

SUBJECT DESCRIPTIVE FORM

Subject Title: Research Methods and Biostatistics

Subject Code: HTI5155

Credit Value: 3

Date of Submission: Feb 2007

Responsible Staff & Department: Prof Iris Benzie, Prof. Daniel Chow (HTI)

Pre-requisite: Nil

Recommended Background Knowledge: Nil

Exclusions: Nil

Learning Approach:

Contact hours:

Lectures / Tutorials	25 hours
Seminars/Workshop/Case Study/Presentation	17 hours
Subtotal:	42 hours

Independent study hours:

Self-study	40 hours
Assignments	60 hours
Subtotal:	100 hours
Total	142 hours

Assessment (types & weighting):

Course work (100%)

Data analysis assignment	30%
Proposal writing assignment	40%
Information gathering/data critique assignment	30%

Learning Outcomes:

Upon completion of the subject, the student will be able to

1. demonstrate understanding of the importance of planning and information gathering in research and demonstrate good planning and information gathering skills
 2. use a range of information gathering approaches appropriately
 3. demonstrate the ability to critically and comprehensively review the scientific literature on a given topic
 4. explain different type of research approaches that are used in health sciences
 5. perform power calculation and demonstrate understanding of type i and type ii errors and the meaning of one-tail and two-tail p values in planning, performing and evaluating statistical analyses of research data
 6. select and use the appropriate statistical tool(s) and presentation method(s) for a given set of research data and purpose
 7. demonstrate understanding of the key elements of a research proposal
 8. discuss, evaluate and summarize given research findings
 9. demonstrate knowledge, understanding and application of accepted ethical principles in research involving human subjects or animals
 10. present a research proposal and research findings in the appropriate manner for communication of the scientific purpose/plan and the results/message
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Syllabus/topics:

1. Different types of research and approaches to research in health sciences: qualitative and quantitative research; observational; cross-sectional; case-control, nested case control; prospective; intervention studies
 2. Information sources and reviewing the literature; acknowledging sources; paraphrasing and avoiding plagiarism; critically reviewing what's out there
 3. Identifying the problem, posing the question, hypothesis testing – what do you want to do and why?
 4. Research design; is it fit for purpose? is the project feasible?
 5. Power calculations, Type I and Type II errors; types of data, descriptive and inferential statistics; selecting statistical methods of data analysis; parametric and non-parametric; similarities, differences and correlations: P values; does it all fit together and what does it mean?
 6. Ethical principles and approval procedures: what are you doing, why and to whom or what?
 7. Questionnaire design and evaluation; doing surveys and avoiding leading questions
 8. Proposal writing: putting your ideas together
 9. Presenting and evaluating data: what have you found? what does it mean?
 10. Critical analysis of data and communicating the message: are the conclusions warranted? Who needs to know the findings and how best to tell them?
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Recommended Reading List:

1. Biostatistics for the Biological and Health Sciences. Marc M. Triola and Mario F. Triola, Pearson Education Inc, Boston Ma, 2006.
2. Statistics for Health Care Professionals. Ian Scott and Deborah Mazhindu. Sage Publishing Ltd, London UK, 2005.
3. Handbook of Health Research Methods: Investigation, Measurement and Analysis. Ann Bowling and Shah Ebrahim. Open University Press, London, UK, 2005.
4. Fundamentals for Biostatistics. Bernard A Rosner. Thomson-Brooks/Cole, Belmont Ca. 6th ed, 2006.
5. Foundations of Clinical Research: applications to practice LG Portney, MP Watkins MP. Appleton & Lange, 2000.
6. Biostatistics: The Bare Essentials. Geoffrey R Norman, David L Streiner. BC Dekker Inc. Ontario, 2000.