CORE / REQUIRED MODULES

CO5102 Principles of Epidemiology  
*Modular Credits: 4*
This module introduces students to the tools for describing the occurrence of disease, evaluating the cause of disease, and monitoring interventions to prevent or treat disease. Through didactic sessions, discussions and workshops, students learn how to measure health and its determinants, and acquire basic skills in the interpretation and design of observational and interventional studies. Practitioner-led seminars provide examples of the application of epidemiology to needs assessment, disease prevention and to health policy.

CO5103 Quantitative Epidemiologic Methods  
*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 and Systems  
*Modular Credits: 4*
What is health policy? What is a health system? This module will explore health policy, its formulation, implementation, and its relation to the health system. The module will also describe various aspects of a health system, as well as explaining the roles of the government and the individual in influencing health and healthcare policy. Numerous case studies (local and international) will be studied in detail to increase participants’ appreciation of the topics such as basic health economics, policy evaluation, and health system performance.

CO5202 Environmental and Occupational Health  
*Modular Credits: 4*
This module provides a basic understanding of the relationship between the environment and health. Management of health issues in the general environment and workplace will be discussed.

CO5203 Lifestyle & Behavior in Health & Disease  
*Modular Credits: 4*
This module provides an overview of social and behavioural theories that are commonly used to understand health behaviour and to guide the development of interventions designed to prevent, reduce or eliminate major public health problems. It provides students with the principles and skills to address factors influencing behaviour and behaviour change at the individual, interpersonal, organizational, community and policy levels. Upon completion of this module, students will be able to apply theories and models of behavioural change to inform the design of health promotion interventions.
COS5210 – Practicum
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, 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 specialisation.

ELECTIVE MODULES

COS5201 – Control of Communicable Diseases
Modular Credits: 4
Pre-requisites: to be confirmed
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 industrialised 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 STIs), 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 programmes 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 non-governmental organisations.

COS5204 – Health Economics and Financing
Modular Credits: 4
This module addresses the economic and financing aspects of the production, distribution, and organization of health care services and delivery. This includes the structure of health care delivery and insurance markets, demand for and supply of health services, pricing of services, cost of care, financing mechanisms, and their impact on the relevant markets. A special emphasis will be given to market failures and the role of government in the market for health services. Through textbook readings and discussions of seminal articles and more recent empirical applications in health economics, students will learn the economic way of thinking. They will be given the opportunity to showcase these skills through a series of research papers written throughout the semester that will culminate with a final manuscript that provides an in-depth analysis of a critical health issue.
COS5205 – Management of Healthcare Organisations

Modular Credits: 4

This practitioner-led module which is targeted at participants with basic background in management (either through academic study or practice) equips participants with management skills needed for managing healthcare organisations. Teaching will be through lectures, group activities and panel discussions and there will be significant emphasis on the case study method. Participants will be expected to actively share their experiences and learn collectively. Topics covered will include leadership in the healthcare setting, strategy and planning for healthcare, human resource management and development, communications, marketing and branding, finance, operations, information and quality management (including accreditation, use of score cards and benchmarking).

Remarks: Although conducted outside office hours (Thursday evenings), site visits will be organised during office hours to enable participants to see first-hand ‘Management of Healthcare Organisations’ and learn from leading edge practitioners.

COS5206 – Medical and Humanitarian Emergencies

Modular Credits: 4

This module provides training in the minimum internationally accepted and recognized standards for disaster responses and other humanitarian crises. Its design and content enable the participants to better prepare and manage critical life-saving issues in a national, regional, or broader international context and from a public health standpoint. The course equips the participant with the basic knowledge and skills needed to plan and manage the overall crisis, paying particular attention to the most vulnerable populations. Topics include the history and development of Sphere Project standards, international humanitarian law, disaster planning, response and recovery, health services issues, which include the control of communicable and non-communicable diseases, information and surveillance standards, nutrition, water and sanitation needs, psychosocial needs, security issues, and shelter. The participant will be exposed to the broad spectrum of crises issues and cross trained to understand how all life-saving sectors are interrelated and bear upon the success or failure of each sector.

COS5208 – Measuring and Managing Quality of Care

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 patient safety and 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, healthcare professionals’ performance measurement and patient satisfaction surveys. Strategies for managing quality, including the tools for continuous quality improvement in healthcare organizations, will be presented.

