



SUBJECT OUTLINE

Subject Name:

Medicinal Food Science

Subject Code:

NMDM1

SECTION 1 – GENERAL INFORMATION

Award/s:	Total Course Credit Points:	Level:
Undergraduate Certificate in Building Health through Nutrition	12	1 st Year
Undergraduate Certificate in Lifestyle Coaching	10	1 st Year
Duration: 1 Semester		
Subject Coordinator: Dr Mansi Dass Singh (Adelaide Campus)		
Subject is: Core	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:

e-Learning (Online)	Narrated PowerPoint presentations Tutorials: Asynchronous tutor moderated discussion forum and activities Student handouts, web-based resources Full Time
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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 introduces students to food-based science, including food spoilage, food additives and natural toxins. The methods of food preparation and cooking, cultivation and storage practices are presented and analysed. Students explore the therapeutic potentials of various whole foods by examining their natural chemical constituents. A variety of cultural dietary medicine systems and diets are introduced, and foods are discussed from the philosophical perspectives of these cultural systems. Medicinal Food Science provides a foundation for later subjects where nutrition and diet therapy are discussed.



Learning Outcomes

1. Examine the therapeutic potentials of foods from the perspectives of traditional knowledge, use, and research.
2. Apply an understanding of dietary philosophies and principles of traditional cultures to the restoration, maintenance and promotion of health and wellbeing.
3. Develop strategies for the effective management of health conditions based on the therapeutic potential of specific foods.
4. Investigate the influences of external factors on food quality and safety, and how this impacts both nutritional status and the therapeutic potential of foods.

Assessment Tasks

Type	Learning Outcomes Assessed	Session Content Delivered	Due	Weighting
Essay (1000 words)	1 & 4	1-7	Week 5	30%
Report (1000 words)	1-3	4-24	Week 12	35%
Final Written Exam multiple choice, short answer and case study questions (1.5 hours)	1-4	1-26	Final Examination Period	35%

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

Prescribed Readings:

1. Braun, L., & Cohen, M. (2017). *Essential herbs and natural supplements*. Sydney, NSW: Churchill Livingstone Elsevier.
2. 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.
3. A reading list that contains links to recent articles on phytochemicals and current research will be available to the students on the Learning Management System.

Recommended Readings:

1. Fedoroff, N. V., & Brown, N. M. (2004). *Mendel in the kitchen: A scientist's view of genetically modified foods*. Washington, DC: Joseph Henry Press. [ebook available]
2. Higdon, J. & Drake, V. (2013). *An evidence-based approach to phytochemicals and other dietary factors*. (2nd ed.). Stuttgart, Germany: Thieme Medical Publishers [ebook available]



3. Kirchmann, H., & Bergström, L. (Eds.). (2009). *Organic crop production: Ambitions and limitations*. Sweden: Springer. [ebook available]
4. Nestle, M. (2013), *Food politics: How the food industry influences nutrition and health* (10th ed.). Berkley, CA: University California Press. [ebook available]
5. Salter, A., Wiseman, H., & Tucker, G. (Eds.). (2012). *Phytonutrients*. Oxford, England: Wiley-Blackwell. [ebook available]
6. Schlenker, E. D., & Roth, S. L. (2015). *Williams' essentials of nutrition & diet therapy* (11th ed.). St Louis, MO: Mosby Elsevier. [ebook available]
7. Spencer, J., & Crozier, A. (2012). *Flavonoids and related compounds: Bioavailability and function*. Boca Raton, FL: CRC Press. [ebook available]
8. Watson, R., & Preedy, V. (Eds.). (2013). *Bioactive food as dietary interventions for liver and gastrointestinal disease*. Boston, MA: Elsevier. [ebook available]
9. 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. [ebook available]

Subject Content

Week	Lectures	Tutorials / Practicals
1.	<p>Session 1</p> <p>Introduction (Subject Outline / Subject Aims / Assessment / Teaching Resources)</p> <p>Introduction to Medicinal Food Science</p> <ul style="list-style-type: none"> ➤ Dietetic principles in Nutritional Medicine (NM) ➤ Review of recommended dietary intake (RDI) and underpinning principles ➤ Food as medicine concepts and principles 	<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> <ul style="list-style-type: none"> ➤ Students will become acquainted with online nutritional medicine research databases available through LibGuides. ➤ Video and discussion
	<p>Session 2</p> <p>Food Science - Part 1: Farming Methods</p> <ul style="list-style-type: none"> ➤ Conventional farming practices: crop rotation, hydroponics, pesticides, herbicides ➤ Organic and biodynamic farming ➤ Impact of farming methods on the environment and food quality 	<p>Facilitated discussion:</p> <ul style="list-style-type: none"> ➤ Is it necessary for organic foods to be a part of a healthy diet? ➤ Environmental impacts of conventional and organic farming methods
2.	<p>Session 3</p> <p>Food Science - Part 2: Food Labeling Regulations</p> <ul style="list-style-type: none"> ➤ The role of Food Standards Australia New Zealand (FSANZ) ➤ Labelling regulations ➤ Genetically modified foods 	<p>View and respond activity:</p> <ul style="list-style-type: none"> ➤ Students will be provided with examples of food labels in which they are to identify all the FSANZ regulatory guidelines and discuss their appropriateness
	<p>Session 4</p>	<p>Reading and review:</p>



