



# SUBJECT OUTLINE

Subject Name:

Subject Code:

## Foundations of Human Nutrition N MDF1

### SECTION 1 – GENERAL INFORMATION

<b>Award/s:</b>	<b>Total Course Credit Points:</b>	<b>Level:</b>
Undergraduate Certificate in Building Health through Nutrition	12	1 <sup>st</sup> Year
<b>Duration:</b>	1 Semester	
<b>Subject Coordinator:</b> Vicki Todd-Urbinder (Melbourne Campus)		
<b>Subject is:</b>	<b>Subject Credit Points:</b>	4
Core		

#### Student Workload:

No. timetabled hours per week:	No. personal study hours per week:	Total hours per week:
6	4	10

#### Delivery Mode:

e-Learning (Online)	Narrated PowerPoint presentations	
	Tutorials: Asynchronous tutor moderated discussion forum and activities	
	Student handouts, web-based resources	
Blended Learning (Online)	2 x 2 hour lectures (live streamed)	2 x 1 hour tutorials / workshops online as indicated
	Full Time	

**Pre-requisites:** Meet entry requirements for course with a background in allied health field

**Co-requisites:** Nil

### SECTION 2 – ACADEMIC DETAILS

#### Subject Rationale

This subject establishes an essential bridge between health science and nutritional medicine. Students are introduced to the fundamentals of human nutritional science, including the biochemical and physiological functions of individual macro- and micro- nutrients, the importance of nutrients in normal cell function, energy balance and metabolism and the consequences of deficiencies or excesses on human health. This subject explores the role of scientific research and its application in nutritional medicine practice. Foundations of Human Nutrition is essential to the further study of nutritional medicine where students will develop a deeper understanding of the role of diet and nutrition in restoring, maintaining and promoting optimum health and wellbeing.



## Learning Outcomes

1. Define the macro- and micro- nutrients and their role in health and disease.
2. Identify and discuss the function and implications of states of excess or deficiency for macro- and micro-nutrients.
3. Clarify the appropriate nutritional intake requirements for selected macro- and micro- nutrients in the maintenance and management of health.
4. Apply basic dietary guidelines including required dietary intake of specific nutrients relevant to the restoration, maintenance and promotion of health and wellbeing.
5. Appraise current research-based evidence in relation to health benefits and toxicities of macro- and micro-nutrients.

## Assessment Tasks

Type	Learning Outcomes Assessed	Session Content Delivered	Due	Weighting
<b>Online Quiz 1</b> (30 minutes)	1-4	1-7	Week 5	20%
<b>Nutrient Report</b> (1000 words)	1-4	8-16	Week 9	35%
<b>Case Study Report</b> (1250 words)	1-5	2-22	Week 13	45%

All written assessments and online quizzes are due at 11:55 p.m. Sunday and submitted through the LMS

### Prescribed Readings:

1. Paxton, F. (2015). *Foundations of naturopathic nutrition: A comprehensive guide to essential nutrients and nutritional bioactives*. Crows Nest, NSW: Allen & Unwin.
2. Whitney, E., Rolfes, S. R., Crowe, T., Cameron-Smith, D., & Walsh, A. (2016). *Understanding nutrition: Australia and New Zealand edition (4<sup>th</sup> ed.)*. South Melbourne, Vic: Cengage Learning. [ebook available]
3. Current research articles as outlined per session within the subject study guide reading list.

### Recommended Readings:

1. Food Standards Australia New Zealand. (n.d.). Australian Food Composition Database (previously NUTTAB), 2019. Retrieved from <https://www.foodstandards.gov.au/science/monitoringnutrients/afcd/Pages/default.aspx>
2. Gropper, S. S., & Smith, J. L. (2017). *Advanced nutrition and human metabolism (7th ed.)*. Belmont, CA: Wadsworth Cengage Learning. [ebook available]



