

Capacity Building for a Better Future

RULES, REGULATIONS AND 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.

Eligibility Criteria for Admission

Admission to this courses is open to all those with a Master's degree of a recognised University (recognised by UGC) with at least 55% marks or equivalent grade in any of the following subjects: Demography/Population Studies, Sociology, Psychology, Anthropology, Social Work including Mathematics, Statistics, Health and allied sciences. Any one with a Master's degree from a recognised University in any other subject with experience in the population or allied fields is also eligible for admission. Applicants who are 28 years or less will be preferred.

Selection Criteria for the M.P.S. Course

Selection will be made on the basis of past academic records, written test and interview. Only short-listed candidates will be called for interview. Reservation for SC, ST, OBC and PH candidates will be considered as per GOI norms.

Number of Seats and Award of Degrees

There are 50 seats available with the Government of India fellowship for M.P.S. Course. In addition, candidates sponsored by Governmental and Non-Governmental organizations and other funding agencies may also be considered for the admission to the M.P.S. course fulfilling the above admission criteria. The students, who completes the M.P.S. course, will be awarded the M.P.S. degree.

Fellowships

There are 50 Government of India Awards (Fellowships of Rs. 5000/- per month) available for M.P.S. Course. There are no other allowances.

Duration of the Course

The M.P.S. programme, which is of one academic year comprising of two semesters, begins from mid of July. The first semester ends in mid of December. The second semester starts December third week and ends in June next year.

Conditions for the Award

- a) M.P.S. is a full time course. The student shall not accept or hold any appointment paid or otherwise or receive any emoluments, salary, stipend, etc., from any other source during the tenure of the award.
- b) The student should also obtain prior permission of the Director in writing for appearing at any examination conducted by any other University/Institution.

- c) The fellowship will be available from the onset of the course till the end of the course.
- d) The fellowship may be terminated at any time if the Institute is not satisfied with the progress or conduct of the fellow.
- e) The student will have to execute a bond requiring him/her to refund the fellowship received by him/her, if the fellow discontinues before the end of the prescribed period. The condition of the bond cannot be waived or relaxed except by the Director with the consent of the Executive Council of the Institute.
- f) If a student's performance in the first semester is not found satisfactory, or his/her conduct is found unsatisfactory on the basis of indiscipline of any act as is likely to undermine the prestige of the Institute, or endanger harmony of academic life of the Institute or is likely to violate the rules of the institute, his/her admission and fellowship will be terminated without any further notice. In case the fellowship is terminated, he/she will be required to refund the whole of the fellowship money drawn till that date provided the action against him/her has not been contemplated on the ground of unsatisfactory performance as stated above.
- g) Fees: The candidates admitted to the programme will have to pay the fees as per schedule of the Institute on 1st January and 1st July every year regularly. For payment of fees, a grace period of 30 days shall be given without late fee. Thereafter, 5% on all dues will be charged extra as late fee, every month.

Payment of Fees

Particulars	Indian Students (Rs.)	Foreign Students (US \$)
A: Non Refundable		
Admission Fee	500	200
Tuition Fee (Per Year)	8000	7000
Computer Fee (Per Year)	2500	--
Examination Fee (Per Sem)	500	--
Re-examination Fee (Per Paper)	500	--
Re-evaluation Fee (Per Paper)	500	--
Thesis Submission Fee	--	--
Thesis re-submission Fee	--	--
Provisional Certificate Fee	100	--
Degree Certificate Fee	200	--
Library Fee (Per Year)	800	--
Medical Examination Fee	200	--
Sport/Cultural Fee (Per Year)	1000	--
Duplicate Certificate Fee	800	--
Migration Certificate Fee	100	--
Transcript Fee (For Two Sets)	500	50
Duplicate I-card Fee	100	--
Hostel Accommodation Charges (Per Month)	400	300
Refundable Deposits		
Library	2000	100
Dining Hall	2000	--
B: Processing Fee (Non-Refundable)		
Convocation Charges	500	50

Note: 50% Concession on Tuition Fees to students from SAARC Countries.

Hostel Accommodation

Accommodation in the hostel of the Institute will be provided to the students at the applicable rate, subject to availability.

Medical Facilities

The students of the Institute will have access to free medical advice from the medical officers of the Institute.

Leave

A student can take leave for a maximum of four working days in a semester on the recommendation of Course Co-ordinator and granted by the Director.

Attendance

- (1) Minimum of 95 percent of attendance in classes is compulsory to receive full fellowship.
- (2) Minimum of 75 percent of attendance in classes is compulsory to appear in examinations.

COURSES FOR MASTER OF POPULATION STUDIES

Group A: Preparatory Courses (Non-credited)	Unit
A1. Basic Mathematics	½
Group B: Main Courses	
1. Basic Statistical Methods for Population Studies	1
2. Social Science Concept and Issues	1
3. Introduction to Demography	½
4. Fertility and Nuptiality	1
5. Mortality, Morbidity and Public Health	1
6. Reproductive Health	½
7. Migration, Spatial Distribution and Urbanization	1
8. Gender Issues in Population Studies	½
9. Population and Development	1
10. Population Policies and Programmes	1
11. Evaluation and Adjustment of Data Population Projection	½
12. Research Methodology	1
13. Historical Demography	½
14. Advanced Statistical and Computer Applications	½
15. Indirect Estimation Techniques and Demographic Models	½
Group C: Optional Courses	
1. Urban and Regional Planning	½
2. Population Ageing	½
3. Biostatistics	½
4. Business Demography	½
5. Operation Research Methods	½
6. Health Economics	½
Group D: Research Orientation	
D1. Term Paper	1
Group E: Viva-voce Examination	
V1. Viva-voce – I (To be held after the 1st semester examination)	½
V2. Viva-voce – II (To be held after the 2nd semester examination)	½

A one-unit course involves 48 hours of classroom lecture while a half-unit course is composed of 24 hours of lecture. A student is expected to take all the preparatory and main courses and one of the optional courses. The performance of a student is evaluated through a combination of assignments, written examination and comprehensive viva-voce.

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.

Evaluation

Grades obtained in all the subjects except A1 are counted for determining the overall grade (Total 14 units equivalent to 56 credits). Minimum Grade required for passing is "B Minus" in each unit.

Grading System

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

Letter Grade	Numerical Value	Equivalent Marks/Qualitative Level
A + (A Plus)	9	85 and above / Excellent
A (A Only)	8	75-84 / Very Good
A - (A Minus)	7	65-74 / Good
B + (B Plus)	6	55-64 / Above Average
B (B Only)	5	45-54 / Average
B - (B Minus)	4	35-44 / Below Average
C + (C Plus)	3	25-34
C (C Only)	2	15-24
C - (C Minus)	1	1-14
D (D Only)	0	0

} Poor/Fail

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 B Minus, i.e. grade C Plus will not be eligible for the award of the degree.

Written Examination

Written examination will be conducted for Group A, Group B and Group C Courses.

Re-evaluation of Answer Sheets

A student can have access to his/her examination papers in the form of xerox 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 4 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. The break up of weight is as follows:

	<u>Weight</u>
1. Initiative and Interest	0.15
2. Content	0.40
3. Presentation and Defence	0.25
4. Participation in the Seminar	0.20
	<hr/> 1.00 <hr/>

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.

A1	BASIC MATHEMATICS	(24 Hours)
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1. Concept of number system, constants, variables and functions; Linear and quadratic functions; Graphic representation of linear and quadratic functions; Solutions of linear and quadratic equations.
2. Sequences; Progressions: arithmetic and geometric progressions.
3. Logarithms: properties of logarithms, use of common logarithms in numerical calculations.
4. Permutations and Combinations; binomial and exponential functions.
5. Rates and Ratios.
6. Matrix algebra: Definition of matrices; types of matrices; matrix operations – addition, subtraction and multiplication.
7. Concepts of limits; differentiation and integration.
8. Interpolation and Extrapolation.

Reading List

1. Frank, Ayers (1958): *First Year College Mathematics*, Schaum's Outline Series, McGraw Hill Book Company, New York.
2. Hall, H.S. and S.R. Knight (1960): *Higher Algebra*, Macmillan, London.
3. Kruglak, H. and J.T. Moore (1973): *Basic Mathematics*, Schaum's Outline Series, McGraw Hill Book Company, New York.
4. Prakasam, C.P., G. Rama Rao, and R.B. Upadhyay (1987): *Basic Mathematics in Population Studies*, Gemini Publishers, Mumbai.
5. Ross, M.R. (1946): *Differential and Integral Calculus*, McGraw Hill Book Company, New York.

B1	BASIC STATISTICAL METHODS FOR POPULATION STUDIES	(48 Hours)
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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.

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

Measures of dispersion: Range, Variance, Standard Deviation; Merits and demerits of different measures of dispersion. Measures of Skewness and Kurtosis.

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

Introduction to set theory, 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.

Discrete probability distributions: 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.

Concepts in Inductive statistics: Population, sample parameter, and statistic. Sampling distribution of mean and standard error. Concepts of statistical hypothesis, critical region, level of significance, and two types of errors.

