SUBJECT OUTLINE

Subject Name: **Subject Code:**

Medicinal Food Science NMDM121

SECTION 1 – GENERAL INFORMATION

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

Duration: 1 Semester

Subject Coordinator: Katrina Clark (Sydney campus)

Subject is: Core or Elective as noted **Subject Credit Points:** 4

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

Delivery Mode:

Face to face	2 x 2 hour lectures	2 x 1 hour tutorials
E-Learning	Details:	Narrated PowerPoint presentations Asynchronous tutor moderated discussion forum and activities Student handouts, web-based resources
Intensive Delivery	Details:	Summer School - contact hours are delivered over 4 x 4hrs per week for 5 weeks. Assessments: Essay for intensive delivery is due to be uploaded by 11.55pm Sunday AEST on week 3 of the Summer School period. Report for intensive delivery is due to be uploaded by 11.55pm Sunday AEST on week 5 of the Summer School period. Final written exam is conducted in week 6 of summer school.
Full Time		
Part Time		

Pre-requisites: BIOH111

Co-requisites: NMDF121 (pre- or co-requisite)

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. Critically discuss 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. Consider 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	Session Due	Weighting
Essay (1000 words)	1,4	1-8	Sunday following Session 10	25%
Report (1500 Words)	1,2,3	1-26	Sunday following Session 26	40%
Final Examination (Multiple choice, short answer and case studies 1.5 hours)	1-4	1-26	Final Exam Period	35%

Prescribed readings:

1. 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.
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.

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

Subject Content

Week	Lecture	Tutorial

1.	Session 1 **Introduction to medicinal food science** • Dietetic principles in Nutritional Medicine (NM) • Review of RDI and underpinning principles • Food as medicine concepts and principles	• Students will become acquainted with online nutritional medicine research databases available through LibGuides. • Video and discussion
	Session 2 **Food Science Part I: Farming methods:** • Conventional farming practices: crop rotation, hydroponics, pesticides, herbicides • Organic and biodynamic farming • Impact of farming methods on the environment and food quality	Facilitated discussion: • Is it necessary for organic foods to be a part of a healthy diet? • Environmental impacts of conventional and organic farming methods
2.	Session 3 **Food Science Part II: Food labeling regulations:** • The role of FSANZ • Labeling regulations • Genetically modified foods	View and respond activity: • Students will be provided with examples of food labels in which they are to identify all the FSANZ regulatory guidelines and discuss their appropriateness
	Session 4 **Food Science Part III: Food manufacturing and processing techniques:** • Milling, canning, blanching, freezing, pasteurisation, dehydration, peeling, irradiation • The advantages and disadvantages of food manufacturing and processing techniques	Reading and review: • Draw on the prescribed reading and review the impacts of food manufacturing and processing on the nutritional profile of foods
3.	Session 5 **Food Science Part IV: Food storage, preparation and cooking:** • Kitchen safety and hygiene • Nutrient losses in cooking, preparation and storage	Group work: • Students will prepare a short communication to educate the lay person on the most appropriate preparation and cooking techniques to minimise nutrient losses
	Session 6 **Food Science Part V: Food additives:** • Colours, flavours, preservatives and other additives • Health effects of food additives in food	Read and review: • Using the required reading for this session, review the findings of the study and discuss how food additives may impact upon health outcomes
4.	Session 7 **Food Science Part VI: Food spoilage and disease:** • Investigate food spoilage, food mediated disease (caused by micro-organisms), and natural toxins associated with deleterious health outcomes	• Case studies
	Session 8 **Food Science Part VII: Introduction to**	Facilitated discussion: • Students establish two main meals and one breakfast

