SYLLABUS
M.P.S. COURSE

International Institute for Population Sciences
(DEEMED UNIVERSITY)
Deonar, Mumbai 400 088.
Website: http://www.iipsindia.org
About the Institute

The Institute was established in 1956 as the regional centre for training and research in Population Studies for the country of Asia and Pacific region. The International Institute for Population Sciences embraced the present name and was declared a “Deemed University” in 1985 by the Ministry of Human Resource Development, Government of India. The Institute is an autonomous body under the administrative control of the Ministry of Health and Family Welfare, Government of India. This is the only Institute of its kind in the world exclusively devoted to teaching and research in population sciences. Over the last fifty years, the Institute has helped in building a nucleus of professionals in the field of population in various countries in the ESCAP region. Many who were trained at the Institute now occupy key positions in reputed national and international organizations.

Rules for Master of Population Studies (M.P.S.)

The M.P.S. course is designed to provide a higher level of understanding of the population sciences including an in-depth knowledge of the linkages between population and various dimensions of socio-economic, health and environmental development. These courses also provide a comprehensive idea to conduct further research in various aspects of population and development.

<table>
<thead>
<tr>
<th>Paper Code</th>
<th>Explanation</th>
<th>TITLE</th>
<th>Credits</th>
<th>Hours</th>
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<tr>
<td>MPS F1</td>
<td>Foundation</td>
<td>Basic Statistical Methods for Population Studies</td>
<td>NC</td>
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<td>MPS F2</td>
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<td>Social Science Concept and Issues</td>
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<tr>
<td>MPS C1</td>
<td>Core</td>
<td>Introduction to Demography and History of Population</td>
<td>4</td>
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<td>MPS C2</td>
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<td>Fertility and Nuptiality</td>
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<tr>
<td>MPS E2</td>
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Semester II

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<td>Migration, Spatial Distribution and Urbanization</td>
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<td>Gender Issues and Reproductive Health</td>
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<td>Population Policies and Programmes</td>
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<td>Advanced Statistical and Computer Applications</td>
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<td>MPS C10</td>
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<td>Indirect Estimation Techniques, Population Projection and Demographic Models (Quality of data and projection are added)</td>
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<td>E4.2: Health Economics and Financing</td>
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<td>E4.3: Urbanization, Space and Planning</td>
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<td>Term paper</td>
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**Term Paper**

A student is required to write a term paper on some demographic or related problems under the guidance of a faculty member. The topics of the term paper have to be submitted at the beginning of the Second Semester. The term paper will be presented in formal seminar of the students and faculty members of the Institute. The content, presentation & defence and participation in the seminar shall be subjected to assessment by a committee comprising of faculty members.

**Grading System**

The following ten points grading system is followed in the Institute:

<table>
<thead>
<tr>
<th>Letter Grade &amp; Qualitative Level</th>
<th>Value</th>
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<tbody>
<tr>
<td>O (Outstanding)</td>
<td>10</td>
<td>85-100.0</td>
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<tr>
<td>A+(Excellent)</td>
<td>9</td>
<td>75.0-84.9</td>
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<tr>
<td>A(Very Good)</td>
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<td>65.0-74.9</td>
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<tr>
<td>B+(Good)</td>
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<td>B(Above Average)</td>
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<td>50.0-54.9</td>
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<td>C (Average)</td>
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<td>P (Pass)</td>
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<tr>
<td>AB (Absent)</td>
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1. The teacher concerned will set the question paper and also evaluate the answer books as per grading pattern.
2. A final grade for each paper will be arrived by taking weighted average of grades given in different sections of the paper in case of questions of unequal weights. The weights can be given in proportion to the credit (i.e. number of hours) assigned for each section of the paper.
3. Overall Grade will be arrived on the basis of the number of credit hours and grade points for each subject.
4. A student securing a overall average grade points (OAGP) of less than P only, i.e. grade F+ (plus) and below will not be eligible for the award of the degree.
Re-evaluation of Answer Sheets

A student can have access to his/her examination papers in the form of photo copies at a cost of Rs. 200/- per paper with prior approval of the Director.

A student can apply for re-evaluation of his/her answer sheet at a cost of Rs. 500/- per paper.

EVALUATION PROCEDURE FOR TERM PAPER

The term paper will be of 6 credits. Each of the students is given appropriate weightage for initiative and interest (by his/her guide) and for the content of the paper presentation, defence and his/her participation in the seminar by a Committee specially constituted by the Director for evaluation purpose.

Re-Examination

(1) Re-examination will not be conducted during the course period.

(2) Those students who fail or could not appear in any examination will be allowed to re-appear in a paper in the next semester examinations on payment of re-examination fee.

(3) Those failing in any exam of final semester will not be awarded the degree in the same academic year. They can appear in the re-examination along with first semester of the next batch on payment of re-examination fee.

(4) Maximum of three attempts will be allowed including the first appearance in each paper.

(5) There will not be any down grading in re-examinations.
**Objective:** This course aims to provide students with basic knowledge of statistical techniques which can be used in demographic analysis.

Introduction to statistics: Descriptive and Inductive statistics. Concept of variables, Nominal, Ordinal and Interval scale variables.

Tabulation of data, conversion of raw data into frequency distribution, graphical presentation of nominal, ordinal data, Logarithms: properties of logarithms, Rates and Ratios, Interpolation and Extrapolation.

Introduction to statistics: Descriptive and Inductive statistics. Concept of variables, Nominal, Ordinal and Interval scale variables.

Tabulation of data, conversion of raw data into frequency distribution, graphical presentation of nominal, ordinal data, Logarithms: properties of logarithms, Rates and Ratios, Interpolation and Extrapolation.

Measures of Central Tendency: Mean (arithmetic, geometric, harmonic) Median, Mode; Merits and demerits of different measures.


Techniques of analyzing bivariate nominal and ordinal level data: Contingency table, odds ratios, relative risk.

Introduction to set theory, permutations and combinations; Introduction to the concept of probability, A-priory, and mathematical probability. Events: exhaustive, mutually exclusive events; Laws of probability, additive and multiplicative laws of probability through demographic data, Bayes’ theorem.

Discrete probability distributions: Binomial and exponential functions, Binomial probability distribution and Poisson distribution and their properties. Continuous probability distribution; Introduction to Normal distribution and its properties, applications of normal distribution.

Introduction to the concept of correlation: Pearson correlation coefficient, and its properties; Spearman ranks correlation coefficient. Concept of linear regression, fitting of regression line to bi-variate data.


Testing statistical hypothesis and test of significance. Introducing the t distribution, comparing two groups, principles of comparison, independent t-test and paired t-test, Assumptions involved in t testing. Testing the association of attributes and Chi-square goodness of fit.