Testing statistical hypothesis and test of significance. Testing the difference of means and proportions: t-test for small samples and tests based on normal distribution for large samples. Testing the association of attributes and Chi-square goodness of fit.

Analysis of Variance and Covariance.

Introduction to Multivariate Analysis. Concept of multi-variate regression. Multiple and Partial correlation coefficients.

Essential Reading List

1. Blalock, Hubert M. (1960): *Social Statistics*, McGraw-Hill Book Company, New York.
2. Howell David C. “*Fundamental Statistics for the Behavioral Sciences*”, 4th Edition, an International Thosurooss Publishing Company, USA.
3. Mc Clave, James T., P. George Benson and Terry Sincich (2001): *Statistics for Business and Economic*, Eighth Edition, Prentice Hall, NJ, USA.
4. Norman R. Kurtz (1999): *Statistical Analysis for the Social Sciences*, Allyn and Bacon.
5. Douglas and Altman (2006): *Practical Statistics for Medical Research*, Chapman and Hall Publication, Washington, D.C.
6. Ebdon, E. (1978): *Statistics in Geography*, Basil Blackwel, Oxford.

Suggested Reading List

1. Dillon, W.R. and Goldstein, M. (1984): *Multivariate Analysis*, John Willey and Sons, New York.
2. Goon, A.M., Gupta, M.K. and Dasgupta, B. (1985): *Fundamental of Statistics Vol. I*, The World Press Private Ltd. Calcutta.
3. Gupta, S.C. and Kapoor, V.K. (1986): *Fundamental of Mathematical Statistics*, Sultan Chand and Sons Publishers, Delhi.
4. Retherford, R.D. and Choe, M. K., (1993): *Statistical Models for Casual Analysis*, A Wiley-Inter-Science Publications, John Wiley and Sons, INC, New York.
5. Graeme Hutcheson and Nick Sofroniou, (1999): *The Multivariate for Social Scientist*, SAGE Publications.

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
7. Social stratification : Social Class and Caste: Principles of Class and Caste
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
14. Process of Social and Cultural Changes in India and their role in influencing demographic behaviour: a) Sanskritization b) Westernization c) Modernization

Essential Reading List

1. Davis, Kingslay, *Human Society*, MacMillan and Co., New York, (1975), Chapters 1, 3,5,6.
2. Kapadia, K. M., *Marriage and Family in India*, Oxford University Press, Calcutta, (1966).
3. Mandelbaum, D.G., *Society in India-Continuity and Change(vol.1) and Change and Continuity*, (Vol. 2). University of California Press, London, (1970).
4. Mac Iver R.M. and Charles H. Page, *Society: An Introductory Analysis*, Holt, Rinehard and Winston, New York, (1949), Chapters No.1, 3,7,11,15,22,24,25,26.
5. Srinivas M.N., *Social Change in Modern India*, University of California Press, Berkeley, (1966)
6. Haralambos, Michael, *Sociology: Themes and Perspectives*, Oxford University Press, Delhi (1980).

Suggested Reading List

1. Kuppaswamy B., *Social Change in India*, Konark Publication Pvt. Ltd. Delhi, (1972).
2. Muzumdar, Haridas , *The Grammar of Sociology: Man in Society*, Asia Publishing House, Mumbai (1966).
3. Johnson, Harry M, *Sociology : A Systematic Introduction* , Allied publishers, Bombay (1966).
4. Mc Gee , Reece , *Sociology: An Introduction* , Holt, Rinehard and Winston, New York (1980).
5. Magill ,Frank N (ed.), *International Encyclopedia of Sociology*, Fitzroy Dearborn Publishers, London, (1995).

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

1. Abler, R, Adams, J and Gould P., (1971): *Spatial Organization: The Geographer's view of the World*, Prentice Hall, New Jersey.
2. Johnston, R.J., (2004): *Geography and Geographers*, Oxford Unity Press.
3. Richard, Peet., (1998): *Modern Geographic Thought*, Blackwall Publishers
4. Singh, R.L., (1971) *India: A Regional Geography*, National Geographical Society of India, Varanasi.
5. Francis John Monkhouse (1956) *Maps and Diagrams: Their Compilation and Construction*, University of Michigan.
6. JF Friedman (1966) *Regional Development Policy: A Case Study of Venezuela*, Cambridge, Massachusetts : MIT Press, 1966.

ECONOMICS

A. Introduction:

Defining Economics, Micro and Macro economics, Economic and non economic good, Basic Economic Activities, Factors of Production, Economic Systems.

B. Basic Concepts in Micro Economics

Concept of Marginal and Total Utility, Law of Diminishing Marginal Utility, Theory of Demand: Indifference curves Theory and Properties, Equilibrium of consumer, Income, Substitution and Price effect. Elasticity of Demand: Price, Income and cross elasticity, Basic concepts in theory of production, cost and market structure.

C. Basic Concepts in Macro Economics

Basic Concepts in National Income: Concept of GDP, NDP, GNP, NNP, NI, PCI, GDPPCI, PPP, GDPPCI (PPPUS\$), 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

Political economy and protectionism – Mercantilism, Classical economics and free enterprise – Adam Smith and David Ricardo, Welfare economics – Alfred Marshall and Amartya Sen, Karl Marx and the Labour theory of Value, Empirical economics – Paul Samuelson.

E. Indian Economy: Structure, Planning and Growth

Characteristics of Indian Economy: Economic Transition in India, Strategy of economic planning in India, Industrial Policy 1956, 1977 and 1991, New Economic Reforms- 1991, Other Development issues: Poverty and Unemployment.

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
2. Koutsoiannis A, 1979, Modern Microeconomics, London: Macmillan Press Ltd,
3. Lipsey and Chrystal, 2004, Economics, Oxford university Press, Part One, part two and part five
4. Dasgupta AK, Epochs of Economic Theory, OUP, Bombay, Chapters 2, 3, 4, 7 and 8
5. Datt R and Sundaram K.P.M, 2000, Indian economy, S. Chand & Company Ltd, Part II.

Suggested Readings

1. Samuelson, Paul A. and William D. Nordhaus., "Economics", New York: Tata McGraw Hill, part one, two and five
2. Blaug, M., 1962. "Economic Theory in Retrospect", London: Heinemann Ltd.
3. Haney, Lewis H., 1960, "History of Economic Thought", New York: Macmillan
4. Government of India, Ministry of Finance, Economic Division, Economic Survey, 2001-2002

B3	INTRODUCTION TO DEMOGRAPHY AND SOURCES OF DEMOGRAPHIC DATA	(24 Hours)
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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. 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

(A) Present levels and past trends in the sex and age structure of the population of world and developed and developing countries.

(B) Present levels and past trends in the sex and age structure of India's population.

(C) Importance of age-sex structure in population dynamics and factors affecting sex ratio of the population.

(D) Sex ratio of India's population and role of different factors in changing sex ratio.

(E) Factors affecting age structure of the population: dynamics of age structure along with demographic transition.

(F) Ageing of the population and relative roles of low fertility and low mortality in population ageing.

Essential Readings

1. Jacob S. Siegel and David a. Swanson (2004): *The Methods and Materials of Demography*, Second Edition, Chapters 1, 2, 3, 7, 9,10, Elsevier Science, USA.
2. John Weeks (2005): *Population: An Introduction to Concepts and Issues*, Wordsworth Learning. Singapore 9th edition.
3. United Nations, (1973): *The Determinants and Consequences of Population Trends*, Vol. I, *Population Studies*, No. 50, Chapter VII, New York.
4. Bhende, A., (1996): *Principles of Population Studies* (Seventh Edition), Himalaya Publishing House, Bombay.
5. United Nations, World Population Ageing, 1950-2050
6. www.censusindia.gov.in

Suggested Readings

1. World Population Prospects 2006, Vol I and II, United Nation
2. Warren S. Thompson, *Population Problems*
3. Bogue, D., (1969): *Principles of Demography*, John Wiley and Sons, New York.
4. Registrar General, India (1997): *Civil Registration System in India*, Office of the Registrar General, India, New Delhi. .
5. United Nations, (1998): *Handbook on Civil Registration and Vital Statistics Systems, Management, Operation and Maintenance*, New York.

B4	FERTILITY AND NUPTIALITY	(48 Hours)
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A. FERTILITY – SUBSTANTIVE

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

Theory of Social Capillarity, Theory of Change Response, Theory of Diffusion and Cultural Lag, Liebenstein Theory, Becker's Theory, Easterlin Framework of Fertility, Caldwell's Theory, U. N. Threshold Hypothesis, Reproductive motivations and value of children theories.

B. FERTILITY MEASURES AND MODELS

Introduction

- Some Basic Concepts
- Sources of Data for Fertility Analysis
- Problems in Fertility Analysis
- Period and Cohort Approaches

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

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

1. Introduction, Concepts, Sources and Quality of Nuptiality Data.
2. Measures and Indices of Nuptiality: Crude and Specific Rates; Standardization of Marriage Rates.
3. Analysis of Marital Status Data: Singulate Mean Age at Marriage (SMAM) – Synthetic Cohort and Decade Synthetic Cohort Method.
4. Gross and Net Nuptiality Tables.
5. Marriage Patterns in India and Selected Countries, Marriage Squeeze.
6. Divorce & widowhood: Basic concepts & Measures.
7. Standard Age Pattern of Marriage – Coale's Model.

