

# SYLLABUS

UNDER  
SKILL DEVELOPMENT CENTRE

# POST GRADUATE DIPLOMA IN PUBLIC HEALTH

**DURATION- ONE YEAR**

Effective from the Academic Session 2021

**SIDHO-KANHO-BIRSHA UNIVERSITY  
PURULIA, WEST BENGAL**

## Prospect of Diploma in Public Health

Public health is all about taking a broad view of society to prevent illness and improve wellbeing. In contrast to general practitioners, hospital doctors, and nurses who primarily look after individual patients on a case-by-case basis, the public health professionals are more concerned about the society as a whole, not individual.

In general there are three main areas of public health:

1. **Health improvement and wellbeing** – to involve in campaigns in order to encourage healthy dietary habits, physical exercise, every day hygiene, and to persuade people to get rid of substance abuse.
2. **Healthcare and Equity** – To make sure that everyone has access to the high quality health services and medicines that they need, Health Equality and Health equity to be practices in order to avoid any kind of Health Disparity in the society.
3. **Health protection** - To prevent the outbreak of epidemics, plan responses to emergencies, natural calamities, and for food safety and security.

Jobs are available, and particularly in the Post-COVID world more jobs will be available, in local authorities and government, non-government organizations, private healthcare companies, charities, and in higher education/research. Roles are varied - encompassing everything from school nurses and substance misuse workers to public health consultants and epidemiologists - meaning there is no standard route into this field. The prospect is varied and multi-disciplinary.

## **PUBLIC HEALTH**

### **1<sup>ST</sup> SEMESTER**

#### **SDPHET101: Introduction to Public Health**

#### **Paper 101: Fundamentals of Public Health (PH)**

##### **A. Introduction of Public Health: 2 credits**

###### **Course Objectives:**

- To introduce students to the discipline of public health
- To give an overview of the methods of prevention and health promotion
- To understand the determinants and measures of disease and health related states
- To understand the status of health and disease at global and national levels

###### **Course outline:**

1. Health, its determinants and public health
2. The science and practice of public health
3. History of public health
4. Disease, its measures and prevention
5. Measures of disease in population
6. Global health and epidemiological transition
7. Sources of global health data
8. Functional organisation of the public health system in India
9. Evolution of global public health initiatives : primary health care, selective primary health care, MDGs, SDGs

###### **Suggested Reading:**

- 1) Oxford textbook of Public Health Ed. Roger Detels, James McEwen, Robert Beaglehole, and Heizo Tanaka Oxford University Press (OUP) 4th Edition: 2002.
- 2) Public Health at the Crossroads – Achievements and Prospects. Robert Beaglehole and Ruth Bonita 2nd Edition Cambridge University Press
- 3) Maxcy-Rosenau-Last Public Health & Preventive Medicine, Fourteenth Edition Ed Robert Wallace, MD, et al.
- 4) Epidemiology and Management for Health Care: Sathe, et al. Popular Prakashan, Mumbai,
- 5) International Public Health: Diseases, Programs, Systems, and Policies by Michael Merson, Robert E Black, Anne J Mills - Jones and Bartlett Publishers.
- 6) Preventive and Social Medicine, K Park, Bansaridas Bhanot Publishing House.

##### **B. Population and Health: 1 credit**

### Course objectives

- To familiarize students to the fundamentals of population studies and its links with health
- To impart practical knowledge and skills of demographic and health data sources and practical use of data

### Course outline

1. Introduction to population and health: definition, scope, Concept of demography, Population components, Demographic transition theory
2. Sources of demographic and Health data : Population census, Vital registration system, Sample Registration System, National Family Health Survey (NFHS), District Level Health Survey (DLHS), Annual Health Survey(AHS), National Sample Survey Organization (NSSO) (demonstrate the practical use of the data and its advantages and limitations.)
3. Population composition: Levels and trends in the sex and age structure of the population of world and developed and developing countries
4. Concepts, definition, determinants and measurement of fertility, mortality and migration, population projection
5. Life tables: Concept, importance and methods
6. Population policy: Population policy linkages with health issues

### Suggested reading:

- 1) The Springer Series on Demographic Methods and Population Analysis: Ed.: **Land**, Kenneth C. "The Plenum Series on Demographic Methods and Population Analysis" Durham, NC 27708-0088, USA , 2014
- 2) Population Studies and Development from Theory to Fieldwork: **Petit**, Véronique (Ed.) Springer International Publication AG 2018
- 3) Handbook of Population: Ed. Dudley Poston and Michael Micklin. Springer publication, Edition one, 2006
- 4) Principles of population Studies: Asha Bhende and Tara Kanitkar, Himalaya Pub, Houses, Mumbai, 2011
- 5) The methods and Materials of Demography (Second edition): Siegel, Jacob S., and David A. Swanson, : Elsevier Academic Press, San Diego, 2004

### C. Ageing & Society: 1 credits

#### Course Objectives:

- To provide an overview of demographic, social, psychological and health issues related to population ageing
- To expose students to the health status of older adults, disease and disability burden and challenges to public health due to population ageing

**Course outline:**

1. Demographic trends and epidemiological description of the major health problems and issues for older populations and their implications for public health
2. Theories of ageing and biology of ageing : Identify the components of usual versus successful aging, behavioural, social and environmental factors that influence successful ageing
3. Chronic conditions and Disability in older adults: their implications for public health, functional decline, Fall prevention
4. Nutrition of older adults : frailty , obesity in older adults
5. Health care services for older adults: strategies to prevent diseases and promote health in elderly
6. Dementia, Alzheimers and other mental health conditions in older adults : its implications for families and society , Alzheimer's Disease and Care giving
7. Socio-cultural change and social care needs of older adults : Historical shifts in position, , family care giving, current social care giving needs of ageing adults
8. End of life care
9. Policy and programmes for welfare of older adults: Policies and programs from India and around the world that support healthy ageing will be examined.

