

SUBJECT OUTLINE



Subject Name:

Foundations of Human Nutrition

Subject Code:

NMDF121

SECTION 1 – GENERAL INFORMATION

Award/s:	Total course credit points:	Level:
Bachelor of Health Science (Naturopathy)	128	Core 1 st Year
Bachelor of Health Science (Nutritional and Dietetic Medicine)	96	Core 1 st Year
Bachelor of Health Science (Myotherapy)	96	Core 2 nd Year
Bachelor of Complementary Medicine	48	Elective 3 rd Year

Duration: 1 Semester

Subject Coordinator: Karen Wallace (Perth campus)

Subject is: Core or Elective as noted

Subject Credit Points: 4

Student Workload:

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

Delivery Mode:

Face to face	2 x 2 hours lecture	2 x 1 hour tutorial
E-Learning	Details:	Narrated Powerpoint presentations Asynchronous tutor-moderated discussion forum and activities Student handouts, web-based resources
Intensive Delivery	Details:	Summer school - offered 4 x 4hrs per week for 5 weeks. Assessments for the Summer School intensive are due to be uploaded by Sunday on the week assigned through the Summer School period – Essay due week 5, Case Study Report due week 5. Final exam conducted in Week 6.
Full Time		
Part Time		

Pre-requisites: BIOH111, BIOB111

Co-requisites: SOCQ121

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 micronutrients, 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 micro and macronutrients and their role in health and disease.
2. Discuss the digestion, absorption, physiological role and biochemical metabolism of selected macro and micronutrients.
3. Clarify the appropriate dosage range for selected macro and micronutrients 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 micronutrients.

Assessment Tasks

Type	Learning Outcomes Assessed	Session Content Delivered	Session Due	Weighting
Essay (1000 words)	3,5	1-10	Sunday following Session 14	20%
Case Study Report (1500 Words)	1,3,4,5	2-22	Sunday following Session 24	30%
Written Exam (1.5 hours) Multiple choice, short answer, application question	1-5	1-26	Final Exam Period	50%

Prescribed readings:

1. Summers, J., & Smith, B. (2014). *Communication skills handbook* (4th ed.). Milton, QLD: Wiley.
2. Whitney, E., Rolfes, S. R., Crowe, T., Cameron-Smith, D., & Walsh, A. (2016). *Understanding nutrition: Australia and New Zealand edition* (3rd ed.). South Melbourne, Vic: Cengage Learning.
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., *Nutrient database for Australian foods (NUTTAB) 2010*, Retrieved from <http://www.foodstandards.gov.au/science/monitoringnutrients/nutrientables/nuttab/Pages/default.aspx>
2. Gropper, S. S., & Smith, J. L. (2017). *Advanced nutrition and human metabolism* (7th ed.). Belmont, CA: Wadsworth Cengage Learning.
3. Hendler, S. S., & Rorvik, D. M. (2008). *PDR for nutritional supplements* (2nd ed.). Montvale, NJ: Thomson Reuters.
4. Osiecki, H. (2014). *The nutrient bible* (9th ed.). Eagle Farm, QLD: Bio Concepts Publishing.
5. Paxton, F. (2015). *Foundations of naturopathic nutrition, a comprehensive guide to essential nutrients and nutritional bioactives*. Crows Nest, NSW: Allen & Unwin.
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/ Lippincott Williams & Wilkins.
7. Schlenker, E. D., & Roth, S. L. (2015). *Williams' essentials of nutrition & diet therapy* (11th ed.). St Louis, MO: Mosby Elsevier. [ebook available]
8. Wahlqvist, M. L. (Eds.). (2011). *Food and nutrition: Food and health systems in Australia and New Zealand* (3rd ed.). Crows Nest, NSW: Allen and Unwin.

Subject Content

Week	Lecture	Tutorial
1.	Session 1 Introduction to Dietary Requirements <ul style="list-style-type: none"> • Introduction to Nutrition 	<ul style="list-style-type: none"> • Visit the recommended websites and complete the associated activities

