

## SUBJECT OUTLINE



Subject Name:

### Nutritional Physiology Research

Subject Code:

**NMDA321**

#### SECTION 1 – GENERAL INFORMATION

<b>Award/s:</b>	<b>Total course credit points:</b>	<b>Level:</b>
Bachelor of Health Science (Nutritional and Dietetic Medicine)	96	3 <sup>rd</sup> Year
Bachelor of Health Science (Naturopathy)	128	4 <sup>th</sup> Year
<b>Duration:</b>		
1 Semester		
<b>Subject Coordinator:</b>		
Sandy Davidson (Sydney campus)		
<b>Subject is:</b> Core	<b>Subject Credit Points:</b> 2	

#### Student Workload:

<b>No. timetabled hours per week:</b>	<b>No. personal study hours per week:</b>	<b>Total hours per week:</b>
<b>3</b>	<b>2</b>	<b>5</b>

#### Delivery Mode:

Face to face	1 x 2 hour lecture	1 x 1 hour tutorial
Intensive Delivery	Details:	Summer School - contact hours are delivered over 5 weeks with 2 x 4 hour days delivered per week. Assessment: Participation for intensive delivery is assessed in class. The Research Question assessment is due the Sunday following Week 2 of the Summer School period, and the Research Project is due the Sunday following Week 6.
Full Time		
Part Time		

**Pre-requisites:** NMDC221, BIOS222

**Co-requisites:** SOCH311

#### SECTION 2 – ACADEMIC DETAILS

##### Subject Rationale

This subject builds upon all prior nutrition subjects and expands the student's knowledge of emerging and advanced nutritional physiology concepts and understandings. The subject draws on the student's existing knowledge of physiology, nutritional biochemistry, and pathophysiology and expands on this knowledge both through exploration of current nutrition science and mechanistic research. This subject provides students with the opportunity to critically analyse, synthesis and consolidate knowledge and apply current best-evidence incorporating complementary medicine understandings and philosophies in the clinical management and prevention of disease. Students will review the evidence of dietary approaches, foods, nutraceutical and phytochemical research associated with improvement of physiological mechanisms that underlie abnormal functioning of the human body and disease processes.

##### Learning Outcomes

1. Develop an answerable clinical question relating to a specific disease or associated biological process.
2. Conduct a literature review bearing on the clinical question.
3. Demonstrate knowledge of the current and emerging nutritional physiology research.
4. Critically evaluate, analyse, synthesise and consolidate current nutritional science research methodology and findings.
5. Apply evidence-based practice principles, complementary medicine understandings and philosophy, critical thinking, creativity and judgement to determine nutritional interventions for acute and chronic disease.

Assessment Tasks				
Type	Learning Outcomes Assessed	Weeks Content Delivered	Week Due	Weighting
<b>Participation in weekly tutorial activities and discussion</b> (Progressive assessment Sessions 7 & 13)	1-5	1-13	1-7 and 8-13	20%
<b>Research question rationale and summary of methodology</b> (500 words)	1, 2	1-2	5	15%
<b>Research project Literature Review or Case Study</b> (3000 words)	1-5	1-13	13	65%

#### Prescribed readings:

1. This subject requires students to search the literature using research databases to discover and evaluate the best recent articles 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 semester to semester 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.

Subject Content		
Week	Lecture	Tutorial
1.	<b>Introduction</b> (Subject outline / Subject Rationale / Subject Assessment / Student Resources): <ul style="list-style-type: none"> <li>• Evidence Informed Practice</li> <li>• Combining traditional knowledge and evidence-based practice</li> <li>• Hierarchy of evidence versus clinical relevance and application</li> </ul>	<ul style="list-style-type: none"> <li>• Students are provided with a number of research articles of different study designs</li> <li>• Students are introduced to the strengths and limitations by design</li> </ul> Facilitated group discussion: <ul style="list-style-type: none"> <li>• How can we apply available evidence in practice?</li> </ul>
2.	<ul style="list-style-type: none"> <li>• Critiquing Research Articles</li> <li>• Establishing a research question</li> </ul>	<ul style="list-style-type: none"> <li>• Students are provided with a literature review and a case study</li> <li>• Critique and analyse the quality of each</li> <li>• Class discussion – translation of evidence into practice</li> </ul>
3.	<ul style="list-style-type: none"> <li>• Academic writing</li> <li>• Methodology</li> <li>• Literature Review</li> <li>• Case Report</li> </ul>	<ul style="list-style-type: none"> <li>• Student practice developing a search strategy and undertake database searches</li> </ul>