Essential Reading List


Suggested Reading List

SOCIOLOGY

1. Sociology: sociology as a social science - its nature, subject matter and scope

2. Relation of sociology with other social sciences, sociological perspective

3. Basic Concepts in sociology

4. The Family:
   a) Sociological Significance of the Family
   b) Types and functions of Family
   c) Nuclear and joint families

5. Marriage: Different forms of marriage, changing patterns of marriage/mate selection in India

6. Kinship - features of kinship system in India, regional variations


8. Socialization: agencies of socialization

9. Culture: meaning and characteristics of culture.

10. Society and Culture in India
    a) Aspects of society and culture in India, and its role and importance in Population Studies.
    b) Social Institutions and their role in influencing demographic situation of the Population of India
        - Family, Marriage, Kinship and Religion

11. Caste System
    i) Concept and definition of Caste System,
    ii) Changing Caste System in India

12. Social Mobility: vertical and horizontal, intra- and inter-generational mobility

13. Social Change

    Definition and Concept of Social Change


Essential Reading List

Suggested Reading List


GEOGRAPHY

1. Importance of Geographical factors- Physical factors (relief, rainfall, temperature, soil and vegetation) Economic and Social factors (Mineral resources and industrialisation, transport, language, religion and caste/tribe); the influence of geographical factors on population.

2. Geographical approaches: the concept of region- formal and functional regions; the concept of growth pole and regional development; core and periphery; distance and decay function; Maps-scale, choropleth, isopleths and distribution maps.

3. Physical divisions of India; administrative organization of India. Historic-Cultural regions; Agro-climatic regions; NSS regions.

4. Theoretical Perspectives in Geography- Place of geography in Social sciences; man and nature relationship- determinism and possibilism; Positivism (quantification) and Phenomenology; and Radical and Postmodern Geography.

5. Concept of Social Space; Social Structure and Spatial Structure; Role of time and space in social sciences.

Reading List


ECONOMICS

A. Introduction:

B. Basic Concepts in Micro Economics
C. Basic Concepts in Macro Economics
   Basic Concepts in National Income: Concept of GDP, NDP, GNP, NNP, NI, PCI, GDPPCI, PPP, GDPPCI (PPPS$), Theory of consumption and saving: Consumption function, Keynes’ Psychological law of consumption, concept of APC and MPC, APS and MPS, Factors affecting consumption and savings, Basic concept of Investment.

D. Economic Theories

E. Indian Economy: Structure, Planning and Growth

Essential Readings

1. Ahuja H.L, Advanced Economic Theory: Microeconomic Analysis, S. Chand and Company Limited, New Delhi, Chapters 5,6,7,8,9,12,16, 17, 18, 20
4. Dasgupta AK, Epochs of Economic Theory, OUP, Bombay, Chapters 2, 3, 4, 7 and 8

Suggested Readings

1. **Introduction to Demography**

Definition and Scope: Demography as a scientific discipline; Development of demography as a discipline. Some basic demographic concepts. Components of population change.

Historical trends in population situation in the world. Present population situation and past and future trends in the world and in developed and developing countries.

Brief description of Demographic transition theory.

2. **Population History**

Contribution of fertility, mortality and migration to population change in the past; major sources of data about the population in the past; major explanations of population change in the past; relation between population change and other social and economic changes at the national and local levels; All the above in relation to India.

2. **Sources of Demographic Data**

Population census; Uses and limitations; Indian Censuses.

Vital registration system.

National Sample Survey. Sample Registration System and Demographic Health Surveys (DHS) and other sample surveys.

3. **Dynamics of Age-Sex Structure**

Present levels and past trends in the sex and age structure of the population of world and developed and developing countries. Present levels and past trends in the sex and age structure of India’s population.

Importance of age-sex structure in population dynamics and factors affecting sex ratio of the population. Sex ratio of India’s population and role of different factors in changing sex ratio.

Factors affecting age structure of the population: dynamics of age structure along with demographic transition; Ageing of the population and relative roles of low fertility and low mortality in population ageing.

4. **Population growth rates – Arithmetic, geometric and exponential**

**Essential Readings**


7. www.censusindia.gov.in

**Suggested Readings**

2. Warren S. Thompson, *Population Problems*

<table>
<thead>
<tr>
<th>C2</th>
<th>FERTILITY AND NUPTIALITY</th>
<th>(60 Hours)</th>
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<tbody>
<tr>
<td>A.</td>
<td>FERTILITY – SUBSTANTIVE</td>
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</table>
| 1. | Terms and Concepts  
Importance of the fertility study in population dynamics; Basic terms and concepts used in the study of fertility |
| 2. | Framework for Fertility Analysis  
Determinants of natural fertility; Davis intermediate variables framework of fertility; Socio-economic determinants of proximate variables; Lee and Bulatao framework of fertility determinants |
| 3. | Fertility Transition in Developed Countries  
Historical fertility decline in European and Non-European Industrialized Countries and underlying factors; Below-replacement level fertility in developed countries and its implications |
| 4. | Fertility Transition in Developing Countries  
Pattern of fertility transition in developing countries; causes of high fertility in Africa and Asia. Fertility Transition in India: Historical trend and regional patterns in development, culture and fertility transition. Fertility Surveys – Findings and Emerging research issues |
| 5. | Hypotheses and Theories of Fertility  
| B. | FERTILITY MEASURES AND MODELS |
| 6. | Introduction  
Some Basic Concepts  
Sources of Data for Fertility Analysis  
Problems in Fertility Analysis  
Period and Cohort Approaches |
7. **Direct Estimation of Fertility**
   - Period Measures of Fertility
     - Basic Fertility Measures
     - Order-Specific Fertility Rates
     - Marital Status Specific Fertility Rates
     - Standardized Birth Rates and Coale’s Fertility Indices
   - Cohort Measures
   - Birth Interval Analysis
   - Reproduction Measures

8. **Fertility Models**
   - Age patterns of Fertility: Coale and Trussell Fertility Model: Estimating M and m
   - Bongaarts and Potters Aggregate Fertility Model and its applications

C. **NUPTIALITY**
9. Introduction, Concepts, Sources and Quality of Nuptiality Data.
10. Measures and Indices of Nuptiality: Crude and Specific Rates; Standardization of Marriage Rates.
11. Analysis of Marital Status Data: Singulate Mean Age at Marriage (SMAM) – Synthetic Cohort and Decade Synthetic Cohort Method.
13. Marriage Patterns in India and Selected Countries, Marriage Squeeze.
15. Standard Age Pattern of Marriage – Coale’s Model.

**Essential Reading List**

Suggested Reading List


| C3 | MORTALITY, MORBIDITY AND PUBLIC HEALTH | (60 Hours) |

A. MORTALITY

1. Basic Concepts and Measures of Mortality

Definition of deaths and fetal deaths according to WHO; Need and Importance of the study of Mortality; various sources of mortality data and its quality with special reference to the developing countries.

*Introduction and basic measures:*

Some basic measures: - crude death rate (CDR) and Age-Specific Death Rates (ASDRs)- their relatives merits and demerits.

*Techniques of standardization and decomposition of Rates/Ratio*

Need and importance of standardization: direct and indirect technique of standardization of rates and ratios in the light of mortality rates; Decomposition.