**Suggested reading:**

- 1) Prohaska, T.R. Lynda A. Anderson, Robert H. Binstock (eds) 2012. Public Health for an Aging Society. USA: JHU Press. ISBN: 9781421404356
  - 2) Whitbourne S.K. 2001. Adult development and ageing. Biopsychosocial perspectives John Wiley & sons.
  - 3) Hofer S.M. Duane F Alwin. Ian Stuart Hamilton . 2011. An introduction to gerontology. UK: Cambridge University Press.
  - 4) Scott M. 2008. Handbook of cognitive ageing. Interdisciplinary perspectives. USA: Sage publications .
  - 5) Albert S.M. 2014. Public Health and Aging: An Introduction to Maximizing Function and Well-being. USA: Springer publication
  - 6) Schweda, M. Larissa Pfaller, Kai Brauer, Frank Adloff, Silke Schocktan. 2017. Planning later life: bioethics and public health in ageing societies, : Routledge
- National Research Council (US) Panel on Race, Ethnicity, and Health in Later Life; Anderson NB, Bulatao RA, Cohen B, editors. Critical Perspectives on Racial and Ethnic Differences in Health in Late Life. Washington (DC): National Academies Press (US); 2004. 17, Behavioral Health Interventions: What Works and Why? Available from: <https://www.ncbi.nlm.nih.gov/books/NBK25527/>

## SDPHET102: Human Biology and Public health perspective

### Paper 102: Human Biology and Public health perspective

#### Course objectives:

- To provide an understanding about the structure and function of the humanbody

#### A. Human Biology: 2 credits

##### Course outline

1. Human life cycle : growth and development, sexuality and conception
2. Cells and tissues of the human body
3. Homeostasis
4. Structure and function of organs and systems and related disorders: musculo- skeletal, cardiovascular, respiratory, digestive, urino-genital, lymphatic, nervous system and sense organs

##### Suggested reading:

- 1) Textbook of Medical Physiology : A. C. Guyton, Prism Books Pvt. Ltd., Bangalore,
- 2) Anatomy and Physiology for Nurses : R.S. Winwood, J.L. Smith, Education Academic and Medicinal Publishing Division of Hodder and Stoughton, London,
- 3) Atlas of Anatomy : Casey Horton, Marshall Cavendish Books, London,
- 4) Basic Clinical Physiology : J.H. Green , Oxford University press, Delhi
- 5) Samson Wright's Applied Physiology : Keele, Neil, *et.al.* (Ed) Oxford University press, Delhi
- 6) Lehninger, Principles of Biochemistry.

#### B. Public health Perspective: 2 credits

##### Course outline

1. Reproductive health definition and its significance, Problem and strategies
2. Sexually transmitted disease and its prevention
3. Infertility: causes and remedies
4. Assisted reproductive technologies: IVF, ZIFT, GIFT
5. Artificial insemination, Surrogate mother and embryo donation
6. Adolescence: Physical and Mental problems, Drug and alcohol abuse

##### I. Women's , maternal Health

1. Burden of reproductive ill-health: unintended pregnancies, unsafe abortions, MTP act, non sexually transmitted infections, infertility, violence against women
2. Early human development and public health implications, Gametogenesis, fertilization, implantation, Fetal development, Preconception period , maternal and paternal risk factors for maternal and fetal outcomes , Developmental origins of adult diseases
3. Antepartum – antenatal care and significance, physiological changes during pregnancy,

complications of pregnancy, high risk pregnancy

4. Intrapartum- stages of labour and delivery, components of labour, danger sign and management of labour complications of labour and delivery
5. Postpartum – care, complications of postpartum
6. Maternal morbidity and mortality; levels and causes of maternal mortality
7. Contraception, sterilization, population control

## II. Child Health

1. Levels and trends in child mortality , major causes of neonatal, infant and child mortality and public health interventions
2. Major causes of neonatal mortality; Preterm births, low birth weight and public health interventions ; birth defects
3. Common morbidities among young children; lower respiratory tract infections, diarrhoea,
4. Immunization; coverage, factors
5. Infancy and child hood : Growth and development; physical, motor, cognitive, psycho-social and language development
6. Child nutrition
7. Policy and programmes: the main national and international interventions for prevention of reproductive and childhood/adolescent morbidity and mortality, including RMNCHA+, JSSK, RBSK, IYCF, IMNCI, maternity benefit schemes

### Suggested reading:

- 1) Kotch Jonathan B. Maternal and Child Health: Programs, Problems, and Policy in Public Health 3rd Edition Jones & Bartlett Learning; 3 edition (May 11, 2012) ISBN-13: 978-1449611590
- 2) Ehiri John(Ed.) Maternal and child health: Global challenges, programmes and policies . Springer-Verlag US 2009
- 3) Dutta D C. Textbook of Obstetrics: Including Perinatology and Contraception. Jaypee Brothers Medical Publisher Ltd. New Delhi . 8th Edition 2016
- 4) Dutta D C Textbook of Gynaecology . JAYPEE BROTHERS MEDICAL PUBLISHERS

