Master of Arts in Population Studies
(Distance Learning)
Syllabus

Approved by the Academic Council on 08 May 2025

INTERNATIONAL INSTITUTE
FOR POPULATION SCIENCES
(Deemed to be University)

(स्थापना/ Established in 1956)
बेहतर भविष्य के लिए क्षमता निर्माण
Capacity Building for a Better Future

Deonar, Mumbai 400 088

http://iipsindia.ac.in

Programme Outcomes:

- To develop experts in demography and population studies with analytical skills to address evolving population and health challenges.
- To enhance the relevance of population studies in social sciences, public health, and policy-making.
- To equip students with advanced research methodologies for evidence-based policy formulation and demographic analysis.
- To promote an interdisciplinary approach to understanding population dynamics, migration, and socioeconomic development.
- To prepare students for careers in research, academia, and policy institutions at national and international levels.

Index to the Courses

Sr. No.	Course Code	Course Name	Course Type	Credits	L	T	P
		YEAR 1					
1	MSP-1C	Sociology, Psychology and Anthropology	C	2	2	0	0
2	MSP-2C	Economics and Geography	C	2	2	0	0
3	MSP-3C	Basic Statistical Methods for Population Studies	C	4	3	1	0
4	MSP-4C	Introduction to Demography and History of Population	C	4	3	1	0
5	MSP-5C	Fertility and Nuptiality	C	4	3	1	0
6	MSP-6C	Evaluation, Adjustment of Demographic Data and Population Projection	C	4	3	1	0
7	MSP-7C	Introduction to Demographic and Statistical Software	C	4	3	1	0
8	MSP-8C	Migration and Urbanization	C	4	3	1	0
9	MSP-12C	Research Methodology	C	4	3	1	0
10	MPS-16C	Morbidity, Mortality and Public Health	C	4	3	1	0
11	IKS-1	Swayam-1	IKS	4	-	-	-
12	IKS-2	Swayam-2	IKS	2	-	-	-
		Year 1 credits		42			
		YEAR II					
13	MSP-9C	Historical Demography	C	3	2	1	0
14	MSP-10C	Gender and Reproductive Health	C	4	3	1	0
15	MSP-11C	Population and Development	C	4	3	1	0
16	MSP-13C	Concepts and Measures of Global Health	C	3	2	1	0
17	MSP-14C	Population Policies, Programme and Evaluation of HFW Programme	C	4	3	1	0
18	MSP-15C	Advanced Statistical Packages and Applications in Large-scale Data	C	3	2	1	0
19	MSP-17C	Population Ageing and Health Transition	C	4	3	1	0
20	MSP-18E	Urbanization, Space and Planning or Biostatistics and Epidemiology	E	3	2	1	0
	MSP-TP	Term paper	TP	10			
	MSP-VV	Viva-voce	VV	4			

		Year 2 credits	42			
		TOTAL CREDITS (including 4 credits of viva-voce)	84			

Notes:

- IKS-Indian Knowledge System course, C- Core course, E-Elective course, L-Lecture, T-Tutorial and P-Practical.

- Year II: For Paper 20 (Course Code MSP 18E): One elective should be opted from Urbanization, Space and Planning OR Biostatistics and Epidemiology.

- Student must pass 50% of the core papers in the 1st year to be promoted to 2nd year.

- The final IKS paper from SWAYAM will be subject to course availability. It is recommended to choose a freely available course, as directed by the CDOE. Submission of the completion certificate to CDOE is mandatory. However, to get the certificate student may need to pay nominal fee to the respective paper opted.

FIRST YEAR

PAPER 1

Course Code: MSP 1C

Course Title: SOCIOLOGY, PSYCHOLOGY AND ANTHROPOLOGY

Credit: 2
(Lecture: 2)

Hours: 30

COURSE OUTCOMES:

- To gain familiarity with basic social science concepts that has bearing on understanding population dynamics.
- Understand the varied aspects of social reality, such as caste, tribe, gender, kinship, marriage, social mobility and religion in terms of its relevance in population studies.
- To understand the psychological concepts like perception, behaviour, emotion, personality, coping mechanism, and their bearing on Population Studies

COURSE CONTENT:

Block 1: Sociology and Anthropology

Unit 1: Study of human society

This unit covers basic concepts in Anthropology/Sociology, the sociological point of views / perspectives in sociology, anthropological point of views/ perspectives in anthropology and the value of sociology. Further, it discusses about major groups, communities, social stratification and social class.

Unit 2: Society, Institutions and Social Change

This unit deals with caste system in India and changes in Indian caste system. It also discusses the tribes in India and its classification. Further it talks about various social institutions. Besides, it covers the concept of social change, its mechanisms and determinants, and processes such as Sanskritization, Westernization and Modernization

Block 2: Psychology

Unit 3: Social Psychological Concepts and Issues in Population Sciences

This unit presents a brief introduction to the discipline of psychology and is followed by a discussion on the importance of psychology in population studies. This unit also discusses various important psychological concepts, such as personality, motivation, emotion, communication and related theories. Further, it presents a brief account on the concept, types and measures of well-being as well as some common mental disorders.

READING LIST:

Burkeman, L. (2012). *The antidote: Happiness for people who can't stand positive thinking*. Penguin Books.

Davis, K. (1975). *Human society*. MacMillan & Co.

Duhigg, C. M. (2012). *The power of habit*. Random House.

Freud, S. (1900). *The interpretation of dreams*. Macmillan.

Haralambos, M. (1980). *Sociology: Themes and perspectives*. Oxford University Press.

Horney, K. (1937). *The neurotic personality of our time*. W. W. Norton & Company.

Johnson, H. M. (1966). *Sociology: A systematic introduction*. Allied Publishers.

Kapadia, K. M. (1966). *Marriage and family in India*. Oxford University Press.

Kuppuswamy, B. (1972). *Social change in India*. Konark Publications Pvt. Ltd.

Kalat, J. W. (2013). *Introduction to psychology* (10th ed.). Cengage Learning.

MacIver, R. M., & Page, C. H. (1949). *Society: An introductory analysis*. Holt, Rinehart & Winston.

Mandelbaum, D. G. (1970). *Society in India: Continuity and change* (Vol. 1). University of California Press.

Mandelbaum, D. G. (1970). *Change and continuity* (Vol. 2). University of California Press.

Muzumdar, H. (1966). *The grammar of sociology: Man in society*. Asia Publishing House.

Srinivas, M. N. (1966). *Social change in modern India*. University of California Press.

FIRST YEAR

PAPER 2

Course Code: MSP 2C

Course Title: ECONOMICS AND GEOGRAPHY

Credit: 2   Hours: 30
(Lecture: 2)

COURSE OUTCOMES:

- Viewing population in space and time and read population geography in consideration of man-environment relationship, geographical factors and regional perspective.
- Recognition of interplay between economic development and population changes in an evolving world order.

COURSE CONTENT:

Block 1: Economics

Unit 1: Basic Concepts in Economics

This unit is devoted to explain some important concepts in economics as the knowledge and understanding of those concepts are essentim, al for studying
different dimensions of interaction between economic development and population growth under different subjects of population studies.

Unit 2: Basic Concepts in Micro Economics

This unit covers the concept of demand, supply and prices. In this unit you will also learn about the theory of production and the concept of law of diminishing
return.

Unit 3: Basic Concepts in Macro Economics

This unit presents in brief the basic concepts of national income meaning. The theories of consumption and saving, and factors affecting consumption

function are also discussed in detail in this unit. At the end of this unit, you will find a short description of the basic concept of Investment and its application.

Unit 4: Basic Concepts in Public Finance

This unit deals with public and private goods, and the concept of public revenue and its sources. In this unit you will also learn about the concept and measures
of equity in health care.

Unit 5: Indian Economy

This unit focus on the basic insight into the structure of the economy in pre-independent India and discuss the overall strategy adopted to bring about the

developmental planning into the economy. In this unit, we have also discussed the approaches adopted in different five-year plan and variation in policy decisions regarding economy. At the end, a list of major programmes for rural development, poverty and unemployment eradication are also discussed.

Block 2: Geography

Unit 6: Study of Man and Nature

This unit provides the basic concept, branches and scope of geography. The unit also describes the concept of man-environment relationship. Further, approaches like determinism, possibilism, neo-determinism and human ecology to study man-environment relationship are covered in this unit.

Unit 7: Geographic Approaches

In this unit you will learn about the various systematic approaches of geography with their historical perspectives.

Unit 8: Concepts of Human Geography

This unit contains the basic concepts and need of human geography in population studies. This unit will also cover the concepts like over, optimum and under population.

Unit 9: Human Settlements

In this unit you are expected to learn about the concepts, patterns, hierarchy and types of human settlements in Indian context. This unit will also focus the factors associated with the human settlements in India.

Unit 10: Geography of India

This unit mainly discusses the Indian Geography i.e. the regional and administrative regions of India. In this unit you are expected to learn about the land, water and energy resources along with agricultural and industrial development in India. This unit also provide a description in the regional inequalities in development and changing political geography of India.

READING LIST

Abler, R., Adams, J., & Gould, P. (1971). *Spatial organization: The geographer's view of the world.* Prentice Hall.

Ahuja, H. L. (n.d.). *Advanced economic theory: Microeconomic analysis.* S. Chand & Company.

Dasgupta, A. K. (n.d.). *Epochs of economic theory.* Oxford University Press.

Datt, R., & Sundaram, K. P. M. (2000). *Indian economy (Part II).* S. Chand & Company Ltd.

Friedman, J. F. (1966). *Regional development policy: A case study of Venezuela.* MIT Press.

Johnston, R. J. (2004). *Geography and geographers.* Oxford University Press.

Koutsoiannis, A. (1979). *Modern microeconomics.* Macmillan Press Ltd.

Lipsey, R. G., & Chrystal, K. A. (2004). *Economics.* Oxford University Press.