*Infant mortality and its sub-division*

Need and importance of the study of infant mortality in demographic analysis; Conventional measures of infant mortality (IMR) and its sub-divisions- Neo-natal, Post-Neonatal mortality and Peri-natal Mortality Ratio/Rate. Approaches for estimating infant and child mortality rates from birth history collected in large-scale surveys; and Lexis diagram.

*Measures of maternal mortality*

Maternal Mortality Rate, Ratios, Life time risk; Issues related to estimation of maternal mortality measures.

2. Life Tables

*Introduction*

Basic concept of a life table; types and forms of life table;

Brief history of life tables; Anatomy of life table; uses of life table in demographic analysis.

*Construction of Life tables based on Age-specific death Rates (ASDRs)*

Underlying assumptions of life table construction using ASDRs of a community during a specified period; Methods of life table Construction—Conventional approach, and those proposed by Greville and Chiang.

*Model Life Tables (MLT)*

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Need for MLT for countries having poor vital registration statistic; underlying principles of constructing some important MLT systems - First UN MLT, Coale and Demeny Regional MLT; Brass two-parameter logit Life table system; and New UN MLT; WHO Model life table, Uses of model life tables in demographic analysis for countries having limited and/or defective civil registration and age-data; and Multiple decrement life table.

3. Mortality and health transitions

Levels and trends in mortality by regions, with special reference to India; age and sex specific mortality with a focus on excess female mortality; differentials by residence and socio-economic factors (occupation, income, education, etc); historic mortality transitions as experienced by developed countries (Europe); overview of epidemiological transition; changing disease and death pattern in developing countries; factors responsible for high mortality in the past; main causes of mortality decline in developing countries; current global mortality scenario; and concepts and overview of health transition.

4. Child survival framework

Importance of infant mortality in population and health; causes of infant mortality (endogenous and exogenous factors); levels and trends (global and south Asia/India); and Mosley and Chen' framework for child survival.

5. Causes of death

Importance of causes of death statistics; definition and sources of causes of death statistics; a brief history of the International statistical classification of diseases, injuries and causes of death (ICD); an overview of ICD – X (1990); global leading causes of death (with a focus on Asia and India); cause of death statistics in India (RG: Rural and MCCD); distribution of deaths by main causes by age, development, life expectancy (UN).

B. MORBIDITY AND PUBLIC HEALTH

6. Introduction to Morbidity

Need and importance of the morbidity study; sources of morbidity data; concepts and definitions of health and morbidity; conditions as proposed by WHO and other social scientists.

7. Measures of Morbidity

Need for morbidity indices; various measures of morbidity: incidence and prevalence rates; interrelationships between measures of morbidity; other measures related to working day loss etc.

8. Burden of disease

Need for the study; basic concepts; measurement and current global scenario.

9. Public Health and Epidemiology

Basic concepts of community health; principles of Epidemiology- basic concepts and definitions; types of Epidemiology: descriptive and analytical; epidemiology of communicable and non-communicable diseases; nutrition and health, environment and health; occupation and health.
Compulsory Reading List


Suggested Reading List

A. MIGRATION

1. Concepts, pattern, determinants and consequences of migration and issues related to migration

   Concept of mobility and migration, sources and quality of data, types of migration, census definition of migrants, limitations.

2. Internal Migration

   Internal migration patterns and characteristics in developing countries with a special focus on India.
   Determinants of internal migration: Causes of migration at the place of origin and at the place of destination.
   Consequences of internal migration: demographic, economic, social and political consequences at the individual, household and community level.

3. Sources of international migration data and problems.

   Patterns of international migration: Historical and recent trends, permanent immigrants, labour migration, brain drain, refugee migration and Illegal migration.

4. Causes and consequences of international migration.

   Migration theories and models -
   Ravenstein’s Laws of Migration
   Everett Lee’s Theory of Migration
   Mobility Field Theory
   Lewis-Fei-Ranis Model of Development
   Todaro’s Model of Rural-Urban Migration

5. Measures of Migration

   Direct estimation of lifetime and inter-censal migration rates from census data.

   Indirect measures of net internal migration: Vital Statistics Method, National Growth Rate Method and Census and Life Table Survival Ratio methods.

   Methods of estimating international migration.

   Migration surveys

B. SPATIAL DISTRIBUTION AND URBANISATION

6. Spatial Distribution

   Spatial distribution: importance and pattern, factors affecting spatial distribution of population: physical, economic, social factors and Govt. policies.
7. **Urbanization**

Urbanization definition and Importance; Important aspects of urbanization process-level and tempo of urbanization, urban population growth and its components, urban size class structure; Data sources; Definitional and conceptual problems; Definition of urban and other associated urban concepts in Indian census; Forces of urbanization and components of urban population growth in developed countries, sub-urbanization and urban turnaround; Current urbanization process in developed and developing countries with special focus on India, Kingsley Davis model of urbanization process; Forces of urbanization and components of urban population growth in developing countries, over urbanization phenomena and urban primacy, Major urbanization problems and policies in developing countries with focus on India.

8. **Measures of Spatial Distribution and Urbanization**

Selected measures of concentration of population-Density, percentage distribution and dissimilarity index; Selected measures of Degree and tempo of urbanization; Growth and distribution of urban population, Rank-Size rule and Primacy Index, Lorenz curve and Gini’s concentration ratio.

**Essential Reading List**


**Suggested Reading List**

1. Identify the structure, components and characteristics of global health care system

2. Understanding the needs and goals for various policies related to public health, policy environment, frameworks for policy analysis

3. Basic models and functions of health services, health care systems, international experience

4. Health infrastructure and health delivery system in India- public, private, NGOs, Indigenous health systems

5. National health programmes- Public health preparedness

6. Public health system- A re-appraisal and SWOT analysis, a critique on the health delivery system- problems related to structural, functional and management of public health care services

7. Health care system- stakeholders in health care system, human capital and health, role of government in providing health care, improving access to health care with quality

8. Health care legislations in India: Legal aspect of health care, MTP Act, biomedical waste Rules, COPRA Act, PNDT Act, Transplantation of human organs Act, etc.


10. Heath services- Community needs assessment, Decentralization of health facilities

11. Sustainability of public health intervention- Concept and mechanism of sustainability, models and examples of sustainability, community ownership, Public-private mix

12. Introduction to health services and research policies - Perspectives- methodological approach


14. Major public health problems – A critical review and analysis, identification of major areas of public health requiring interventions, ongoing public health interventions in India. Health system reforms and their impact

**Essential Reading List**


4. Fort, Meredith, Mary Anne Mercer and Oscar Gish (Editors). Sickness and Wealth: The Corporate Assault on Global Health


10. Indian Council of Social Science Research and Indian Council of Medical Research (1981), Health for All by 2000 A. D., ICSSR, Delhi.