3. Hendler, S. S., & Rorvik, D. M. (2008). *PDR for nutritional supplements* (2nd ed.). Montvale, NJ: Thomson Reuters.
4. Nelson, D. L., & Cox, M. M. (2016). *Lehninger principles of biochemistry* (7th ed., international ed.). New York, NY: W.H. Freeman.
5. Osiecki, H. (2014). *The nutrient bible* (9th ed.). Eagle Farm, QLD: Bio Concepts Publishing.
6. Ross, A. C., Caballero, B., Cousins, R. J., Tucker, K. L., & Ziegler, T. R. (Eds.). (2014). *Modern nutrition in health and disease* (11th ed.). Philadelphia, PA: Wolters Kluwer.
7. Schlenker, E. D., & Roth, S. L. (2015). *Williams' essentials of nutrition & diet therapy* (11th ed.). St Louis, MO: Mosby Elsevier. [ebook available]
8. Summers, J., & Smith, B. (2014). *Communication skills handbook* (4th ed.). Milton, QLD: Wiley.
9. Wahlqvist, M. L. (Ed.). (2011). *Food and nutrition: Food and health systems in Australia and New Zealand* (3rd ed.). Crows Nest, NSW: Allen and Unwin.

## Subject Content

Week	Lectures	Tutorials / Practicals
1.	<p>Session 1</p> <p><b>Introduction</b> (Subject Outline / Subject Aims / Assessment / Teaching Resources)</p> <p><b>Introduction to Dietary Requirements</b></p> <ul style="list-style-type: none"> <li>➤ Introduction to nutrition</li> <li>➤ Nutrient reference values (NRV), recommended dietary intake (RDI) as per the Australian Dietary Guidelines, therapeutic dosage ranges</li> <li>➤ Global and national governing bodies and regulatory agencies</li> </ul>	<p>Activities are developed to allow the students to explore relevant concepts, expand on ideas and have peer and lecturer interaction. Activities also allow for formative assessment and feedback.</p> <p>Prior to class: Online tutorial activities to assist with preparation and revision:</p> <ul style="list-style-type: none"> <li>➤ Definitions</li> <li>➤ Natural Medicine Principles</li> </ul> <p>Post class: Online tutorial activities to consolidate learning concepts:</p> <ul style="list-style-type: none"> <li>➤ NRV's</li> <li>➤ Governing bodies</li> </ul>
	<p>Session 2</p> <p><b>Macronutrients: Carbohydrates - Part 1</b></p> <ul style="list-style-type: none"> <li>➤ Types, biochemical structures, absorption, physiological functions, RDI levels, deficiency indications, toxicity</li> <li>➤ Carbohydrates in health management</li> </ul>	<p>Prior to class: Online tutorial activities to assist with preparation and revision:</p> <ul style="list-style-type: none"> <li>➤ Physiology</li> <li>➤ Sources</li> </ul> <p>Post class: Online tutorial activities to consolidate learning concepts:</p> <ul style="list-style-type: none"> <li>➤ Glycaemic Index and glycaemic load</li> <li>➤ Deficiency and toxicity</li> </ul>
2.	<p>Session 3</p> <p><b>Macronutrients: Carbohydrates - Part 2 (Dietary Fibre)</b></p> <ul style="list-style-type: none"> <li>➤ Types, sources, biochemical structures, fermentation, metabolic effects &amp; physiological</li> </ul>	<p>Prior to class: Online tutorial activities to assist with preparation and revision:</p> <ul style="list-style-type: none"> <li>➤ Water quality</li> <li>➤ Sources</li> </ul> <p>Post class: Online tutorial activities to consolidate</p>