### (P) LTD New Delhi 6th edition 2013

- 5) Behrman RE and Kliegman R. Nelson's textbook of paediatrics. Elsevier Inc Publication 2016 ISBN: 978-1-4557-7566-8
- 6) Ghai O P. Essentials of Paediatrics. CBS Publications and Distributions Pvt Ltd. New Delhi 8th Edition 2013

## SDPHET103: Nutrition

### A. Basic Nutrition: 2 credits

#### Course objectives

- To understand the role of nutrients in the physiological processes

#### Course outline

1. Introduction to nutrition, inter relationship between food, nutrients & health. Nutritional Status. Common terms related to nutrition.
2. Energy: Introduction, Physiological fuel value,. Basal Metabolic Rate, Total Energy Expenditure, Specific dynamic action, Respiratory Quotient
3. Carbohydrates: Classification, function, sources, RDA & deficiency
4. Fibre – types, role in health and diseases.
5. Lipids: Classification of fatty acids, Function, sources, RDA, & deficiency. Saturated fat, MUFA, PUFA, essential fatty acids, prostaglandins. Cholesterol – introduction, sources, requirement.
6. Proteins: Classification of amino acids. (essential & non- essential), functions of protein, sources, RDA & Deficiency. Evaluation of the protein quality – biological value, protein efficiency ratio, nitrogen retention, net protein utilization.
7. Vitamins: Classification – Fat soluble & water soluble, function, sources, RDA & deficiency.
8. Minerals: Major minerals – Ca, P, Mg, Na, K. Minor minerals – Fe, I, F, Zn, Co, Mn, Se, S, Cr., Function, sources, RDA & deficiency.
9. Water: Role of water in the body, its requirement, extracellular & intracellular fluid, maintenance of water balance

#### Suggested Reading:

- 1) Mann, J. and Truswell, S. eds., 2017. Essentials of human nutrition. Oxford University Press.
- 2) Eastwood, M.A., 2013. Principles of human nutrition. Springer.
- 3) Bender, D., 2014. An introduction to nutrition and metabolism. CRC Press.

### B. Public Health Nutrition: 2 credits

#### Course objectives

- To understand the global and national burden of nutritional deficiencies
- To identify public health nutrition interventions
- To study the impact of nutritional policies and programmes and nutritional status of the population



### Course outline

1. Introduction to public health nutrition
2. Nutrition Transition: Demographic, economic transition, poverty alleviation, food consumption patterns
3. Undernutrition: global and Indian prevalence of undernutrition, risk factors consequences
4. Micronutrient deficiency disorders: prevalence, risk factors, Interventions that worked globally, lessons learnt.
5. Overnutrition: Evolutionary principle, Obesity: prevalence and risk factors: Physical activity and inactivity, screening of those at nutritional risk, Life style diseases: Interventions that worked globally, lessons learnt.
6. Guidelines for prevention of non- communicable diseases
7. Food Security: Factors affecting food security, economics food security and community development, Food security bill

### Suggested reading:s

- 1) Vir S.C., (2015), Public health nutrition in developing countries (Part I and II), Woodhead Publishing India Pvt, Ltd.
- 2) WHO and Chan, M., (2011) 'Haemoglobin concentrations for the diagnosis of anemia and assessment of severity', Geneva, Switzerland: World Health Organization, Geneva pp. 1–6.
- 3) Cashman, K. D., Sheehy, T., & O'Neill, C. M. (2018). Is vitamin D deficiency a public health concern for low middle income countries? A systematic literature review. European journal of nutrition, 1-21.

## SDPHET104: Biostatistics

### A. Theory: Credits 2

#### Course objectives

- To introduce students to the use of bio-statistics in health sciences
- To understand the role of biostatistics as a supportive discipline of epidemiology

#### Course Outline

1. Introduction to biostatistics: Descriptive and Inductive statistics
2. Describing data: Variables: Nominal, Ordinal and Interval scale variables. 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; Graphical presentation of data
3. Introduction to the concept of probability, events; exhaustive, mutually exclusive events; laws of probability, additive and multiplicative laws of probability and its

properties

4. Discrete probability distributions: Binomial probability distribution and Poisson distribution and their properties. Continuous probability distribution. Introduction to normal distribution and its properties
5. Sampling methods: Type of sampling, Probability sampling, Non-probability sampling, sample size determination
6. Correlation: Concept of correlation, Pearson correlation coefficient, and its properties; Spearman ranks correlation coefficient
7. Concepts in Inductive statistics: Population, sample parameter, and statistic. Sampling distribution of mean and standard error. Statistical hypothesis, critical region, level of significance, and two types of errors.
8. Test of Significance: 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
9. Nonparametric tests: One sample test, two sample tests, linear regression, multiple linear regressions, one way ANOVA and two way ANOVA

## **B. Biostatistics practical: 2 Credits**

### **Course Objectives**

- To train students in use of statistical software
- To explain use of data in decision making
- To make students aware of pitfalls in statistical analysis

### **Course outline**

1. Introduction to statistical software
2. Working with data: Computing variables, recoding variables, sorting data, grouping data, ensuring quality of data
3. Exploring data: Descriptive statistics, Frequencies, compare means, frequency tables and crosstabs, multiple response analysis
4. Analysing data: Pearson correlation, The Chi-Square Test of Independence, comparing means: One sample t tests, Paired t tests, Independent samples t tests, and One-way ANOVA
5. Multivariate analysis: Linear regression, logistic Regression analysis

### **Suggested reading:**

- 1) Statistics for Social sciences: T. Rajaretnam, Sage publication. New Delhi 2016
- 2) Fundamentals of Statistics (Seventh Edition): S.G. Gupta. Himalaya Publication, Mumbai, 2017
- 3) Introduction to Biostatistics and Research Methods(Fifth Edition): P.S.S. Sundar Rao, J. Richard, Prentice Hall, New Delhi, 2012
- 4) An Introduction to Biostatistics: A manual for students in Health Sciences: P.S.S. Sundar Rao, J. Richard Prentice Hall, New Delhi, 1996
- 5) Bio-Statistics: A foundation for Analysis in the Health Sciences: Daniel, W.W.,

John Wiley and Sons Pub., Canada, 1991.