<table>
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<tr>
<th>E1.2</th>
<th>INTRODUCTION TO BIOSTATISTICS &amp; EPIDEMIOLOGY</th>
<th>(45 Hours)</th>
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Learning Objectives: The disciplines of Epidemiology and Biostatistics create and apply methods for quantitative research in health sciences. The Biostatisticians at Johns Hopkins School of Public Health have rightly said “Our designs and analytic methods enable health scientists and professionals in academia, government, pharmaceutical companies, medical research organizations and elsewhere to efficiently acquire knowledge and draw valid conclusions from their ever-expanding sources of information”. The main objective of this course is to equip students with the basic concepts and methods employed in epidemiologic and biostatistical research. At the same time, the course aims to equip the students with recent advances in the fields of Epidemiology and Biostatistics. The idea is to emphasize concepts over details, with recent applications in public health. After going through this course, the students should be capable enough to take up responsibilities and actively participate in academics, government organizations, pharmaceutical companies, health organizations, etc. The introduction of such course is especially very important in India as there is very limited capacity in India at this moment.

A. Basic Concepts in Epidemiology
1. Introduction: Definition and objectives of epidemiology; Epidemiology and clinical practice; The epidemiologic approach; Infectious disease epidemiology, occupational epidemiology, disaster epidemiology
2. The dynamics of disease transmission: Modes of transmission; epidemic, endemic and pandemic; Disease outbreak; Determinants of disease outbreak; Herd immunity; incubation period; outbreak investigation; epidemiological modeling.
3. Identifying the roles of genetic and environmental factors in disease causation: Association with known genetic diseases; Age at onset; Family studies; Interaction of genetic and environmental factors.
4. Epidemiology and public policy: Epidemiology and prevention; Population versus high-risk approaches to prevention; epidemiology and clinical medicine; Risk assessment; Meta Analysis.
5. Epidemiological Study Designs: Ecological, Cross-Sectional, Case-Control, Cohort Studies, Randomized Intervention Studies.
6. Experimental epidemiology; Randomized trials; Clinical Trials- Basic concepts; Definitions; Historical perspectives, Phase I, II, III and IV trials, Protocol development, Use of control arms, Concepts of randomization and blinding, ethical issues

B. Measurement of Health & Disease Burden
1. Measuring the occurrence of disease: Measures of morbidity - prevalence and incidence rate, association between prevalence and incidence, uses of prevalence and incidence, problems with incidence and prevalence measurements; Surveillance; Quality of life including DALY, HALE, etc., Measures of mortality.

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2. Assessing the validity and reliability of diagnostic and screening test: Validity of screening test – sensitivity, specificity, positive predictive value and negative predictive value; Reliability; Relationship between validity and reliability; ROC curve and its applications; Overall accuracy.
3. Issues in epidemiology: Association; causation; causal inference; Errors and bias; Confounding; Controlling confounding; Measurement of interactions; Generalizability.

Reading List:
20. Groeneboom P: Nonparametric Estimation under Shape Constraints, Cambridge University Press; 1
E2.1 CONCEPTS AND MEASURES OF GLOBAL HEALTH (45 Hours)

Rationale: This paper introduces to the students the basic concepts of global health. This course emphasizes on understanding the global burden of disease and measuring population health. A key component of this course is to understand the determinants of health and health disparities. It will also provide student with a broad understanding of the relationship between environment and health. It also develops the understanding of the students about the health care delivery system, human resources for health, migration of human resources for health, etc. Finally, it introduces to students the issues related to policy and health. The topics that will be covered in the course are listed below:

1. **Concept and introduction**: Concept of global health; why is it important to study global health?; health and development in the global context; demographic, health and epidemiological transitions; major patterns of distribution of disease in the world; sources of data on disease and disability

2. **Global burden of disease**: Concept of burden of disease; hypotheses related to burden of diseases – compression of morbidity, expansion of morbidity and dynamic equilibrium; measures of burden of disease at the population level – health expectancy and health gap; methods for estimating DFLE, HALE and DALY; how does the burden of disease and mortality vary by geography, social class, race and gender? GBD 1990, 2010 and 2013 – changes and continuities; new and re-emerging infectious diseases; issues related to HIV/AIDS; introduction to NCDs; double burden of diseases in developing countries; impact of tobacco abuse; trends and challenges related to maternal and child health; maternal mortality

3. **Determinants of Health**: Culture, gender, race, social, political and economic determinants of health and health disparities; contribution of income, education and other factors to health; Factors responsible for variation in the global burden of disease across countries; poverty and health; income inequality and health; health risk factors

4. **Environment and health**: Role of water, sanitation, indoor and outdoor air pollution and nutrition in explaining global health disparities; climate change and health; migration, disaster (man-made, natural), conflicts and epidemics

5. **Health care delivery systems**: Introduction to health systems; how to measure performance of health system?; health systems in different countries; factors responsible for better performance of health systems in developed countries; the distribution of human resources for health; quality of human resources for health; the push and pull factors associated with the migration of health care providers

6. **Policy and health**: Human rights approach to health; national and international policies related to health; how are global health priorities set?; the role of international actors like WHO, World Bank, etc. in global health; influence of international priorities on national priorities

Essential readings
The aims of this course are:

1) To impart knowledge of concepts and theoretical framework relating to demography of ageing, and health, social and economic dynamics of population ageing
2) To impart concepts and theories of health transition, linkage between health transition and ageing transitions
3) To develop skills to analyze trends, determinants and consequences of population ageing
4) 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.

I Demography of Ageing:
A. Concepts and measures of population ageing; components of population ageing; Inter-relationship between population ageing, fertility, mortality and migration; population ageing and momentum of population growth, age structure transition and ageing, and declining population.
B. Population ageing trends and patterns in developed and developing countries; Factors determining ageing trends and patterns; Projected trends and pattern of population ageing; global and regional perspective.
C. Population ageing trends, patterns and determinants in India; state variations; future scenario of population ageing in India and states.

II Life Course Perspective and Social Dynamics of Ageing:
A. Life course perspective of population ageing; Age and Ageing, Ageism; Social Status and Roles of Elderly, Family Structure, Intergenerational relations, Kinship and family support, Social Security; Social network- Frameworks (Berkman and others) and measurement.
B. Living Arrangements of Elderly, Old Age Homes, Social Networks, and Contribution of elderly: “Feminization” of Ageing, Dependency, Gender Dimensions and Discrimination, Widows, Elderly abuse, Social and legal Vulnerability, Legislations to protect elderly in India.

III Health Transition: Understanding Health Transition and Ageing Transition; Critiques of “Health Transition” and “Epidemiological Transition” theory: Mortality and Morbidity Compression, Age Patterns of Mortality and Morbidity; Global burden of disease, communicable diseases, injuries and violence; Health Transition and emergent infectious diseases; social epidemiology and medical social determinants of health as fundamental causes of chronic disease; social determinants of health; the relative income hypothesis and the social gradients of health for ageing population: Healthy Ageing; WHO Framework for Healthy Ageing.