COS5209 – Control of Non-Communicable Diseases

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.

**COS5214 – Introduction to Health Services Research**  
*Modular Credits: 4*  
*Pre-requisites: CO5102 and CO5103*  
This module will enable public health and clinical researchers to critically evaluate the health outcomes and cost-effectiveness of interventions and healthcare programmes. It will provide a foundation for collecting, analyzing and interpreting data that influences decision-making and resource allocation at both institutional and national level. The course will integrate elements of epidemiology, statistics, health economics, and incorporate a diverse range of important subjects including survey methods, decision analysis, and cost effectiveness analysis. Students will also be taught to design their own studies in health services research.

**COS5215 – Advanced Epidemiology I**  
*Modular Credits: 4*  
*Pre-requisites: CO5102 and CO5103*  
This module covers advanced methods for the design, conduct, analysis and interpretation of epidemiologic studies. The main focus is on analytical studies that aim to identify risk factors for diseases particularly case-control and cohort studies. Topics include causal inference, study design, methods of handling confounding and identifying effect modification, measurement error and information bias, selection bias, lifestyle and molecular epidemiology, and meta-analysis.

**COS5218 – Advanced Quantitative Methods I**  
*Modular Credits: 4*  
*Pre-requisite: a minimum grade 'B-' obtained in CO5103 and working knowledge of STATA*  
In this module, the principles of statistical modelling 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 analysing repeated measures data, assessment of model fit, statistical handling of confounding and statistical evaluation of effect modification will also be discussed.

**COS5220 – Design, Conduct and Analysis of Clinical Trials**  
*Modular Credits: 4*  
*Pre-requisites: CO5102 and CO5103*  
In this module, issues in clinical trials, including blinding randomisation, 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 studies will also be covered.

**COS5221 Contemporary Global Health Issues**  
*Modular Credits: 4*  
This course offers students a panoramic overview of the evolving global health landscape in today's globalised society with unprecedented inter-connectedness where public health problems & consequences are now easily trans-national, if not global.

**COS5222 Programme Evaluation**  
*Modular Credits: 4*  
This course is designed to give you a foundation in program evaluation and an introduction to impact evaluation. As part of this course, you will be developing evaluation strategies for an existing public health program. This is an opportunity to practice evaluation theory, design, and planning within real world constraints.
**COS226 – Public Health Communications**
*Modular Credits: 4*
*Pre-requisites: CO5203*

This module focuses on the design, implementation, and evaluation of communication programmes designed to change or reinforce health behaviour.

Emphasis will be on the step by step process of

1. formative research and analysis (including use of conceptual frameworks, audience research, and assessment of the media, policy and service environment),
2. theory-based and evidence-based strategic design,
3. message development, pretesting and materials production,
4. implementation and monitoring, and
5. theory-based evaluation and dissemination of findings.

Upon completion of this module, students will be able to develop a work plan for a health communication project.

**Remarks:** Priority will be given to full-time students and part-time students who have completed CO5203 in previous semesters. For students completing CO5203 in the same semester will be placed on waitlist and will be informed in the week prior to the start of CO5226. Please do not apply to read this module if you are graduating in Semester 1 AY2015/2016.

**CO5230 Public Health and Aging**
*Modular Credits: 4*

In this module, an overview of the aging population and its increasing relevance for public health planning and policy, both in Singapore and internationally. Major topics include demography of ageing, normal (physiological and biological) and abnormal (physical and mental) ageing, prevention of ageing-related diseases and compression of morbidity, health and social services and policies for older persons, and medico-legal and ethical issues of care for the older persons. Students will learn how to apply their knowledge to critically appraise health and social programmes and policies for older persons and apply medico-legal and ethical principles in the care for older persons.

**CO5232 Collection, Management & Analysis of Quantitative Data**
*Modular Credits: 4*

This module is an introduction to management and data analysis of quantitative surveys in public health research, with strong emphasis on acquiring hands-on experience for handling public health data with the STATA software. It will cover essential concepts such as sampling and design of questionnaires as well as practical components such as data storage, management, and basic statistical analysis of the questionnaire data.

