

MASTER OF PUBLIC HEALTH (MPH)

Brief Description of Modules

Core / Required Modules

CO5101 – Public Health Biology and Ethics @

Module Coordinator: A/Prof Lim Meng Kin

Modular Credits: 4

This module provides students with a basic understanding of the determinants of health (e.g. genetic, psychosocial, behavioural, economic and environmental); explores the impact of global trends including technological advances on the future direction of public health; and examines ethical concerns including resource allocation, the right to life and healthcare, and the tensions between autonomy and community health promotion.

CO5102 – Principles of Epidemiology

Module Coordinator: A/Prof Saw Seang Mei

Modular Credits: 4

This module covers measurement of health and its determinants in populations, from both routine statistics, surveys, cohort studies, case-control studies and clinical trials. Topics include the design and conduct of epidemiologic studies, and mortality & morbidity indices. Illustrates and reinforces the principles taught through interactive sessions on selected topics.

CO5103 – Quantitative Epidemiologic Methods

Module Coordinator: Prof Chia Kee Seng / Dr Tai Bee Choo

Modular Credits: 4

This module will be integrated with various epidemiological study designs. It will cover descriptive and inferential statistics; and introduce the concepts of multivariate analyses.

CO5104 – Health Policy & System

Module Coordinator: A/Prof Lim Meng Kin

Modular Credits: 4

How do healthcare systems around the world compare? How can their performance be improved? This module examines the goals and processes for healthcare reform, and the relationship between health policy and health systems performance. It explores the roles of government and the private sector in healthcare financing and provision, and familiarizes participants with the approaches and options for ensuring optimal health systems performance - including the judicious use of regulation, provider payment mechanisms, and other financial incentives. Through role play and stakeholder analysis, participants will appreciate the complex political processes involved in healthcare reform.

CO5202 – The Environment in Health and Disease

Module Coordinator: Prof David Koh

Modular Credits: 4

This module will provide a basic understanding of the relationship between the environment (including the general environment and workplaces) and health, and how environmental health issues are managed. Global environmental health issues and its management, as well as problems stemming from air water and ground pollutants, toxic waste and its containment will be discussed. Visits will also be arranged to various relevant agencies and departments in Singapore.

CO5203 – Lifestyle and Behaviour in Health and Disease

Module Coordinator: A/Prof Wong Mee Lian

Modular Credits: 4

This module introduces the principles of health education, health promotion and behavioural change. It provides students with the principles and skills to address the social, psychological and environmental factors influencing behaviour and behaviour change. Upon completion of this module, students will be able to apply commonly used theories and models of behavioural change to change behaviour at the individual, group and community level.

CO5210 – Practicum

Module Coordinator: A/Prof Adeline Seow

Modular Credits: 4 *Pre-requisites: CO5102, CO5103*

This module is both a practice as well as a seminar course. Module requirements are fulfilled by planning and conducting a project in cooperation with an advisor over the course of 6 - 12 months, presenting the results of this project, and attending and participating in the series of weekly student presentations held in the second semester. The project should involve collection of primary data, or an in-depth analysis of secondary data, and should be in the student's selected area of specialization.

Clinical Modules

CO5105 – Clinical and Public Health Practice #

Module Coordinator: A/Prof Annelies Wilder-Smith

Modular Credits: 4

This module seeks to integrate all the key lessons in public health in the form of clinical studies. These bedside tutorial sessions focus on infectious diseases of significance in Singapore and the region; and develop skills to diagnose, manage generally, and then to investigate and control the infections.

CO5307– Clinical Occupational Medicine #

Module Coordinator: A/Prof Chia Sin Eng

Modular Credits: 4

This module serves as a refresher course for practising physicians with emphases on the occupational aspects of clinical practice. In addition to lectures,

slide quizzes and tutorials, there will be clinical sessions where participants clerk hospital in-patients and out-patients and present their case histories for class discussion. Participants will also have attachments to an occupational medicine referral clinic in an outpatient setting. There will be in-depth coverage of occupational dermatology and occupational lung disorders. At the end of the module, participants should be able to diagnose, manage, and understand the principles of prevention of occupational diseases.

Elective Modules

CO5201 – Control of Communicable Diseases *2

Module Coordinator: A/Prof Annelies Wilder-Smith

Modular Credits: 4

This module focuses on communicable diseases of public health concern in Singapore and internationally. This course will help students understand prevention, surveillance and control of communicable diseases in industrialized and developing countries. Vector-borne diseases (in particular dengue and malaria), food and water borne diseases, sexually transmitted diseases, airborne diseases and zoonosis will be covered. A special emphasis will be placed on the control of HIV/AIDS (and other STDs), Tuberculosis, dengue and malaria. Tropical diseases targeted for elimination, tropical diseases currently lacking adequate control measures and infectious diseases of poverty and poor hygiene will be discussed. Vector control will be illustrated, including a visit to the Environmental Health Institute. Vaccine preventable diseases both in routine programs as well as in outbreak situations will be discussed. Outbreak investigations will be simulated and pandemic preparedness outlined. Students will read, critically appraise and discuss the application of current control strategies. They will identify a relevant infectious disease of public health concern and prepare a proposal for a public health intervention. This course will help students prepare for work in communicable diseases in local and international governmental and nongovernmental organizations.