IV Ageing and Health:
A. Ageing and Life Expectancy: ageing and life expectancy; changing age pattern of mortality, oldest old mortality; ageing and epidemiological transition in disease prevalence and patterns; Measuring population health; life expectancy and disability free life expectancy, health adjusted life expectancy.
B. Ageing and Burden of Disease: Measurement issues in assessing burden of chronic and multiple diseases in ageing populations; Self-Reported Prevalence, Symptom based prevalence; Measured Prevalence; burden of non-communicable diseases, dual burden of communicable and non-communicable in developed and developing countries; injuries and violence Indian scenario; Ageing, Intrinsic Capacity and Biomarkers of Ageing.
C. Ageing and Functional Health: Ageing and disabilities; trends and prevalence; ageing and injuries, ageing and functional health on various domains- mobility, self-care, pain, vision, interpersonal activities, sleep and energy; Ageing and Quality of Life, WHOQol Ageing and Disability; WHODAS; Ageing and wellbeing and Life satisfaction.
D. Ageing and mental health problems; cognition, memory loss, dementia and depression; Alzheimer’s and Parkinson.
E. Ageing and health risk factors: nutrition, diet and food practices; health risk behaviour- tobacco, alcohol; physical activities; Access to minimum living conditions (sanitation, water).

V Health Care System for Geriatric Care and Health Financing:
A. Availability and accessibility to geriatric care, Geriatric Health Care Institutions; Human Resource Development for Geriatric Care; institutional care; Long-term Care; Health Systems Inequalities for Addressing NCDs.
B. Ageing, health care and health financing: health care utilization, public and private health services utilization; outpatient and inpatient health care utilization; sources of health spending; out of pocket health expenditure; lack of health care options for elderly; Health induced impoverishment among elderly.

VI Population Ageing and Economic Conditions:
B. Ageing and Public Finance: Ageing, savings and investment; pressures on public finance -government health expenditure; implications for health insurance and health financing for elderly; Implications for Government expenditure for social security – pension, social support and housing; The Solow model with an ageing population, Becker’s family model; Bloom and Williamson’s model; ageing and poverty; Ageing, health and development.

VII Ageing Policies and Programmes:
A. Social and Economic Support Policies and Programmes for the Elderly- Retirement, Pensions and Social care Policies in developed and developing countries. Social security and welfare policies and programmes for elderly in India. National Programmes for Health Care of Elderly (NPHCE); National Policy for Senior Citizens.
C. Worldwide Longitudinal Ageing Studies in 40 countries: LASI, SAGE, SHARE, HRS, CHARLS, JSTAR, ELAS, KLoSHA

Reading List
A. Concepts and Measures of Development:

Need to study population in the context of development: Meaning, definition and scope of development – definition and indicators.

Concepts of development and measures: Limitations of per capita income as an indicator of development; emphasis on equality, Lorenz curve and Gini coefficient; towards human centered development-welfare approach, investment in human capital approach, concepts of social development, physical quality of life index (PQLI); human development index (HDI), gender development index (GDI), human poverty index (HPI); concept of sustainable development.

B. Theories and Strategies of Development:

Theories of development: Arthur Lewis's two-sector model; big push theory, Liebenstein's critical minimum effort theory, Harrod-Domar and Solow's growth models.

Development strategies through the different five year plans in India.

Millennium development goals and achievements with special reference to India.

C. Linkages of Population on Development:

Divergent views regarding relationship between population and development: (i) Classical views: Malthus and marx, concept of optimum population (ii) population growth as obstacle to development Coale and Hoover study, tragedy of commons, limits to growth study, Enke's investment model (iii) population growth as conducive to development – views of Colin Clark, Ester Boserup and Julian Simon (iv) views of revisionists and need to study linkages between population change and development.

Effect of development on demographic variables; Demographic transition theory, demographic dividends and population ageing: effects of fertility and mortality declines, health improvements and migration on economic growth.

D. Population and Resources:

Natural resources: classification of natural resources, renewable and non-renewable resources, resources scarcity and resource depletion.

Capital resources: effect of demographic factors on savings and investments, technology and development; importance of technology to improve the productivity of physical assets.
Human resources - quantitative aspects: concepts labour force, economically active population, unemployment, types of unemployment, disguised, seasonal frictional and chronic. Factors affecting demand and supply of labour, effect of population growth and development on structure of employment.

Human resources – qualitative aspects: factors influencing productivity of human beings need for investment in human capital, implications of population growth on food, sanitation, housing, employment, education and health and social security to improve the quality of human resources.

E. Population and Environment:

Concepts of environment-biosphere, ecosystem, environmental Kuznetz curve, sustainable development-definition and scope.

Philosophical dimensions of the new environmentalism: postmodernism, eco Marxism, deep ecology, social ecology and ecofeminism.

Human impact on environmental - pressure of population on water, land and air; pollution and environmental degradation; Global warming and climate change- debate on climate change and mitigation.

Environmental degradation and its implications on population- food, health; poverty and local environment; development and displacement.

Environmental policies and programmes- global and national policies.

Essential Readings

Suggested Readings


<table>
<thead>
<tr>
<th></th>
<th>GENDER ISSUES AND REPRODUCTIVE HEALTH</th>
<th>(60 Hours)</th>
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<tr>
<td>2.</td>
<td>Patriarchy and Matriarchy, Kinship Structure and gender roles; Gender stratification in traditional and modern societies.</td>
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<td>4.</td>
<td>Autonomy, Empowerment and Status of Women: Concepts, definition and measurement; various indicators and their merits and demerits; Gender sensitive development and health intervention models and programme. Status of Women and Population Dynamics: Inter-linkages.</td>
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<td>5.</td>
<td>Gender and social institutions in India: State, Legal System, Religious, Family, Society, Marriage customs and patterns, dowry system, segregation and seclusion of women - Purdah system. Implications for sex ratio trends and patterns in India; Son Preference, Desired sex composition of children, child sex ratio, sex ratio at birth and sex selective abortion.</td>
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<td>6.</td>
<td>Gender inequalities in health: gender differentials in nutrition and health, mortality differentials by sex (children, adults, and aged) and gender inequalities in health care utilization.</td>
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</table>
Gender inequalities at family level, in employment, in education, in important decision making process and in workplace.

7. Implications of gender inequalities for development - equal access to and utilization of services; equal participation in social development, equal access and control over capital for economic development; equal participation in policy and decision making process; equal distribution of political power.


9. Gender based violence: Different forms of violence during life time

10. Gender and mass media: Language, image and portrayal of women in different mass media and the changes over the time

11. Gender mainstreaming, gender sensitive financing and budgeting.


13. Introduction to reproductive health, Definition and rationale of RH approach, Evolution of ideas about reproductive health, Components of RH and life cycle approach of RH, Recommendations from ICPD.

14. Physiology of human reproduction, Male and female reproductive system; Conception, Pregnancy, Customs, and taboos related to menstruation and puberty in different societies.

15. Maternal and obstetric morbidity, Maternal morbidity, safe motherhood programmes, emergency obstetric care, Cultural practices during pregnancy, childbearing and its impact on health of women, Effects of maternal death on family, Strategies to reduce maternal morbidity and mortality.