- 6) Bio-Statistics: A Manual of statistical methods for use in the Health, Nutrition and Anthropology: K. Vishwas Rao, Jaypee Brothers Medical Pub., New Delhi, 1996.

## SDPHET105: Research methodology and techniques

### A. Quantitative Research Methods: 1 credit

#### Course objectives:

- To introduce students to quantitative research methods in public health including issues of ethics and biosafety
- To train students in the method of analysis of data and report writing. The information from this course will be subsequently used for planning health interventions

#### Course outline:

1. Types of research; steps in conducting research
2. Ethics in research
3. Survey methods and their application to public health research
4. Survey design and planning, sampling, construction of questionnaire,
5. Data collection , analysis
6. Report writing

#### Suggested reading:

- 1) Health Research Methodology: A guide for training in research methods. Second Edition. WHO, 2001.
- 2) Kothari, C.R., 1990. Research Methodology: Methods and Techniques. New Age International. 418p.
- 3) John Creswell (2013). Research Design: Qualitative, Quantitative, and mixed methods approaches. Fourth edition, Sage Publications
- 4) ICMR, 2016 Ethical Guidelines for Biomedical Research on Human Participants, ICMR, New Delhi.

### B. Qualitative Research Methods: 1 credit

#### Course objectives:

- To orient students about use of various qualitative data collection methods for use in public health research.
- To introduce various interpretive analytic approaches, explore their use, and guide students in applying them to data.
- To introduce computer software used for data analysis

#### Course outline

1. Foundation of qualitative research and epistemology

2. Approaches in qualitative research: Substantive theory, Grounded theory approach, interpretivist approach, Role of theory in qualitative health research
3. Research Designs: Conceptual framework, Pure designs, mix-methods designs
4. Introduction to Qualitative data collection methods
  - a. Interview
  - b. Focus Group Discussion
  - c. Observation
  - d. Case Study
  - e. Participatory methods
5. Sampling in qualitative research: Sample size, sample selection techniques,
6. Quality Control of qualitative data: setting standards, judging quality, validity and credibility
7. Analytic approaches, methods, and techniques: Principles of analysis, Steps in analysis; thematic analysis, content analysis, narrative analysis,
8. Computer assisted applications for qualitative analysis and Presenting, report writing and paper writing using qualitative data

**Suggested reading:**

- 1) Ulin P, Robinson E, Tolley E. *Qualitative Methods in Public Health : A field guide for Applied Research*, Jossey Bass Pub, 2005
- 2) Russell Bernard H., Gery W. Ryan *Analyzing Qualitative Data: Systematic Approaches*, SAGE Publications, 2010.
- 3) Green J, Thorogood J, *Qualitative methods for Health research*, Sage Pub, 2004
- 4) Catherine Pope, Nicholas Mays, *Qualitative Research in Health Care*, John Wiley & Sons, 2008
- 5) David Silverman *Interpreting Qualitative Data: Methods for Analyzing Talk, Text and Interaction* SAGE Publications, 2006
- 6) Carol Grbich Sage Pub, *Qualitative Research in Health* 1999
- 7) Matthew B. Miles, A. Michael Huberman, *Qualitative Data Analysis* Sage Pub,

**C. Nutrition Methods and Techniques: 2 credits**

**Course objective:**

- To orient students to the research methods in the field of public health nutrition.
- To develop their skills in nutrition research methods and to update them with the current techniques in nutrition research.

**Course outline:**

1. Principles of nutritional epidemiology
2. Nutritional Survey, Surveillance, Monitoring and Evaluation
3. Tools and Techniques: Anthropometry

- a. Height and weight measurements
  - b. BMI, Z score, WHO software's: Anthro, Anthroplus
  - c. Circumference measurements- MUAC cut offs: SAM , MAM , Old classification in comparison with new. Other circumferential measurements
  - d. Skinfold measurement
  - e. Comparison to standards
  - f. Technical error of measurement
  - g. Growth charts- growth monitoring, Types of charts, target height, percentiles, deriving third percentile.
4. Dietary and Nutrient intake analysis – Energy expenditure, energy balance, Diet recall, Food frequency, Weighment method, comparison with standards; Units of

**measurement in foods, Standardisation of foods for portion sizes, Nutritional questionnaires**

5. Nutritional screens - Physical examinations for clinical signs and symptoms, Biochemical assessment methods, cut offs.
6. Standards for comparison – RDA, NCHS standards, ICMR standards

**Suggested reading:**

- 1) Willett, W. (2012). Nutritional epidemiology. Oxford University Press.
- 2) Margetts, B. M., & Nelson, M. (Eds.). (1997). Design concepts in nutritional epidemiology. OUP Oxford.
- 3) Frisancho, A. R. (1990). Anthropometric standards for the assessment of growth and nutritional status. University of Michigan Press.
- 4) Cohen, B. E. (2002). Community food security assessment toolkit (pp. 02-013). Washington, DC: US Department of Agriculture, Economic Research Service.
- 5) Billig, P., Bendahmane, D., & Swindale, A. (1999). Water and sanitation indicators measurement guide. Food and Nutrition Technical Assistance Project, Academy for Educational Development.
- 6) World Health Organization. (1995). The use and interpretation of anthropometry: report of a WHO expert committee. World Health Organ Tech Rep Ser., 854, 312-409.