Peet, R. (1998). *Modern geographic thought.* Blackwell Publishers.

Samuelson, P. A., & Nordhaus, W. D. (n.d.). *Economics.* Tata McGraw-Hill.

Singh, R. L. (1971). *India: A regional geography.* National Geographical Society of India.

FIRST YEAR

PAPER 3

Course Code: MSP 3C

Course Title: BASIC STATISTICAL METHODS FOR POPULATION STUDIES

Credit: 4   **Hours: 60**
(Lecture: 3, Tutorial:1)

COURSE OUTCOMES:

- Refresh on basic statistical methods and its application to population data.
- Recognize the relevance of distribution in bivariate and multivariate tabulations.
- Application of statistical distribution in diagnosing demographic outcome and indicators.
- Develop an understanding of generalization based on principles of statistical analysis.

COURSE CONTENT:

Block 1: Some Basic Mathematical Tools

Unit 1: Elementary Mathematical Tools in the Field of Population

In this unit, we have endeavored to explain you some basic mathematical tools and their applications in population data analysis. You will learn about permutation and combination, binomial and exponential functions and computation of population growth rate in different sections of this unit.

Unit 2: Interpolation and Graduation

The interpolation is defined as the technique of obtaining the most likely estimate of a certain quantity under certain assumptions. In this unit, we will discuss about different methods of interpolation, extrapolation and graduation with their application in population data analysis. Besides, you will also find a critical evaluation of different methods, their merits and limitations.

Block 2: Basic Measures of Statistics, Elements of Probability Theory and Probability Distributions

Unit 3: Basic Measures of Statistics

The term "Statistics" refers to the statistical data on the one hand, and principles and methods, which have been developed for analysing numerical data, on the other. In this unit, we have endeavoured to explain you the meaning and scope of statistics, ways of presentation of statistical data (constant, variables and attributes, frequency distribution, graphic representation), various measures of central tendency, dispersion, moments, skewness and kurtosis.

Unit 4: Elements of Probability Theory

This unit deals with the elementary principles and concepts of probability, rules of probability, conditional probability including Bayes rule of probability, which will enable you to understand different statistical methods and techniques. Besides, the concepts of Random variables and Probability distribution, Mathematical expectation are also explained in brief.

Unit 5: Probability Distributions

This unit presents the basic concepts of theoretical probability distributions, their nature and utility in understanding the complexities of population problems. Among the large number of theoretical distributions, based on discrete and continuous nature of random variable, we have explained only few important distributions, which have been proved as asset in explaining the behavioural parameters of social/natural phenomena. The Binomial, Poisson, Geometric and Normal distributions are explained in brief along with their utilities in solving various social and natural complexities with solved examples.

Block 3: Statistical Methods Used in Population Data Analysis

Unit 6: Correlation and Regression

Correlation is a statistical tool which explains the extent of relationship between two variables, while, the regression analysis deals with the estimation or prediction of the unknown value of one variable

from the known value(s) of the other variable. This unit aims to explain you the meaning and scope of correlation and regression analyses, their computational procedures and interpretations. At the end of this unit, a brief description of multiple and partial correlations is also presented.

Unit 7: Multivariate Techniques - I

Multivariate analysis is simply defined as the application of methods that deal with reasonably large number of measurements made on each object in the sample simultaneously. It includes a variety of techniques to be used in various situations in almost all fields of scientific inquiry. In this unit, we will discuss about analysis of variance, covariance and multiple regression analysis and also illustrate their computational procedures with suitable examples. However, application of software packages will be explained to you during the contact classes.

Unit 8: Multivariate Techniques - II

In this unit, we have endeavoured to explain you some more multivariate techniques and their applications. After completing this unit, you are expected to learn the basic concepts as well as applications of multiple classification analysis, path analysis, and logistic regression. However, their application through different software packages is again due for the contact classes.

Block 4: Sampling Designs and Statistical Inference

Unit 9: Sampling Designs

This unit deals with the basics of the sampling designs used in large demographic surveys. After completing this unit, you are expected to learn about determination of sample size as well as fundamentals of different sampling schemes including their merits and limitations.

Unit 10: Statistical Inference

Statistical inference can be defined as the process of generalization in a prescribed manner from a sample to its universe. It mainly deals with two types of inferences; estimation of the parameter, which describes merely the parameter and hypothesis testing, which begins with a hypothesis about the parameter and then uses the sample data to check the truth of the hypothesis. In this unit, we have endeavoured to familiarize you with the basic concepts of statistical inference viz., parameter, statistic, hypothesis, two types of errors, size and power of test etc. and explained in brief the test procedures for difference in means and proportions.

Unit 11: Tests of Significance

It is nothing but a procedure to assess the significance of difference between a statistic and the corresponding population parameter or the difference between two independent statistics. If the difference is not significant, it is supposed to be attributed to the fluctuations of sampling. This unit aims to explain you the Chi-square test of significance, theory of attributes and the tests of significance based on distribution free methods.

READING LIST:

Bhat, N. R., & Singh, M. R. (1993). *Applied mathematics*. Tata McGraw-Hill Publishing Company Ltd.

Chakravorti, S. R., & Giri, N. (1997). *Basic statistics*. South Asian Publishers.

Clarke, G. M., & Cooke, D. (1994). *A basic course in statistics*. Arnold.

Dillon, W. R., & Goldstein, M. (1984). *Multivariate analysis*. John Wiley & Sons.

Dixon, W. J., & Massey, F. J. (1983). *Introduction to statistical analysis* (4th ed.). McGraw-Hill.

Douglas, G., & Altman, D. (2006). *Practical statistics for medical research*. Chapman and Hall.

Fisher, L. D., & Van Belle, G. (1993). *Biostatistics: A methodology of the health sciences*. Wiley Interscience.

Goon, A. M., Gupta, M. K., & Dasgupta, B. (1985). *Fundamentals of statistics* (Vol. 1). The World Press Private Ltd.

Jain, S. K. (1979). *Basic mathematics for demographers*. The Australian National University.

Marcello, P., & Gourneau, K. (2000). *Principles of biostatistics* (2nd ed.). Duxbury Thomson Learning.

Prakasam, C. P., Rama Rao, G., & Upadhyay, R. B. (1987). *Basic mathematics in population studies*. Gemini Publishers.

Sundaram, K. R., Dwivedi, S. N., & Sreenivas, V. (n.d.). *Medical statistics: Principles and methods*. BI Publications Private Limited.

PAPER 4

Course Code: MSP 4C

Course Title: INTRODUCTION TO DEMOGRAPHY AND HISTORY OF POPULATION

Credit: 4   **Hours: 60**
(Lecture: 3, Tutorial:1)

COURSE OUTCOMES:

- Acquaint the students with the scope and relevance of the discipline of population studies.
- Become aware of the global, regional and national population trends.
- To understand the nature of diversity in the size, distribution, composition, and basic characteristics of population across Indian states.
- To familiarize on various sources of demographic data in India, and their limitations.
- To appreciate the historical perspectives on population change.

COURSE CONTENT:

Block 1: Introduction to Population Studies and History of Population

Unit 1 Introduction to Population Studies

This unit presents in brief the meaning and scope of population studies, its development as an independent discipline and different phases of its development in India. At the end of this unit, you will find a short description of the subject matter on population studies.

Unit 2 History of Population

This unit covers the brief history of world population, the global variation in population size and growth and the past, present and future population trends across the world. In this unit you will also learn about the demographic profile of India and its States.

Block 2: Sources of Population Data

Unit 3 Sources of Population Data

In this unit, we have endeavoured to explain to you the nature and scope of different sources of Population data, i.e. Population Censuses, Registration of Vital events, Sample Surveys, etc.

Block 3: Age-Sex Structure

Unit 4 Basic Concepts and Importance of Age-Sex Structure

This unit deals with the basic concepts and definition used in studying age-sex structure of a population, which influences not only the demographic but also the social, economic and political structures of the population. You will learn about its impact on population growth and upon various other socio-economic aspects of any population.

Unit 5 Measures of Age and Sex Structure

This unit deals with measures of age and sex structure of the population. You will also learn about the population pyramid of various countries.

Unit 6 Trends and Patterns of Sex Ratio

In this unit, you will learn about trends and patterns of sex ratio. This unit also cover the factors affecting sex ratio of the population.

READING LIST:

Bogue, D. (1969). *Principles of demography*. John Wiley & Sons.

Bhende, A., & Kanitkar, T. (1996). *Principles of population studies* (7th ed.). Himalaya Publishing House.

Census of India. (n.d.). *Census of India*. Retrieved from http://www.censusindia.gov.in

Dyson, T. (2018). *A population history of India: From the first modern people to the present day*. Oxford University Press. https://doi.org/10.1093/oso/9780198829058.001.0001

Jacob S. Siegel, & David A. Swanson. (2004). *The methods and materials of demography* (2nd ed.). Elsevier Science. https://books.google.co.in/books/about/The_Methods_and_Materials_of_Demography.html?id=-uPrAAAAMAAJ&redir_esc=y

John Weeks. (2005). *Population: An introduction to concepts and issues* (9th ed.). Wordsworth Learning.

Thompson, W. S. (1930). *Population problems*. McGraw-Hill.

United Nations. (1958). *Multilingual demographic dictionary*. John Wiley & Sons Ltd.

United Nations. (1998). *Handbook on civil registration and vital statistics systems: Management, operation, and maintenance*. United Nations.