Essential Reading List

1. Asha A. Bhende and Tara Kanitkar, (2003), *Principles of Population Studies*, Sixteenth Revised Edition, Himalaya Publishing House, Mumbai.
2. David G. Mandelbaum, (1974), *Human Fertility in India: Social Components and Policy Perspectives*, University of California Press, Berkeley.
3. John R. Weeks, (2005), *Population: An Introduction to Concepts and Issues*, Ninth Edition, Wadsworth Publishing Company, Belmont, California.
4. Ronald Gray, Henri Leridon and Alfred Sipra, (1993), *Biomedical and Demographic Determinants of Reproduction*, Oxford University Press, Oxford.
5. Sydney H. Coontz, (1968), *Population Theories and the Economic Interpretation*, Routledge, London.
6. United Nations, (1973), *Determinants and Consequences of Population Trends, Vol. 1*, pages 96-104, UN, New York.
7. United Nations, (1999), *Below Replacement Fertility*, Population Bulletin of the UN, Special Issue Nos. 40/41, Department of Economic and Social Affairs, UN, New York.
8. Bongaarts, J and Potter, R (1983) *Fertility, Biology and Behavior: An Analysis of the Proximate Determinants*. Academic Press, New York.
9. Hinde, Andrew (1998) *Demographic Methods*. London: Arnold.
10. Newell, Colin (1988) *Methods and Models in Demography*. London: Frances Pinter.
11. Pathak, K.B. and F.Ram, (1998) *Techniques of Demographic Analysis*, Mumbai: Himalaya Publishing House, Chapter 4, Pp.108-153.
12. Preston, Samuel H., Heuveline, Patrick, and Guillot, Michel (2001) *Demography: Measuring and Modeling Population Processes*. Oxford: Blackwell Publishers.
13. Siegel, Jacob S., and David A. Swanson (eds.), (2004) *The Methods and Materials of Demography* (Second edition). San Diego: Elsevier Academic Press.
14. Coale Ansley J. and T. James Trussell (1978) *Technical Note: Finding the Two Parameters that Specify a Model Schedule of Marital Fertility. Population Index 44, 2 (1978), pp. 203-213.*

Suggested Reading List

1. Bogue, Donald J., Eduardo E. Arriaga, and Douglas L. Anderson, eds. (publication editor George W. Rumsey) (1993) *Readings in Population Research Methodology*. Chicago: United Nations Population Fund. Volume 3: Fertility Research, (All three chapters but selected pages).
2. Mishra, B.D. (1981) *An Introduction to the Study of Population*, New Delhi: South Asian Publishers Pvt. Ltd.
3. Palmore, James A. and Gardner, Robert W. (1983) *Measuring Mortality, Fertility and Natural Increase: a Self-Teaching Guide to Elementary Measures*. Honolulu: East-West Population Institute, East-West Center.

4. Pollard, A.H., Yusuf, Farhat and Pollard, G.N. (1990) *Demographic Techniques* (third edition). Sydney: Pergamon Press.
5. Rowland, Donald T. (2006), *Demographic Methods and Concepts*. New York: Oxford University Press.

B5	MORTALITY, MORBIDITY AND PUBLIC HEALTH	(48 Hours)
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A. MORTALITY

1. Basic Concepts and Measures of Mortality

- a) 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.
- b) *Introduction and basic measures:*
Some basic measures: - crude death rate (CDR) and Age-Specific Death Rates (ASDRs)- their relatives merits and demerits.
- c) *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.
- d) *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.
- e) *Measures of maternal mortality*
Maternal Mortality Rate, Ratios, Life time risk; Issues related to estimation of maternal mortality measures.

2. Life Tables

- a) *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.
- b) *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.
- c) *Model Life Tables (MLT)*
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.

Reading List

Compulsory Reading List

1. Caldwell, J, Sally Findley, Pat Caldwell and Gigi Santow (1990): What we know about health transition: The cultural, social and behavioural determinants of health. *The proceedings of an international workshop, Vol.1&2, ANU, Canberra*, Health Transition Centre.
2. Mosley, W. H. and L. C. Chen (1984): Analytical framework for the study of child survival in developing countries, *Population and Development Review* 10 (Supplementary Copy).
3. Murray, C. J. L., (1994): Quantifying the Burden of Disease: The Technical Basis for Disability Adjusted Life Years, *Bulletin of the WHO*, Vol. 72(3), pp.429-445.
4. Pugh, Thomas F. and Brian MacMohan (1970): *Epidemiology: Principles and Methods*, Little Brown Publishers, Boston (Chapters 1 through 5).
5. Ram, F. and K.B. Pathak (1998): *Techniques of Demographic Analysis, 2nd Ed*, Himalaya Publishing house, Bombay (Chapters 2 & 3).
6. Shryock, Henry S. Jacob Siegel and Associates (1980): *The Methods and Materials of Demography Vol. 2*, US Department of Commerce. Washington DC, pp. 389-393, Chapter 14.
7. WHO (1992): *International Statistical Classification of Diseases and related Health Problems*, Tenth Revision, Vol. 1, Geneva.
8. Weeks, John R. 2005. *Population: An Investigation to concepts and Issues*. 9th Edition, Wadsworth Publishing Co. CA.
9. Yaukey, David. 1985. *Demography: The study of Human population*. St. Martins, New York.

Suggested Reading List

1. Administrative Staff College of India (2002): *A comparative assessment of the Burden of Disease in selected states: Methodology, results, policy and program intervention*. Research Paper No. 2.
2. Coale, Ansley J. and Paul, Demney (1983): *Regional Model Life Tables and Stable Populations*, Academic Press, New York.
3. Government of India (1997) *Reproductive & Child Health Program: Schemes for Implementation*, Ministry of Health and Family Welfare, New Delhi.
4. Jagger, C (1999): *Health Expectancy calculation by the Sullivan Method: A Practical Guide*, NUPRI, Research Paper Series No. 68.
5. Murray C. J. L., J. A. Salomon, C. D. Mathers and A. D. Lopez (2002). *Summary Measures of Population Health: Concepts, Ethics, Measurement and Applications*. WHO, Geneva.
6. Office of the Registrar General of India (2007). *Medical Certification of Cause of Death 2001*. Ministry of Home Affairs, New Delhi.
7. Omran, A. R. (1971): The epidemiologic transition: a theory of the epidemiology of population change, *Milbank Memorial Fund Quarterly*, Vol. XLIX, pp. 509-538.
8. Park, J.E. and K. Park (1989): *Text Book of Preventive and Social Medicine (Twelfth Edition)*, M/S Banarsidas Bhanot Publishers, Jabalpur (Chapters 2 & 3).
9. Preston, S. H., Patrick Heuveline and Michel Guillot (2001): *Demography: Measuring and Modeling Population Process*, Blackwell Publishers, Oxford, UK (Chapters 2, 3 & 4).
10. United Nations (1973): *The Determinants and Consequences of Population Trends, Vol. I*, Population Studies No.50, Dept. of Economic and Social Affairs, United Nations, New York (Chapter 5).
11. United Nations (1982): *Model Life Tables for Developing Countries*, United Nations, New York.
12. United Nations (1998): *Too Young to Die: Genes or Gender*, Dept. of Economic and Social Affairs, United Nations, New York.

13. United Nations (1999): *Health and Mortality Issues of Global Concern*, Proceeding of the Symposium on Health and Mortality, Brussels, 19-22 November 1997.

B6	REPRODUCTIVE HEALTH	(24 Hours)
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1. Introduction to reproductive health

- a. Definition and rationale of RH approach,
- b. Evolution of ideas about reproductive health
- c. Components of RH and life cycle approach of RH
- d. Recommendations from ICPD

2. Physiology of human reproduction

- a. Male and female reproductive system; Conception, Pregnancy
- b. Customs, and taboos related to menstruation and puberty in different societies
- c. Overview of family planning programmes and strategies
- d. Role of managers and planners in family planning programme

3. Maternal and obstetric morbidity

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

4. Abortion and related issues

- a. Spontaneous, induced abortion, legal and illegal abortions, safe and unsafe abortions and consequences of unsafe abortions
- b. Laws regarding abortion.

5. Infertility

- a. 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.

6. Gynaecological and contraceptive morbidity

- a. Anemia, Breast, Cervical, Ovarian, Prostate Cancer; Behavioural risk factors
- b. Contraceptive morbidity related to different methods.

7. Reproductive Tract Infection/Sexually Transmitted Infections and HIV/AIDS

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

8. Male Reproductive Health Issues

- a. Men's reproductive health services
- b. Men's role in women's health,
- c. Strategies to reaching out to men.

