distribution of the population, Whipple's Index, Myers' blended index, United Nations age-sex accuracy index

Unit 2: Fertility, reproduction, and fertility theories 10hrs

a. Overview of measures of fertility and reproduction: Crude Birth Rate (CBR.), General Fertility Rate (GFR.), Age Specific Fertility Rate (ASFR.), Total Fertility Rate (TFR.), Standardization of birth rate, Child woman ratio, *children ever born, P*opulation momentum, Replacement level fertility, Baby boom syndrome, Baby bust syndrome, Measures of reproduction (Gross reproduction rate, Net reproduction rate), Determinants of fertility
b. Theories of fertility decline: Classical demographic transition theory, Secularization/ Individualism theory, Wealth flows theory, Micro-economic theory, Supply-demand theory, Bongaarts theory

Unit 3: Mortality, life table and mortality theories 8hrs

a. Overview: Crude Death Rate (CDR), Age Specific Death Rate (ASDR), Cause Specific Death Rate (CSDR), Infant Mortality Rate (IMR), Neonatal Mortality Rate (NMR), Post-neonatal Mortality Rate(PNMR), Maternal Mortality Ratio (MMR), Child Mortality Rate (CMR), Under 5 Mortality Rate (U5MR), Fetal Mortality Rate, Perinatal Mortality Rate, Standardization of death rates, Determinants of mortality
b. Life table: Anatomy and simple construction of life table, importance
c. Theories of mortality decline: Demographic transition theory, Epidemiological transition theory

Unit 4: Migration and migration theories 8hrs

a. Overview of measures of migration: Basic terminology of migration, Measures of migration, Immigration/In-migration rate, Emigration/Out migration rate, Net migration rate, Gross migration rate, Age-specific migration rates, Sex-specific migration rates, Lifetime survival method for net migration, National growth rate method, Vital statistics method, Determinants of migration
b. Migration theories:G. Ravenstein theory, Everett S. Lee theory, Haris-Todaro theory, Political economy theory, World system theory

Unit 5: Nuptiality 6hrs

Overview of measures of nuptiality: Introduction, Basic terminologies of nuptiality, Simple measures of nuptiality: Crude marriage rate (CMR), General marriage rate (GMR), Age-specific marriage rate (ASMR), Total marriage rate (TMR), Average age at first marriage, Singulate mean age at marriage (SMAM)), Determinants of nuptiality

Unit 6: Urbanization and urbanization theories 6hrs

Overview of measures of urbanization: Basic terminology of urbanization, History of urbanization in Nepal, Simple measures of urbanization, Degree of urbanization, Tempo of urbanization, Concentration and dispersion of population, Determinants of urbanization, Urbanization theories: Central place theory (Walter Christaller)

Unit 7: Population estimates and projections 4hrs

Overview: Balancing equation method, Mathematical methods: i. Arithmetic growth model, ii. Geometric growth model, iii.Exponential growth model, iii. Modified exponential growth model, Concept of population doubling time

Unit 8: Population theory and policy4hrs

a. Population theory: Early thinking on population issues, Malthusian, Neo-malthusians and Cornucopian population theories, Demographic transition theory, Optimum population theory, Epidemiological theory of population
b. Population policy: Concept of population policy, Types of population policy, Review of population policies of Nepal and Current population policy, Population policies around the world

Unit 9: Human Development indicators 4hrs

Concept of human development index and Poverty index, Construction technique of HDI and Poverty Index, Critical analysis of the current position of countries in terms of human development and poverty index

Part B: Health Informatics

1. Course Objectives

At the end of the course, learners will be able to:

1. Identify appropriate hardware and software for their use
2. Acquire knowledge on national health data base and surveillance system
3. Able to use different search engine on web
4. Handle some database, reference software
5. Handle some statistical software
6. Interpret the statistical outputs

2. Course Contents

Unit 1: Introduction to Information Technology (IT) 5 hrs

Introduction, history, architecture, system, hardware, software

Unit 2: Operating system (OS) 5 hrs

Introduction to different types of operating systems, memory management, file concepts, access and allocation methods, free space management, disk structure, disk scheduling and disk management.

Unit 3: Public health and IT 20 hrs

Introduction to public health informatics, principles of using technology, role of the public health professional in information technology, electronic communication, Information technology and organizational change in Public Health (PH), National information

management system, IT in public health surveillance, future directions in public health information technology applications, ethics in IT, security, privacy and legal issues of IT, barriers to IT, IT disasters, on-line research for PH, WWW site and use in PH, managing GIS, evolution of information technology management in PH, telemedicine and telehealth, management information system (HMIS and HSIS), strategic planning for information management, challenge of teaching information technology in PH.

Unit 4: Database management **10 hrs**

Introduction to database systems, database administration - database system architecture and data dictionary- Relational, Hierarchical, Network Models

Unit 5: Data analysis **20 hrs**

Introduction of different commercial and non-commercial data analysis and reference managing software and hands on practice in some software (Epi Info, SPSS), introduction to different software used by govt. and non-government organizations for surveillances, mapping, projection, modeling

Part C: Research Methods

1. Objectives

At the end of the course, the learners will be able to:

a. Explain the concepts, process and steps involved in conducting health research
b. Select suitable approaches to quantitative and qualitative data analysis
c. Design quantitative and qualitative research
d. Apply mixed methods in different research activities
e. Demonstrate a critical understanding of various research methods.
f. Reflect critically on evidence-based practice in public health issues
g. Demonstrate knowledge and understanding of the assumptions of the research approaches that are commonly used in public health and other relevant areas.
h. Demonstrate skills in processing, interpretation and use of data
i. Develop a research proposal on a selected health problem

2. Course contents

Unit 1: Theoretical orientation on research methodology 20hrs

a. Research paradigm and knowledge generation
b. Research problems
c. Research objectives
d. Research framework
e. Research design
f. Rationale of research
g. Literature review
h. Ethics and research

Unit 2: Process of research 10 hrs

a. Identifying research problems
b. Setting research objectives
c. Deciding research design
d. Literature search and review
e. Data collection – Techniques, tools and process
f. Data analysis – management and analysis process
g. Validity and reliability

Unit 3: Qualitative research Method 15hrs

a. Qualitative research designs
b. Selection of participants

c. Instruments of qualitative study
d. Qualitative data collection methods
e. Qualitative data analysis
f. Trustworthiness of Qualitative data

Unit 4: Mixed method in health research 5hrs

a. Introduction to Mixed Methods (MM) study
b. Theory of mixed methods
c. Variations on the MM Designs
d. Characteristics of MM Studies

Unit 5: Development of research proposal 10hrs

a. Proposal of a research project - concept of proposal, components of a research proposal, research development process, obtaining ethical approval.

Unit 6: Writing Research Report

a. Concept of research report
b. Components of research report
c. Organizing results
d. Discussions of the results
e. Limitations of research
f. Conclusion and recommendation

Unit 7: Research report dissemination

a. Oral presentation
b. Poster presentation
c. Publication

Part D: Pedagogical Methods

1. **Objectives**

At the end of the course, the learners will be able to:

1. Discuss the objectives and philosophies of pedagogy
2. Explain the required qualities for teaching in higher education
3. Discuss various pedagogical approaches used in education
4. Describe the relationship between curriculum and pedagogy
5. Describe the methods of student evaluation and assessment

2. **Contents**

a. Objectives and philosophies of pedagogy
b. Required qualities for teaching in higher education: individual, social and occupational/professional
c. Pedagogical approaches (teaching methods and media) in education
d. Curriculum and Pedagogy
e. Balanced model of curriculum
f. Methods of student evaluation and assessment: formative, summative and diagnostic