SUBJECT OUTLINE

Subject Name:

Nutritional Physiology Research

Subject Code:

NMDA321

SECTION 1 – GENERAL INFORMATION

Award/s:		**Total Course Credit Points:**	**Level:**
	Bachelor of Health Science (Naturopathy)	128	4th Year
	Bachelor of Health Science (Nutritional and Dietetic Medicine)	96	3rd Year
Duration:	1 Semester		
Subject is:	Core	**Subject Credit Points:**	2

Student Workload:

No. timetabled hours per week: 3	No. personal study hours per week: 2	Total hours per week: 5

Delivery Mode*:

☐ **On campus** ☒ **Online / Digital** ☐ **Blended** ☐ **Intensive**

Weekly Session^ Format/s - 1 session per week:

☒ Livestream lectures:	☒ 2 hours	☐ 3 hours	1 lecture per week
☒ Livestream workshops / tutorials:	☒ 1 hour	☐ 2 hours	1 tutorial per week

*All modes are supported by the online learning management system which will include subject documents such as handouts, readings, assessment guides and online learning support.

^A 'session' is made up of 3 hours of timetabled / online study time per week unless otherwise specified. Each subject has a set number of sessions as outlined above.

Note: As they are aware, international students on a Student Visa (500) must attend livestream classes on their local campus, using the Virtual Classrooms provided.

Study Pattern:	☒ Full Time ☒ Part Time
Pre-requisites:	NMDC221, BIOS222
Co-requisites:	Nil

SECTION 2 – ACADEMIC DETAILS

Subject Rationale

This subject builds on the student's existing knowledge of physiology, nutritional biochemistry, pathophysiology, social sciences, and public health. Students will use research and their research literacy skills to make sound, evidenced-based decisions for clinical management and prevention of disease for individuals and communities.

Learning Outcomes

1. Develop nutrition based clinical research questions relating to a specific disease or associated biological process.
2. Identify appropriate research articles using databases and evaluate the data in response to a clinical question.
3. Actively engage and discuss current and emerging research within clinical nutrition.
4. Critically evaluate current research as applied to clinical nutritional medicine.
5. Apply evidence-based practice (EBP) principles, complementary medicine principles and philosophy and critical thinking to nutritional management.

Assessment Tasks

Type	Learning Outcomes Assessed	Session Content Delivered	Due	Weighting
Clinical Research Question and Rationale (750 words)	1-2	1-3	Week 6	30%
Critical Research Appraisal (Part A) (1000 words)	3-4	4-9	Week 10	40%
Clinical Translation Presentation (Part B) (5-minute recorded slide presentation)	3-5	1-13	Week 14	30%
All written assessments are due at 11:55 p.m. Sunday and submitted through the LMS.				

Pass Requirements

To achieve a passing grade in this subject, students must:

- have a cumulative mark of at least 50%, and
- have submitted all assessment items with a value greater than 15%.

Prescribed Readings:

This subject requires students to search the literature using research databases to identify and evaluate the best recent evidence on their topic of investigation. Guidance on conducting searches will be provided in class. Other research papers for in-class analysis and discussion will be sourced by the Subject Coordinator as they are published, and then posted on the Learning Management System for the students. Consequently, the reading materials will change from study period to study period as new articles become available.

Recommended Readings:

The link for the full list of relevant eJournals is available on LibGuides Nutrition Subject Guides – a mix of subscription and open access.

Bland, M. (2015). *An introduction to medical statistics* (4th ed.). Oxford University Press. [ebook available]

Hoffmann, T., Bennett, S. & Del Mar, C. (2013). *Evidence-Based Practice Across the Health Professions* (2nd ed.). Elsevier Australia. [ebook available]

Lovegrove, J., Hodson, L., Sharma, S., & Lanham-New, S. A. (Eds.) (2015). *Nutrition research methodologies.* John Wiley& Sons. [ebook available]

Webb, P., Bain, C., & Page, A. (2020). *Essential epidemiology: An introduction for students and health professionals* (4th ed.). Cambridge University Press. [ebook available]