9. Adolescent and Menopausal women

- a. Aspects of adolescent sexual and reproductive behaviours
- b. Socio-psychological and health problems of menopausal women

10. Reproductive rights and ethical issues

- a. Human rights and values
- b. Ethical values in RH services; information, liberty of choice
- c. Professional and ethical issues

Essential Reading List

1. Berer, M., (2000): *Making Abortions Safe: A Matter of Good Public Health Policy and Practice*, Bulletin, WHO, Vol. 78(5), pp. 590-592.
2. Bott, S. et al (Eds. 2003): *Towards Adulthood: Exploring the Sexual and Reproductive Health of Adolescent in South Asia*, World Health Organization, Department of Reproductive Health and Research, Geneva.
3. Pachauri, S. (Eds. 1999): *Implementing a Reproductive Health Agenda in India : The Beginning*, New Delhi ; Population Council.
4. Rutsein, Shea, O. and Shah, Iqbal, H. (2004): *Infecundity, Infertility, and Childlessness in Developing Countries*. DHS Comparative Reports No.9. Calverton, Maryland, USA ORC Macro and the World Health Organization.
5. Srinivasan, K. (Eds. 1996): *Population Policy and Reproductive Health*, New Delhi; PFI and Hindustan Publications.
6. Verma, R., P.J. Pelto, S.L. Schensul, and A. Joshi (Eds. 2004): *Sexuality in the Times of AIDS: Contemporary Perspectives from Communities in India*, New Delhi; Sage.
7. World Health Organization, (1990): *Measuring Reproductive Morbidity*”, Report of a Technical Working Group, Geneva, August 30-September1, 1989, WHO/MCH/90.4.

Suggested Reading List

1. Alan Guttmacher Institute, (2000): “Readings on induced abortion vol.1: Politics and policies- Articles from Family Planning Perspectives 1974-1999”, The Alan Guttmacher Institute, New York.
2. Casterline, J.B., (1989): Collecting Data on Pregnancy Loss: A Review of Evidence from the World Fertility Survey, *Studies in Family Planning* Vol. 20(2):81-85.
3. Gittleson, J.; Bentley, M.E.; Pelto, P.J.; Nag, M.; Pachuri, S.; Harison, A.B., and Landman, L.T (Eds), (1994): *Listening to Women Talk About Their Health: Issues and Evidence from India*, The Ford Foundation, New Delhi.
4. Goliber, T.J., (1997): Population and Reproductive Health, *Population Bulletin* Vol. 52(4), Washington, DC: Population Reference Bureau.
5. Raju, S.and Leonard, A.(eds.) (2004): *Men as Supportive Partners in Reproductive Health*, Population Council, New Delhi
6. Unisa, S., (1999): Childlessness in Andhra Pradesh, India: Treatment-Seeking and Consequences, *Reproductive Health Matters*, Vol. 7, No. 13.
7. Bergman Ylva, (2004): *Breaking Through, A Guide to Sexual and Reproductive Health and Rights*, Norra Skane Offset, Stockholm.
8. Singh, S.K., Lhungdim H., Chattopadhyay, A and Roy, T.K, (2006): “Women’s vulnerability to STI/HIV in India, I.I.P.S, Mumbai.

A. MIGRATION

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

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

ii. 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.

iii. International migration

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.

Causes and consequences of international migration.

iv. 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

2. Measures of Migration

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

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

ii. Methods of estimating international migration.

3. Migration surveys

B. SPATIAL DISTRIBUTION AND URBANISATION

i. Spatial Distribution

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

ii. **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.

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

1. Cohen, Robin, (1996): *Theories of Migration*, The International Library of Studies on Migration, Edward Elgar, Cheltenham.
2. Eduardo Arriaga, (1975): "Selected Measures of Urbanization", in Sydney Goldstein and David Sly (Eds.) *Measures of Urbanization and Projections of Urban Population*, IUSSP Belgium.
3. United Nations, (2004): *World Urbanization Prospects, The 2003 Revision*, New York.
4. United Nations, (1998): *World Population Monitoring 1997*, International Migration and Development, New York.
5. United Nations, (1974): *Methods of Measuring Internal Migration*, Manual VI, UN, New York.
6. Shryock, Henry S. Jacob S. Siegel and Associate, (1980): *The Methods and Materials of Demography Vol.1 & 2*, U.S. Bureau of the Census, Washington D.C.

Suggested Reading List

1. Oberai, A.S. (1987): *Migration, Urbanization and Development*, International Labour Office, Geneva
2. Gavin Jones and Visaria, Pravin, (Eds.), 1997: *Urbanization in large developing countries – China, Indonesia, Brazil and India*, Clarendon Press, Oxford.
3. Kingsley, Davis, (1972): *World Urbanization, 1950-70*, Vol. II, Analysis of Trends, Relationship and Development, Population Monograph Series 4 and 9, University of California, Berkeley.
4. Mitra R. G., (2002): *Understanding Patterns of Migration from Census 2001 Data*, Population Stabilization and Development, Council of Cultural Growth and Cultural Relations, Cuttack
5. Todaro, Michael P.(1976), *Internal Migration in Developing Countries*, International Labour Office, Geneva.
6. United Nations, (1979): "Trends and Characteristics of International Migration Since 1950" *Demographic Studies* No. 64, UN, New York.
7. United Nations, (1983): *Determinants and Consequences of Population Trends*, Vol 1, UN, New York, Chapter-VI.

1. Importance of the study of Gender Issues in Population Studies. Emergence of the Gender Issues as an important area of concern. Differences between sex and gender.
Definitions, Concepts and Terminologies: gender, unequal gender relations, gender equity, gender disparities, gender inequalities, gender mainstreaming, gender sensitive planning and gender balance.
2. Patriarchy and Matriarchy, Kinship Structure and gender roles; Gender stratification in traditional and modern societies.
3. Feminists Theories: Evolution of feminism; Shift from women in development to gender in development. International and national experience: Different theories of feminism.
4. 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.
5. 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.
6. 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.
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.
8. Right-based approach to gender equity and Reproductive Health and HIV/AIDS; Human rights related to gender, reproductive health rights.
Gender as a key determinant of vulnerability to poverty, gender and HIV/AIDS vulnerability and its demographic impact.
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.
12. National and international programme, policies and laws favoring empowerment of women.
National Policy of Women Empowerment.

Essential Readings

1. Basu, Alaka M., (1992): *Culture, The Status of Women and Demographic Behaviour*, Oxford University, New York.
2. Dyson, Tim and Mick Moore, (1983). "On Kinship structure, female autonomy, and demographic behaviour in India", *Population and Development Review* vol. 9(1), pp. 35-60.
3. Ellsberg Mary and Heise Lori L. (2005) *Researching violence against women: A practical guide for researchers and activists*. WHO and Path, Washington D.C.
4. Folbre, Nancy. (1992). Improper arts: Sex in classical political economy. *Population and Development Review*. 18(1): 105-112.
5. Gita Sen, Adreinne Germain and Lincoln C. Chen, (Eds.), (1994): *Population Policies Reconsidered: Health and Empowerment and Rights*, Harvard University Press, Harvard.
6. Jeffery Patricia and R. Jeffery. 1997. *Population Gender and Politics: Demographic change in rural north India*. Cambridge University, Cambridge.

7. Miller, Barbara, D.(ed) (1993) *Sex and Gender Hierarchies*, Cambridge University Press, New York.
8. Hess, B.B. and M.M. Ferree. (1987). *Analyzing Gender: A Handbook of Social Science Research*. Sage Publication, London.
9. United Nation. 2001. *Population, Gender and Development: A Concise Report*. UN, Economic and Social Affairs (Dept. of), New York
10. World Health Organization. (1998). *Gender and Health. Technical paper WHO/FRH/WHD/98*. (Website: www.who.int)
11. World Bank. (1991). *Gender and Poverty in India*. World Bank, Washington.
12. World Health Organization (2003): *Comparative Evaluation of Indicators for Gender Equity and Health*, Women and Health Programme, Centre for Health Development, Kobe, Japan.
13. William Joan. 1989. Deconstructing Gender, 87 Michigan L Rev. 797. *Law Journal Article*

Suggested Readings

1. Agnes, Flavia. (2000). Law and gender inequalities: the policies of women's right in India. Oxford, New Delhi.
2. Anker, R.(1997). *Gender and Jobs: Sex Segregation of Occupations in the World*, ILO, Geneva.
3. Balk, Deborah, 1997): "Defying Gender Norms in Rural Bangladesh: A Socio demographic Analysis". *Population Studies* Vol.51, pp. 153-172.
4. Bandhopadhyay, D. 2000. Gender and governance in India. *Economic and Political Weekly*. 35(3): 2696-269xxx).
5. Basu, Alaka Malwade. 2000. Gender in population research: Confusing implications for health policy. *Population Studies*. 54: 19-22.
6. Bhasin K. 1993. *What is patriarchy?*, Kali for Women Publishers, New Delhi.
7. Bhasin K. (2000). *Understanding Gender*, Kali for Women Publishers, New Delhi.
8. Das Gupta, Monica, 1987. Selective discrimination against female children in rural Punjab, India. *Population and Development Review*, 13(1): 77-100.
9. Doyal L.(1995) *What Makes Women Sick: Gender and the Political Economy of Health*. London, Macmillan.
10. Dreze, Jean and Sen Amartya, (1995): *India: Economic and Social Opportunity*, Oxford University Press, New York.
11. Harriet B. Presser, (1997): Demography, Feminism and the Science-policy Nexus, *Population and Development Review* Vol. 23(2), pp. 295-331.
12. Jeffery, Roger and Basu, Alka M. (Eds.), (1996): *Girls Schooling, Women's Autonomy and Fertility Changes in South Asia*, Sage Publications, New Delhi.
13. Jejeebhoy S. 1996. *Women's Education, Autonomy and Reproductive Behavior: Assessing what we have learned*. East West Centre, Hawaii.
14. Reeves Hazel and Baden Sally (2000): *Gender and Development: Concepts and Definitions*, Report No. 55, Bridge (development- gender) Institute of Development Studies, University of Sussex, Brighton BN1 9RE, UK.
15. Sonya, Andermahr, Lovell Terry and Wolkowitz, Carol, (1997): *A Glossary of Feminist Theory*, Arnold-Hodder Headline Group, London.
16. Sopher, David, (1980). *An Exploration of India: Geographical Perspective on Society and Culture*, Cornell University New York.