## PUBLIC HEALTH

### 2<sup>nd</sup> SEMESTER

#### SDPHET201: Disease, Immunity and Vaccination

#### A. Infectious Diseases and Control Programmes: 2 credits

##### Course objectives:

- To understand the biology of pathogens and the mechanism of action of **antibiotics and antivirals**
- To understand the pathology, pathogenesis, clinical manifestation, mode of transmission, prevention and control of diseases of bacterial and viral etiology
- To understand the principles of infectious disease control programmes
- To orient students about the national disease control programmes,
- Critical evaluation of various disease control programmes

##### Course outline

1. General overview of infectious diseases and their impact in developing countries
2. Epidemiology of infectious diseases
3. Structure of prokaryotic cell, pathogenic modifications
4. Anti-microbial agents, drug resistance
5. Infectious disease control programmes (including agent biology, epidemiology, pathogenesis and pathology, clinical presentation and management; public health strategies and mechanisms)
  - a. Vaccine preventable diseases: TB, polio, diphtheria, tetanus, measles.
  - b. Respiratory diseases: Tuberculosis, leprosy, ARI's
  - c. Intestinal : Diarrhoea, typhoid, worm infestations
  - d. Contact : STIs and AIDS
  - e. Vector borne : malaria and filaria, JE, dengue, leptospirosis,
  - f. zoonotic : plague and rabies
6. Neglected tropical diseases
7. Basic principle of control and destruction of microorganisms: Sterilization, Disinfection. Antibiotics, Pasteurization

##### Suggested reading:

- 1) Duguid et al. Textbook of Medical microbiology
- 2) Javetz and Melnick : Adelbergs Medical Microbiology
- 3) World Health Organization : Report on infectious diseases, and Report on Multidrug resistance , World Health Organization, Geneva
- 4) Principles and Practice of Medicine : Davidson, Edward, Bouchier et. Al., Pearson Professional Ltd. London
- 5) Biology of Disease : Jonathan Phillips, Paul Murray, Blackwell Science Ltd. Australia,

- 6) Human Virology : A textbook of Students of Medicine and Microbiology, Dentistry, Leslie Collier, John Oxford, Oxford University Press, Tokyo
- 7) Textbook of Medicine : Cecil, Bennett, et al., Harcourt Brace Jovanovich Inc. U.S.A.
- 8) Nelson K E : Infectious disease epidemiology : theory and practice
- 9) Giesecke J : Modern infectious disease epidemiology
- 10) National Disease Control Programmes websites and class handouts

## B. Non-communicable Diseases, Injuries and Control Programmes: 1 credit

### Course Objectives:

- To give an understanding of the pathophysiology of major NCDs. Classification, clinical manifestations, diagnosis and, treatment.
- To understand the risk factors for common NCDs, and methods of disease control and health promotion
- To give an understanding of the pathophysiology of some common mental health problems

### Course outline:

1. Epidemiology of NCDs, risk factors, global status, prevention and control, global initiatives
2. National strategies for control of NCDs (epidemiology, pathophysiology including biochemical and genetic parameters, cardinal signs, clinical and diagnostic

### features (with special emphasis on biochemical parameters), treatment(emphasize pharmacological component) prevention and control

- a. Diabetes
  - b. Cardiovascular diseases
  - c. Asthma and COPD
  - d. Cancer
  - e. Musculo-skeletal conditions
3. Neurological disorder: Alzheimer's, Parkinson's, Autism, Schizophrenia, Huntington Chorea
  4. Tobacco, obesity and other risk factors for NCDs
  5. Unintentional Injuries- prevention and control; global and national strategies
  6. Introduction to mental health, health promotion, National Mental health policy of India
  7. Epidemiology of Major Mental Disorders burden of mental health morbidities, psychosocial, etiology of mental and behavioural disorders; depression, schizophrenia, Alzheimer's, Parkinson's, senile dementia, suicides

### Suggested reading:

- 1) Class handouts
- 2) World Health Organization (2016). Global Report on Diabetes. WHO Press, Switzerland
- 3) National Centre for Disease Control Director General of Health Services Ministry of Health and Family Welfare, GOI 2017. Training Module for Medical Officers for Prevention, Control and Population Level Screening of Hypertension, Diabetes and Common Cancer (Oral, Breast and Cervical). National Programme for Prevention and

Control of Cancer, Diabetes, Cardiovascular Diseases and Stroke

- 4) World Health Organization 2014: GLOBAL STATUS REPORT on Non-communicable Diseases
- 5) World Health Organization 2013: Global Action Plan for the Prevention and Control of Non-Communicable Diseases, 2013-2020, WHO, Geneva, Switzerland
- 6) Standard Treatment Guidelines: Hypertension Screening, Diagnosis, Assessment, and Management of Primary Hypertension in Adults in India- Quick Reference Guide May 2016 Ministry of Health and Family Welfare, Government of India
- 7) Prevention of cardiovascular disease: guidelines for assessment and management of total cardiovascular risk: World Health Organization. ISBN 978 92 4 154717 8 (NLM classification: WG 120) © World Health Organization 2007