	<p>functions, RDI levels, prescribing recommendations, in health management</p> <p><b>Macronutrient: Water</b></p> <ul style="list-style-type: none"> <li>➤ Functions, quality, requirements, health management</li> </ul>	<p>learning concepts:</p> <ul style="list-style-type: none"> <li>➤ Health Management</li> </ul>
	<p>Session 4</p> <p><b>Macronutrients: Lipids - Part 1</b></p> <ul style="list-style-type: none"> <li>➤ Types, biochemical structures, physiological functions, RDI levels, deficiency, toxicity, therapeutic uses</li> <li>➤ Lipids in health management</li> </ul>	<p>Prior to class: Online tutorial activities to assist with preparation and revision:</p> <ul style="list-style-type: none"> <li>➤ Physiology</li> <li>➤ Sources</li> <li>➤ Definitions</li> </ul> <p>Post class: Online tutorial activities to consolidate learning concepts:</p> <ul style="list-style-type: none"> <li>➤ Health Management</li> </ul>
3.	<p>Session 5</p> <p><b>Macronutrients: Lipids - Part 2 Essential Fatty Acids (EFAs) continued, Phospholipids, Sterols and Cholesterol</b></p> <ul style="list-style-type: none"> <li>➤ Physiological functions, mechanism of action, RDI levels, deficiency indications, toxicity, therapeutic applications</li> <li>➤ Lipids in health management</li> </ul>	<p>Prior to class: Online tutorial activities to assist with preparation and revision:</p> <ul style="list-style-type: none"> <li>• Biochemical structure; sources</li> <li>• Properties</li> </ul> <p>Post class: Online tutorial activities to consolidate learning concepts:</p> <p>Health Management</p>
	<p>Session 6</p> <p><b>Macronutrients: Protein - Part 1</b></p> <ul style="list-style-type: none"> <li>➤ Types, sources, absorption, physiological functions, RDI levels, deficiency indications and toxicity</li> <li>➤ Protein in health management</li> </ul>	<p>Prior to class: Online tutorial activities to assist with preparation and revision:</p> <ul style="list-style-type: none"> <li>➤ Biochemical Structure</li> <li>➤ Physiology</li> </ul> <p>Post class: Online tutorial activities to consolidate learning concepts:</p> <ul style="list-style-type: none"> <li>➤ Health Management</li> </ul>
4.	<p>Session 7</p> <p><b>Macronutrients: Protein - Part 2</b></p> <ul style="list-style-type: none"> <li>➤ Purine-pyrimidine synthesis, acid-alkaline diets</li> <li>➤ Branched chain amino acids: Valine, Leucine and Isoleucine: <ul style="list-style-type: none"> <li>○ Sources, biochemical structures, absorption, physiological functions, RDI levels, deficiency indications and toxicity</li> <li>○ Health management</li> </ul> </li> </ul>	<p>Prior to class: Online tutorial activities to assist with preparation and revision:</p> <ul style="list-style-type: none"> <li>➤ Metabolic pathways</li> <li>➤ Structural categories</li> </ul> <p>Post class: Online tutorial activities to consolidate learning concepts:</p> <ul style="list-style-type: none"> <li>➤ Health Management</li> </ul>
	<p>Session 8</p> <p><b>Macronutrients: Amino Acids - Part 1</b></p> <ul style="list-style-type: none"> <li>➤ Aromatic amino acids: Tryptophan, Tyrosine, Phenylalanine</li> </ul>	<p>Prior to class: Online tutorial activities to assist with preparation and revision:</p> <ul style="list-style-type: none"> <li>➤ Metabolic pathways</li> </ul> <p>Post class: Online tutorial activities to consolidate learning concepts:</p>