CO5204 – Health Economics & Financing *2

Module Coordinator: A/Prof Phua Kai Hong & Dr. Vernon Lee

Modular Credits: 4

This module focuses on health care economic and financing concepts. The microeconomics framework, including issues of supply, demand, market structure, market failure and public private roles are discussed as they apply to the health sector. Topics include: Health care financing and payment methods, health resources and costs, and health cost-containment; resource allocation and issues of equity, efficiency and cost-effectiveness; Valuation of health status and outcomes, and application of economic evaluation techniques to assess health programs.

CO5205 – Management of Healthcare Organizations

Module Coordinator: A/Prof Lim Meng Kin

Modular Credits: 4

This module equips participants with the basic skills set needed to function effectively as healthcare managers of any healthcare organization. Topics include strategic management, human resource, finance, operations, marketing, support services, information, and quality management. Inductive sharing of participants' experiences and perspectives in diverse healthcare contexts will be elicited through interactive case studies

CO5206 – Medical & Humanitarian Emergencies

Module Coordinator: A/Prof Lim Meng Kin

Modular Credits: 4

This module provides an introduction to disaster preparedness and management in the national, regional, and international context and from the public health standpoint. Participants will be equipped with the basic knowledge and skills needed to plan and manage medical humanitarian assistance to vulnerable populations. Topics include disaster planning, response and recovery, rapid epidemiological assessment, control of communicable diseases, information and surveillance systems, nutrition, water and sanitation needs, psychosocial needs, security issues, and international humanitarian law.

CO5208 – Measuring & Managing Quality of Care *₂

Module Coordinator: A/Prof Lim Meng Kin

Modular Credits: 4

This module provides an introduction to the concepts and techniques used to measure and improve the quality of healthcare. It will address current concerns with medical errors and explore systemic approaches to harm reduction. Participants will understand the methodologies and instruments for the measurement of quality in healthcare, including clinical outcome indicators, physician performance measurement, and patient satisfaction surveys. Strategies for managing quality, including the tools for continuous quality improvement in healthcare organizations, will be presented.

CO5209 – Control of Non-Communicable Diseases *₂

Module Coordinator: Prof Lee Hin Peng, Dr Helena Marieke Verkooijen

Modular Credits: 4

In this module, the public health approach to non-communicable disease control will be illustrated using a matrix, which integrates epidemiological parameters (i.e. risk factors, prevention, surveillance) with the main non-communicable diseases (i.e. cardiovascular disease, cancer, mental illness, chronic respiratory disease, diabetes mellitus, Alzheimer's disease and congenital and childhood diseases). In addition, current issues, such as genetics and ethics, will be highlighted in relation to control of non-communicable diseases. The students will read, critically appraise and discuss the application of some relevant epidemiological studies.

Finally, they will perform a literature search to identify an important and relevant public health concern and prepare a proposal for a public health intervention.

CO5212 – Planning Health Promotion Programs

Module Coordinator: A/Prof Wong Mee Lian

Modular Credits: 4 *Pre-requisite: CO5203*

This module equips students with the knowledge and skills to plan implement and evaluate health promotion programs in a variety of settings such as the hospital, school, workplace and the community. It emphasizes the integrated application of evidence-based theories and principles from the behavioral, social, epidemiological, educational and management sciences in planning, implementing and evaluating health promotion\education programs. Upon completion of this module, students will be able to prepare a written plan for a health promotion program that includes: problem statement, goals/objectives, intervention description / methods, process and outcome evaluation, budget, and timeline.

CO5214 – Introduction to Health Services Research

Module Coordinators: Dr. Luo Nan, Dr Suchin Virabhak

Modular Credits: 4 *Pre-requisites: CO5102, CO5103*

This course will enable public health and clinical researchers to critically evaluate the outcomes, quality, and effectiveness of interventions and healthcare programs. It will provide a foundation for collecting, analyzing and interpreting data that influence decision-making and resource allocation at both the patient and societal level. The course will integrate elements of epidemiology and statistics, and incorporate a diverse range of important subjects including survey and qualitative methods, decision and cost effectiveness analyses, and health technology assessment. Students will also be taught to critically appraise studies in health services research and to discuss their application across healthcare sectors. Finally, students will be given the opportunity to apply the practical tools they have learnt to address existing health issues.