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

1. Todaro, Michael P. (1981): *Economic Development in the Third world*. New York: Longman, Chapter 3.
2. Haq, Mahbubul (1996): *Reflections on Human Development*, Delhi: Oxford University Press. Chapters 1 & 2.
3. United Nations Development Programme (2007): *Human Development Report 2007/08*, New Delhi: Palgrave Macmillan Technical Note 1. pp. 393-99.
4. Ray, Debraj (1998): *Development Economics*. Delhi: Oxford University Press. Chapters 1, 2, 3 & 4.
5. Kapila, Ray and Uma Kapila (2001): *India's Economy in the Twenty First Century*. 2nd Revised Edition. New Delhi: Academic Foundation. Chapters 1 to 5, 15, 16 & 21.
6. Birdsall, Nancy, Kelley, Allen C. and Sinding, Steven W. (2001). *Population Matters: Demographic Change, Economic Growth and Poverty in the Developing World*, Oxford: Oxford University Press Chapters 2, 4 and 5.
7. David E Bloom, David Canning, Jaypee Sevilla, (2003): *The Demographic Dividend*. Sanata Monica, CA: Rand Corporation. Chapter 2.
8. National Research Council (1986): *Population Growth and Economic Development: Policy Questions*. Washington D.C.: National Academy Press. Chapters 1, 2, 3, 4, 6 & 8.
9. United Nations (1973): *The Determinants and Consequences of Population Trends*, Volume 1, Chapters 11 & 13.
10. Kawadia, G. and K. Ahuja, (2006): *Environmental Issues of Development*. Sections A and E, Ambala: Associated Publishers. Chapters 1, 3 & 13.
11. Goudie Andrew (1986) *The human impact on the natural environment*; Blackwell, UK
12. Rogers J W John and Feiss Geoffrey P (1998) *People and the earth* Cambridge University Press, UK

Suggested Readings

1. Sen, Amartya, (2002): The concept of development in Chenery Hollis and T.N. Srinivasan (eds), *Handbook of Development Economics* Vol. 1. Amsterdam: Elsevier. Chapter 1.
2. Jamison D. et al. (eds) (2006): *Disease Control Priorities in Developing Countries*, New York: Oxford University Press and World Bank. Chapter 1.
3. Chenery Hollis and T.N. Srinivasan (eds), (2002): *Handbook of Development Economics*, Vol 1, Amsterdam: Elsevier. Chapters 10, 11, 13 & 15.

4. United Nations Development Programme (1 UNDP, *Human Development Report 1990* Delhi: Oxford University Press. Chapter 1.
5. Lewis W.A, (1958): Economic development with unlimited supplies of labour. In A. N. Agarwala and P. Singh (eds.) *The Economics of Underdevelopment*. New York: Oxford University Press.
6. Leibenstein, H. (1963): *Economic Backwardness and Economic Growth*. New York: John Wiley Chapter 8.
7. Solow, R.M. (1956): A contribution to the theory of economic growth, *Quarterly Journal of Economics*, 70:65-94.
8. Coale A.J. and Hoover, E.M. (1958): *Population Growth and Economic Development in Low Income countries*, Princeton N. J.: Princeton University Press.
9. Simon Julian. (1981): *The Ultimate Resource*, Princeton N.J.: Princeton University Press.
10. United Nations (1973): *The Determinants and Consequences of Population Trends*, Volume 1, Chapters 3 & 7.
11. Martin Philips L, (2004): *Migration and Development: Towards Sustainable Solutions*, Geneva: ILO.
12. Chary, S.N and Vinod Vyasulu (eds). (2000): *Environnemental Management – An Indian Perspective*, New Delhi: Macmillan India.
13. United Nations. 2003. *Indicators for Monitoring the Millennium Development Goals: Definition, Rationale, Concepts and Sources*. New York: United Nations.

B10	POPULATION POLICY AND PROGRAMMES	(48 Hours)
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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.

Role of the United Nations, and other International agencies; U.N. World Population Conferences: Bucharest (1974) and Mexico (1984), and Cairo (1994) the World Population Plan of Action in different countries.

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.

National health and family planning programmes: CNA, RCH, National Population Policy- 2000, National Health Policy- 2002, and National Rural Health Mission 2005-2012.

B. POPULATION AND PROGRAMME MANAGEMENT

Reproductive health Programme Management: Principles: Human Resource Development System (HRDS), performance appraisal, feedback and counseling.

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.

Quality of Care in Reproductive Health Programme: A Management Perspective: Definition and importance of quality of care. Framework for quality of care in family planning.

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

1. Bruce, Judith, (1990): "Fundamental Elements of Quality of Care: A Simple Framework", *Studies in Family Planning*, Vol. 21, No.2.
2. Giridhar, G. Sattar E.M. and Kang J.S., (Eds.), (1989): *Reading in Population Programme Management*, ICOMP.
3. Government of India, (1996): *Community Need Assessment*, Ministry of Health and Family Welfare, New Delhi.
4. Government of India (2002): *National Health Policy*, Ministry of Health and Family Welfare, New Delhi.
5. Government of India, (1999): *National Policy on Older Persons in India*, Ministry of Social Justice and Empowerment, New Delhi.
6. Government of India, (2000): *National Population Policy*, Department of Health and Family Welfare, Ministry of Health and Family Welfare, Govt. of India, New Delhi.
7. Jain, Anirudh, (1988): *Do Population Policy Matter? Fertility and Policies in Egypt, India, Kenya, and Mexico*, Population Council, New York.
8. Bertrand Jane T., Robert J. Magnani, Naomi Rutenberg (1994): *Handbook of Indicators For Family Planning Programme Evaluation*, The Evaluation Project, Carolina Population Center, University of North Carolina at Chapel Hill, USA.

Suggested Reading List

1. Peabody, J.W.; Rahman, H. Omar; Gertlor, Paull, J.; Haan, Joyce, (1999): *Policy and Health Implication for Development in Asia*, Cambridge University Press. Cambridge.
2. Peters, David H. Yazbeek Abdo S.; Sharma, Rashmi R.; Ramana G.N.V., (2002): *Better Health Care Systems in India*, World Bank, Washington D.C.
3. United Nations, (1979): "The Methodology of Measuring the Impact of Family Planning Programme on Fertility", Manual IX, *Population Studies*, No.66, New York.
4. United Nations, (1998): *National Population Policies*, Department of Economics and Social Affairs, New York.
5. World Bank, (2006): *World Development Report, 2006*, Oxford University Press, London.
6. World Health Organization, (1978): "Primary Health Care", International Conference on Primary Health Care, Alma Ata, USSR, 6-12, September.

B11	EVALUATION AND ADJUSTMENT OF DATA POPULATION PROJECTIONS	(24 Hours)
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A. Evaluation 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.

B. 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.

Cohort component method: basic methodology; projection of mortality, fertility and migration components; population projections of United Nations, World Bank and Expert Committees of Government of India; accuracy of population projections.

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

1. Mishra, B.D. (1981). *Introduction to Study of Population*. South Asian Publishers. Chapters 4 & 7.
2. Seigel Jacob S. and David A. Swanson (eds.) (2004): *The Methods and Materials of Demography*. 2nd Edition, New York: Elsevier Academic Press. Chapters 20 & 21.
3. Smith Stanley K., Jeff Tayman, and David A. Swanson, (2001): *State and Local Population Projections: Methodology and Analysis*. New York: Kulwer Academic/Plenum Publishers. Chapters 3 & 7.

4. United Nations (1974): *Methods for Projections of Urban and Rural Population: Manual VIII*. Population Studies, No. 55. New York: Department of Economic and Social Affairs. Chapters 3 & 4.