### C. Immunology and vaccination: 1credit

#### Course objectives

- To provide a basic knowledge of the immune response and its involvement in health and disease

#### Course outline

1. Introduction, basic concepts in immunology, components of the immune system
2. Innate immunity: Different lines and layers of defense, The complement system
3. Adaptive immunity- humoral and cell mediated: The structure of a typical antibody molecule, Interaction between the antibody and specific antigen; Antigen processing and presentation
4. Cytokines and immunomodulation Hypersensitivity and allergy
5. Vaccines and Vaccination: immunology of selected infectious diseases of public health importance Applications of immunology in diagnosis and management of common diseases
6. Autoimmune diseases: Multiple sclerosis, Myasthenia gravis, Pernicious anemia, Rheumatoid arthritis, Systemic lupus erythematosus

#### Suggested reading:

- 1) Essential Immunology: - Ivan Roitt, Blackwell scientific publications, London Edinburgh Boston, Australia, 1997.
- 2) Immunology : Janis Kuby, W.H. Freeman and company, U.S.A.1992
- 3) Immunobiology : The immune system in health and disease: J. Travers, current biology pub, New York, 1997.
- 4) Vaccines Prospects and perspectives: Harmindar Sing, Rajesh Bhatia, Forwardpub. Co., Delhi, 1993
- 5) Relevant documents and Suggested texts therein from the WHO website
- 6) WHO Technical Publications: Vaccines, Human Genetics Program series.
- 7) Harrison's Principles of Internal Medicine 16th Ed.-2005



## SDPHET202: Epidemiology

### A. Introduction to Epidemiology: 2 credits

#### Course Objectives

- To familiarise students on science and methods of epidemiology
- To understand the applications of epidemiology in public health decision making

#### Course Outline

1. Historical aspects, definition, aim and uses
2. Descriptive epidemiology
3. Risk measurement, Measurement of morbidity and mortality: Incidence, Prevalence, Age-adjustment and survival analysis, use of morbidity and mortality
4. Epidemiological study designs
5. Bias, confounding and interaction
6. Causal association
7. Disease Surveillance

#### Suggested reading:

- 1) Gordis Leon. Epidemiology (Fifth edition) , Elsevier Saunders, 2013.
- 2) Dona Schneider and David E. Lilienfeld. Lilienfeld's Foundations of Epidemiology, Fourth Edition, Oxford University Press, USA, 2015.
- 3) Porta Miquel. A Dictionary of Epidemiology, Oxford University Press, USA, 2014
- 4) Somerville Margaret, et al., Public Health and Epidemiology at a Glance, Second Edition, Wiley-Blackwell, 2016
- 5) Beaglehole. R. Bonita, et. al Basic Epidemiology, 2nd Edition, WHO Publication, Geneva, 2006.
- 6) Spasoff R.A. Epidemiologic Methods for Health Policy, Oxford University Press, 1999
- 7) Barkar, D.J.P., Practical Epidemiology: Churchill pub, Livingstone, 1991.
- 8) Knox E. G. Epidemiology in health care planning: A Guide to the Uses of a Scientific Method, Oxford University Press, USA.

### B. Social Epidemiology: 2 credits

#### Course objectives

- To introduce students to the social determinants of health

#### Course outline

1. Background and History of social epidemiology: glossary of social epidemiology
2. Social determinants of health: socio economic position, education, occupation, ethnicity and health , measurement of determinants, mechanisms and pathways through which income, education, and occupation affect health.
3. Inequalities and Disparities in Health: Poverty, discrimination, vulnerability, income inequality and impact on health outcome, measuring poverty, measuring health inequalities.

4. Ecological perspective in social epidemiology : Social capital, social cohesion, and health, community-level mechanisms/processes through which community social capital contributes to health improvement.
5. Concept of prevention in social epidemiology
6. Public health strategies to reduce health disparities

**Suggested reading:**

- 1) Berkman LF, Kawachi I & Glymour MM. Social Epidemiology. New York: Oxford University Press, 2014.
- 2) Kawachi I, S.V. Subramanian, Daniel Kim. Social Capital and Health, Springer 2007
- 3) Oakes & Kaufman , Methods in Social Epidemiology. Jossey-Bass Pub, 2006
- 4) Gwikel Julie. Social Epidemiology. Columbia University Press, 2006
- 5) Krieger N. Embodying inequality: epidemiologic perspectives, Baywood Pub, 2005
- 6) Marmot M, Richard G. Wilkinson, Social Determinants of Health, Oxford University Press, 2006
- 7) Nambiar Devaki, Arundati Muralidharan The social determinants of health in India: concepts, processes, and indicators. Springer Publication. New Delhi. 2017

**SDPHET203: Gender issue and Health, PH in disasters and outbreak, Environmental and occupational health;**

**A. Gender Issues & Health: 1**

**credit Course objectives:**

- To introduce students to the concept of gender and importance of gender issues **in in public health practice and research and policy planning**

**Course outline:**

1. Concept of gender, distinguish sex from gender
2. Gender as determinant of health
3. Role of biology and sociology in health and health care
4. Gender and health inequities
5. Gender and disability
6. Gender perspective in public health in India:
7. Gender, Sexuality, and HIV/AIDS— social and structural contexts of HIV vulnerability