CO5215 – Advanced Epidemiology *2

Module Coordinator: Prof Chia Kee Seng, A/Prof Adeline Seow

Modular Credits: 4 *Pre-requisites: CO5102, CO5103*

This module covers advanced principles and analytical methods for epidemiologic studies. Topics include design and analyses of case-control and cohort studies, methods of handling confounding and identifying effect modification, causal inferences and introduction to genetic and molecular epidemiology.

CO5216 – Critical Appraisal I with Scientific Writing *2

Module Coordinator: A/Prof Saw Seang Mei

Modular Credits: 2 *Pre-requisite: CO5102*

The students will be taught how to critically appraise scientific literature and develop a better understanding of the various types of epidemiologic study designs. The students will read journal articles that describe various study designs including prevalence surveys, case-control studies, cohort studies,

clinical trials, and studies describing the accuracy of tests. The students will be given opportunities to present their critique of scientific journal articles in small-group tutorials. Importantly, they will be given opportunities to interpret and apply basic principles of epidemiology and biostatistics.

CO5217 – Critical Appraisal II with Evidence-based Medicine *2

Module Coordinator: A/Prof Adeline Seow

Modular Credits: 2 *Pre-requisites: CO5102, CO5103, CO5216*

This is an intermediate course (conducted over 7 weeks) and assumes that students are familiar with basic tools in critical appraisal. The objective is for students to enhance their familiarity with issues in interpreting and applying results from scientific studies in clinical and public health practice.

CO5218 – Advanced Quantitative Methods *2

Module Coordinator: Prof Chia Kee Seng, A/Prof Tai Bee Choo

Modular Credits: 4 *Pre-requisite: CO5103*

In this module, the principles of statistical modeling will be introduced, and statistical models such as multiple linear regression, logistic regression and Cox proportional hazards model will be applied to a variety of practical medical problems. Methods for analyzing repeated measures data, assessment of model fit, statistical handling of confounding and statistical evaluation of effect modification will also be discussed.

CO5219 – Clinical Epidemiologic Methods *2

Module Coordinator: Prof Chia Kee Seng, A/Prof Adeline Seow

Modular Credits: 4 *Pre-requisites: CO5102, CO5103*

This module will build on the basic concepts learnt in core epidemiology and biostatistics modules, with specific applications to study designs used in patientcare settings. The main objective of the course is to provide skills and tools that can be applied to a variety of research designs. Individual sessions will focus on evaluating validity and bias in clinical observational studies, selecting and evaluating instruments to measure patient outcomes, and methods used for risk adjustment. Prognostic studies and diagnostic testing will also be discussed. Students will critique journal articles and use practical exercises to explore threats to validity and the use of conceptual and analytic models in clinical studies.

CO5220 – Design, Conduct and Analysis of Clinical Trials *2

Module Coordinator: A/Prof Tai Bee Choo

Modular Credits: 4

In this module, issues in clinical trials, including blinding randomization, sample size, power, ethical, regulatory, and quality-of-life issues will be addressed. Interim and sequential analyses, analysis of multiple treatments and endpoints, stratification and subgroup analyses, as well as meta-analysis of randomized controlled trials will also be discussed. Although particular emphasis is given to

the evaluation of treatment in Phase III clinical trials, early phase trials including preclinical pharmacokinetic and pharmacodynamic studies will also be covered.

CO5221 – Contemporary Global Health Issues

Module Coordinator: A/Prof Annelies Wilder Smith, A/Prof Sri Chander

Modular Credits: 4

This module exposes the student to contemporary global health issues, and helps him/her to identify the required skill sets necessary to address the health issues. Alternative approaches, creative solutions and potential compromises aimed at resolving them are discussed using case studies. Relevant individual experiences will be encouraged to surface.

This short course covers topics such as the current global disease burden, health transition, donors to health programs, and many cross-cutting issues. This provides a panoramic survey and exposure to the contemporary issues that must be faced by a global health leader today.

CO5222– Design, Monitoring and Evaluation of Health Programs

Module Coordinator: A/Prof Annelies Wilder Smith, A/Prof Sri Chander

Modular Credits: 4 *Pre-requisites: CO5221*

This module enables the student to understand the concepts and acquire critical skill sets necessary to design and manage pilot health projects and scaled-up programs. A wide variety of field-tested tools will be introduced and discussed. Participants will break into small groups to practice applying what they have learned by developing a Health Program Matrix using the project life cycle approach, APDIME (Assessment, Planning, Design, Implementation, Monitoring and Evaluation).