Suggested Readings

1. Government of India (2006): *Population Projections for India and States, 2001-2026*. New Delhi: Office of the Registrar General.
2. Makridakis, S. Steven C., Wheelwright, and Rob J. Hyndman (1998): *Forecasting: Methods and Applications*, New York: John Wiley and Sons, p607-.
3. Shryock, Henry S. Jacob S. Seigel and Associates: (1973): *The Methods and Materials of Demography*, Vol. I. Washington, D.C. U.S. Bureau of the Census. Chapter 8.
4. United Nations, (1955): *Methods of Appraisal of Quality of Basic Data for Population Estimates*, Manual II. New York: United Nations. Chapter 1 & 3.
5. United Nations (2006): *World Population Prospectus: The 2004 Revision* Vol. III: Analytical Report. New York: United Nations.

B12	RESEARCH METHODOLOGY	(48 Hours)
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1. Scientific Methods of Research

Definition of Research, Assumptions, Operations and Aims of Scientific Research. The Research Process: conceptual, Empirical and Analytical Phases of Research: Essentials
Criteria of Scientific methods.

2. Research Designs

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.

3. Methods of Data Collection

Quantitative Methods: Checklist schedules, questionnaire (mail method, interviews through telephone, internet and computers), interview schedule (face-to-face interviews or personal interviews).

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.

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.

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. Bernard, H. Russell, (1995): *Research Methods in Anthropology: Qualitative and Quantitative Approaches*, Altamira Press, Walnut Creek.
2. Goode W J and Hatt P K. 1952. *Methods in Social Resasrch*. McGraw Hills, New York.
3. Kish, Leslie, (1995): *Survey Sampling*, John Wiley and Sons, Inc. New York.
4. Lohr L. Sharaon., (1999): *Sampling: Design and Analysis*, Duxbury Press, London.
5. Lwanga S. K. and Lemeshow S., (1991): *Sample Size determination in Health Studies: A Practical Manual*, World Health Organisation, Geneva.
6. Mukherji, P.N., (1999): *Methodologies in Social Science*, Sage Publications, New Delhi.
7. Pullum W. 2006. An Assessment of Age and Data Reporting in the DHS Surveys, 1985-2003. DHS Methodological Report No. 5. Calverton, Maryland, Marco International Inc.
8. Royce A. Singleton and Bruce C. Straits, (1999): *Approaches to Social Research*, Oxford, Oxford University Press.
9. Young P V. 1994. *Scientific Social Surveys and Reasearch*. Prentice-Hall, New York (4th Edition).

B13	HISTORICAL DEMOGRAPHY	(24 Hours)
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1. **Introduction to historical demography:** Meaning, Scope, and Importance; Difference between History of Demography, Demographic History and Historical Demography; Limitations of Research in Historical Demography.
2. Development of historical demography: Developments in Europe, USA, and India.
3. **Sources of historical data:**
Census, vital registration data, Parish records, bills of mortality, fiscal documents, military records, inventories of properties, genealogies, marriage practices, origin and extent of towns, archaeological remains, administrative geography, colonization of new land, cemetery data, traveler's tales.
4. **Biological evolution and Historical Migration** – theories (Darwinism, Mendel, Lamarckism); Historical migration (Racial migration and fossil evidences); Cultural Evolution and Peopling of India (Pre-historic, ancient medieval and British Period).
5. **Historical methods:**
Family reconstitution; Cross checking the information from different sources.
6. **India's demographic history:**
 - a) Colonial Census and Anthropological Investigations- census enumeration and caste consciousness; Enumeration of religious identity and communalism.
 - b) Demography of famines and mortality.
 - c) Epidemics, famine and Mortality; Infanticide, child marriages, and conditions of Widow.
 - d) Family planning methods and health practices in India – a historical perspective.

Essential Readings

1. Davis, Kingsley, *The Population of India and Pakistan*, Princeton, Princeton University Press, 1951.
2. Tim Dyson (ed.), *India's Historical Demography: Studies in Famine, Disease and Society*, London, Curzon, 1989.
3. Glass D.V. & Eversley, D.E., *Population in History: Essays in Historical Demography*, London, Edward Arnold, 1965.
4. Hollingsworth, T.H., *Historical Demography: The Sources of History*, Studies in the Uses of Historical Evidence, London, 1969.
5. Maharatna, Arup, *Demography of Famines: An Indian Historical Perspective*, Delhi, 1996.
6. Willigan, J. Dennis, Lynch, Katherine A., *Sources and Methods of Historical Demography*, Academic Press, New York, 1982.

Reading List:

1. Akerman, S., "History and Demography: An Evaluation of the Family Reconstitution Technique" in A.E. Andersson and I. Holmberg (eds) Demographic, Economic, and Social Interaction, Cambridge, Ballinger Publishing Company, 1977.
2. Harris, P.M.G., History of Human Populations, Vol.II (Migration Urbanization and structural change) London: Praeger, 2003.
3. John Knodel, "Two and a Half Centuries of Demographic History in a Bavarian Village". Population studies Vol.XXIV No.3, Nov. 1970, pp. 353-376.

4. Kertzer, David I., "Qualitative and Quantitative Approaches to Historical Demography", Population and Development Review, Vol.23 (4). Dec. 199--(839-84), 1997.
5. Krishnan, P., "Historical Demography Through Literature: Preliminary Report on Indian Historical Demography", Paper presented in the Session Historical Demography, IUSSP Meeting, Florence, Italy, June, 1985.
6. Paul E.Vincent, "French Demography in the Eighteenth Century" Population Studies Vol.I, 1947-48. Pp.44-71.
7. Razzell, P.E., "The evolution of Baptism as a form of Birth Registration through Cross Matching census and Parish Register Data: A study in Methodology" Population Studies Vol.26, No.1. March 1972, pp.121-146.
8. Saito, Osamu, Historical Demography: Achievements and Prospects, Population Studies, Vol.50 (3--(53), 1996.
9. Srivastava, H.C., "Registration of vital Events in Goa- A study of current system in Retrospect", Artha Vijanana, Vol. XIII, No.4, Dec. 1971.
10. Vinovskis, Maris A., Studies in American Historical Demography, Academic Press, New York, 1979.
11. William H. Howells, "Estimating Population Numbers Through Archeological and Skeletal Remains" in Robert F. Heizar and Sherburne F. cook. The application of Quantitative methods in Archeology, Viking Fund Publication in Archeology, No.28, 1960. pp. 158-159.

B14	ADVANCE STATISTICAL METHODS AND COMPUTER APPLICATIONS	(24 Hours)
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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.
3. Correlation and regression analysis – interpretation and regression diagnostic test.
4. Multivariate analysis – concepts and interpretation of results of multiple regression, logistic regression, ANOVA, MCA with and without interaction. Survival analysis-cox regression test of proportionality and heterogeneity.
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.
4. *Stata user's guide: Release 8.*, 2nd Edition. Stata Press.
5. *Stata programming reference manual: Release 8.*, 2nd Edition. Stata Press.
6. *Stata survey data reference manual: Release 8.*, 2nd Edition. Stata Press.
7. Snijders, Tom A.B. and Bosker, Roel J., (1999): *Multilevel analysis: An introduction to basic and advanced multilevel modeling*. Sage Publications.
8. Cromley, Ellen K. and McLafferty, Sara L., (2002): *GIS and public health*. Guilford Press, New York.

B15	DEMOGRAPHIC MODELS AND INDIRECT METHODS FOR ESTIMATING FERTILITY AND MORTALITY	(24 Hours)
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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.

Essential Readings

1. Bhat P.N.M, (2002): General growth balance method: A reformulation for population open to migration, *Population Studies*, 56 (2002), 23-34, Printed in Great Britain.
2. Bhat P.N.M., (2002): Completeness of India's Sample Registration System: An assessment using the general growth balance method, *Population Studies*, 56 (2002), 119-134, Printed in Great Britain.
3. Coale, A.J., (1981): "Robust estimation of Fertility by the Use of Model Stable Population", *Asian and Pacific Census Forum*, Vol.8 No.2. East-West Centre, Honolulu, Hawaii.
4. Lahiri, Subrata, and Lysander Menezes (2004): "Estimation of adult mortality from two enumerations of a destabilized population subject to response biases in age-reporting", In *Population, Health and Development in India: Changing Perspectives*, (Eds. by T. K. Roy, M. Guruswamy, and P. Arokiasamy), Rawat Publications, Jaipur: 2004, pp.101-136.

5. Lahiri, Subrata, Arni S. R. Srinivasa Rao, and S. Srinivasan (2005): Role of Age-specific Growth Rates on Population Ageing in Some Developed and Developing Countries – A Comparative Study, *Demography-India*, 34(1): 63-83.
6. Keyfitz, Nathan (1977): *Introduction to the Mathematics of Population with Revision*, Addison-Wesley Publishing Company, Inc., Massachusetts.
7. Pathak, K.B. and F. Ram (1998): *Techniques of Demographic Analysis*, Himalaya Publishing House, Second Edition, Mumbai.
8. Preston, Samuel H., and Subrata Lahiri (1991): “A Short-cut Method for Estimating Death Registration Completeness in Destabilized Populations”, *Mathematical Population Studies*, 3(1):39-51.
9. Rele, J. R. (1967): “Fertility Analysis Through extension of Stable Population Concepts”, *Population Monograph Series No.2*, University of Berkeley.
10. United Nations (1983): *Indirect Techniques for Demographic Estimations*, Manual X, Population Studies No.81, Department International Economic and Social Affairs, (ST/ESA/SER.A/81).