	<ul style="list-style-type: none"> • Definitions of nutrition, diet, NRV, RDI and therapeutic dosage range • Global and national governing bodies and regulatory agencies 	<ul style="list-style-type: none"> • View the video presentation followed by class or on-line discussion
	Session 2 Macronutrient: Carbohydrates Part I <ul style="list-style-type: none"> • Types, sources, biochemical structures, absorption, physiological functions, RDI levels, deficiency indications, toxicity • Carbohydrates in health management 	<ul style="list-style-type: none"> • Complete worksheet and work through the exercises on calculating GI and GL. Discuss findings in class or on-line in your tutorial group. • Access the recommended websites and complete the associated activities.
2.	Session 3 Macronutrients: Carbohydrates Part II (dietary fibre) <ul style="list-style-type: none"> • Types, sources, biochemical structures, fermentation, metabolic effects & physiological functions, RDI levels, prescribing recommendations • Water • Functions, quality, requirements • Water and Fibre in health management 	<ul style="list-style-type: none"> • Read the set journal article for this tutorial. • Thoroughly analyse the findings of this article and answer the set questions outlined in the tutorial.
	Session 4 Macronutrients: Lipids Part I <ul style="list-style-type: none"> • Types, sources, biochemical structures, absorption, physiological functions, RDI levels, deficiency, toxicity, therapeutic uses • Lipids in Health Management 	<ul style="list-style-type: none"> • View the slides featuring pictures of foods known to contain fats. • Complete the worksheet by filling in the class of fat each food would belong to. • Share your findings in class or in the on-line forum.
3.	Session 5 Macronutrients: Lipids Part II (EFAs continued, phospholipids, sterols and cholesterol) <ul style="list-style-type: none"> • Biochemical structures, physiological functions, mechanism of action, RDI levels, deficiency indications, toxicity, therapeutic applications • Lipids in Health Management 	<ul style="list-style-type: none"> • Drawing upon the tutorial reading, review the findings of the paper and consider how the findings presented can/cannot be applied to clinical nutritional medicine management.
	Session 6 Macronutrients: Protein Part I <ul style="list-style-type: none"> • Types, sources, biochemical structures, absorption, physiological functions, RDI levels, deficiency indications and toxicity • Protein in Health Management 	<ul style="list-style-type: none"> • Using the provided diet diary, recall and record everything you have eaten over the past 24 hours. Analyse your diet and consider the amount and sources of dietary protein consumed. Discuss findings in class or in your on-line tutorial forum.
4.	Session 7 Macronutrients: Protein Part II <ul style="list-style-type: none"> • Urea cycle, purine-pyrimidine synthesis, acid-alkaline diets • Branched chain amino acids – valine, leucine and isoleucine 	<ul style="list-style-type: none"> • Review reading on acid-alkaline balance and discuss findings online or in class. • Watch video presentation on health impacts of BCAA.
	Session 8 Macronutrients: Amino acids Part I <ul style="list-style-type: none"> • Aromatic amino acids (tryptophan, tyrosine, phenylalanine) and aspartate • Sources, biochemical structures, absorption, physiological functions, RDI levels, deficiency indications and toxicity • Amino acids in Health Management 	<ul style="list-style-type: none"> • Case study

5.	Session 9 Macronutrients: Amino acids Part II <ul style="list-style-type: none"> • Sulphur containing amino acids (methionine, cysteine, taurine, glutathione), glutamine & glycine • Sources, biochemical structures, absorption, physiological functions, RDI levels, deficiency indications and toxicity • Amino acids in Health Management 	<ul style="list-style-type: none"> • Case study
	Session 10 Macronutrient: Amino acids Part III <ul style="list-style-type: none"> • Lysine, Threonine, Serine, Arginine, Histidine, Alanine • Sources, biochemical structures, absorption, physiological functions, RDI levels, deficiency indications and toxicity • Amino acids in Health Management 	<ul style="list-style-type: none"> • Review the slides provided of 4 protein powder supplements. Compare and contrast formulas, review labelling claims and identify any potential risks.
6.	Session 11 Vitamins: Water Soluble Vitamins Part I <ul style="list-style-type: none"> • Introduction to water soluble vitamins and Vitamin C • Sources, biochemical structures, absorption, physiological functions, RDI levels, therapeutic uses, deficiency indications and toxicity • Water Soluble Vitamins in Health Management 	<ul style="list-style-type: none"> • Case study
	Session 12 Vitamins: Water Soluble Vitamins Part II <ul style="list-style-type: none"> • Introduction to B group vitamins, Vitamin B1, Vitamin B2, and inositol • Sources, biochemical structures, absorption, physiological functions, RDI levels, therapeutic uses, deficiency indications and toxicity • Water Soluble Vitamins in Health Management 	<ul style="list-style-type: none"> • View the provided video presentation on vitamin supplementation and discuss your views about their content.
7.	Session 13 Vitamins: Water Soluble Vitamins Part III <ul style="list-style-type: none"> • Vitamin B3, Vitamin B5, and Biotin • Sources, biochemical structures, absorption, physiological functions, RDI levels, therapeutic uses, deficiency indications and toxicity • Water Soluble Vitamins in Health Management 	<ul style="list-style-type: none"> • Read the recommended journal article and answer the questions outlined for this tutorial activity.
	Session 14 Vitamins: Water Soluble Vitamins Part IV <ul style="list-style-type: none"> • Vitamin B6, Vitamin B12 and Folate • Sources, biochemical structures, absorption, physiological functions, RDI levels, therapeutic uses, deficiency indications and toxicity • Water Soluble Vitamins in Health Management 	<ul style="list-style-type: none"> • Case study
NON-TEACHING WEEK Semester 1 - This aligns with the week after Easter so it may fall between weeks 6 to 8. Semester 2 & Online students - The break week falls between Weeks 7 and 8.		
8.	Session 15	<ul style="list-style-type: none"> • Download the required reading and answer the associated questions. Upon reviewing the

