SUBJECT DESCRIPTION FORM

SUBJECT CODE: HTI4154

SUBJECT TITLE: Cost Effectiveness of Health Technology

CREDITS: 2

PRE-REQUISITES: Nil

RESPONSIBLE DEPARTMENT: Department of Health Technology & Informatics

RESPONSIBLE MEMBER OF THE ACADEMIC STAFF: Dr. Aaron Leung

CONTACT HOURS: (Online mode of delivery)

Lectures	14 hours
Presentation	3 hours
Tutorial	14 hours
Sub-total:	31 hours

Independent Study Hours:

Self-study	40 hours
Assignments	10 hours
Final Presentation	10 hours
Sub-total:	60 hours

RATIONALE:

This course is an elective course designed to teach the student theoretical basis and practical application of formal cost-effectiveness analysis (CEA). CEA is a fundamental tool for objective evaluation and decision making with respect to health technologies. As a first course on formal evaluation of technology, this subject is appropriate for undergraduates from all departments in the Faculty of Health and Social Sciences or those from Engineering Disciplines.

LEARNING OUTCOMES:

The student will achieve a practical working knowledge of formal cost effectiveness analysis and how it is applied evaluation of Health Technology. This knowledge will enhance the student's ability to objectively prioritize when making decisions about rapidly evolving technology of health care. The entire course is web-enabled, allowing each student to work through new concepts with simulated evaluation data presented on line.

The student will be able to:
1) derive a stream of costs and benefits from raw data
2) select an appropriate perspective
3) apply economic discounting to CEA analyses
4) justify analysis parameters such as time horizon
5) make use of imperfect and incomplete data

TEACHING AND LEARNING ACTIVITIES:

This Subject is concerned with the evaluation of technology used in health care. "Cost-effectiveness" is an often misused term, but this formal discipline is an accepted way of objectively assessing the "value"

of technological alternatives. With constrained resources and ever more health technology, it is necessary that society ask the question,"Is this technology better than that?"

Cost effectiveness analysis will enable the student to see past the simple answer of which is more expensive and see instead, which is the best investment in Health. Simple algebraic calculations are made to determine the net ratio of cost to outcomes produced. Cost-effectiveness analysis can range from the very simple to extremely complex depending on the number of variables considered, but it is a discipline that should be understood and may be practised by all those who must evaluate the worth of health technologies.

The lectures demonstrate the theoretical underpinnings of different analysis techniques. Students then apply that theory by working through actual analyses from raw data.

In addition, each student will derive streams of costs and benefits from everyday examples from their own lives to integrate all the theory they have learned into an analysis that they conduct from start to finish. This will build confidence in the practical application of the techniques learned.

The final example created by the student will then be presented, reinforcing the ability of the student to communicate the results of a CEA.

ASSESSMENT:

Each example worked by the student will be assessed by the instructor. The emphasis in the assessments is not to obtain a theoretically precise answer but rather on learning to apply the processes of CEA correctly. Each student project will receive narrative feedback by the instructor.

The final presentation made by the student will also serve as the final evaluation of whether the student has learned how to apply all of the relevant CEA principles on a problem of their own choosing. They will be assessed on:
Stream of costs
Stream of benefits,
Definition of Perspective
Selection of Time Horizon
Discounting and accounting for inflation
Data quality handling

REFERENCE LIST:

1) Weinstein M., Stason W. (1977). Foundations of Cost-Effectiveness Analysis for Health and Medical Practices. New England Journal of Medicine, 296(13), 716-21.
2) Doubilet P., Weinstein M., McNeil B., (1986). Use and Misuse of the Term "Cost Effective" in Medicine. New England Journal of Medicine, 314(4), 253-6.
3) Detsky A. , Naglie I. (1990). A Clinician's Guide to Cost-Effectiveness Analysis. Annals of Internal Medicine, 113(2), 147-54.
4) Mullahy J. What you don't know can't hurt you? statistical issues and standards for medical technology evaluation. Med Care. 1996;34:D5124-D5135.
5) Siegel JE, Weinstein MC, Russell LB, Gold MR, for the Panel on Cost-Effectiveness in Health and Medicine. Recommendations for reporting cost-effectiveness analyses. JAMA. 1996;276:1339-1341.

REQUIRED TEXT:

Gold M., Siegel J., Russell L., Weinstein M., eds. (1996) Cost-Effectiveness in Health and Medicine. Oxford, Oxford University Press.