Suggested Readings

1. Bennett, N.G., and S. Horiuchi (1981): “Estimating completeness of death registration in a closed population”, *Population Index*, 47(2):207-221.
2. Bennett, Nail. G., and Shiro Horiuchi (1984): “Mortality estimation from registered deaths in less developed countries”, *Demography*, 21(2):217-233.
3. EL. Badry, M.A., (1961): “Failure of Enumerators to make Entries of Zero”, Errors in Recording Childless Cases in Population Censuses, *Journal of American Statistical Association* Vol. 56.
4. Hill, Kenneth (1987): “Estimating Census and Death Registration Completeness”, *Asia and Pacific Population Forum*, 1(3): 8-13 &23-24.
5. Horiuchi, S. and A. J. Coale (1982):“A Simple Equation for Estimating the Expectation of Life at Old Ages, *Population Studies*”, Vol. 36, pp.317-326.
6. KIm, Young J., Schoen, R. & Sarma, P.S.(1991) : Momentum and The Growth-Free Segment of Population, *Demography*, Vol.28, No.1 pp. 159-173.
7. Lahiri, Subrata (1990): Some New Approaches to the Estimation of Life Expectancies at Older Ages, In *Dynamics of Population and Family Welfare, 1989*, (eds. by Srinivasan and K.B. Pathak), pp.315-341.
8. Martin, Linda G. (1980): “A Modification for use in Destabilized Population Brass's Technique for Estimating Completeness of Death Registration”, *Population Studies*, 3(1):39-51.
9. Mitra, S., 1984, “Estimating the Expectation of Life at Old Ages”, *Population Studies*, Vol. 38, pp. 313-319.

10. Potter, R.G. and Kulkarni, P.M. (1977) : Population Momentum : A WiderDefination, Popluation Studies Vol. 40 pp. 555-56.
11. Preston, S.H., and A.J. Coale (1982): “Age structure, growth, attrition, and accession: A new synthesis, *Population Index*”, 48(2): 217-259.
12. Preston, Samuel H. Patrick, Heuveline and Michel Guillot, 2003, *Demography: Measuring and Modeling Population Processes*, Blackwell Publishers, 2001 (First Indian Reprint 2003).
13. Preston, S.H.; Himes, Christine and Mitchell, Eggers (1989): “Demographic Conditions Responsible for Population Aging”, *Demography*, 26 (4): 691-704.
14. Rele, J. R., (1987), “Fertility Levels and Trends in India, 1951-81”, *Population and Development Review* Vol. 13 (2). Academic Press, New York.
15. Schoen, R. and Kim Young J. (1991) : “Momentum Towards Stability as a Fundamental Principle of Population Dynamics” *Demography*, Vol.28 No.3, pp.455-466.
16. Zlotnik, H. and Hill, K., (1981): “Use of Hypothetical Cohort in Estimating Demographic Parameters under Conditions of Changing Fertility and Mortality”, *Demography*, Vol. 18, No.1.

C1	URBAN AND REGIONAL PLANNING	(24 Hours)
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I. HUMAN SETTLEMENTS

Settlement characteristics: Evolution and stages; characteristics and factors; types/pattern of settlement and their hierarchy, settlement pattern in India.

Spatial distribution of population: Global pattern of population distribution, important indices of spatial distribution and their application.

Urban structures: Urban morphology: internal structure of cities, important models.

II. URBAN AND REGIONAL PLANNING (12 Lectures)

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

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

Urban policy since independence, five year plans, important urban plans (Delhi, Mumbai, Navi Mumbai, and Chandigarh); examples of recent plans:SRA, JNURM, Vision 2020, PURA, SEZ.

Regional development/planning : Regional concept; definition of region, types of region (formal, functional and planning); methods of regionalization/delineation, regional disparity; 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, Central Place theory, Growth Pole theory; Core-periphery interactions.

The practice of regional planning in India, planning regions in India.

III. Application of GIS Urban in Planning

GIS and urban planning, application of GIS in urban planning.

Essential Reading List

1. Chand, M and V.K. Puri, (1983), *Regional Planning in India*, New Delhi, Allied.
2. Friedman, J and W. Alonso, (eds: 1969), *Regional Development and Planning: A Reader*, Cambridge, MIT Press.
3. Hall, P, (1992), *Urban and Regional Planning*, Third Editions, London, Routledge.
4. Husain, M, (1994), *Human Geography*, Jaipur, Rawat.
5. Leong, Goh C. and G.C. Morgan, (1982), *Human and Economic Geography*, Singapore, Oxford University Press.
6. Singh, R. Y. (1994), *Geography of settlements*, Rawat, Jaipur.

Suggested readings

1. Friedman, J and Clyde Weaver, (1979), *Territory and Function: The evolution of regional planning*, London, Edward Arnold.
2. Kawashima, T and P. Korcelli, (1982), *Human Settlement Systems: Spatial Patterns and Trend*, Luxemburg, IIASA.
3. Knowles, R and J. Warling, (1983), *Economic and Social geography: Made Simple*, London, Heinemann.
4. Misra, R.P, (1992), *Regional planning: Concepts, Techniques, Policies and Case studies*, New Delhi, Concept.
5. Sarin, M, (1982), *Urban Planning in the Third World: The Chandigarh Experience*, London, Manshell.
6. BMRDA, (1996), *Report on the draft regional plan of the Bombay metropolitan region (Parts One to Six)*, Bombay, Bombay Metropolitan Regional Planning Board.
7. UNEP and others (2007), *Liveable Cities: The benefits of environmental planning*, The Cities Alliance, Washington. <http://www.citiesalliance.org/index.html>.

C2	POPULATION AGEING	(24 Hours)
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Demography of Ageing: Concepts and measures of population ageing, overview of regional, national and international trends and projections. Components of population ageing and their inter-relation with population ageing and age structure; Ageing trends and patterns in India.

Social Aspect of Ageing: Social Status and Roles of Elderly, Family Structure, Intergenerational relations, Kinship and family support, Social Security

Living Arrangements of Elderly, Old Age Homes, Social Networks, and Contribution of elderly: “Feminization” of Ageing, Dependency, Gender Dimensions and Discrimination, Widows, elderly abuse, Vulnerability, Legislations to protect elderly in India.

Ageing and Health: Ageing and life expectancy, pattern of mortality, health adjusted life expectancy; Ageing and burden of diseases- burden of chronic diseases, burden of non-communicable diseases, disabilities, injuries, mental health problems, cognition and memory loss.

Ageing and health risk factors -nutrition, diet, health behaviour, physical activities; functional health status and health expectancies. Ageing, health care and health financing: health care utilization, public and private health services availability and accessibility, institutional care, health care costs.

Economic aspects of Population Ageing: Implications of population ageing on labor force, demographic windows, pressures on public finance - government health expenditure, health insurance and health financing for elderly, health care costs, housing, pension and social security.

Ageing policies and programmes: Pensions, Retirement and Social Security Policies for elderly in Asian Countries. National Policies and programmes for elderly in India.

Reading List

1. United Nations (1994), *Ageing and the Family*, United Nations, New York.
2. United Nations (1998), *Economic and Social Implications of Population Ageing*, Department of International Economic and Social Affairs, UN, New York.
3. United Nations (2001): *Living Arrangements of Older Persons: Critical Issues and Policy Responses*. Population Division, Department of Economic and Social Affairs, Special Issue Nos. 42/43, 2001, New York.
4. Bloom, D.E., D. Canning, et.al., (2002): *The Demographic Dividend: A New Perspective on The Economic Consequences of Population Change*. Santa Monica, CA, RAND.
5. Jones,A.M., Rice, N., d’Uva,T.B. and Balia, S.(2007). *Applied Health Economics*. New York: Routledge.
6. Bose, A.B.(2006). *Social Security for the Old*. New Delhi: Concept Publishing Company.
7. Mason, A. (2000). *Population Change and Economic Development in East Asia: Challenges Met, Opportunities Seized*. Stanford: Stanford University Press.
8. Linda J. Waite (ed.) (2004) *Aging, Health, and Public Policy: Demographic and Economic Perspectives*, Supplement to Population and Development Review.
9. Irudaya Rajan, (2007) *Social Security for the Elderly Experiences from South Asia*, Routledge, New Delhi.
10. Prskawetz, Bloom, and Lutz, eds., 2008 *Population Aging, Human Capital Accumulation, and Productivity Growth*, A Supplement to Population and Development Review.

C3	BIOSTATISTICS	(24 hours)
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- 1. Introduction and Overview**
Definition of epidemiology, historical context and contributions
- 2. Measuring Health and Disease**
Incidence, prevalence rates, attack rates, risk rates, odds ratios, absolute and relative risk.
- 3. Epidemiological Study Designs**
Ecological, Cross-Sectional, Case-Control, Cohort Studies, Randomized Intervention Studies.
- 4. Issues in Epidemiology**
Association, Causality, Causal inference, Errors, Bias, Validity, Generalizability, Confounding, Exposure Association.