United Nations. DESA. (2022). *World population prospects 2022*. Retrieved from
https://www.un.org/development/desa/pd/sites/www.un.org.development.desa.pd/files/wpp2022_summary_of_results.pdf

FIRST YEAR
PAPER 5
Course Code: MSP 5C
Course Title: FERTILITY AND NUPTIALITY

Credit: 4   **Hours: 60**
(Lecture: 3, Tutorial:1)

COURSE OUTCOMES:
- Familiarize students on basic concepts on fertility and nuptiality.
- Recognize socio-cultural and economic factors influencing fertility behaviours.
- Inculcate an understanding of various theories of reproduction and family formation.
- Identify the different sources of data for fertility and nuptiality measurements
- Perform fertility and nuptiality analysis

COURSE CONTENT:

Block 1: Nuptiality: Concepts and Measures

Unit 1 : Concepts and Basic Measures of Nuptiality
This unit deals with the basic concepts of Nuptiality and different sources of demographic data related to its study and explains various measures of Nuptiality.

Unit 2 : Estimation of Age at Marriage
This unit explains the computational procedures of mean age at marriage from census data using the methods developed by Hajnal, Agarwala, etc. Further, it also
describes the three parameter nuptiality model (Coale's) and estimation of those parameters.

Unit 3 : Age at Marriage in India
This unit explores the age at marriage in India and its variation over a period of time. The unit gives insights on the levels and trends of age at marriage in different states in India and also its differentials

according to various socio-economic characteristics viz., religion, caste, type of family, educational status, economic status etc..

Block 2: Basic Concepts and Measures of Fertility and Reproduction

Unit 4 : Fertility Studies : Concepts and Sources of Data

This unit deals with the basic concepts used in fertility studies viz., fecundity, fecundability, natality, birth order and parity, sterility, natural and controlled fertility etc. Further, we have also endeavored to explain the various sources of fertility data with their relative merits and limitations.

Unit 5 : Measures of Fertility and Reproduction

This units describes the different measures of fertility viz., crude birth rate, age specific fertility rate, general fertility rate etc. as well as reproduction rates where the gross reproduction rate and net reproduction rate are the focal points of discussion. Further, a detailed description on standardized rates and parity progression ratio are presented with illustration towards the end of this unit.

Unit 6 : Indirect Methods of Estimation of Fertility

This unit is devoted to various indirect techniques for fertility estimation; reverse survival method, application of stable population theory, Rele's procedure for estimation of fertility, P/F ratio method and age pattern of fertility are the major content of this unit.

Block 3: Framework for and Synthesis of Fertility Analysis

Unit 7 : Age Pattern of Fertility: Empirical Pattern and Mathematical Modelling.

This unit presents the empirical as well as theoretical aspects of age pattern of fertility. After completing this unit, one should be able to understand the conceptual aspects of age pattern of fertility, variations in the age pattern of fertility, advantages of studying age patterns of fertility, age pattern of fertility in India and urban-rural differences in fertility rates.

Unit 8 : Framework for and Synthesis of Fertility Analysis

In this unit we have endeavoured to explain you the determinants of fertility and also the factors which influences those determinants. More specifically, the role of various social, cultural, psychological and economic factors in determining fertility preferences and behaviour have been explained. After completing this unit, you are expected to understand the determinants of natural fertility, Davis intermediate variables framework, Bongaart's proximate determinants model, socio-economic determinants of proximate variables and theories of fertility.

Unit 9 : Hypothesis and Theory of Fertility

In this unit you will learn about various hypothesis and theories of fertility. These hypothesis and theories have been presented in their historical perspective. More specifically, you will learn about theories like Social Capillarity, theory of Change and Response, theory of Diffusion or Cultural Lag, Liebenstein's theory, Becker's theory, Easterlin's Framework of Fertility, Caldwell's theory Wealth Flows and U.N. Threshold Hypothesis

Unit 10 : Reproductive Motivations

In this unit you are exposed to learn about important issues related to reproductive motivation. After completing this unit, you will be familiarised with the concepts on value of children, sex preference as well as social, cultural, psychological and economic aspects in reproductive motivation.

Block 4: Fertility Transition in Some Developed and Developing Countries

Unit 11 : Fertility Transition

In this unit we have endeavoured to explain the nature and causes of fertility transition in industrialized and developing countries. After completing this unit you can understand the nature of fertility decline in the developed countries and underlying factors, the implications of below or near replacement level fertility, the nature of fertility decline in the developing countries viz., China, Sri Lanka and India. Also, differential fertility, adolescent fertility and its implications, etc. have been discussed in this unit.

Unit 12 : Large Scale Surveys : Substantive Findings

This unit presents an introduction of large-scale surveys in the field of fertility and family planning. In this unit, you are expected to know the substantive findings from World Fertility Survey, Demographic

Health Survey, and National Family Health Surveys and empirical justifications of important observation of these surveys.

READING LIST:

Arriaga, E. E., Bogue, D. J., & Anderson, D. L. (Eds.). (1993). *Readings in population research methodology* (Vol. 3: Fertility research). United Nations Population Fund.

Bhende, A. A., & Kanitkar, T. (2003). *Principles of population studies* (16th rev. ed.). Himalaya Publishing House.

Bogue, D. J., & Anderson, D. L. (Eds.). (1993). *Readings in population research methodology*. United Nations Population Fund.

Bongaarts, J., & Potter, R. (1983). *Fertility, biology, and behavior: An analysis of the proximate determinants*. Academic Press.

Coale, A. J., & Trussell, T. J. (1978). Technical note: Finding the two parameters that specify a model schedule of marital fertility. *Population Index, 44*(2), 203–213. https://doi.org/10.2307/2736719

Coontz, S. H. (1968). *Population theories and the economic interpretation*. Routledge.

Mandelbaum, D. G. (1974). *Human fertility in India: Social components and policy perspectives*. University of California Press.

Newell, C. (1988). *Methods and models in demography*. Frances Pinter.

Palmore, J. A., & Gardner, R. W. (1983). *Measuring mortality, fertility, and natural increase: A self-teaching guide to elementary measures*. East-West Population Institute, East-West Center.

Pathak, K. B., & Ram, F. (1998). Techniques of demographic analysis (pp. 108–153). Himalaya Publishing House.

Pollard, A. H., Yusuf, F., & Pollard, G. N. (1990). *Demographic techniques* (3rd ed.). Pergamon Press.

Preston, S. H., Heuveline, P., & Guillot, M. (2001). *Demography: Measuring and modeling population processes*. Blackwell Publishers.

Rowland, D. T. (2006). *Demographic methods and concepts*. Oxford University Press.

Siegel, J. S., & Swanson, D. A. (Eds.). (2004). *The methods and materials of demography* (2nd ed.). Elsevier Academic Press.

United Nations. (1973). *Determinants and consequences of population trends* (Vol. I). UN.

United Nations. (1998). *Handbook on civil registration and vital statistics systems: Management, operation, and maintenance*. United Nations.

Weeks, J. (2005). *Population: An introduction to concepts and issues* (9th ed.). Wordsworth Learning.

PAPER 6

Course Code: MSP 6C

Course Title: EVALUATION, ADJUSTMENT OF DEMOGRAPHIC DATA AND POPULATION PROJECTION

Credit: 4   **Hours: 60**
(Lecture: 3, Tutorial:1)

COURSE OUTCOMES:

- To develop an understanding of demographic transition and demographic dividend.
- To train the students in mathematical and component methods of population projection

COURSE CONTENT:

Block 1: Evaluation and Adjustment of Demographic Data

Unit 1: Appraisal of the Quality of Age-Sex Data

This unit deals with the methods for appraising the accuracy of population data where you will primarily be concerned with the types, sources of errors in demographic data, their evaluation and adjustment.

Unit 2: Evaluation of Errors in Age Sex Data

The unit presents a detailed description of types, sources of errors associated with data on age, age-sex distribution.

Unit 3: Techniques of Errors Adjustment in Age Data

The unit discusses the techniques involved in adjustment of errors associated with data on age distribution.

Unit 4: Quality Checks Assurance in Large Sample Surveys

The unit covers different mechanisms by which data quality of large-scale sample survey can be assured to a greater extent.

Block 2: Population Estimates and Projections

Unit 5: Basic Concepts of Population Estimates and Projections
This unit presents in detail the basic concepts on need and uses of population estimates and population projections.

Unit 6: Methods of Obtaining Population Estimates
This unit deals with various methods of obtaining estimates of population totals; and method of obtaining estimates of population sex-age structure for
inter-censal years.

Unit 7: Component Method of Population Projection
This unit covers the component method of population projection; and method of obtaining projected values of fertility, mortality and migration for the future
years.

Unit 8: Other Methods of Population Projections
This unit explains some other methods of population projection such as Population projection by Expert Committee (Technical Group); Population projection
by World Bank; Population projection by United Nations which are extensively used for planning and policy formation.

Unit 9: Rural-Urban and Sub-National Population Projections
This unit presents the method of projecting sub-national population projections and method of projecting population for rural and urban areas.

Unit 10: Socioeconomic Projections

This unit describes the methods related to projection of households, school enrolment for different levels of schooling and the projection of labour force.

READING LIST:

Badry, E. L., & M.A. (1961). Failure of enumerators to make entries of zero: Errors in recording childless cases in population censuses. *Journal of American Statistical Association, 56.*

Banda, J. P. (2003). Non-sampling errors in surveys. *United Nations Secretariat, ESA/STAT/AC.93/7. Statistics Division.* https://www.un.org/esa/statistics

Bogue, D. (1969). *Principles of demography.* John Wiley & Sons.

Bhende, A., & Kanitkar, T. (1996). *Principles of population studies* (7th ed.). Himalaya Publishing House.

Census of India. (2011). *Report on post enumeration survey, 2011.* Registrar General & Census Commissioner.

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FIRST YEAR

PAPER 7

Course Code: MSP 7C

Course Title: INTRODUCTION TO DEMOGRAPHIC AND STATISTICAL SOFTWARE

Credit: 4
(Lecture: 3, Tutorial:1)

Hours: 60

COURSE OUTCOMES:
- To have hands on experience on statistical packages like SPSS, STATA to facilitate handling of large-scale data sets.
- To familiarize with the data management such as recoding, sorting, filtering, file merging and splitting using SPSS and STATA
- To understand and learn the uses of univariate, bivariate and multivariate analysis using software packages

COURSE CONTENT:

Block 1: Introduction to Demographic and Statistical Software

Unit 1: Introduction to Computer
This unit gives a general introduction to the computer, its basic components and devices and their functions.