17. Infertility, Methodological issues in measurement of infertility, Sexual dysfunction, behavioural risk factors, and consequences, Assisted reproductive technologies and its use and misuse; component of infertility in government programmes.

18. Gynecological and contraceptive morbidity: Anemia, Breast, Cervical, Ovarian, Prostate Cancer; Behavioural risk factors, Contraceptive morbidity related to different methods.

19. Reproductive Tract Infection/Sexually Transmitted Infections and HIV/AIDS: Issues related to HIV infection; socio-cultural, medical, public health and psychological perspectives, Social epidemiological questions concerning HIV infection in Asian countries with emphasis on India, Coping with HIV/AIDS infection: Psycho-social and economic issues, Reproductive Tract Infections (RTI) and Sexually Transmitted Infections (STIs) • Interaction between RTIs/STIs and HIV/AIDS • Impact of HIV/AIDS on fertility, mortality and its relationship with migration.

20. Male Reproductive Health Issues: Men’s reproductive health services, Men’s role in women’s health, Strategies to reaching out to men.


22. Gender and Reproductive Health • Rights based approach to gender equity and reproductive health and HIV/ AIDS • Gender and HIV/AIDS vulnerability and its demographic impact

23. Reproductive rights and ethical issues • Human rights and values • Ethical values in RH services; information, liberty of choice • Professional and ethical issues

**Essential Readings**


Suggested Readings


<table>
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<tr>
<th>C7</th>
<th>POPULATION POLICY AND PROGRAMMES</th>
<th>(60 Hours)</th>
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**A. POPULATION POLICIES AND PROGRAMMES**

Definition of Population Policy; principal features of a population policy; policies in the context of population growth, structure and distribution.

Policy formulation: Policy indicators, justification of population policy, socio-cultural, political and ethical issues related to population policy and the mechanism of how government decisions influence family decisions.


Fertility influencing policies: pro-natalist policies, fertility control policies.

Programmes for special groups: women and children, youth, aged, and for tribal.
Health influencing policies: historical perspective of policies and programmes in developing and developed countries. The Alma Ata Declaration and Health for All by 2000 A.D.

Migration influencing policies.


B. POPULATION AND PROGRAMME MANAGEMENT


Reproductive Health Programme Management Strategies: Targeting the people in need; Marketing approach, client segmentation; community needs assessment; unmet need approach, and health seeking behavior. Providing services; commercial distribution, community based distribution (CBD) systems, and social marketing.


C. EVALUATION of FAMILY WELFARE PROGRAMMES

Introduction to evaluation of population, health and family welfare programme, objectives of the evaluation, types of evaluation, Evaluation Framework, Types and levels of indicators in FW programme evaluation. Discussion on Methodological Issues in different evaluation studies in India.

Role of MIS in evaluation of family welfare programmes, Operation Research Techniques (ORT) in evaluation and intervention.

Natural fertility; Potential fertility; Contraceptive Prevalence Rate; Use effectiveness of family planning methods; Unmet need for family planning, Wanted and unwanted fertility, Bongaarts’ model for estimating fertility impact, Demand-supply framework to evaluate family planning programmes.

Cost-Effective Analysis, SWOT Analysis.

Essential Reading List


**Suggested Reading List**


<table>
<thead>
<tr>
<th></th>
<th>RESEARCH METHODOLOGY</th>
<th>(60 Hours)</th>
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<tbody>
<tr>
<td>1.</td>
<td><strong>Scientific Methods of Research</strong></td>
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<td>2.</td>
<td><strong>Research Designs</strong></td>
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<td></td>
<td>Observational Studies: Descriptive, explanatory, and exploratory, monitoring and evaluative studies. Experimental Studies: Pre-test design, post-test design, Follow-up or longitudinal design, threat to internal validity. Action research studies, Panel Studies.</td>
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<td>3.</td>
<td><strong>Methods of Data Collection</strong></td>
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<td></td>
<td>Quantitative Methods: Checklist schedules, questionnaire (mail method, interviews through telephone, internet and computers), interview schedule (face-to-face interviews or personal interviews).</td>
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<td>Questionnaire/interview schedule design and construction: Principles of constructing a questionnaire/ interview schedule, Types of questions, framing of questions (simple, delicate, personal matter), sequencing of questions.</td>
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<td>Qualitative Method: In-depth interviews, key informant interview, observation (participatory and non-participatory), focus group discussion, content analysis, social mapping, social networking, free listing, pile sorting, projective techniques, mechanical devices (camera, tape recorder), mystery client technique, vignettes method.</td>
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</table>
4. Measurement

Reliability and validity of measurement: Face, content, construct, convergent, concurrent, and predictive validity; Inter-coder reliability, stability, non random and random errors, scaling and composite indices.
Attitude Scales: Point scales, ranking scales, rating scales, limitations of attitude scales,
Types of Scales: Bogardus, Guttman, Likert, Semantic, Thurstone scale.

5. Sampling

Complete enumeration versus sampling.
Concept of sampling unit, sampling frame and sampling design.
Sampling methods: Simple random sampling, stratified sampling, systematic sampling, cluster sampling, and purposive sampling.
Multistage sampling in large-scale surveys, self-weighting designs, Stratification in multistage sampling.
Sampling and non-sampling errors, calculation of weights, sample size determination.

6. Data Collection, processing and analysis

Research ethics; At the level of respondent, community, organization and presentation of results
Fieldwork – interaction with community and respondent.
Editing, coding, data entry, validation & analysis.

7. Writing research proposal and report

Purpose of a proposal/report
Content of proposal/report: Introductory section, methodology adopted, analysis and inferences, summary, conclusion and recommendations.
References/Bibliography, Appendices, Footnotes.

8. Research Methodology Lab-exercise: ANTHROPAC, Atlast Ti and Group Work

Essential Reading List

1. Basics of MORTPAK4, SPECTRUM and applications.
2. Introduction to SPSS-facilities, creating database structure, data entry, specifying scales, validation of data entry, importing and exporting data. Data Manipulation – recoding creating new variable, sorting, filtering and selection of specific data, generating simple frequencies, use of syntax editor. Large scale data handling – (using NFHS, DLHS-RCH, NSSO) Merging, splitting data and formatting.
5. Introduction to STATA, generating, variables, commands and do file editor. Survey analysis – estimation of mean, proportion, design effect and probit analysis and standard non-parametric test.
6. Concept of data hierarchy and multilevel analysis. Introduction to MLwiN, importing and formatting data. Illustration of 2 and 3 level analysis using NFHS, DLHS-RCH, NSSO data.
7. Introduction to GIS and illustration.

References

1. SPSS 14.0 Brief Guide – SPSS Inc.
2. SPSS regression models 11.0 - SPSS Inc.
3. SPSS advanced models 11.0 - SPSS Inc.

I. Concepts of Demographic Models:
Stable population; Generalized Population; Momentum of Population Growth; Concept of Multiregional Model; and Micro Model such as Birth Interval, Waiting Time (Birth Distribution etc, Estimation of fecundability?)