4.	<b>Important concepts and complex nuances in nutrition research</b> <ul style="list-style-type: none"> <li>Advanced clinical prescribing</li> <li>Decision making in practice</li> <li>Micronutrient synergy</li> <li>Micronutrient complexes</li> <li>Single micronutrients</li> <li>Dosing</li> </ul>	Class debate: <ul style="list-style-type: none"> <li>Students develop an argument for circumstances where different prescribing and dosage strategies may nor may not be warranted.</li> </ul>
5.	<b>Nutrition and the Environment</b> <ul style="list-style-type: none"> <li>Environmental chemicals, sources, health effects and minimisation strategies</li> <li>Food toxicants in the daily diet</li> </ul>	Students work in groups to identify the number of potential daily exposures to environmental chemicals and food toxicants and identify avoidance strategies. Class discussion: <ul style="list-style-type: none"> <li>Students present individual findings</li> </ul>
6.	<b>Investigating the mechanisms and relationships to disease processes and exploration of current clinical research regarding:</b> <ul style="list-style-type: none"> <li>Acid Base balance</li> <li>Nutritional implications</li> </ul>	Research activity: <ul style="list-style-type: none"> <li>Students undertake a literature search for a specific condition investigating the role of nutrition in regulating acid base balance and improved health outcomes.</li> </ul>
7.	<b>Biochemical and mechanistic basis of cell salt mineral therapy</b> <ul style="list-style-type: none"> <li>Cations and anions</li> <li>Sodium, Phosphate, Potassium, Calcium, Chloride, Magnesium, Iron &amp; Silica</li> </ul>	Case study analysis
<b>NON-TEACHING WEEK – Note that make up classes may be scheduled in this week.</b> <b>Semester 1</b> - This aligns with the week after Easter so it may fall between weeks 6 to 8. <b>Semester 2</b> - The break week falls between Weeks 7 and 8.		
8.	<b>An exploration of current clinical research regarding</b> Clinical application of nutraceuticals and phytochemicals in disease prevention and management	Case study analysis
9.	<b>An exploration of current clinical research regarding:</b> <ul style="list-style-type: none"> <li>Gut-brain axis</li> <li>Human microbiome</li> </ul>	Activity: <ul style="list-style-type: none"> <li>Students are provided with a number of research articles.</li> <li>Critique and analyse the relevance of each</li> </ul> Class discussion translation of evidence
10.	<b>Investigating the mechanisms and relationships to disease processes and current clinical research regarding nutritional modulation of:</b> <ul style="list-style-type: none"> <li>Immune dysfunction</li> <li>Inflammation cytokine production</li> <li>Th1 and Th2 balance</li> <li>Allergy</li> <li>Autoimmune</li> </ul>	Activity: <ul style="list-style-type: none"> <li>Students are provided with a number of research articles</li> <li>Critique and analyse the relevance of each</li> </ul> Class discussion - translation of evidence into practice
11.	<b>Investigating the mechanisms and relationships to disease processes:</b> <ul style="list-style-type: none"> <li>Genetic polymorphisms</li> <li>Nutrigenomics</li> <li>Pyroluria</li> </ul>	Research tutorial: <ul style="list-style-type: none"> <li>Students provided with a list of gene classifications which have been documented to impact a variety of disease conditions</li> <li>These will be divided amongst the students who will search the literature and collate evidence on</li> </ul>

		disease implications and possible treatment interventions Group discussion: each group presents findings
<b>12.</b>	<b>Investigating the mechanisms and relationships to disease processes and current clinical research regarding nutritional modulation of:</b> <ul style="list-style-type: none"> <li>• Methylation</li> <li>• One-carbon metabolism</li> <li>• Foetal programming</li> </ul>	Activity: <ul style="list-style-type: none"> <li>• Students are provided with a case study and a series of questions relating to the case</li> <li>• In small groups, answer the questions via literature searching where necessary</li> </ul> Class discussion
<b>13.</b>	<b>Investigating the mechanisms and relationships to disease processes and current clinical research regarding nutritional modulation of:</b> <ul style="list-style-type: none"> <li>• Aging theories</li> <li>• Cognitive Function</li> <li>• Neuroplasticity</li> <li>• Telomeres</li> </ul>	Activity: <ul style="list-style-type: none"> <li>• Students are provided with a number of research articles</li> <li>• Critique and analyse the relevance of each</li> </ul> Class discussion - translation of evidence into practice
<b>14.</b>	<b>Non-Teaching Week /Practical Exam Week 1: note that make-up classes may be scheduled in this week.</b>	
<b>15.</b>	<b>Non-Teaching Week /Practical Exam Week 2: note that make-up classes may be scheduled in this week.</b>	
<b>16.</b>	<b>Final Exam Week 1</b> Please refer to the Exam Timetable for your local campus for the exact day and time of exam.	
<b>17.</b>	<b>Final Exam Week 2</b> Please refer to the Exam Timetable for your local campus for the exact day and time of exam.	