Unit 2: Introduction to Microsoft Office (Ms-Office)
This unit describes the basics of MS-office application software. The specific thrust of this unit is on giving working knowledge of MS-Word, MS-Excel, and MS-PowerPoint.

Unit 3: Introduction to Internet and Info-POPLINE
This unit gives a general introduction to the Internet and Info-POPLINE, and their uses in the field of Population Studies.

Unit 4: MORTPAK

This unit deals with the MORTPAK software; a software package for demographic measurement in developing countries, with special emphasis on mortality measurement.

Unit 5: SPECTRUM

This unit presents the basics of SPECTRUM; a demographic software and its application to project the population.

Unit 6: Statistical Package for Social Sciences (SPSS)

This unit contains a general introduction to the SPSS and its uses for analysing the data. This unit also covers the process of creating database, data entry, data manipulation and various kinds of statistical analysis.

Unit 7: STATA

In this unit, you are expected to learn about the statistical software called STATA. This unit discusses data management, recoding as well as generating variables and also statistical analysis using STATA software.

READING LIST:

Cromley, E. K., & McLafferty, S. I. (2002). *GIS and public health*. Guilford Press.

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PAPER 8

Course Code: MSP 8C

Course Title: MIGRATION AND URBANIZATION

Credit: 4   **Hours: 60**
(Lecture: 3, Tutorial:1)

COURSE OUTCOMES:

- To make the students understand the basic concepts, definitions, sources of data etc. on migration and urbanization.
- To develop a critical understanding on the various theories/models concerning migration and urbanisation.
- To equip students on the measurement and estimation of level, trend and pattern of migration and urbanization.
- To understand the trend and pattern of spatial distribution and its linkage with migration and urbanization.
- To develop a critical understanding on the emerging migration and urban issues, government policies and programmes in the context of development.

COURSE CONTENT:

Block 1: Spatial Distribution: Measures and Patterns

Unit 1 : Spatial Distribution of Population

This unit gives an overall picture of the spatial distribution of population on earth and its concentration in a few pockets. It discusses the factors responsible for the present population distribution pattern, including the local concentration in the urban areas. It also mentions some methods used to measure and depict the distribution of population.

Unit 2 : Population Redistribution

This unit is devoted to explain population redistribution, where redistribution due to natural increase and migration is analysed. Besides, the concentration of urban population is discussed with the help of standard distance and Gini's concentration Index.

Block 2: Migration: Concepts, Measures, Determinants and Consequences

Unit 3 : Internal Migration: Concepts, Determinants and Consequences

This unit discusses the Internal Migration, where we will explain the sources of migration data, some basic concepts, differentials and patterns of migration, causes and consequences of internal migration in India.

Unit 4 : Direct Methods of Estimating Migration

This unit presents some basic ideas about migration and various direct methods for its estimation. The major focus of this unit is on estimation of migration from place of birth data, duration of residence data, place of last residence data and place of residence at fixed prior date data.

Unit 5 : Indirect Measures of Net Internal Migration

This unit explains indirect techniques for estimation of net internal migration. The focal point of this unit is estimation of internal migration of an area by natural growth rate method, vital statistics method and survival ratio method. Methods of estimating international migration are also discussed.

Unit 6 : Migration Models

This unit concentrates on Migration Models. Some of the selected models have been discussed in this unit.

Unit 7 : International Migration : Trends, Types, Determinants and Consequences

This is the last unit of this block which describes in brief, about international migration, it's trends, types, determinants and consequences.

Block 3: Urbanization: Concepts, Measures, Patterns and Consequences

Unit 8 : Urbanization: Concepts and Definitions

This unit concentrates on the conceptual and definitional issues with respect to urbanization. It also discusses the conceptual problems, sources of data and components of urban growth.

Unit 9 : Measurements of Urbanization and Urban Structure

This unit deals with the measurement of urban population growth, urbanization and urban structure. After going through this unit, a student is expected to learn about the measurement of the degree and tempo of urbanization, the growth rate of urban population and its various components and structure of urban areas by city size, concentration, rank size distribution and urban primacy.

Unit 10 : Urbanization process in Developed and Developing Countries

This unit concentrates on forces and components of urban population growth in developed and developing countries; stages of urbanization and urban system development; forms and typologies of urbanized regions.

Unit 11 : Recent Trends and Prospects of the Process of Urbanization

In this unit we have discussed the pattern and trends of urbanization in developed and developing countries and some salient features of urbanization in India.

Unit 12 : Urban Problems and Planning

This is the last unit of this block. It focuses upon the urban problems. It also gives a brief idea about the urban planning and urbanization. Last of all, it illustrates the urban problems and policies through a case study of Mumbai.

READING LIST:

Arriaga, E. (1975). Selected measures of urbanization. In S. Goldstein & D. Sly (Eds.), *Measures of urbanization and projections of urban population* (pp. 45-67). IUSSP.

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FIRST YEAR

PAPER 9

Course Code: MSP 12C

Course Title: RESEARCH METHODOLOGY

Credit: 4
(Lecture: 3, Tutorial:1)

Hours: 60

COURSE OUTCOMES:

- To understand the research design and scientific approaches to conduct of research in varied settings.
- To familiarize the quantitative methods of data collection.
- To understand various sampling procedures and determining sample size.
- To understand qualitative research
- To familiarize the qualitative methods of data collection.
- Develop skills for writing proposal and scientific articles.
- Introducing students to field level settings and primary data collection.

COURSE CONTENT:

Block 1: Basic Concepts and Sampling Techniques

Unit 1 Introduction to Research Methodology and Scientific Methods of Research

This unit deals with importance of research methods and basic elements of social research, i.e. concepts, definitions, hypothesis, theory, etc. After completing this unit, a student is expected to understand the development of research methodology, scope of social research and formulation of research problems.

Unit 2 Measurement

In social science research, measurement denotes the assignment of numbers indicative of quantity to properties or characteristic or behaviour of people. In this unit, we have endeavoured to explain the basic concepts and levels of measurement, scaling techniques and validity and reliability of measurement.

Unit 3 Sampling Techniques and their Applications

Sampling is the process of learning about the population on the basis of a part of population called sample population. In this unit, we have explained the need of sampling over complete enumeration, basic concepts and their definitions used in sampling theory and some standard techniques in probability sampling with their relative merits and limitations.

Unit 4 Qualitative Research Methods

Qualitative research is a type of formative research that includes specialized techniques for obtaining in-depth responses about what people think and how they feel. In this unit, we have endeavoured to familiarize you with the difference between qualitative and quantitative research methods and also explained various qualitative research methods.

Block- 2: Research Methods

Unit 5 Research Design

The research design is an arrangement of conditions for the collection and analysis of data to contribute to the existing knowledge. This unit enables us to learn about different types, components and features of research designs. Further, the internal and external validity of research design and the threats to validity including the methods to overcome them are also explained.

Unit 6 Methods of Data Collection

Methods of data collection, compilation, analysis and interpretation of information are important components of social research methodology. In this unit, an attempt is made to make the students aware of the quantitative methods of data collection where special emphasis is given on the art of asking questions, preparation of a questionnaire, pre-testing and pilot study.

Unit 7 Data Processing and Analysis

Data processing is a set of activities ranging from editing of questionnaires to analysis and report writing. In any research study, the specification of the data processing requirements in terms of time,

manpower, material, etc. is an important component. This unit is devoted to explaining in brief, various steps of data processing, viz., editing, coding, data validation and updating and analysis of data.

Unit 8 Writing a Research Proposal

Research proposal is a concise and coherent summary of the proposed research. It sets out the central issues or questions that one intends to address, target population and budget. In this unit the fundamentals of developing a research proposal is discussed.
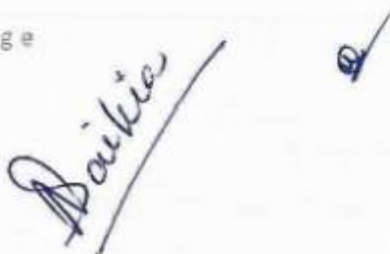
Unit 9 Writing Research Report

The purpose of a research report is to disseminate the research topic in detail along with its design and the results in a clear and concise format. This unit is devoted to explaining the steps involved in preparing a research report.

READING LIST:

Berg, B. L., & Lune, H. (2011). *Qualitative research methods for the social sciences* (8th ed.). Pearson, Allyn & Bacon.

Booth, W. C., Colomb, G. G., Colomb, J. M., & Williams, J. M. (2003). *The craft of research.* University of Chicago Press.

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Sayer, A. (1984). *Method in social science: A realist approach*. Hutchinson.

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PAPER 10

Course Code: MSP 16C

Course Title: MORBIDITY, MORTALITY AND PUBLIC HEALTH

Credit: 4   Hours: 60
(Lecture: 3, Tutorial:1)

COURSE OUTCOMES:

- Become familiar with the basic definitions and concepts used, importance and the scope of mortality study and its bearing on fertility, and population health.
- Become aware of varied sources of health data (morbidity, mortality, disability), their merits/demerits, uses and significance as indicators; and their basic measures.
- Explain synthetic formulation of survival experience (e.g., life table).
- To convey the transitional and differential dynamics of early age life experiences.
- To understand the linkages among epidemiology, mortality transition, and public health.

COURSE CONTENT:

Block 1: Basic Concepts and Measures of Morbidity

Unit 1 : Basic Concepts and Analysis of Health & Morbidity Statistics

In this unit, we provide the basic concepts of health and morbidity along with the related terms to be used therein. Further, different measures of morbidity are also discussed with suitable illustration.