**Remarks:** Students who have previously taken “CO5224 Data Collection in Public Health” are not allowed to take this module.
CO5233 Qualitative methods in Public Health
Modular Credits: 4
Qualitative methods in Public Health will familiarize students with the range of related data collection and analytic methods, as well as ethical considerations and ways to best communicate this approach. Students will learn practical techniques to improve the quality of data collection, including: In depth interviews, focus groups and observational methods. We will also explore lesser-known approaches such as using photo voice or how to ‘walk through spaces’. Emphasis will be given to data management and transparency in analyses, the best ways of doing these, using practical policy relevant methods. In addition, ways of presenting methods, clearly, concisely and creatively. Critical appraisal of the method and its application in mixed methods designs will also be considered.

Remarks: Students who have previously taken “CO5224 Data Collection in Public Health” are not allowed to take this module.

CO5234 Develop health proposals: DME skills, tools, approaches
(formerly named ‘CO5880G – Design, Monitoring and Evaluation of Health Programmes’)
Modular Credits: 4
Two of the most important skills that public health practitioners need to develop are program design and proposal writing. These two skills are inseparably linked: they are two sides of the same coin. A poorly designed project or program will have very little chance of successfully competing for funds, while an innovative, well-conceived project will never get funded unless it gets written into a good proposal. A good program design in a good proposal can lead to better implementation and management, and sets the stage for good monitoring and evaluation. In turn, a project executed well has better chances for re-funding and expansion by donors. This skills building DME course is designed to introduce the potential proposal writer to the working environment that he will eventually confront repeatedly. It requires living through the process of applying good principles of program/project design in developing a proposal. This is a shortened schedule closely simulating reality

Remarks:
- This module was previously named ‘CO5880G – Design, Monitoring and Evaluation of Health Programmes’.
- Students who have previously read ‘CO5880G – Design, Monitoring and Evaluation of Health Programmes’ are not allowed to take CO5234
- It is recommended that students have completed CO5102 Principles of Epidemiology and CO5103 Quantitative Epidemiologic Methods prior to reading this module

CO5235 – Information Technology in Healthcare
Modular Credits: 4
Students will learn about use of Information Technology in Singapore healthcare. They will gain knowledge and skills on managing IT projects in their workplace, learn about key considerations for IT project success, and be able to conduct a basic evaluation of healthcare IT products.

CO5236 – Economic Methods in Health Technology Assessment
Modular Credits: 4
This course aims to provide an applied introduction to Health Technology Assessment (HTA) research in order to enable students to begin conducting their own research and/or to understand research conducted by others. Health econometrics, cost-effectiveness and economic evaluation in healthcare, and conjoint analysis will be covered. Examples of economic analyses that have been used in all stages of HTA research, starting with quantifying economic burden of illness studies, to cost-
effectiveness of particular health technologies, to budget impact and pricing will be included. Prior knowledge of basic statistics is recommended.

**COS237 – Healthcare Analytics**  
*Modular Credits: 4*  
*Pre-requisites: CO5103*  
This module will cover major topics in healthcare analytics, including clinical related analytics (diseases, medication, laboratory test, etc.) and healthcare operations related analytics (resource planning/scheduling, care process analytics and improvement, admission and readmission, etc.). Students will learn the insights of these different healthcare analytics areas, and how to select the right analytics techniques for these healthcare analytics problems.

**COS5312 – Occupational Ergonomics**  
*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. Work place assessments will also be performed to evaluate various ergonomic factors. In addition to lectures and tutorials, case studies from industry will also be discussed.

**COS5317 – Workplace Assessment**  
*Modular Credits: 4*  
*Pre-requisites: CO5305 and 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.

**SPH6004 Advanced Biostatistics**  
*Modular Credits: 4*  
*Pre-requisites: Students interested in this module should have background in Statistics.*  
This module will introduce several advanced topics for analyzing large or complex datasets, with a particular emphasis on biomedical and epidemiological data. Classical strategies for statistical inference, variable selection and model assessment are less efficient when the dimension of the dataset is large. This module will introduce Bayesian techniques and multivariate data analysis in an applied framework that combines both computing and theory, and also overviews the problem of multiple testing correction common in, for example, genomics and proteomics studies.

*Remarks: Students interested in this module should have background in Statistics.*

The programme reserves the right not to offer a module if the number of MPH students taking it for credit is fewer than 10.