	<ul style="list-style-type: none"> <li>➤ Aspartate <ul style="list-style-type: none"> <li>○ Sources, biochemical structures, absorption, physiological functions, RDI levels, deficiency indications and toxicity</li> <li>○ Health management</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>➤ Research</li> <li>➤ Health Management</li> </ul>
5.	<p>Session 9</p> <p><b>Macronutrients: Amino Acids - Part 2</b></p> <ul style="list-style-type: none"> <li>➤ Sulphur-containing amino acids: Methionine, Cysteine, Taurine, Glutathione</li> <li>➤ Glutamine &amp; Glycine</li> <li>➤ Lysine &amp; Carnitine <ul style="list-style-type: none"> <li>○ Sources, biochemical structures, absorption, physiological functions, RDI levels, deficiency indications and toxicity</li> <li>○ Health management</li> </ul> </li> </ul>	<p>Prior to class: Online tutorial activities to assist with preparation and revision:</p> <ul style="list-style-type: none"> <li>➤ Metabolic pathways</li> </ul> <p>Post class: Online tutorial activities to consolidate learning concepts:</p> <ul style="list-style-type: none"> <li>➤ Research</li> <li>➤ Health Management</li> </ul>
	<p>Session 10</p> <p><b>Macronutrients: Amino Acids - Part 3</b></p> <ul style="list-style-type: none"> <li>➤ Threonine, Serine, Arginine, Histidine, Alanine <ul style="list-style-type: none"> <li>○ Sources, biochemical structures, absorption, physiological functions, RDI levels, deficiency indications and toxicity</li> <li>○ Health management</li> <li>○ Supplementation</li> </ul> </li> </ul>	<p>Prior to class: Online tutorial activities to assist with preparation and revision:</p> <ul style="list-style-type: none"> <li>➤ Metabolic pathways</li> <li>➤ Forms of Amino Acids (D, L)</li> </ul> <p>Post class: Online tutorial activities to consolidate learning concepts:</p> <ul style="list-style-type: none"> <li>➤ Health Management</li> <li>➤ Supplementation</li> </ul>
6.	<p>Session 11</p> <p><b>Vitamins: Water Soluble Vitamins - Part 1</b></p> <ul style="list-style-type: none"> <li>➤ Introduction to water soluble vitamins and Vitamin C</li> <li>➤ Biochemical structures, absorption, physiological functions, RDI levels, therapeutic uses, deficiency indications and toxicity</li> <li>➤ Health management</li> </ul>	<p>Prior to class: Online tutorial activities to assist with preparation and revision:</p> <ul style="list-style-type: none"> <li>➤ Properties</li> <li>➤ Sources</li> </ul> <p>Post class: Online tutorial activities to consolidate learning concepts:</p> <ul style="list-style-type: none"> <li>➤ Health Management</li> <li>➤ Dosing and supplementation</li> </ul>
	<p>Session 12</p> <p><b>Vitamins: Water Soluble Vitamins - Part 2</b></p> <ul style="list-style-type: none"> <li>➤ Introduction to B Group Vitamins, Vitamin B1, Vitamin B2, and inositol</li> <li>➤ Absorption, physiological functions, RDI levels, therapeutic uses, deficiency indications and toxicity</li> <li>➤ Health management</li> </ul>	<p>Prior to class: Online tutorial activities to assist with preparation and revision:</p> <ul style="list-style-type: none"> <li>➤ Properties</li> <li>➤ Sources</li> </ul> <p>Post class: Online tutorial activities to consolidate learning concepts:</p> <ul style="list-style-type: none"> <li>➤ Health Management</li> <li>➤ Dosing and supplementation</li> </ul>
7.	<p>Session 13</p> <p><b>Vitamins: Water Soluble Vitamins - Part 3</b></p>	<p>Prior to class: Online tutorial activities to assist with preparation and revision:</p>



	<ul style="list-style-type: none"> <li>➤ Vitamin B3, Vitamin B5, and Biotin</li> <li>➤ Biochemical structures, absorption, physiological functions, RDI levels, therapeutic uses, deficiency indications and toxicity</li> <li>➤ Health management</li> </ul>	<ul style="list-style-type: none"> <li>➤ Sources</li> </ul> <p>Post class: Online tutorial activities to consolidate learning concepts:</p> <ul style="list-style-type: none"> <li>➤ Health Management</li> <li>➤ Research</li> </ul>
	<p>Session 14</p> <p><b>Vitamins: Water Soluble Vitamins - Part 4</b></p> <ul style="list-style-type: none"> <li>➤ Vitamin B6, Vitamin B12 and Folate</li> <li>➤ Biochemical structures, absorption, physiological functions, RDI levels, therapeutic uses, deficiency indications and toxicity</li> <li>➤ Health management</li> </ul>	<p>Prior to class: Online tutorial activities to assist with preparation and revision:</p> <ul style="list-style-type: none"> <li>➤ Biochemical pathways</li> <li>➤ Sources</li> </ul> <p>Post class: Online tutorial activities to consolidate learning concepts:</p> <ul style="list-style-type: none"> <li>➤ Health Management</li> <li>➤ Dosing and supplementation</li> <li>➤ Introduction to Food analysis software</li> </ul>
<p><b>NON-TEACHING WEEK</b> (note that make-up classes may be scheduled in this week)</p> <p><b>Semester 1</b> – This aligns with the week after Easter so it may fall between Weeks 6 to 8</p> <p><b>Semester 2 &amp; Online students</b> – The non-teaching week falls between Weeks 7 and 8</p>		
8.	<p>Session 15</p> <p><b>Vitamins: Fat Soluble Vitamins - Part 1</b></p> <ul style="list-style-type: none"> <li>➤ Introduction to fat soluble vitamins, Vitamin A and Vitamin D</li> <li>➤ Biochemical structures, absorption, physiological functions, RDI levels, therapeutic uses, deficiency indications and toxicity</li> <li>➤ Health management</li> </ul>	<p>Prior to class: Online tutorial activities to assist with preparation and revision:</p> <ul style="list-style-type: none"> <li>➤ Difference between fat soluble and water soluble vitamins</li> <li>➤ Sources</li> <li>➤ Metabolic pathways</li> </ul> <p>Post class: Online tutorial activities to consolidate learning concepts:</p> <ul style="list-style-type: none"> <li>➤ Supplementation</li> </ul>
	<p>Session 16</p> <p><b>Vitamins: Fat Soluble Vitamins - Part 2</b></p> <ul style="list-style-type: none"> <li>➤ Vitamin K and Vitamin E types, biochemical structures, absorption, physiological functions, RDI levels, deficiency indications and toxicity</li> <li>➤ Health management</li> </ul>	<p>Prior to class: Online tutorial activities to assist with preparation and revision:</p> <ul style="list-style-type: none"> <li>➤ Sources</li> <li>➤ Metabolic pathways</li> </ul> <p>Post class: Online tutorial activities to consolidate learning concepts:</p> <ul style="list-style-type: none"> <li>➤ Cautions; Conditions</li> </ul>
9.	<p>Session 17</p> <p><b>Minerals: Macrominerals - Part 1</b></p> <ul style="list-style-type: none"> <li>➤ Calcium, Magnesium and Phosphorous</li> <li>➤ Sources, biochemical structures, absorption, physiological functions, RDI levels, therapeutic uses, deficiency indications and toxicity</li> <li>➤ Health management</li> </ul>	<p>Prior to class: Online tutorial activities to assist with preparation and revision:</p> <ul style="list-style-type: none"> <li>➤ Introduction to Macro v. Micro minerals</li> <li>➤ Properties</li> </ul> <p>Post class: Online tutorial activities to consolidate learning concepts:</p> <ul style="list-style-type: none"> <li>➤ Health management</li> </ul>