Unit 2 : International Classification of Diseases and Causes of Death

This unit discusses the historical background of international classification of diseases along with various revisions undertaken by the WHO. It also gives an idea about the international classification of causes of death statistics with special emphasis on causes of death in India.

Unit 3 : Epidemiology, Public Health and Burden of Disease

This unit gives the basic concepts of epidemiology, mainly the types of epidemiology, epidemiologic transition, models in epidemiology and diseases. It also gives an idea of Burden of Disease.

Block 2: Basic Concepts and Measures of Mortality

Unit 4: Importance of Mortality Studies: Concepts, Definitions and Differentials

This unit presents in brief the importance of study of mortality, basic concepts and definitions involved in mortality studies and its socio-economic, demographic and cultural differentials. Besides, the biological as well as socio-economic determinants of mortality are also explained towards the end of this unit.

Unit 5: Measures of Mortality

This unit aims to explain the different sources of mortality data with their merits and limitation. Besides, it also explains the different basic measures of mortality including the methods for their standardization.

Unit 6: Health Transition: Mortality Concepts and Patterns

In this unit, we provide the basic concepts of health transition, mortality and epidemiologic transition along with the related terms to be used therein. Further, level in trend in mortality in developed as well as developing countries have been discussed.

Block 3: Life Table and Indirect Methods of Mortality Estimation

Unit 7: Life Table Techniques

This unit presents a detailed description of the basic concepts and definition of life table functions and methods of construction of life table from age specific death rates, census age returns and incomplete data.

Unit 8: Model Life Table Systems, Multiple Decrement Life Tables

In this unit, we have endeavoured to explain the analytical concept of multiple decrement/increment life tables, types of model life tables and some indirect methods of estimating mortality from age distribution alone.

Unit 9 : Indirect Methods of Mortality Estimation

This unit include some indirect techniques of mortality estimation, which are frequently used when the available mortality data are either incomplete or grossly deficient in quality.

READING LIST:

Caldwell, J., Findley, S., Caldwell, P., & Santow, G. (1990). *What we know about health transition: The cultural, social, and behavioural determinants of health* (Vol. 1 & 2). Health Transition Centre, ANU.

Mosley, W. H., & Chen, L. C. (1984). Analytical framework for the study of child survival in developing countries. *Population and Development Review, 10*(Supplementary Copy). https://doi.org/10.2307/1972713

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Park, J. E., & Park, K. (1989). *Textbook of preventive and social medicine* (12th ed., Chapters 2 & 3). M/S Banarsidas Bhanot Publishers.

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FIRST YEAR

PAPER 11

Course Code: IKS-1

Course Title: SWAYAM-1

Credit: 4
(Lecture: 4)

Hours: 60

COURSE CONTENT:

Link from SWAYAM to be shared with the students by the coordinator.

FIRST YEAR
PAPER 12
Course Code: IKS-2
Course Title: SWAYAM-2

Credit: 2
(Lecture: 2)

Hours: 30

COURSE CONTENT:

Link from SWAYAM to be shared with the students by the coordinator.

SECOND YEAR

Credit: 3
(Lecture: 2, Tutorial:1)

Hours: 45

COURSE OUTCOMES:

- To appreciate and recognize an evolutionary account of population changes with traces of historical trends in population
- Familiarizing the students, the data sources and methods in analysis of historical demography
- To gain an understanding of transformational trends in settlement and livelihood patterns of human population
- A detailed understanding of India's population history in particular reference to social and cultural reforms.

COURSE CONTENT:

Block 1: Historical Demography

Unit 1 Introduction to Historical Demography

This unit deals with an introduction to historical demography, genealogy and development of historical demography and limitations of research in the same.

Unit 2 Sources of Historical Data

This unit discusses about various sources of data for the research of historical demography e.g. Census, Vital Registration, Parish registers, Bills of Mortality, Fiscal Documents, Military Records, Genealogies, Wills, Marriage Contracts, etc.

Unit 3 Methods of Historical Demographic Research

This unit explains the methodological issues in historical demographic research. The unit gives insights on various methods such as Family Reconstitution Method, Back Projection and Generalized Inverse Projection. It also discusses about the Cambridge Group on Historical Demography and Social Structure, the Princeton European Fertility Project and Cross Checking of data from different sources.

Unit 4 Biological Evolution and Historical Migration

This unit describes various theories of biological evolution such as – Lamarck's Theory, Darwin's Theory and Mendel's Law. It further outlines the population distribution in India during pre-historic period and during Indus Valley Civilization. The unit also gives an account of the historical migration in India.

Unit 5 Census Administration in British India

This unit deals with the history of Census in India. It talks about the British Indian Census, rumours and fears regarding census taking, census administration and lastly, the linkages between census, religion and politics during pre-independence period.

Unit 6 History of India's Population Growth

The last unit of the module gives an historical account of India's population growth, the scenario in 19th century and various racial and linguistic groups. Further, this unit presents a historical account of the great famines in India and its implications on demography, the history of birth control movement in India and the history of developing of healthcare systems in India.

READING LIST:

Akerman, S. (1977). History and demography: An evaluation of the family reconstitution technique. In A. E. Andersson & I. Holmberg (Eds.), *Demographic, economic, and social interaction* (pp. 71-86). Ballinger Publishing Company.

Davis, K. (1951). *The population of India and Pakistan*. Princeton University Press.

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Ernst, W., Pati, B., & Sekher, T. V. (2017). *Health and medicine in the Indian princely states: 1850-1950*. Routledge. https://www.routledge.com/Health-and-Medicine-in-the-Indian-Princely-States-1850-1950/Ernst-Pati-Sekher/p/b00W9780415679350

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Hollingsworth, T. H. (1969). *Historical demography: The sources of history, studies in the uses of historical evidence*. London.

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Vincent, P. E. (1947-48). French demography in the eighteenth century. *Population Studies, 1*, 44-71.

Willigan, J. D., & Lynch, K. A. (1982). *Sources and methods of historical demography*. Academic Press.

W. H. Howells, "Estimating population numbers through archaeological and skeletal remains." In R. F. Heizer & S. F. Cook (Eds.), *The application of quantitative methods in archaeology* (pp. 158-159). Viking Fund Publication in Archaeology, No. 28. (1960).

Course Code: MSP 10C

Course Title: GENDER AND REPRODUCTIVE HEALTH

Credit: 4   Hours: 60
(Lecture: 3, Tutorial:1)

COURSE OUTCOMES:

- To impart knowledge to students on gender issues related to population, development and health.
- To build skills for students to analyze and understand evidence relating to the context of gender and gender-based inequalities and linkages between gender, population, development and health.
- Reproductive Health section aims to introduce the concepts and methods used in reproductive health research and to equip students with the principles, methods and research skills necessary to conduct policy-relevant research. It provides a non- clinical foundation in the main aspects of reproductive health: family planning, obstetric health.

COURSE CONTENT:

Block 1: Gender Issues in Population Studies

Unit 1: Gender Issues in Population Studies
This unit discusses the importance of gender issues in population studies and the difference between sex and gender. You will learn the meaning of patriarchy and matriarchy along with its changing concepts. The notions and theories of feminism in the national and international contexts are also presented.

Unit 2: Autonomy, Empowerment and Status of Women

The unit starts with the introduction of a few important landmarks, which were instrumental in bringing the concepts of women's autonomy, empowerment and status on the forefront. The unit further discusses the concepts of women's autonomy, empowerment and status of women in detail. You will also be introduced with the measures like Gender Development Index (GDI) and Gender Inequality Index (GII). After going through this unit, you will develop sufficient idea about the relationship between gender and empowerment, and gender and development.

Unit 3: Gender, Development and Reproductive Health

This unit is devoted to discussion on some of the issues related to gender, development and reproductive health in India. Through this unit you will learn about the gender-based violence (GBV) in terms of sexual and domestic violence. The magnitude of reproductive health problems and reproductive health components have been discussed in this unit.

Block 2: Reproductive Health

Unit 4: Introduction to Reproductive Health and Physiology of Human Reproduction

This unit explains the link between reproductive health and demography, reproductive health situation in Indian context, and the basics of human reproductive system.

Unit 5: Maternal mortality, Morbidity and Menopause

This unit focuses on the key issues of maternal mortality and morbidity. The specific thrust of this unit is on methodological issues in measuring maternal mortality. Besides this, the unit also gives emphasis, on maternal mortality situation, abortion related morbidity, gynaecological morbidity, pelvic inflammatory disease and menopause.

Unit 6: Infertility: Causes, Consequences and Measurements

This unit deals with the meaning of infertility, its causes and consequences. Besides, an attempt has also been made to explore methodological issues in measurement of infertility.

Unit 7: Reproductive Health Issues and Sexually Transmitted Infections

This unit focuses on the aspects of role identification for men in the reproductive health issues, adolescent reproductive health issues and reproductive health risks, sexually transmitted infection and HIV/AIDS.

Unit 8: Theories on Reproductive Health Behaviour and Reproductive Rights

This unit deals with the concept of reproductive health framework, theories on reproductive health behaviour and reproductive rights which takes beyond concept of family planning.

READING LIST:

Basu, A. M. (1992). *Culture, the status of women, and demographic behaviour: illustrated with the case of India* (pp. xvii+-265pp). https://doi.org/10.1017/s0021932000022008

Berer, M. (2000). Making abortions safe: a matter of good public health policy and practice. *Bulletin of the World Health Organization, 78,* 580-592.

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Visvanathan, N., Duggan, L., Wiegersma, N., & Nisonoff, L. (Eds.). (2011). *The women, gender and development reader*. Fernwood Publishing.

Wingood, G. M., & DiClemente, R. J. (Eds.). (2002). *Handbook of women's sexual and reproductive health*. Springer Science & Business Media.