**Suggested reading:**

- 1) Rieker and Bird (2005) Rethinking gender differences in health: Why we need to integrate social and biological perspectives. Journal of Gerontology. Series B. 60B, II, 40-47.
- 2) Fausto-Sterling, Anne. Sex / Gender: Biology in a Social World. Routledge, 2012. ISBN: 9780415881463
- 3) Morrow, M. (2007). "Introduction: Beyond Gender Matters" and "Our Bodies, Our Selves' in Context: Reflections on the Women's Health Movement in Canada." In Women's Health in Canada: Critical Perspectives on Theory and Policy, edited by **M. Morrow, O. Hankivsky, & C. Varcoe (pp. 3-63). Toronto: University of Toronto Press.**

- 4) Nichols, F.H. (2000). History of the Women's Health Movement in the 20th century. J Obstet Gynecol Neonatal Nurs., 29(1), 56-64.
- 5) Springer, K.W, Hankivsky, O., & Lisa M. Bates, L.M. (2012). Gender and health: Relational, intersectional, and biosocial approaches. Social Science & Medicine, 74(11), 1661-1666.
- 6) Lorber, Judith and Lisa Jean Moore (2002). Women get sicker but men die quicker: Social epidemiology. In Gender and the social construction of illness. Lanham MD: Alta Mira Press, 13-36. 7.
- 7) Bertakis, K.D. et al. (2000). Gender differences in the utilization of health care services. The Journal of Family Practice, 49(2), 147-152:  
<http://www.jfponline.com/purls/Pages.asp?AID=2450>

## B. PH in disasters and outbreaks: 1 credit

### Course objectives

- To introduce students to the nature of various disease outbreak their epidemiology and management

### Course outline

#### Public Health in Outbreaks

1. Disease outbreaks in India
2. Outbreak investigation
3. Epidemic control in India; integrated disease surveillance, legislation for the control of outbreak in India , international health regulations

#### Disaster management

1. Introduction to Natural & Man-made Disasters
2. Disaster Preparedness: Disaster Preparedness Plan , Disaster Preparedness for People and Infrastructure, Role of technology in disaster Preparedness
3. Disaster management: Hazard, Risk and Vulnerability, Concept and Relationship, disaster Risk Reduction, risk Analysis Techniques, People Participation in Risk Assessment
4. Disaster Mitigation: Disaster Mitigation Strategies, Emerging Trends in Disaster Mitigation, Role of Team and Coordination,
5. Rehabilitation, Reconstruction & Recovery
6. Disaster Response : role and responsibilities of different governmental organizations at local, district, state and central level

### Suggested reading:

- 1) Taori, K (2005) Disaster Management through Panchayati Raj, Concept Publishing Company, New Delhi.
- 2) Roy, P.S. (2000): Space Technology for Disaster management: A Remote Sensing & GIS Perspective, Indian Institute of Remote Sensing (NRSA) Dehradun.
- 3) Sharma, R.K. & Sharma, G. (2005) (ed) Natural Disaster, APH Publishing Corporation, New Delhi.

## C. Environmental and Occupational Health: 2 credits

**Course objective:**

- To enable the students to identify the various sources of environmental threats and occupational hazards to health and the ways to manage these threats and hazards so as to prevent related diseases

**Course outline:**

1. Principles of environment health and human ecology
2. Food sanitation and safety
3. 3.Vector and rodent control
4. 4.Waste disposal
5. Environmental pollution : Environment health policy, Current and emerging issues in environment including global warming
6. Occupational health: Hazards at the workplace , Diagnostic criteria of various occupational diseases
7. Workplace safety: Prevention of occupational hazards (including accidentprevention) Legislations related to occupational health, Employees State Insurance Scheme

**SDPHET204: Bioethics, Bio safety and regulations. Public health Economics, Management, Policies and planning**

**A. Bioethics, Biosafety and Regulations 1 credit**

**Course objectives:**

- To introduce students to the ethical principles and practices in public health research
- To introduce students to the existing guidelines

**Course outline:**

1. Introduction to Bioethics – principles and history
2. Clinical research: clinical research designs, clinical trial, conduct and regulation
3. National Ethical Guidelines for biomedical and health research
4. Regulations for medical devices, drug and biological material regulations
5. Publication ethics and regulations – introduction; fabrication, falsification, or plagiarism; ethics in scientific publications, guidelines and best practices of publications, committee of publication ethics
6. Guidelines for biosafety , animal ethics , stem cell guidelines, data sharing policies

**Suggested reading:**

- 1) National Ethical Guidelines for biomedical and health research involving human participants. ICMR, 2017
- 2) Guidelines and e-learning tools of Committee of Publication Ethics

- 3) CDSCO, 2013. Regulations and Guidelines Specific to Ethics Schedule Y & CDSCO-GCP., Available on [www.cdsaindia.in/sites/default/files/02\\_Regulations\\_Dr.Bangaruranjan.pdf](http://www.cdsaindia.in/sites/default/files/02_Regulations_Dr.Bangaruranjan.pdf)
- 4) CONSORT Checklist-CONSORT statement. 2010. Available on [www.consortstatement.org/media/default/downloads/consort2010](http://www.consortstatement.org/media/default/downloads/consort2010)
- 5) The University of Illinois at Chicago. Evidence Based Medicine: PICO. Available on <http://researchguides.uic.edu>.