CO5223 – Independent Study Module (ISM)

The independent study module enables a student to undertake a focused or indepth study an approved topic in Public Health. Students may elect to focus on any one of the pre-approved areas of study. Specific learning objectives will be defined by the student in consultation with a supervisor, who should be an NUS academic staff member. Modes of learning may include content-based/didactic activities, practical work related to health program development or evaluation, or research in an area relevant to the chosen specialization. The overall objective is to allow candidates to further tailor their learning experience according to their needs. The ISM also allows students with the requisite capability and aptitude to extend their Practicum (C05210) into a substantive 8 MC research project.

CO5224 – Survey Methods in Public Health

Module Coordinator: Dr. Helena Marieke Verkooijen

Modular Credits: 4 *Pre-requisite: CO5102*

This module will equip students with the tools to assess health needs relevant for the planning, implementation and evaluation of programs in a defined population.

It will focus on practical applications of research methodologies relevant to understanding and measuring determinants of health and health outcomes, focusing on applied sample survey methodology. Students will formulate a plan for needs assessment that incorporates appropriate sampling, data collection, questionnaire design and analytic methods, and will discuss the strengths, limitations, practical and ethical considerations in implementing this plan.

CO5225 – Maternal Child Health/Nutrition

Module Coordinator: Elizabeth Jahncke

Modular Credits: 4

This course will introduce students to the substantive issues in maternal and child health (MCH) including the public health challenges impacting health outcomes for this potentially vulnerable group. Students will examine the main causes of mortality and morbidity within MCH populations, including differences between developed and developing countries. Using a lifecycle approach, the causes and consequences of common nutritional deficiencies for this group will be explored.

The course will also cover issues shaping MCH policy and programming. Case studies will be used to illustrate current strategies believed to be effective in reducing maternal and child morbidity and mortality.

CO5304 – Occupational Health Practice *1R@

Module Coordinator: Dr Lee See Muah

Modular Credits: 4

This module provides an overview of the scope and practice of occupational health, and in particular, the role and contribution of the occupational physician, and his integration with the other occupational health professionals.

The rationale, legislative requirements, and functions of occupational health services at the workplace, industry, national and international level are described. The practice of occupational health in the developing countries, where priorities and resources may differ, and the need for the development of an appropriate and relevant occupational health service for such settings, are examined.

CO5305 – Industrial Hygiene *1

Module Coordinator: Dr Gregory Chan

Modular Credits: 4

This module offers an overview and scope of industrial hygiene, in particular the practical aspects of recognition, identification and control of chemical, physical and biological agents at the workplace. The health effects of exposure to these agents and their biological monitoring would also be discussed. Participants would have the opportunity to carry out monitoring at the workplace in addition to laboratory assays of various agents commonly encountered. Tutorials and group discussions and workplace evaluations will also be conducted.

CO5306 – Public Health Toxicology *1

Module Coordinator: Prof Ong Choon Nam

Modular Credits: 4

This module introduces the fundamental principles of toxicology and demonstrates its relationship to public health practice. Emphasis will be on environmental and occupational exposures. Examples and case studies will be presented to illustrate the basic concepts and health effects of exposure to chemicals commonly encountered. Detailed discussions will be conducted on the toxicity of heavy metals, industrial solvents, pesticides and carcinogenic compounds. Participants would have the opportunity to carry out assays of toxic substances in the laboratory, in addition to lectures and seminars.

CO5312 – Occupational Ergonomics *₁

Module Coordinator: Dr Lee See Muah

Modular Credits: 4

This module covers both ergonomics/human factors and basic work physiology. It emphasizes the practical aspects of how to fit the worker to the job and how to fit the job to the worker and the need for a multifactorial approach to the study of ergonomics/human factors. The basic principles of human, work and environmental factors related to occupational disease and work-related illness will be discussed. Common issues related to work and stress, work and performance will also be covered in the lectures. Workplace assessments will also be performed to evaluate various ergonomic factors. In addition to lectures and tutorials, case studies from industry will also be discussed.

CO5317 – Workplace Assessment *_{1R}

Module Coordinator: A/Prof Chia Sin Eng

Modular Credits: 4 *Pre-requisites: CO5305, CO5306*

The workplaces to be visited represent common manufacturing industries such as electronics, metalworking, woodworking, petrochemical processing, chemical manufacturing and ship building and repair. There will also be visits to a diving unit and an aeromedical centre. Reading of the work processes and work activities of the workplace to be visited is expected before each visit, and participants are required to make observations and assessments of the work environment during the visit. The visits will be followed by class presentations and discussions.

Please note:

5105 OR 5307 is a required module for medical graduates seeking specialist accreditation in Public Health or Occupational Medicine

** Elective credits recognized for specialization. A minimum of 20 MCs of distinctive modules will constitute a specialization*

1 = Occupational and Environmental Health (R = required)

2 = Clinical Epidemiology

@ credits awarded only for candidates whose basic qualification is not a medical degree