SECOND YEAR
PAPER 15
Course Code: MSP 11C
Course Title: POPULATION AND DEVELOPMENT

Credit: 4   Hours: 60
(Lecture: 3, Tutorial:1)

COURSE OUTCOMES:

- To acquaint students on key concepts, indicators and composite indices of development.
- To familiarize students on various theories of population and development.
- To introduce pessimistic, optimistic and neutralistic views on population.
- To explain quantitative and qualitative aspects of human resources.

COURSE CONTENT:

Block 1: Population and Development: Concepts, Measures and Linkages

Unit 1: Concepts and Measures of Development

This unit provides the basic concept, definition and indicators of population and development and also explains why population and development issues have to be studied together. The process of development reduces population growth. This is an ongoing debate and both sides of the argument are laid out in this unit. In this unit you will also learn about various measures of development.

Unit 2: Theories and Strategies of Development

This unit gives a description of theories related to population and development. The views and theories propounded by Arthur Lewis's two-sector model; big push theory, Liebenstein's critical minimum effort theory, Harrod-Domar and Solow's growth models form the subject matter of this unit. This unit also provides ideas related to development strategies through different five-year plans.

Unit 3: Linkages of Population and Development

This unit deals with the relationship of population growth and development. Demographic transition theory, age structure transition, demographic dividends and population ageing; effects of fertility and mortality declines, health improvements and migration on economic growth are also discussed in detail in this unit.

Block 2: Divergent Views of Population and Development

Unit 4: Pre-Modern Views of Population and Development

In this unit you are expected to learn about various theories of population. These theories have been presented in their historical perspective. More specifically, you will learn about Malthusian theory, Marx's theory, Optimum population theory and theory of Demographic transition.

Unit 5: Modern Views of Population and Development

This unit describes modern theories related to population and development. Three major viewpoints i.e. pessimist, optimist and neutralist to study the linkages between population and development are also discussed in detail in this unit.

Block 3: Population and Development: Natural, Capital and Human Resources

Unit 6: Natural Resources

In this unit, you will learn about the formation of natural. You will also learn about how population growth and these resources are related.

Unit 7: Capital Resources

This unit deals with the capital resources. The effect of demographic factors on savings and investments, technology and development; and importance of technology to improve the productivity of physical assets are also discussed in this unit.

Unit 8: Human Resources: Qualitative Aspects

An educated, healthy and productive population is a valuable resource for any country. In this unit, you will learn how these assets are formed.

Unit 9: Human Resources: Quantitative Aspects

In this unit, you will learn about the labour force, for labour is a critical input in economic activity. What constitutes the labour force of a country? How do you measure it? How do you measure labour force activity? These are some of the questions addressed in this unit.

Block 4: Social Development and Environment: Concepts and Implications

Unit 10: Environmental Degradation: Policy and Programme for Better Environment

This unit presents the different forms of environmental degradations at the global as well as in the Indian context. It focuses on the more threatening issues of global warming as a result of increased release of greenhouse gases into the atmosphere during the last two hundred years.

Unit 11: Population and Climate Change

This unit deals with various issues related to climate change. The concepts of the greenhouse effect, global warming and its impact are also discussed in this unit.

Unit 12: Sustainable Development and Resources, Effect of Population Growth and Industrialization

This unit is devoted to make you understand the concept of Sustainable Development, its strengths and weaknesses, and effects of Population growth on resources and environment.

READING LIST:

Birdsall, N., Kelley, A., & Sinding, S. (2001). *Population matters: Demographic change, economic growth and poverty in the developing world*. Oxford University Press. [Chapters 2, 4, and 5].

Chary, S. N., & Vyasulu, V. (Eds.). (2000). *Environmental management: An Indian perspective*. Macmillan India.

Coale, A. J., & Hoover, E. M. (1958). *Population growth and economic development in low-income countries*. Princeton University Press.

David, B., Canning, D., & Sevilla, J. (2003). *The demographic dividend*. Rand Corporation. [Chapter 2].

Habib, I. (2010). *Man and environment: The ecological history of India (A peoples history of India 36)*. Tulika Books.

Kapila, R., & Kapila, U. (2001). *India's economy in the twenty-first century*. Academic Foundation. [Chapters 1 to 5, 15, 16, & 21].

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Ray, D. (1998). *Development economics*. Oxford University Press. [Chapters 3 & 4].

Solow, R. M. (1956). A contribution to the theory of economic growth. *Quarterly Journal of Economics, 70*, 65-94.

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UNDP. (2022). *Human development report 2021-2022: Uncertain times, unsettled lives: Shaping our future in a transforming world*. UNDP.

PAPER 16

Course Code: MSP 13C

Course Title: CONCEPTS AND MEASURES OF GLOBAL HEALTH

Credit: 3   Hours: 45

(Lecture: 2, Tutorial:1)

COURSE OUTCOMES:

- To familiarize the students with the emerging concepts, measures, and significance of global health in contemporary world.
- To understand the global mortality transition in terms of it varied features like cause of death, population age structure and differential quality of life.
- To understand the impact of poverty, inequality on disease prevalence, health infrastructure, deprivation for the mortality divide and its repercussions.
- To introduce and understand impacts of environmental factors and recommend public health measures need to be taken to mitigate health effect of climate change.
- To recommend appropriate public health intervention in keeping with disease burden and evaluate health system performance in international perspective.

COURSE CONTENT:

Block 1: Concepts, Measures and Determinants of Global Health

Unit 1: Concepts and Introduction

This unit is devoted to explain some important concepts and importance global health. The concept of demographic, health and epidemiological transitions are also discussed in detail in this unit. At the end of this unit, you will learn about major patterns of distribution of disease in the world, and sources of data on disease and disability.

Unit 2: Global Burden of Disease-measuring Global Health

This unit covers the concept of burden of disease and its hypotheses. This unit also deals with the measures of burden of disease at the population level i.e. health expectancy and health gap. Further, the concept of Global Burden of Disease (GBD) with its changes and continuities are covered in this unit.

Unit 3: Determinants of Health

In this unit, you are expected to learn about the determinants of health and health disparities. This unit will also focus the factors responsible for variation in the global burden of disease across countries. The concept and linkages of poverty and health are also covered at the end of this unit.

Unit 4: Environment and Health

This unit deals with role of water, sanitation, indoor and outdoor air pollution and nutrition in explaining global health disparities. This unit also provide a description on climate change and its impact on health.

Block 2: Health Care Delivery Systems and Policies

Unit 5: Health Care Delivery Systems

In this unit, you are expected to learn about the health systems, how to measure performance of health system and determinants of health systems. This unit will also provide the detail information on distribution and quality of human resources for health, and the push and pull factors associated with the migration of health care providers.

Unit 6: Policy and Health

This unit covers the human rights approach to health, national and international policies related to health. At the end of this unit, you will learn about the role of international agencies like WHO, World Bank etc. in global health.

READING LIST:

Council on Foreign Relations. (2014). *The emerging global health crisis: Non-communicable diseases in low- and middle-income countries* (Independent Task Force No. 72). https://www.cfr.org/sites/default/files/report__pdf/TFR72 NCI)s.pdf

Fauci, A. S., & Morens, D. M. (2012). The perpetual challenge of infectious diseases. *New England Journal of Medicine, 366*(5), 454–461. https://doi.org/10.1056/NEJMra1108296

Fried, L. P., Bentley, M. E., Buekens, P., Burke, D. S., Frenk, J. J., Klag, M. J., et al. (2010). Global health is public health. *Lancet, 375,* 535–537. https://doi.org/10.1016/S0140-6736(09)61973-5

Hoffmann, S. J. (2010). The evolution, etiology, and eventualities of the global health security regime. *Health Policy and Planning, 25*(6), 510–522. https://doi.org/10.1093/heapol/czq030

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Huynen, M., Martins, P., & Hilderink, H. B. M. (2005). The health impacts of globalization: A conceptual framework. *Globalization and Health, 1,* 14. https://doi.org/10.1186/1744-8603-1-14

Mills, A., Rasheed, F., & Tollman, S. (2006). Strengthening health systems. In *Disease control priorities in developing countries* (2nd ed., pp. 87–102). Oxford University Press.

Mozaffarian, D. (2017). Global scourge of cardiovascular disease: Time for health care systems reform and precision population health. *Journal of the American College of Cardiology, 70*(6), 26–28. https://doi.org/10.1016/j.jacc.2017.04.070

Murray, C. J. L., Frenk, J. (2000). A framework for assessing the performance of health systems. *Bulletin of the World Health Organization, 78*(6), 717–731. https://doi.org/10.1590/S0042-96862000000600002

Murray, C. J. L., Saloman, L. A., Mathers, C. D., & Lopez, A. D. (2002). *Summary measures of population health: Concepts, ethics, measurement, and applications.* The World Health Organization.

Murray, C. J. L., Saloman, J. A., & Mathers, C. (2000). A critical examination of summary measures of population health. *Bulletin of the World Health Organization, 78*(8), 981–994.

Skolnik, R. (2008). *Essentials of global health* (2nd ed.). Jones and Bartlett.

World Health Organization. (2010). *Key components of a well-functioning health system.* http://www.who.int/healthsystems/publications/hss_key/en/

World Health Organization. (2017). *Double burden of malnutrition.* http://www.who.int/nutrition/double-burden-malnutrition/en/

Credit: 4   **Hours: 60**
(Lecture: 3, Tutorial:1)

COURSE OUTCOMES:

- To have an understanding of population policy in pro-natalist and anti-natalist divide around the world.
- To critically evaluate the population policies and programmes of India since independence.
- To understand the management and quality of care in health services and family planning programmes.

COURSE CONTENT:

Block 1: Population Policies and Programmes

Unit 1: Population Policy: Concepts and Issues

This unit deals with the definition, indicators and principal features of a population policy and some major population issues in the developed and developing countries. It discusses population policy as a part of the overall public policy aimed at improving the quality of life in the long-run by achieving definite operational goals in the short-run.