	<p>Food Science - Part 3: Food Manufacturing and Processing Techniques</p> <ul style="list-style-type: none"> ➤ Milling, canning, blanching, freezing, pasteurisation, dehydration, peeling, irradiation ➤ The advantages and disadvantages of food manufacturing and processing techniques 	<ul style="list-style-type: none"> ➤ Draw on the prescribed reading and review the impacts of food manufacturing and processing on the nutritional profile of foods
3.	<p>Session 5</p> <p>Food Science - Part 4: Food Storage, Preparation and Cooking</p> <ul style="list-style-type: none"> ➤ Kitchen safety and hygiene ➤ Nutrient losses in cooking, preparation and storage 	<p>Group work:</p> <ul style="list-style-type: none"> ➤ Students will prepare a short communication to educate the lay person on the most appropriate preparation and cooking techniques to minimise nutrient losses
	<p>Session 6</p> <p>Food Science - Part 5: Food Additives</p> <ul style="list-style-type: none"> ➤ Colours, flavours, preservatives and other additives ➤ Health effects of food additives in food 	<p>Read and review:</p> <ul style="list-style-type: none"> ➤ Using the required reading for this session, review the findings of the study and discuss how food additives may impact upon health outcomes
4.	<p>Session 7</p> <p>Food Science - Part 6: Food Spoilage and Disease</p> <ul style="list-style-type: none"> ➤ Investigate food spoilage, food mediated disease (caused by micro-organisms), and natural toxins associated with deleterious health outcomes 	<ul style="list-style-type: none"> ➤ Case studies
	<p>Session 8</p> <p>Food Science - Part 7: Introduction to Functional Foods</p> <ul style="list-style-type: none"> ➤ Phytochemicals ➤ Prebiotics ➤ Probiotics ➤ Antioxidants 	<p>Facilitated discussion:</p> <ul style="list-style-type: none"> ➤ Students establish two main meals and one breakfast to assist in the relief of menopausal symptoms and two main meals and one breakfast designed for Cardiovascular diseases (CVD) ➤ CVD risk reduction
5.	<p>Session 9</p> <p>Food & Culture: A Physiological Perspective - Part 1</p> <ul style="list-style-type: none"> ➤ Kitchen pharmacy ➤ Topical treatments and poultices 	<p>Practical activity:</p> <ul style="list-style-type: none"> ➤ Students learn how to make some of the remedies in the kitchen pharmacy presentation
	<p>Session 10</p> <p>Food & Culture: A Physiological Perspective - Part 2</p> <ul style="list-style-type: none"> ➤ Philosophies, principles of diet therapy in traditional Chinese medicine (TCM) 	<p>Facilitated class discussion</p> <ul style="list-style-type: none"> ➤ On the principles and philosophies of TCM and the application of TCM diet therapy in an holistic nutritional setting
6.	<p>Session 11</p> <p>Food & Culture: A Physiological Perspective -</p>	<ul style="list-style-type: none"> ➤ Worksheet:



	<p>Part 3</p> <ul style="list-style-type: none"> Philosophies and principles of diet therapy in Ayurvedic medicine 	<ul style="list-style-type: none"> Students review the principles and practices of Ayurvedic medicine and fill out their worksheets <p>Facilitated class discussion:</p> <ul style="list-style-type: none"> On the comparison and clinical application of TCM versus Ayurvedic diet therapy
	<p>Session 12</p> <p>Food as Medicine: Macronutrients: Lipids, Protein, Carbohydrates</p> <ul style="list-style-type: none"> Total diet therapy and disease prevention Macronutrient ratios and diet quality Fast food, processed and prepackaged foods, restaurant meals versus meals prepared at home 	<ul style="list-style-type: none"> Students will prepare a short communication to steer the lay person to healthy food options in a variety of food environments
7.	<p>Session 13</p> <p>Food as Medicine: Culinary Herbs and Spices - Part 1</p> <ul style="list-style-type: none"> Onion, garlic, ginger, chili, rosemary, nutmeg, fennel, cloves Nutritional values, phytochemical profiles and therapeutic benefits 	<ul style="list-style-type: none"> Case study
	<p>Session 14</p> <p>Food as Medicine: Culinary Herbs and Spices - Part 2</p> <ul style="list-style-type: none"> Cinnamon, mint, coriander, turmeric, basil, oregano, parsley, thyme, sage, black pepper, lemon balm Nutritional values, phytochemical profiles and therapeutic benefits 	<p>Read and review:</p> <ul style="list-style-type: none"> Drawing upon the required readings, consider the benefits of these culinary spices in the nutritional medicinal management of health and disease
<p>NON-TEACHING WEEK (note that make-up classes may be scheduled in this week)</p> <p>Online students – The non-teaching week falls between Weeks 7 and 8</p>		
8.	<p>Session 15</p> <p>Food as Medicine: Pulses (Legumes) and Grains</p> <ul style="list-style-type: none"> Improving the digestibility of pulses Nutritional values, phytochemical profiles and therapeutic benefits 	<p>Literature search:</p> <ul style="list-style-type: none"> Conduct your own literature search, using the library database, for more information on pulses and grains Consider the information you find in regards to its application / non application in nutrition management
	<p>Session 16</p> <p>Food as Medicine: Vegetables - Part 1</p> <ul style="list-style-type: none"> Cruciferous vegetables Cucurbitaceae family Nutritional values, phytochemical profiles and therapeutic benefits 	<p>Reading and review exercise:</p> <ul style="list-style-type: none"> Review the role of cruciferous vegetables and more specifically their phytochemicals, such as indole-3-carbinol, in nutritional medicine management