Subject Content

Week	Lectures	Tutorials

1.	**Introduction** (Subject Outline / Subject Aims / Assessment / Teaching Resources)
	Introduction to Research in Clinical Nutrition
	• Evidence-based practice (EBP) vs evidence-informed practice (EIP) in clinical nutrition
	• Hierarchy of evidence
	• Types of research used in nutrition science (quantitative and qualitative)
	• Translating research to clinical practice
		• Review papers using different research designs (not in-depth)
		  ◦ Observational studies
		  ◦ Experimental studies
		  ◦ Systematic review, meta-analysis
		  ◦ Clinical guidelines

2.	**Asking Answerable Clinical Questions**
	• Formulating a PICO or PICo Model research question
	• Therapy, aetiology, diagnosis, prognosis questions
	• Extracting searchable key terms
	• Choosing and searching the databases
		• PubMed advanced search techniques
		  ◦ Question provided
		  ◦ Formulate a question and practice

3.	**Acquiring the Evidence** • Searching the databases • Using research tools to document search criteria and strategy (logic grid) • Referencing tools	• Practice using research tools to document search methods
4.	**Statistics – part 1** • Sampling and ethics • Variables	• Review four research papers with different research designs

	• Causation vs correlation • Distributions (standard, mean, median, mode) • Effect measures (brief introduction) • P-values (statistical significance) • Confidence intervals (precision of estimate) • Clinical relevance and cost effectiveness • Measures of association (relative measures and absolute measures) • Qualitative data analysis	• Identify the types of measures for used in the data analysis ◦ Discuss results, outcomes and clinical relevance
5.	**Statistics** – continued from Week 4.	• Continued from Week 4.
6.	**Introduction to Systematic Reviews (SR) and Meta-Analysis (MA)** • Purpose of SR and MA • Introduction to Cochrane database • Summary tables • Forest plots and funnel plots (MA)	• Construct an evidence summary table using 3-4 papers provided • Discuss results of SR and MA provided (first papers will be in the MA)
7.	**Appraising Studies** • Sources of bias and confounding • Risk of Bias (ROB) tool • Critical Appraisal Tools	• Appraise paper provided using Critical Appraisal Tools
	NON-TEACHING WEEK (note that make-up classes may be scheduled in this week) **Semester 1** – This aligns with the week after Easter so it may fall between Weeks 6 to 8 **Semester 2 & Online students** – The non-teaching week falls between Weeks 7 and 8	

8.	**An Exploration of Current Clinical Research - Part 1**
	• Clinical application of nutraceuticals and phytochemicals in disease prevention and management
		• Case study analysis activity
		  ◦ Students provided with article
		  ◦ Critique and analyse the relevance
		• Class discussion
		• Translation of evidence into practice

9.	**An Exploration of Current Clinical Research - Part 2**
	• Gut-brain axis
	• Human microbiome
		• Activity
		  ◦ Students are provided with a research article
		  ◦ Critique and analyse the relevance
		• Class discussion
		  ◦ Translation of evidence into practice

10.	**Investigating the Mechanisms and Relationships to Disease Processes and**	• Activity

	Current Clinical Research Regarding Nutritional Modulation - Part 1 • Immune dysfunction • Inflammation cytokine production • Th1 and Th2 balance	◦ Students are provided with a research article ◦ Critique and analyse the relevance • Class discussion ◦ Translation of evidence into practice
11.	**Investigating the Mechanisms and Relationships to Disease Processes and Current Clinical Research Regarding Nutritional Modulation - Part 2** • Genetic polymorphisms • Nutrigenomics • Methylation • One-carbon metabolism • Foetal programming	• Activity ◦ Students are provided with a research article ◦ Critique and analyse the relevance • Class discussion ◦ Translation of evidence into practice
12.	**Nutrition and the Environment** • Environmental chemicals, sources, health effects and minimisation strategies • Food toxicants and the daily diet	• Activity ◦ Students are provided with a case study and a series of questions relating to the case ◦ In small groups, answer the questions via literature searching where necessary • Class discussion
13.	**Investigating the Mechanisms and Relationships to Disease Processes and Current Clinical Research Regarding Nutritional Modulation - Part 3** • Aging theories • Cognitive function • Neuroplasticity • Telomeres	• Activity ◦ Students are provided with a research article ◦ Critique and analyse the relevance • Class discussion
14-15.	**Non-Teaching Week/Practical Examination Weeks 1 & 2** Note that make-up classes may be scheduled in this week	
16-17.	**Final Examination Weeks 1 & 2** There is no final exam for this subject.	