Unit 2: Fertility Influencing Policies

In this unit, we will discuss how government decisions influence family decisions. We will also deal with recent developments in levels and trends in fertility, age at marriage, prevalence of contraception, abortion and family planning policies and its role in fertility reduction.

Unit 3: Mortality Influencing Policies

This unit focuses on the government perception concerning the acceptability of mortality situation, health issues in developed and developing countries and policy thrust concerning health.

Unit 4: Migration Influencing Policies

In this unit, you will learn about the problems of spatial distribution, urbanization, international migration and migration influencing policies.

Unit 5: Population Policies and Programmes in Some Selected Countries

This unit deals with World Population Plan of Action, the United Nations System and family planning programmes of selected countries in ESCAP region. We will also discuss the family welfare programme, population policies and programmes in India.

Block 2: Population Programme Management

Unit 6: Management: A Brief Introduction

This unit deals with the basic concepts, principles of management and some important concepts of management used in population programmes like motivation, communication, leadership and PERT etc. It also describes the evolution of management thoughts; and functions, qualities and aims of programme managers, in detail.

Unit 7: Features of Population Programme Management

In this unit, we have endeavoured to explain you the essential features of management improvement efforts and elements of strategic management approach. As a part of management efforts of major management areas, community based distribution systems and its limitations, structural interventions, management information systems, organizational development etc., have been elaborated.

Unit 8: Quality of Care in Family Planning Programme: A Management Perspective

This unit explains the different elements of quality of care in family planning programme and the impact of programme effort. The management perspectives on quality of care have been discussed in this unit as it is considered an essential component in any health care programme.

Block 3: Evaluation of Family Planning Programme

Unit 9: Evaluation of Family Planning Programme: Concept, Definitions and Data Requirements

This unit deals with the concept, definitions and approaches of evaluation of a programme. It discusses different bases of evaluation, framework for evaluation, and also the types of data needed for evaluation along with their sources.

Unit 10: Evaluation of Family Planning Programme Execution

In this unit, we have endeavoured to explain the evaluation of programme execution. The specific objectives are to discuss the evaluation of programme inputs, use of operation research in MCH as well as family planning programme, and management information system in MCH & FP programme.

Unit 11: Economic Evaluation of Family Planning Programmes

The technique of cost-benefit analysis is recognised in the field of Economics as a technique useful for efficient allocation of resources between different projects. This unit presents, in brief, the techniques of cost-benefit analysis and its application to family planning programmes and also the problems encountered in such application as well as limitations of such attempts.

Unit 12: Evaluation of Intermediate Impact Objective

In order to expedite the efficiency of a programme, it is necessary to monitor the progress of the programme over time. This unit deals with the importance of evaluation of intermediate impacts in family planning programme and explains, in brief, the role of service statistics as well as sample surveys in this evaluation.

Unit 13: Evaluation of Fertility Impact of Family Planning Programmes

This unit deals with importance of evaluation of fertility impact on family planning programme and its different methods. For direct methods, we have discussed the prevalence method by Bongaarts and the component projection method. However, standardization and fertility projection methods have been explained as indirect techniques of fertility impact evaluation. At the end, Bongaarts method of family planning target setting and estimation of fertility impact of induced abortion are also explained in brief.

READING LIST:

Asia Development Bank. (2006). *Impact evaluation: Methodological and operational issues.* Economic Analysis and Operations Support Division. ADB.

Chrissie, P., & Leger, S. T. (1993). *Assessing health need using life cycle framework.* Open University Press.

Government of India. (2000). *National population policy- 2000.* Ministry of Health and Family Welfare.

Government of India. (2017). *National health policy- 2017.* Ministry of Health and Family Welfare.

Jain, A. (Ed.). (n.d.). *Do population policies matter? Fertility and politics in Egypt, India, Kenya and Mexico.* Population Council.

James, K. S., & Sekher, T. V. (Eds.). (2023). *India population report.* Cambridge University Press. https://www.cambridge.org/core/books/india-population-

Peabody, J. W., Rahman, H. O., Gertlor, P. J., & Haan, J. (1999). *Policy and health implication for development in Asia.* Cambridge University Press.

Peters, D. H., Yazbeek Abdo, S., Sharma, R. R., & Ramana, G. N. V. (2002). *Better health care systems in India.* World Bank.

Srinivasan, K. (2017). *Population concerns in India: Shifting trends, policies, and programs.* Sage Publications.

United Nations. (1995). *Report of the International Conference on Population and Development, Cairo, 5-13 Sept, 1994.*

United Nations. (1998). *National population policies.* Department of Economics and Social Affairs.

Visaria, L., & Ved, R. R. (2016). *India's family planning program: Policies, practices, and challenges.* Routledge.

PAPER 18

Course Code: MSP 15C

Course Title: ADVANCED STATISTICAL PACKAGES AND APPLICATIONS IN LARGE-SCALE DATA

Credit: 3   **Hours: 45**
(Lecture: 2, Tutorial:1)

COURSE OUTCOMES:

- To familiarize students with national and international large scale survey data sets and their exploration.
- To gain practical expertise in use of statistical software.
- To make the students appreciate the veracities of evaluation of survey data sets and its derived outcomes in keeping with statistical principles and properties.

COURSE CONTENT:

Block 1: Advanced Statistical Packages and Applications in Large-Scale Data

Unit 1: Scope of Large-Scale Surveys and Big Data

This unit is devoted to explaining the concept and need of big data for planning and monitoring of public health programmes. This unit also discusses cleaning of big data-range and consistency checks, missing data, long and wide format conversion, merging files.

Unit 2: Software and Quality Assurance Procedures

This unit introduces the software including STATA and R to the beginners. The specific thrust of this unit is on giving working knowledge of both software in handling large scale data and constructing basic graphics and summarize the data. Quality assurance procedures involved in large scale data collections are also described in this unit.

Unit 3: Use of STATA and R for Sampling and Estimates

This unit gives a general introduction to their uses in the field of Population Studies.

READING LIST:

Damico, A. (n.d.). *Step-by-step instructions to analyze major public-use survey data sets with the R language.*

Ladusingh, L., & Qeadan, F. (n.d.). *Sampling methods using STATA.*

Lumley, T. (n.d.). *Complex surveys: A guide to analysis using R.*

PAPER 19

Course Code: MSP 17C

Course Title: POPULATION AGEING AND HEALTH TRANSITION

Credit: 4   Hours: 60
(Lecture: 3, Tutorial:1)

COURSE OUTCOMES:

- To impart knowledge of concepts and theoretical framework relating to demography of ageing, and its societal interface.
- To understand the health transition, its linkage with ageing transitions.C03: To develop skills to analyze trends, determinants and consequences of population ageing.
- To familiarize with aging data sets and its exploration.
- To acquaint the students with ageing policies and programmes and its bearing on the welfare of the elderly.

COURSE CONTENT:

Block 1: Life Course Perspective and Socio-demographic Dynamics of Ageing

Unit 1: Demography of Ageing

This unit is devoted to explain some important concepts and measures of population ageing and components of population ageing. Inter-relationship between population ageing, fertility, mortality and migration are also discussed in this unit. You will also be introduced with the concepts of population ageing and momentum of population growth and age structure transition. At the end of this unit, you will learn about population ageing trends, patterns and determinants in India.

Unit 2: Life Course Perspective and Social Dynamics of Ageing

This unit covers the life course perspective of population ageing, social status, family support and social security to elder population. You will also learn about living arrangements of elderly, feminization of ageing, gender widows, elderly abuse, social and legal vulnerability and legislations to protect elderly in India.

Block 2: Health Transition, Health Care System and Health Financing

Unit 3: Health Transition

This unit deals with the concepts and theories of health transition and linkage between health transition and ageing transitions. It also discusses the concepts of global burden of disease, mortality and morbidity compression and healthy ageing.

Unit 4: Health Care System for Geriatric Care and Health Financing

This unit covers the various aspects of health care systems for elderly including demand for health care services, barriers to seek care, public and private services in elder care. Further, the concepts long-term care, out of pocket health expenditure and health financing are also covered in this unit.

Unit 5: Population Ageing and Economic Conditions

In this unit, we will discuss the implications of population ageing on labor force, retirement, work participation and occupational distribution. In this unit, you are expected to learn the implications of savings and investment, health insurance and health financing, pension, social support and housing for elderly. At the end, the concept of demographic dividend is also discussed.

Block 3: Elder Care and Policies

Unit 6: Ageing Policies and Programmes

This unit is devoted to build capacity to understand and use theoretical and empirical advancements to develop strategies, policies and programmes to meet challenges of population ageing and plan for health care, and social and economic wellbeing of ageing population.

READING LIST:

Asian Development Bank Institute. (2019). *Ageing societies: Policies and perspectives*. ADB.

Berman, L. (2000). Social support, social networks, social cohesion and health. *Social Work in Health Care*.

Bloom, D., Sekher, T. V., & Lee, J. (2021). Longitudinal aging study in India (LASI): New data resources for addressing aging in India. *Nature Ageing, 1*. https://rdcu.be/cC16M

Chakraborti, R. D. (2004). *The greying of India: Population ageing in the context of Asia*. SAGE Publications.

Goli, S., Reddy, B., James, K. S., & Srinivasan, V. (2019). Economic independence and social security among India's elderly. *Economic and Political Weekly, 54*(39), 32-41.

Govt. of India. (1999). *National policy for older persons*. Ministry of Social Justice and Empowerment.

James, K. S., & Goli, S. (2017). Demographic changes in India: Is the country prepared for the challenge? *The Brown Journal of World Affairs, 23*, 169.

National Institute of Ageing. (2007). *Why population ageing matters? A global perspective*. US National Institute of Health.

Pool, I., Wong, L. R., & Vilquin, E. (Eds.). (2006). *Age-structural transitions: Challenges for development*. CIRCRED.

Sandra Gruescu. (2006). *Population ageing and economic growth*. Physica-Verlag.