## **B: Health Systems Management: 1 credit**

### **Course objective:**

- To familiarize students with the challenges of management of health care system in India
- To familiarize students with the principles and techniques of management

### **Course outline:**

1. 1. Health Care Systems in India: health care system includes many sectors or subsystems, types of service providers, sources and methods of financing, and regulations. Model of health care system in India.
2. Challenges in Public health delivery system: with ref to delivery, performance, effectiveness, efficiency, and equity, discussion about the sources of problems and potential solutions
3. 3.Human resource management in public health (HRM) : nature of human resource management, limitations
4. 4. Health management information system (HMIS) : health information sources, challenges in HMIS, advantages and lacunas in current system, recommendations to improve utilization of current HMIS.
5. Brief overview of evolution of management theories and tools and techniques used in management : SWOT, Log Frame, PERT, CPM,

### **Suggested reading:s**

- 1) Fallon L F., Eric J Zgodzinski. Public health management. Sundbury, MA: Jones and Barlett.2009.
- 2) Lieber J.G. , C. McConnel. Management principles for health professionals. Sundbury, MA: Jones and Barlett. 2010.
- 3) Buchbinder, SB, n.H.Shanks. Introduction to health care management. Sundbury, MA: Jones and Barlett. 2007.
- 4) Fallon L F., C.McConnell. Human Resource Management in Health care .Sundbury, MA: Jones and Barlett. 2007.

## **C. Health Economics: 1 credit Course**

### **objectives:**

- To impart knowledge on health care financing health economics including cost-benefit and cost-utility analysis

**Course outline:**

1. Health financing, budgeting and economics
2. Overview on Health financing in Developing countries
3. Health financing concepts such as cost and cost classification
4. Budget management
5. Cost-effective analysis, Cost-benefit analysis and Cost-Utility analysis;
6. Economic analysis reporting for projects
7. Health insurance in India: Private insurance, community based insuranceschemes

**Suggested reading:**

- 1) Essentials of Health Economics: Diane M. Dewar, series editor: Richard Rigelman, United states, 2010
- 2) Health Economics: Peter Zweifel and Friedrich Breyer, Oxford University Press, New York, 1997
- 3) Health Program planning and evaluation A practical, Systematic approach for community Health; L. Michele Issel Jones and Bartlett Publishers, Canada,2009
- 4) Health economics, an International Perspective; Barbara Mcpake, Lilani Kumaranayake and Charles Normand, Routledge, Taylor & Francis Group, New York, 2006
- 5) Health Economics in India (Edited), Prashant Panda and Himanshu Rout, New Century Pubns, 2007

**D. Health Policy and Planning: 1 credit**

**Course objectives**

- To understand health systems and health policy making processes
- To understand the health planning from the perspective of national and global developments concerning health sector.

**Course outline:**

**I. Understanding health policy and systems**

1. Health systems – goals, elements and characteristics, multi-levels of operations, interactions and interrelationships
2. Health systems frameworks: six building blocks of health systems – Governance, Financing, Human resource
3. Overview of the health system in India, human resource,
4. Health system development and strengthening
5. Health Policy and analysis – policy actors, focus and forms of policy analysis –policy analysis triangle

**II. Health Planning**

1. Definition of Planning, Health Planning Models
2. History of Planning in India
3. Development of National Health Policy: Evolution of Indian National HealthPolicies 1981-83, 2001 and 2017
4. Global agendas
  - a. Health for all- Millennium Development Goals- Sustainable Development Goals
  - b. Primary Health Care - Universal health coverage

**Suggested reading:**

- 1) National Health and Research Policy Documents
- 2) Expert Committee Report on Public Health Systems in India 1996
- 3) Collins, C., Green, A., 2014. Valuing Health Systems: A Framework for Low and Middle-Income Countries. SAGE Publications.
- 4) Gupta, R.P., 2016. Health Care Reforms in India: Making Up for the Lost Decades. Elsevier India.
- 5) De Savigny, D., Adam, T., Policy, A. for H., Research, S., Organization, W.H., 2009. Systems Thinking for Health Systems Strengthening, Alliance Flagship reportseries. Alliance for Health Policy and Systems Research.
- 6) Gilson, L., Alliance for Health Policy and Systems Research, World Health Organization, 2012. Health policy and systems research: a methodology reader.

**SDPHEP205: Laboratory and Field based activities**

**A. Laboratory activities: 2 credits**

**Course objective:**

- To demonstrate the diagnostic methods that are used for supporting disease control and environmental health activities and the underlying principles

**Course outline:**

1. Microbiology -Gram staining, microbial growth curve, culture, antibioticsusceptibility testing, ZN staining for AFB, culture and staining
2. Haematological methods; TBC, WBC, RBC count
3. Biochemistry; carbohydrate, protein, lipid estimation; measurement of haemoglobin
4. Immunology: ELISA and Western blotting
5. Environmental measures: Water quality testing; Study of malarial parasite ;vectors
6. Polymerase Chain Reaction; real-time PCR

**Suggested reading:**

- 1) Textbook of Medical Laboratory Technology, P.B. Godkar, Balani publishing, House Bombay.
- 2) Basic laboratory Methods in Medical Bacteriology, WHO, Geneva.
- 3) Basic laboratory Methods in Medical Parasitology, WHO, Geneva

**B. Field study of public health programmes: 2 credits**

**Course objectives**

- To orient students to the organization and delivery of public health activities

**Course outline:**

1. Functional organization of the public health system
2. Infectious disease control programmes

3. Reproductive, maternal and child health services
4. Water sanitation programme and nutritional interventions

**Suggested reading:**

- 1) Rural health care system in India, Ministry of Health and Family Welfare, Government of India
- 2) Common Review Mission Reports (1st to 10th), National Health Mission, Government of India
- 3) Joint Monitoring Mission Reports, World Health Organization, World Bank and Government of India
- 4) Evaluation Reports – International and National