	<p>Session 18</p> <p><b>Minerals: Macrominerals - Part 2</b></p> <ul style="list-style-type: none"> <li>➤ Electrolytes (Potassium, Sodium, Chloride), biochemical structures, absorption, physiological functions, RDI levels, therapeutic uses, deficiency indications and toxicity</li> <li>➤ Health Management</li> </ul>	<p>Prior to class: Online tutorial activities to assist with preparation and revision:</p> <ul style="list-style-type: none"> <li>➤ Electrolyte metabolism</li> <li>➤ Sources</li> </ul> <p>Post class: Online tutorial activities to consolidate learning concepts:</p> <ul style="list-style-type: none"> <li>➤ Health Management</li> </ul>
10.	<p>Session 19</p> <p><b>Minerals: Microminerals - Part 1</b></p> <ul style="list-style-type: none"> <li>➤ Introduction to microminerals, Chromium, Vanadium and Zinc</li> <li>➤ Biochemical structures, absorption, physiological functions, RDI levels, therapeutic uses, deficiency indications and toxicity</li> <li>➤ Health management</li> </ul>	<p>Prior to class: Online tutorial activities to assist with preparation and revision:</p> <ul style="list-style-type: none"> <li>➤ Properties</li> <li>➤ Sources</li> </ul> <p>Post class: Online tutorial activities to consolidate learning concepts:</p> <ul style="list-style-type: none"> <li>➤ Health Management</li> </ul>
	<p>Session 20</p> <p><b>Minerals: Microminerals - Part 2</b></p> <ul style="list-style-type: none"> <li>➤ Cobalt, Selenium and Iodine</li> <li>➤ Biochemical structures, absorption, physiological functions, RDI levels, therapeutic uses, deficiency indications and toxicity</li> <li>➤ Health management</li> </ul>	<p>Prior to class: Online tutorial activities to assist with preparation and revision:</p> <ul style="list-style-type: none"> <li>➤ Properties</li> <li>➤ Sources</li> </ul> <p>Post class: Online tutorial activities to consolidate learning concepts:</p> <ul style="list-style-type: none"> <li>➤ Health Management</li> </ul>
11.	<p>Session 21</p> <p><b>Minerals: Microminerals - Part 3</b></p> <ul style="list-style-type: none"> <li>➤ Manganese, Copper and Iron</li> <li>➤ Biochemical structures, absorption, physiological functions, RDI levels, therapeutic uses, deficiency indications and toxicity</li> <li>➤ Health management</li> </ul>	<p>Prior to class: Online tutorial activities to assist with preparation and revision:</p> <ul style="list-style-type: none"> <li>➤ Properties</li> <li>➤ Sources</li> </ul> <p>Post class: Online tutorial activities to consolidate learning concepts:</p> <ul style="list-style-type: none"> <li>➤ Health Management</li> </ul>
	<p>Session 22</p> <p><b>Minerals: Microminerals - Part 4</b></p> <ul style="list-style-type: none"> <li>➤ Fluoride, Molybdenum, Boron, Silica and Bromine</li> <li>➤ Biochemical structures, absorption, physiological functions, RDI levels, therapeutic uses, deficiency indications and toxicity</li> <li>➤ Health management</li> </ul>	<p>Prior to class: Online tutorial activities to assist with preparation and revision:</p> <ul style="list-style-type: none"> <li>➤ Properties</li> <li>➤ Sources</li> </ul> <p>Post class: Online tutorial activities to consolidate learning concepts:</p> <ul style="list-style-type: none"> <li>➤ Health Management</li> <li>➤ Vegetarian and Veganism</li> </ul>
12.	<p>Session 23</p> <p><b>Nutritional Toxicology: Toxic Metals and Other Toxic Substances</b></p>	<p>Prior to class: Online tutorial activities to assist with preparation and revision:</p> <ul style="list-style-type: none"> <li>➤ Properties</li> <li>➤ Neurotoxicity</li> </ul>