		<ul style="list-style-type: none"> Students will identify the potential advantages and disadvantages associated with cruciferous vegetables and their phytochemicals in the management of specific health conditions
9.	<p>Session 17</p> <p>Food as Medicine: Vegetables - Part 2</p> <ul style="list-style-type: none"> Solanaceae family Chenopodiaceae family Other vegetables Nutritional values, phytochemical profiles and therapeutic benefits 	<p>Reading and response:</p> <ul style="list-style-type: none"> Review the effects of the carotenoid, lycopene in prostate cancer risk reduction and answer the questions provided <p>Facilitated discussion:</p> <ul style="list-style-type: none"> The health benefits associated with foods from the Solonaceae family and circumstances when these foods should be avoided
	<p>Session 18</p> <p>Food as Medicine – Fruits - Part 1</p> <ul style="list-style-type: none"> Enzyme-rich fruits Rutaceae family Nutritional values, phytochemical profiles and therapeutic benefits 	<ul style="list-style-type: none"> Students develop enzyme-rich fruit recipes and explain the potential health benefits associated with these foods
10.	<p>Session 19</p> <p>Food as Medicine: Fruits - Part 2</p> <ul style="list-style-type: none"> Antioxidant-rich fruits Oxygen Radical Absorbance Capacity (ORAC) values Other fruits Nutritional values, phytochemical profiles and therapeutic benefits 	<p>Facilitated discussion:</p> <ul style="list-style-type: none"> The value and the limitations of ORAC units in ranking antioxidant potential of various foods
	<p>Session 20</p> <p>Food as Medicine: Nuts, Seeds and Oils</p> <ul style="list-style-type: none"> Nuts Seeds Oils Nutritional values, phytochemical profiles and therapeutic benefits 	<p>Facilitated discussion:</p> <ul style="list-style-type: none"> The health benefits and potential health hazards associated with nuts, seeds and oils
11.	<p>Session 21</p> <p>Food as Medicine: Medicinal Mushrooms, Algae and Sprouts</p> <ul style="list-style-type: none"> Medicinal mushrooms Algae Sprouts Nutritional values, phytochemical profiles and therapeutic benefits 	<p>Reading and response:</p> <ul style="list-style-type: none"> Review and discuss the current research available on the health effects of medicinal mushrooms and spirulina
	<p>Session 22</p>	<ul style="list-style-type: none"> Video presentation on the fermenting process



	<p>Food as Medicine: Fermented Foods and Probiotics</p> <ul style="list-style-type: none"> Nutritional values, phytochemical profiles and therapeutic benefits 	
12.	<p>Session 23</p> <p>Food as Medicine: Sweeteners</p> <ul style="list-style-type: none"> Natural sweeteners Artificial sweeteners and sugar replacers Nutritional values, phytochemical profiles, therapeutic benefits and health risks 	<ul style="list-style-type: none"> Students prepare a communication with recommendations on ways to reduce consumption of sugars and refined carbohydrates
	<p>Session 24</p> <p>Food as Medicine: Caffeine</p> <ul style="list-style-type: none"> Coffee Tea Cocoa Energy drinks Nutritional values, phytochemical profiles, therapeutic benefits and health risks 	<p>Facilitated discussion:</p> <ul style="list-style-type: none"> The potential benefits and adverse effects of caffeine-containing foods and beverages
13.	<p>Session 25</p> <p>Other Food-based Chemicals</p> <ul style="list-style-type: none"> Alcoholic beverages 	<ul style="list-style-type: none"> Video presentation and discussion
	<p>Session 26</p> <p>Phytochemical Toxicity</p> <ul style="list-style-type: none"> Evidence of the harmful effects and toxicity associated with prolonged or high dosing of certain phytochemical supplements 	<ul style="list-style-type: none"> Case studies
14.	<p>Non-Teaching Week/Practical Examination Week 1</p> <p>Note that make-up classes may be scheduled in this week</p>	
15.	<p>Non-Teaching Week/Practical Examination Week 2</p> <p>Note that make-up classes may be scheduled in this week</p>	
16.	<p>Final Examination Week 1</p> <p>Students are required to sit examinations using the Respondus Lockdown Browser software per the Examination Policy - Higher Education. Refer to your local campus calendar for exam opening and closing times.</p>	
17.	<p>Final Examination Week 2</p> <p>Students are required to sit examinations using the Respondus Lockdown Browser software per the Examination Policy - Higher Education. Refer to your local campus calendar for exam opening and closing times.</p>	