5. **Clinical Trails**
Phase I, II, III, and IV trails
Randomized Control trails
Ethical Issues
6. **Modeling of Infectious Disease Process**
Infectious diseases of human – malaria, tuberculosis, Hepatitis, HIV/AIDs
Deterministic modeling of infectious diseases
7. **Probit and Survival Analysis**
Concepts and definition
Survival analysis - Kaplan-Meir, Life table method, Mantel-Haensal, method, Cox-proportional hazards method. Dose response analysis.

Essential Reading List

1. Beaglehole, R., R. Bonita, and T. Kjellstrom, (1993). *Basic Epidemiology*, WHO.
2. Breslow, N.E. and N.E. Day, (1980). *Statistical Methods in Cancer Research*, Volume I. Lyon: International Agency for Research on Cancer
3. Breslow, N.E. & N.E. Day, (1987). *Statistical Methods in Cancer Research*, Volume II. Lyon: International Agency for Research on Cancer.
4. Kirkwood ,B. and J. Sterne (2003). *Essential Medical Statistics*, 2nd edition, Blackwell Science Ltd.
5. Lee Elisa, T., (1992). *Statistical Methods for Survival Data Analysis*, 2nd edition, John Wiley & Sons, New York.
6. Rockett, R.H. Ian, (1999). Population and Health: An Introduction to Epidemiology, Second Edition, *Population Bulletin*, Vol. 54(4), A Publication of the Population Reference Bureau, Washington.

Suggested Reading List

1. Finney, D.J., (1971). *Probit Analysis*, Cambridge University.
2. Ghys, P.D., T. Brown, N.C. Grassly, G. Garnett, K.A. Stanecki, J. Stover and N Walker, (2004). The UNAIDS Estimation and Projection Package: A software package to estimate and project national HIV epidemics, *Sexually Transmitted Infections*, 80: i5-i9.
3. Mould, Richard,F.,(2005). *Introductory Medical Statistics*, 3rd Ed. Overseas Press, New Delhi.
4. Parmar, Mahesh K.B. and Machin David, (1995). *Survival Analysis: A Statistical Approach*: John-wiley & sons, New York.
5. Pocock, Stuart J., (1983). *Clinical Trials: A practical approach*, John Wiley & Sons.
6. Rosner, Bernard, (2000): *Fundamentals of Bio-statistics*, Duxbury Thomson Learning.
7. Thomas, C. Timmreck, (1998). *An Introduction to Epidemiology*, Jones and Barlett Publishers International, London.
8. Trottier, Helen and Philippe, Pierre, (2001). Deterministic modeling of infectious Diseases: Theory and methods, *The International Journal of infectious Diseases*, Vol. 1(2).
9. Walker, N., J. Stover, K.A. Stanecki, A Zaniewski, N. Grassly, J Garcia-Calleja and P.D. Ghys, (2004). The workbook approach to making estimates and projecting future scenarios of HIV/AIDs in countries with low level and concentrated epidemics, *Sexually Transmitted Infections*, 80: i10-i13.

C4	BUSINESS DEMOGRAPHY	(24 hours)
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Population as a marker for consumer goods and labour market. Population dynamic and its implications for change in the size and composition of market. Relevance of applied demography to business organization, Importance of the subject in the context of globalization and privatization. -

Basic concepts in marketing: Definition of market, evolution of marketing, role and function of marketing, importance of products, place, prices and promotion in marketing activities. Marketing Strategies, need to understand life style and consumer behavior, need to understand life style and consumer demographics–importance in market research.

Demographic data base for market research: Population size, growth rate, sex ratio, age structure, its composition by educational level, occupation, living condition and other socio-economic characteristics. Household size and composition, Relevance of these aspects for the market for different products.

Spatial Distribution of population and Market location: Geographic methods of Market analysis, update methods, geo-demographics systems, retail potential measures, site analysis process, product planning and market segmentation.

Market Survey, Marketing Research Process. Problem formulation, research design, sampling, data collection methods, analysis and interpretation of data, case studies for some products.

Market forecasts, population projections, projection for smaller areas and for market segments, family life cycle, household projections, future market of products related to food, education, housing and health etc. Market for products and activities related to children, youth and aged. Gender specific needs.

Essential Reading List

1. Cheryl Russell, (1984): The Business of Demographics, Population Bulletin (PRB) Vol 38, No 3.
2. Thomas W. Merrick and Stephen J. Tordella, (1988): Demographic : People and Markets. population Bulletin (PRB) Vol 43, No 1, pp 48.
3. Singh Nirmal, Devendra Thakur, (2003): marketing Principles and Techniques, Second Revised edition, Deep and Deep Publications Private Limited. Chapter 5, pp 53-76.
4. Kotler Phillips and Gary Armstrong, (1995): Principles of marketing, 6th Edition., Prentice-Hall of India Private limited.

Suggested Readings List

1. S.L.Rao, (1996): Consumer Markets in India- The Second Phase of Consumer Demand, Paper Presented at the FICCI Seminar of Consumer Markets in India, New Delhi
2. Kulkarni Sumati, (001): Utilization of Demographic Database to understand consumer market in India, paper presented at business demography session at the annual meeting of the PAA, Washington D.C
3. Pol, Lousi B, (1987): Business Demography: A Guide for Business Planners and Marketers, (West porter: Greenwood Press), Westporter
4. Boyel, H.R; West Fall and S.Stasch, (1988): Marketing Research: Text and cases, Homewood Illionis: Richard Irwin Inc. IllLionis and Delhi: All India Traveler Bookseller Chapters 1 and 20

5. NCAER, India Market Demographics Report, 1998
6. Monga G.S. and Shalini Anand (2003): Marketing management.
7. Kotler Phillip, (1972): Marketing Management, Analysis, Planning and Control, Prentice-Hall of India Private limited, Second Edition, New Delhi, pp 165-225.

C5	OPERATION RESEARCH METHODS	(24 Hours)
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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) (X^2 , 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
11. Critiques to OR proposal

Essential Reading List

1. Fisher, Andrew A., James R. Foreit, J. Laing, J. Stoeckel and J. Townsend 2002: Designing HIV/AIDS Intervention Studies-An Operations Research Handbook, Population Council, New York.
2. Foreit, James R. and Tomas Frejka 1998: Family Planning Operations Research-A Book of Reading, Population Council, New York
3. Kish, Leslie 1965: Survey Sampling, New York, John Wiley and Sons.

C6	BASIC HEALTH ECONOMICS	(24 Hours)
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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.

*Rexford E. Snterre and Stephen P. Neun, Health Economics: Theories, Insights and Industry Studies, Thompson South – Western, 3rd Edition (614, San/Hea, 073226) Note: 4th Edition is out in 2007 (ISBN: 032432068X; ISBN13: 9780324320688)

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.

*Drummond MF, Sculpher MJ, Torrance GW, O'Brien B, Stoddart GL, eds. Methods for economic evaluation of health care programmes, Third Edition, Oxford University Press, 2005. (614 Dru/Met)

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.

*Drummond MF, Sculpher MJ, Torrance GW, O'Brien B, Stoddart GL, eds. Methods for economic evaluation of health care programmes, Third Edition, Oxford University Press, 2005. (614 Dru/Met)

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

*O'Donnell O, Doorslaer E v, Wagstaff A and Lindelow M. Analyzing Health Equity Using Household Survey Data, A Guide to Techniques and Their Implementation

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

1. Rexford E. Snterre and Stephen P. Neun, Health Economics: Theories, Insights and Industry Studies, Thompson South – Western, 3rd Edition (614, San/Hea, 073226) Note: 4th Edition is out in 2007 (ISBN: 032432068X; ISBN13: 9780324320688)
2. Drummond MF, Sculpher MJ, Torrance GW, O'Brien B, Stoddart GL, eds. Methods for economic evaluation of health care programmes, Third Edition, Oxford University Press, 2005.
3. O'Donnell O, Doorslaer E v, Wagstaff A and Lindelow M. Analyzing Health Equity Using Household Survey Data, A Guide to Techniques and Their Implementation
4. Gold Marthe R, Joanna E Siegel, Lousie B russel, and Milton C Weinstein, 1996, Cost effectiveness in health and medicine, new York: Oxford University Press.
<http://www.sciencedirect.com/science/handbooks/15740064>

Reading List: Suggested

1. Zweifel and Breyer, 1997, Health Economics, Oxford University Press)
2. Health economics: 3rd Edition by Phelps
3. The economics of health and health care, 2nd edition by Folland, Goodman and Stono (FGS)
4. Handbook of Health Economics (Anthony J. Culyer and Joseph P Newhouse eds., Elsevier Science, 2000: Available online at:
5. Culyer A J and J P Newhouse, 2000, The state and scope of health economics, Handbook of Health Economics, Volume 1A, Eds. Culyer and Newhouse, Elsevier, 2000, pages 1-7.

Recommended Journal:

1. Health Policy and Planning
2. Health Policy
3. Inequalities in Health
4. Bulletin of the World Health
5. The Lancet

E. & O. E.