

Responsible Staff & Department: Prof Iris Benzie, Prof. Daniel Chow **Pre-requisite :** Nil

Recommended Background Knowledge : Nil

Learning Outcomes :

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?