	<ul style="list-style-type: none"> <li>➤ Cadmium, Lead, Mercury, Nickel, Aluminium, Arsenic</li> <li>➤ Biochemical structures, absorption, physiological impacts, toxicity signs, nutritional management</li> <li>➤ Health management of toxic metals and other toxic substances through nutritional medicine</li> </ul>	<p>Post class: Online tutorial activities to consolidate learning concepts:</p> <ul style="list-style-type: none"> <li>➤ Health risks and management</li> </ul>
	<p>Session 24</p> <p><b>Nutritional Assessment</b></p> <ul style="list-style-type: none"> <li>➤ Dietary assessment methods</li> <li>➤ Clinical and laboratory assessment methods</li> <li>➤ Population based assessment methods</li> <li>➤ Balancing Energy Needs</li> </ul>	<p>Prior to class: Online tutorial activities to assist with preparation and revision:</p> <ul style="list-style-type: none"> <li>➤ Balancing energy needs</li> </ul> <p>Post class: Online tutorial activities to consolidate learning concepts:</p> <ul style="list-style-type: none"> <li>➤ Validity of assessments for use as a nutritionist</li> </ul>
13.	<p>Session 25</p> <p><b>Nutrition in Population Health</b></p> <ul style="list-style-type: none"> <li>➤ Nutritional considerations, deficiencies and safety recommendations for key population groups</li> </ul>	<p>Prior to class: Online tutorial activities to assist with preparation and revision:</p> <ul style="list-style-type: none"> <li>➤ Nutritional requirements for population groups</li> </ul> <p>Post class: Online tutorial activities to consolidate learning concepts:</p> <ul style="list-style-type: none"> <li>➤ Research</li> <li>➤ Prescribing</li> </ul>
	<p>Session 26</p> <p><b>Dietary Theories</b></p> <ul style="list-style-type: none"> <li>➤ Popular diet theories</li> </ul>	<p>Prior to class: Online tutorial activities to assist with preparation and revision:</p> <ul style="list-style-type: none"> <li>➤ Types of diets</li> <li>➤ What makes a good diet?</li> </ul> <p>Post class: Online tutorial activities to consolidate learning concepts:</p> <ul style="list-style-type: none"> <li>➤ Application of popularised diets in clinical practice</li> </ul>
14.	<p><b>Non-Teaching Week/Practical Examination Week 1</b></p> <p>Note that make-up classes may be scheduled in this week</p>	
15.	<p><b>Non-Teaching Week/Practical Examination Week 2</b></p> <p>Note that make-up classes may be scheduled in this week</p>	
16.	<p><b>Final Examination Week 1</b></p> <p>There is no final exam for this subject.</p>	
17.	<p><b>Final Examination Week 2</b></p> <p>There is no final exam for this subject.</p>	