II. Indirect methods for estimating fertility:
Needs for Indirect methods; Concept of Reverse Survival Method, Robust Method and method based on Generalized Population Model; Rele's Method; Concept of P/F ratio method and its modification [Hypothetical Cohort methods]

III. Indirect Method of Estimating Mortality:
1. Indirect Methods of Estimating Infant and Child Mortality

(a) Basic concepts, fundamental assumptions and underlying principles to the technique proposed by Brass based on retrospective data on children ever-born and surviving mothers classified by current age of mother; (b) Modifications proposed by Sullivan and subsequently by Trussell over Brass method; and (c) the UN revised and extended version of Trussell's method.
2. Some Methods of Estimating Adult (including Maternal Mortality) and Old Age Mortality
(i) Some methods of estimating adult mortality using successive census age-distributions; (ii) Methods of estimating life expectancies at older ages; and (iii) Estimation of maternal mortality through sisterhood method.

3. Some Indirect Methods for Estimating Death Registration Completeness for Countries Having Limited and Defective Vital Registration Data
An overview of some selected methods of estimating completeness of death registration, starting from Brass growth balance method and its subsequent development.

IV. Valuation and Adjustment of Demographic Data
Appraisal of the quality of demographic data; types and sources of errors; sampling and non-sampling errors; methods of detecting errors in population data; post-enumeration surveys; dual record system; brief introduction to indirect methods.

Evaluation and measurement of errors in age reporting; methods of adjustment for age-sex data; method of graduation.

V. Population Estimates and Projections
Concepts of population projections; population estimates, forecasts and projections, uses of population projections.

Methods of interpolation; extrapolation using linear, exponential, polynomial, logistics, Gompertz curves and growth rate models.


Methods of rural-urban and sub-national population projections.

Methods of related socio-economic projections: labour force, school-enrolment, health personnel and households.

Essential Readings

**Suggested Readings**

**Electives 3**

<table>
<thead>
<tr>
<th></th>
<th>SPATIAL DEMOGRAPHY</th>
<th>(45 Hours)</th>
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<tbody>
<tr>
<td>A.</td>
<td>Concepts and Theories</td>
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<td></td>
<td>Demography as a spatial science; difference between spatial demography and population geography; Spatial pattern and spatial process; location, distance and area; Distance and decay relationship and spatial hierarchy; space, place and region; Type of spaces- concrete and abstract space; absolute, relative and relational spaces</td>
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<td></td>
<td>Understanding demographic process by geographical scale; nature of disaggregated data- Census and secondary sources; Linking micro and macro demography in a spatial frame</td>
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<td></td>
<td>Application of spatial frameworks to demographic process; Space, culture and fertility; Spatial pattern of mortality and diseases; Distance as factor in access to health care and health planning; Migration and distance- gravity model; space, culture and migration; urban sprawl and suburbanization</td>
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<td>B.</td>
<td>Statistical and Geospatial Data and Software</td>
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<td>Spatial Concepts and Cartography: Spatial parameters: Site and location; Scale; Plane and spherical coordinate, Map Projection-UTM, Types of maps: cadastral, toposheet, thematic, digital; Representation of spatial and non spatial data;</td>
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<td>Introduction to geospatial software: GIS: discrete data: point, and polygon data, Raster and vector data, layouts preparation. Geocoding and basics of digitization in ArcGIS</td>
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<td>Introduction to Geoda: ESDA in (Exploratory Spatial Data Analysis); Local Indicators of Spatial Association (LISA)</td>
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<td></td>
<td>Statistical Concepts: Bar diagram, Frequency polygon, Frequency curve; Test of significance, confidence intervals, Univariate and Multivariate Statistics: Correlation and Regression, Matrix algebra; Auto-correlation; kriging, Moran’s I index</td>
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<td></td>
<td>Introduction to Statistical software: SPSS, STATA, R</td>
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<td>C.</td>
<td>GIS and Spatial Analysis of demographic data</td>
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<td></td>
<td>Representation of statistical data and automated cartography (Lab based exercises):</td>
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<tr>
<td></td>
<td>a) Population distribution map of India using dot and sphere/circle, cubes, combined; Cartograms</td>
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<td>b) Density map by Choropleth and population density gradient by Isopleth;</td>
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<td>c) Fertility, mortality and natural growth of population by Polygraph.</td>
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<td>d) Measurement of population concentration by cumulative curve.</td>
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<td>e) Migration flow by Carogram</td>
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<td>Concept and application Models:</td>
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<tr>
<td></td>
<td>a) Spatial Lag and Error Regression Modeling;</td>
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<td>b) Multilevel modeling (hierarchical linear modeling);</td>
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<td>c) Geographically Weighted Regression;</td>
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</tbody>
</table>
d) Spatial Pattern Analysis;
e) Urban and city level projection

**Reading list:**

8. ESRI (1993): Understanding GIS. Redlands, USA
Operations Research in Reproductive Health

1. Definition of OR
   (a) What is Operations Research
   (b) Focus and Objective of Operations Research
   (c) Types and Examples of Operations Research

2. Role of Researchers and Managers

3. Components of OR proposal

4. Identification of Problem and Solution
   (a) Identification and Definition
   (b) Justification
   (c) Alternative Solution
   (d) Indicators- Outputs, Outcomes and Impacts

5. Causality (Randomize Experimental Design)
   (a) Pretest-Post test Control Group Design
   (b) Post test –only Control Group Design
   (c) Multiple Treatment Design

6. Quasi/Non-Experimental Design
   (a) Non-Experimental Control Design
   (b) Time Series, and Before and After Design

7. Inferential Statistics in Operations Research
   (a) (X², t, F)-tests
   (b) Deciding Sample Size in case of Different Experimental Design
   (c) Linking Different Design and Statistical Test

8. Study Design Exercises

9. Ethics in Operations Research
   (a) ICMR Guidelines
   (b) International Perspectives
   (c) Case Studies

10. Utilization and Dissemination, and Process Documentation

10. Critiques to OR proposal
1. **Introduction to Monitoring and Evaluation**: Basic concepts, Difference between Monitoring and Evaluation; Linkage between Planning, Monitoring and Evaluation; Importance of Monitoring and Evaluation

2. **Monitoring and Evaluation Framework**: Resources for monitoring and evaluation, Engagement of stakeholders in monitoring and evaluation; Meaning of Indicators, Ideal requirement, process of developing indicator, illustration of indicators developed from large scale surveys, measurement, need & levels of indicator; Challenges in developing indicators from Large-Scale Surveys; Types of Indicators – Input, Process, Output, Outcome, Impact; Capacity building for monitoring and evaluation

3. **Monitoring of Policy Implementation**: Components of policy and programme, budget, staff, process of evaluation, developing tangible indicators for policy monitoring in terms of Input, Process, Output, Outcome, Impact; Result based inference

4. **Evaluation Design**: Determination of sample size under different approaches and design including measurement of change due to certain interventions; Quasi Experiment design, Case control design, Evaluation Terms of Reference- Formative and Summative Evaluations, Managing Evaluations; Evaluation at different points: Baseline, Mid-point, Concurrent and End line evaluation; Evaluating for results: Need and Uses of evaluation, Principles, norms and standards for evaluation; Roles and responsibilities in evaluation; Randomization, Statistical design of Randomization; Randomized control trials, time dependant cluster design, interrupted time series analysis.