	Vitamins: Fat Soluble Vitamins Part I <ul style="list-style-type: none"> • Introduction to Fat Soluble Vitamins, Vitamin A and Vitamin D • Sources, biochemical structures, absorption, physiological functions, RDI levels, therapeutic uses, deficiency indications and toxicity. • Fat Soluble Vitamins in Health Management 	evidence you should consider how the findings may apply/not apply to hypothetical management.
	Session 16 Vitamins: Fat Soluble Vitamins Part II <ul style="list-style-type: none"> • Vitamin K and Vitamin E types, sources, biochemical structures, absorption, physiological functions, RDI levels, deficiency indications and toxicity. • Fat Soluble Vitamins in Health Management. 	<ul style="list-style-type: none"> • Case study • Video on vitamin K and haemorrhagic disease
9.	Session 17 Minerals: Macrominerals Part I <ul style="list-style-type: none"> • Introduction to macrominerals, Calcium, Magnesium and Phosphorous • Sources, biochemical structures, absorption, physiological functions, RDI levels, therapeutic uses, deficiency indications and toxicity • Macro minerals in Health Management. 	<ul style="list-style-type: none"> • Case study
	Session 18 Minerals: Macrominerals Part II <ul style="list-style-type: none"> • Electrolytes (Potassium, Sodium, Chloride) Sources, biochemical structures, absorption, physiological functions, RDI levels, therapeutic uses, deficiency indications and toxicity • Macro minerals in Health Management 	<ul style="list-style-type: none"> • Using dietary analysis software, analyse your sodium and potassium intake over the past 24 hours and compare your intake to the recommended dietary intakes for these minerals. • View the video presentation on fluid electrolyte balance to assist consolidating your knowledge.
10.	Session 19 Minerals: Microminerals Part I <ul style="list-style-type: none"> • Introduction to Microminerals, Chromium, Vanadium and Zinc • Sources, biochemical structures, absorption, physiological functions, RDI levels, therapeutic uses, deficiency indications and toxicity. • Micro minerals in Health Management. 	<ul style="list-style-type: none"> • Drawing upon the required and optional readings provided for this session, review the clinical applications of chromium, vanadium and zinc and answer the tutorial activity questions. • Choose one of the listed articles and write a short extract to answer the associated questions.
	Session 20 Minerals: Microminerals Part II <ul style="list-style-type: none"> • Cobalt, Selenium and Iodine • Sources, biochemical structures, absorption, physiological functions, RDI levels, therapeutic uses, deficiency indications and toxicity • Micro minerals in Health Management 	<ul style="list-style-type: none"> • Consider the reading on Iodine fortification and then watch the video on iodine deficiency. Upon completing both of these required tasks, consider the implications and benefits of iodine fortification.
11.	Session 21 Minerals: Microminerals Part III <ul style="list-style-type: none"> • Manganese, Copper and Iron • Sources, biochemical structures, absorption, physiological functions, RDI levels, therapeutic uses, deficiency indications and toxicity • Microminerals in Health Management 	<ul style="list-style-type: none"> • Read the recommended journal articles and answer the questions outlined for this tutorial activity.

	Session 22 Minerals: Microminerals Part IV <ul style="list-style-type: none"> Fluoride, Molybdenum, Boron, Silica and Bromine Sources, biochemical structures, absorption, physiological functions, RDI levels, therapeutic uses, deficiency indications and toxicity Microminerals in Health Management 	<ul style="list-style-type: none"> Students investigate the origins of water fluoridation and review the modern day benefits and health considerations. View the provided video presentation and discuss the main points raised.
12.	Session 23 Nutritional Toxicology: Toxic Metals and other Toxic Substances <ul style="list-style-type: none"> Cadmium, lead, mercury, nickel, aluminium, arsenic Biochemical structures, absorption, physiological impacts, toxicity signs, nutritional management Health Management of Toxic Metals and Other Toxic Substances through Nutritional Medicine 	<ul style="list-style-type: none"> Case study Log on to the listed websites to learn more about heavy metal toxicity.
	Session 24 Nutritional Assessment <ul style="list-style-type: none"> Dietary assessment methods and their validity 	<ul style="list-style-type: none"> Read the provided journal article and answer the questions outlined for this tutorial activity.
13.	Session 25 Nutrition in Population Health <ul style="list-style-type: none"> Nutritional requirements, nutritional considerations, deficiencies and safety recommendations for key population groups 	<ul style="list-style-type: none"> View the video presentation and discuss the views portrayed in the video.
	Session 26 Dietary Theories <ul style="list-style-type: none"> Analysis of cultural diets, diets supported by research and 'popularised diets' 	<ul style="list-style-type: none"> Facilitated discussion on the application of 'popularised diets' in clinical practice
14.	Non-Teaching Week/Practical Exam Week 1. Note that make-up classes may be scheduled in this week.	
15.	Non-Teaching Week/Practical Exam Week 2. Note that make-up classes may be scheduled in this week.	
16.	Final Exam Week 1 On campus enrolled students: please refer to the Exam Timetable for your local campus for the exact day and time of exam. Online enrolled students: You are required to sit examinations on campus per the <i>Examination Policy - Higher Education</i> . The Exam Week for subjects offered online is identified in the Online Calendar.	
17.	Final Exam Week 2 Please refer to the Exam Timetable for your local campus for the exact day and time of exam.	