	functional foods: • Phytochemicals • Prebiotics • Probiotics • Antioxidants	to assist in the relief of menopausal symptoms and two main meals and one breakfast designed for CVD risk reduction
5.	Session 9 **Food and Culture – a physiological perspective Part I:** • Kitchen pharmacy • Topical treatments and poultices	Practical activity: • Students learn how to make some of the remedies in the kitchen pharmacy presentation.
	Session 10 **Food and Culture – a physiological perspective Part II:** • Philosophies, principles of diet therapy in traditional Chinese medicine (TCM)	Facilitated class discussion: • On the principles and philosophies of TCM and the application of TCM diet therapy in an holistic nutritional setting
6.	Session 11 **Food and Culture – a physiological perspective Part III:** • Philosophies and principles of diet therapy in Ayurvedic medicine	• Worksheet: Students review the principles and practices of Ayurvedic medicine and fill out their worksheets Facilitated class discussion: • On the comparison and clinical application of TCM versus Ayurvedic diet therapy.
	Session 12 **Food as Medicine – Macronutrients – Lipids, Protein, Carbohydrates:** • Total diet therapy and disease prevention • Macronutrient ratios and diet quality • Fast food, processed and prepackaged foods, restaurant meals versus meals prepared at home	• Students will prepare a short communication to steer the lay person to healthy food options in a variety of food environments
7.	Session 13 **Food as Medicine - Culinary herbs and spices Part I:** • Onion, garlic, ginger, chili, rosemary, nutmeg, fennel, cloves • Nutritional values, phytochemical profiles and therapeutic benefits	• Case study
	Session 14 **Food as Medicine - Culinary herbs and spices Part II:** • Cinnamon, mint, coriander, turmeric, basil, oregano; parsley, thyme, sage, black pepper, lemon balm • Nutritional values, phytochemical profiles and therapeutic benefits	Read and review: • Drawing upon the required readings, consider the benefits of these culinary spices in the nutritional medicinal management of health and disease
	NON-TEACHING WEEK (note that any 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 break week falls between Weeks 7 and 8.	
8.	Session 15 **Food as Medicine - Pulses (legumes) and grains :**	• Literature search: 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

	• Improving the digestibility of pulses • Nutritional values, phytochemical profiles and therapeutic benefits	management
	Session 16 **Food as Medicine – Vegetables Part I:** • Cruciferous vegetables • Cucurbitaceae family • Nutritional values, phytochemical profiles and therapeutic benefits	• Reading and review exercise. Review the role of cruciferous vegetables and more specifically their phytochemicals, such as indole-3-carbinol, in nutritional medicine management • Students will identify the potential advantages and disadvantages associated with cruciferous vegetables and their phytochemicals in the management of specific health conditions
9.	Session 17 **Food as Medicine – Vegetables Part II:** • Solanaceae family • Chenopodiaceae family • Other vegetables • Nutritional values, phytochemical profiles and therapeutic benefits	Reading and response: • Review the effects of the carotenoid, lycopene in prostate cancer risk reduction and answer the questions provided Facilitated discussion: • The health benefits associated with foods from the Solonaceae family and circumstances when these foods should be avoided
	Session 18 **Food as Medicine – Fruits Part I:** • Enzyme-rich fruits • Rutaceae family • Nutritional values, phytochemical profiles and therapeutic benefits	• Students develop enzyme-rich fruit recipes and explain the potential health benefits associated with these foods
10.	Session 19 **Food as Medicine – Fruits Part II:** • Antioxidant-rich fruits • ORAC values • Other fruits • Nutritional values, phytochemical profiles and therapeutic benefits	Faciliated discussion: • The value and the limitations of ORAC units in ranking antioxidant potential of various foods
	Session 20 **Food as Medicine – Nuts, seeds and oils:** • Nuts • Seeds • Oils • Nutritional values, phytochemical profiles and therapeutic benefits	Faciliated discussion: • The health benefits and potential health hazards associated with nuts, seeds and oils
11.	Session 21 **Food as Medicine – Medicinal mushrooms, algae and sprouts:** • Medicinal mushrooms • Algae • Sprouts • Nutritional values, phytochemical profiles and therapeutic benefits	Reading and response • Review and discuss the current research available on the health effects of medicinal mushrooms and spirulina.
	Session 22 **Food as Medicine - Fermented foods and probiotics:**	• Video presentation on the fermenting process

	• Nutritional values, phytochemical profiles and therapeutic benefits	
12.	Session 23 **Food as Medicine – Sweeteners:** • Natural sweeteners • Artificial sweeteners and sugar replacers • Nutritional values, phytochemical profiles, therapeutic benefits and health risks	• Students prepare a communication with recommendations on ways to reduce consumption of sugars and refined carbohydrates.
	Session 24 **Food as Medicine – Caffeine:** • Coffee • Tea • Cocoa • Energy drinks • Nutritional values, phytochemical profiles therapeutic benefits and health risks	• Facilitated discussion on the potential benefits and adverse effects of caffeine-containing foods and beverages
13.	Session 25 **Other food-based chemicals:** • Alcoholic beverages	• Video presentation and discussion
	Session 26 **Phytochemical Toxicity:** • Evidence of the harmful effects and toxicity associated with prolonged or high dosing of certain phytochemical supplements	• Case studies
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 Examination Policy-Higher Education. 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.	