5. **Assuring the Quality of Evaluation Design and Methodology**: Overview; Defining the context; The evaluation purpose; Focusing the evaluation; Evaluation methodology; Mandatory requirements for programme; SWOT analysis of NHM, ICDS and National Livelihood Mission; Social audit – meaning, objectives, advantage, case study of social audit

6. **Statistical Approaches of Evaluation of Intervention Programme**: Statistical inferences used in different intervention design – z, t, F and paired ‘t’ tests, two stage LSM, instrument variable method; Propensity score matching; Difference in Difference Method: Theory and application, advantage and disadvantage, regression implementation

7. **Management Information System and Use of Technology**: MIS – Monitoring information system; Role of programmers; HMIS system; Global Positioning System and use of other technology

**References**


**Electives 4**

| E4.1 | HEALTH ECONOMICS and FINANCING | (45 Hours) |

**Aim and General description**

Health economics is a growing field of economics primarily dealing with issues relating to scarcity in the allocation health and health care. The aim of this proposed course is to familiarize the students with economic ideas and motivate them into undertaking future research and build their careers in health economics. This is an introductory course giving the application of economic principles to policy relevant questions in the arena of health and health care. The course begins with an overview of health economics and students will learn about the health care sector and how to apply economic tools in analyzing structure and performance of health care sector.

**Teaching Strategy:** Teaching by class room lectures, seminars, case studies and group exercise.

**I: Introduction to Health Economics:** Basic concepts in Economics– Utility, Demand and supply analysis, Elasticity, Expenditure Function, Production Possibility Frontier (PPF), Externalities and Market Failure: Approaches to Economics-Positive and Normative, Welfare economics and health.

**II: Costing and Health Economics:** Cost theory and cost analysis, Type of cost curves: SAVC, SAMC, STC, AFC, LATC, The importance of costing in Health Economics, Alternative definitions of cost, types of cost - monetary and non-monetary, measurement and valuation issues in cost, production cost and discounting, Constraints in measuring health cost.

**III: Economic Evaluation:** What is economic evaluation? Various types of economic evaluation used in health care, measuring outcome, Cost effectiveness analysis (CEA), Cost-Benefit Analysis (CBA), Divergence between social and private costs and benefits in health care, Limitations of economic evaluation, Consumer Impact Assessment.
IV: Concepts and Measures of Health Inequalities: Defining health inequality, Why measure health inequality; Health equity and inequality: Concept and definitions; Understanding of the concepts such as need, access and utilisation; cardinal and ordinal health variables; Presence of inequality: Review of some elementary measures of health inequality: Index based approach; Axiomatic approach to measurement; Individual-mean and inter-individual comparison; WHO Index, Coefficient of Variation, Generalised Entropy Index, Lorenz Curve and Gini Coefficient

V: Health Financing and Health Insurance: Health care financing system, source of health care spending, The Health Insurance – intermediary agent, The private health insurance, Regulation of health insurance, Government as health insurer in India, Equity in health care finances, Future investment strategies in health sector, Willingness to pay for health care, User charges as determinant of health financing, National Health Accounting: Sources and Uses of Funds, health budgeting, Interrelationship between epidemiological transition and health expenditure

Reading List: Essential


Reading List: Suggested

2. Health economics: 3rd Edition by Phelps
3. The economics of health and health care, 2nd edition by Folland, Goodman and Stono (FGS)

Recommended Journal:

1. Health Policy and Planning
2. Health Policy
3. Inequalities in Health
5. The Lancet
I. Urbanization and Space

Urbanization and space: concepts and forms (formal and informal spaces); Differences between space, place and region; urbanization and space interaction: gravity model, distance decay model, forces of concentration and dispersion, urban agglomeration and spatial economy; Access to urban and right to the city

II. Evolution of Spaces of Settlements

Settlement: evolution, characteristics and factors; settlement pattern and hierarchy; Urban morphology; Change in urban land use and population density; Rural-urban relationship: dichotomy or continuum; Role of urban centres in rural development.

III. Urban and Regional Planning

Planning: Definitions, concepts, purpose, types and levels; geography/demography and planning relationship.

Regional development/planning: Region: concept and definition, types (formal, functional and planning); Need for regional planning; Types of regional planning; Spatial structure of regions,

Theories of regional development: Stages of development, economic base theory, Industrial location theory, Growth Pole theory; Core-periphery interactions.

Regional planning in India; Planning regions in India; Regional disparity in development; Special area development planning (hilly area development planning, (North-Eastern regional council, Mumbai Metropolitan Regional Development Plan).

Urban Planning: Concepts; history and origins of urban planning; pioneers of urban planning; types of urban plans: New towns, neighborhood, garden city, green belts; healthy urban planning, WHO concept of healthy city, livable city, sustainable city.

Urban policy since independence, five year plans, important urban plans (New Delhi, Navi Mumbai, Chandigarh); Smart Cities Mission; HRIDAY, AMRUT, PURA, RURBAN mission

IV. Challenges in Urban planning

Recent urban policies and programmes; Urban redevelopment; Urban poverty, urban housing and real estate, Slums and slum rehabilitation, The case of SRA in Mumbai; Urban pollution, Solid waste management; Management of migrants

V. GIS and Urban and Regional Planning

Application of GIS in urban and regional planning.

Essential Reading List


**Suggested readings**


**E4.3**

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<tr>
<th>Large Scale Sample Survey</th>
<th>(45 Hours)</th>
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**Unit I: Scope of large scale surveys and sampling design**

Need for large scale surveys, objectives of cross-sectional, longitudinal, rotational and interpenetrating surveys. Sample size determination and sample allocations for such surveys to districts, states and regions in terms of individuals, households and primary sampling units.

**Unit II: Sampling frames**

Sources of sampling frame for cross-sectional, longitudinal, rotational and interpenetrating surveys. Explicit and implicit stratifications, domain controlled sampling by regions and social groups, merging and segmentation procedures for small and large primary sampling units. Mapping and listing for preparation of frame for last stage sampling units. Sample selection of PSUs and households.
Unit III: Quality assurance procedures  
Revisit of sub-samples, field check tables, non-response pattern, and quality lot assurance, roles of supervisors, editors, field and nodal agencies. Third party audit.  

Unit IV: Software development  
Computer assisted personal interview (CAPI), process of data transfers, introduction to features of Census and Survey Processing System (**CSPro**), steps for development of data entry software in CSPro.  

Unit V: Ethical considerations in large-scale sample surveys  

Unit VI: Estimation of sampling weights  

Unit VII: Preparation of factsheets, reports and other deliverables  

Reading List  
2. CSPro Software. www.census.gov/data/software/cspro.Download.htm  