UNFPA. (2001). *Population ageing and development: Social, health and gender issues*. United Nations.

UNFPA. (2011). *Report on the status of elderly in select states of India*. UNFPA.

United Nations, Department of Economic and Social Affairs, Population Division. (2019). *World population ageing 2019: Highlights*. UN.

United Nations. (2001). *Living arrangements of older persons: Critical issues and policy responses*. Population Division, Department of Economic and Social Affairs.

World Health Organization. (2015). *WHO report on ageing and health*. WHO.

PAPER 20

Course Code: MSP 18E

Course Title: URBANIZATION, SPACE AND PLANNING

Note: Year II: For Paper 20: One elective should be opted from MSP 18E i.e. Urbanization, Space and Planning OR Biostatistics and Epidemiology

Credit: 3   Hours: 45
(Lecture: 2, Tutorial:1)

COURSE OUTCOMES:

- Developing a comprehensive understanding on concepts of space, place and region.
- Understanding the history of urban planning and its illustration in Indian context.
- Acquainting students with theories of regional development and various strategies of regional planning.
- Developing a critical understanding on urban policies and progammes in India
- Providing students, a practical knowledge of Geographical Information Systems and its utility in regional and urban planning.

COURSE CONTENT:

Block 1: Urbanization, Space and Planning

Unit 1: Urbanization and Space

In this unit, you will learn about the concept and typologies of space, forces of spatial interaction, urban agglomeration and space economy and access to urban and right to city.

Unit 2: Human Settlements

In this unit, you will learn about the evolution of human settlements, their stages, characteristics and factors influencing them. Towards the end of this unit, you would also get familiar with the classification of settlement, the hierarchy of settlements.

Unit 3: Urban Morphology and Theories of Urban Development

This unit describes how the urban structures have grown over time. You will also study the theories of urban origin and models of urban growth in this unit.

Unit 4: Theories of Regional Development and Planning

In this unit, description about urban planning, new towns, forces and elements of city plan along with neighbourhood planning has been given.

Unit 5: Urban Planning: Concepts and Elements

This unit is devoted to explaining regional analysis with the help of theories of regional planning; such as, central place theory, growth pole theory, industrial location theories and economic base theory.

Unit 6: Regional Development: Concepts and Needs

In this unit, you would learn about the concepts and need of Regional Planning. This unit will also familiarize you with the concept of region, development, regional development and regionalization, region and regionalization in India.

Unit 7: Planning for Metropolitan City and Region: A Case of Mumbai

This unit discusses the various strategies adopted for regional development. It also discusses the development of Mumbai Metropolitan Region (MMR).

Unit 8: Urban Policies and Programmes

In this unit, you will learn about various national level policies and programmes for urban development in India.

Unit 9: Challenges in Urban Planning

This unit discusses the major challenges in urban planning in Indian context.

Unit 10: Application of GIS in Urban and Regional Planning

This unit gives an overview of GIS, its components and elements and its application in urban planning.

READING LIST:

Bhagat, R. B., Roy, A. K., & Sahoo, S. (2020). *Migration and urban transition in India: A development perspective*. Routledge India.

Chand, M., & Puri, V. K. (1983). *Regional planning in India*. Allied Publishers Private Ltd.

Chaudhuri, J. R. (2001). *An introduction to development and regional planning*. Orient Longman.

Friedman, J. (1966). *Regional development policy: A case study of Venezuela*. MIT Press.

Friedman, J. (1964). *Regional development and planning: A reader*. The MIT Press.

Friedman, J., & Alonso, W. (1964). *Regional development and planning: A reader*. The MIT Press.

Friedman, J., & Weaver, C. (1979). *Territory and function: The evolution of regional planning*. Edward Arnold.

Ginsburg, N., Koppel, B., & McGee, T. G. (1991). *The extended metropolis: Settlement transition in Asia*. University of Hawaii Press.

Hall, P. (1992). *Urban and regional planning* (3rd ed.). Routledge.

Harvey, D. (2012). *Rebel cities: From the right to the city to the urban revolution*. Verso.

Husain, M. (1994). *Human geography*. Rawat Publishing.

Kawashima, T., & Korcelli, P. (1982). *Human settlement systems: Spatial patterns and trends*. IIASA.

Knowles, R., & Warling, J. (1983). *Economic and social geography: Made simple*. Heinemann.

Kumar, A., & Bhagat, R. B. (2021). *Migrants, mobility and citizenship in India*. Routledge India.

Leong, G. C., & Morgan, G. C. (1982). *Human and economic geography*. Oxford University Press.

Lefebvre, H. (1991). *The production of space*. Blackwell.

Lo, C. P., & Yeung, A. K. W. (2002). *Concepts and techniques of geographic information systems*. Prentice Hall of India.

Mishra, R. P. (1992). *Regional planning: Concepts, techniques, policies and case studies*. Concept Publishing Co.

MNRDA. (2016). *Mumbai metropolitan regional development plan 2016-2036*. NMRDA.

Nath, V. (1971). Regional development policies. *Economic and Political Weekly, 6*(30-32), 1601-1608.

Nyerges, T. L., & Jankowski, P. (2010). *Regional and urban GIS: A decision support approach*. Rawat Publication.

Sarin, M. (1982). *Urban planning in the third world: The Chandigarh experience*. Manshell.

Singh, R. Y. (1994). *Geography of settlements*. Rawat Publications.

UNEP & others. (2007). *Livable cities: The benefits of environmental planning*. The Cities Alliance. Retrieved from http://www.citiesalliance.org/index.html

PAPER 20

Course Code: MSP 18E

Course Title: BIOSTATISTICS AND EPIDEMIOLOGY

Credit: 3   Hours: 45
(Lecture: 2, Tutorial:1)

COURSE OUTCOMES:

- To introduce the basic concepts of different streams of epidemiology, disease risks, and interventions as public health tools in population studies.
- To introduce the study designs and methodology in cross-sectional, case-control, cohort, and experimental data to analyze epidemiological patterns.
- To understand the use of summary measures of disease burden over epidemiological data in population science.
- To understand comparability of estimates obtained from various parametric and nonparametric models.
- To appreciate the relevance of epidemiology in public policy making.

COURSE CONTENT:

Block 1: Biostatistics and Epidemiology

Unit 1: Introduction and Basics of Biostatistics

This unit presents the definition and scope of Biostatistics. After completing this unit, one should be able to understand the definition and scope of Biostatistics, types of data and presentation of data and their summarization. With the concept of normal distribution and sampling distribution, you will know the reliability of sample-based estimates with the help of their standard error and the confidence intervals.

You will learn which test to be used in the context of small sample sizes. Concept of statistical hypothesis, types of statistical errors (Type I and Type II) and their use in testing of hypothesis will be described in detail. You would know how to compare means and proportions in two and more groups and the methods of post hoc analysis in multiple comparisons.

You will be taken to understand and appreciate the contingency table for its useful applications. Fisher exact test, McNemar's test etc. would be discussed as suitable tests for small sample sizes and non-parametric test where data do not follow normal distribution.

Unit 2: Measures of Disease Frequency and Epidemiology

Basic definition of population at risk, incidence and prevalence of disease with their measurements, measures of morbidity and mortality and case fatality rates are provided in this section. Subsequently basics of epidemiology and prevention and control of diseases are discussed. Dynamics of disease transmission, planning and evaluation of health services are the part of this section. Describing the errors in epidemiological research, certain methods to overcome them are presented.

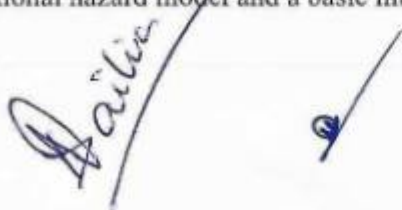## Unit 3: Study Designs used in Medical Statistics

In this unit, an attempt has been made to explain you the various study designs used in medical statistics. After going through this unit, you will come to know about the advantages and disadvantages of the various designs and their applications in a situation. Also, you will come to know about the ethical concerns in clinical research.

Unit 4: Clinical Trials

In this unit, definition and phases of clinical trials are described. After exposition to this unit, you will know about how statistical hypothesis testing is utilized to set the equivalence, non-inferiority and superiority trials. Estimation of sample size for various situation and trials are also provided.

Unit 5: Survival Analysis

This unit gives brief introduction of survival analysis. You are expected to learn about functions of survival time, non-parametric approach to survival analysis, parametric approach to survival analysis, Cox proportional hazard model and a basic introduction to multi-level models.

READING LIST:

Altman, D. G. (2006). *Practical statistics for medical research*. Chapman and Hall.

Bhore, J. (1946). *Report of the health survey and development committee* (Vols. 1-4). Manager of Publications.

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Everitt, B. S., & Pickles, A. (2006). *Statistical aspects of the design and analysis of clinical trials* (2nd ed.). Imperial College Press.

Friedman, L. M., Furberg, C. D., & DeMets, D. L. (1982). *Fundamentals of clinical trials*. PSG.

Gelman, A., Carlin, J. B., Stern, H. S., Rubin, D. B., Dunson, D. B., & Vehtari, A. (2013). *Bayesian data analysis* (3rd ed.). Chapman and Hall.

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Kutner, M. H., Nachtsheim, C. J., Neter, J., & Li, W. (2005). *Applied linear statistical models* (5th ed.). McGraw-Hill/Irwin.

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MacMahon, B., & Pugh, T. F. (1970). *Epidemiology: Principles and methods*. Little Brown.

Murray, C. J. L., & Chen, L. C. (1994). Understanding morbidity change. In A. Kleinman & N. C. Wane (Eds.), *Health and social change in international perspective* (Harvard Series on Population and International Health, March 1994).

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MSP TP - Term paper (10 Credits)

MSP VV - Viva-voce (4 Credits)

Year	Number of papers	Credits
First year	12	42
Second year	10 (including Term paper and Viva-voce)	42
	Total	**84**