SUBJECT OUTLINE

Subject Name: **Subject Code:**

Clinical Diagnostic Techniques HMCL223

SECTION 1 - GENERAL INFORMATION

Award/s:		**Total Course Credit Points:**		**Level:**
	Bachelor of Health Science (Naturopathy)	128	Core	3rd Year
	Bachelor of Health Science (Nutritional and Dietetic Medicine)	96	Core	2nd Year
Duration:	1 Semester			
Subject Coordinator:	Narelle Grant-Steghius (Melbourne campus)			
Subject is:	Core	**Subject Credit Points:**	2	

Student Workload:		
No. timetabled hours per week: 3	**No. personal study hours per week: 2**	**Total hours per week: 5**

Delivery Mode:

Face to Face (On campus)	1 x 2 hour lecture	1 x 1 hour tutorial
e-Learning (Online)	Narrated PowerPoint presentations Tutorials: Asynchronous tutor moderated discussion forum and activities Student handouts, web-based resources	
Intensive Delivery (Summer School)	Contact hours are delivered over 5 weeks with 2 x 4 hour days delivered per week Content: Combination lecture and tutorial activities Assessment: Discussion Participation - Weeks 1-5; Mid-semester Written Exam - Week 3 (in an additional session); Case Study Assignment - Week 5: Final Written Exam - Week 6 Full Time Part Time	

Pre-requisites: NMDF121, BIOC211, BIOP211

Co-requisites: BIOS222

SECTION 2 – ACADEMIC DETAILS

Subject Rationale

Building on Pathology and Clinical Science, Pharmacology and Foundations of Human Nutrition, this subject introduces diagnostic and functional assessment techniques useful to the naturopathic clinician. Both in-office tests as well as those conducted through external laboratories are included. These procedures and the information are essential to guide and assess naturopathic care. Correct interpretation and consideration of clinical context is fundamental to safe and effective case management, both in developing a working diagnosis and monitoring the effectiveness and safety of treatment.

Learning Outcomes

1. Describe the range of laboratory and other diagnostic tests available and their role in naturopathic clinical case management.
2. Select appropriate tests and describe the correct specimen collection and analytical processes where relevant.
3. Interpret laboratory and other diagnostic test results in the context of client's presenting complaints and incorporate results into the whole naturopathic case analyses.
4. Discuss the strengths and limitations of laboratory and other tests in naturopathic clinical case context.
5. Demonstrate effective communication of laboratory and other diagnostic test results to the client and other health professionals.

Assessment Tasks

Type	Learning Outcomes Assessed	Session Content Delivered	Due	Weighting
Discussion Participation	1-5	1-13	Sessions 1-13	10%
Mid-semester Written Exam (1 hour)	1-5	1-5	Session 6	20%
Case Study Assignment (1500 words)	1-5	1-11	Week 12	25%
Final Written Exam (2 hours)	1-5	1-13	Final Examination Period	45%
All written assessments and online quizzes are due at 11:55 p.m. and submitted through the LMS				

Prescribed Readings:

1. Pagana, K. D., Pagana, T. J., & Pagana, T. N. (2016). *Mosby's diagnostic and laboratory test reference* (13th ed.). St Louis, MO: Elsevier.
2. The Royal College of Pathologists of Australasia. (2015). *RCPA manual*. Retrieved from http://rcpamanual.edu.au/

Recommended Readings:

1. American Association for Clinical Chemistry. (2015). *Lab tests online*. Retrieved from https://labtestsonline.org/
2. Chernecky, C. C., & Berger, B. J. (2013). *Laboratory tests and diagnostic procedures* (6th ed.). St Louis, MO: Elsevier. [ebook available]
3. Gibson, R. S. (2005). *Principles of nutritional assessment* (2nd ed.). New York, NY: Oxford University Press.
4. Lord, R. S., & Bralley, J. A. (2008). *Laboratory evaluations for integrative and functional medicine (*2nd ed.). Duluth, GA: Metametrix Institute.
5. Nicoll, D., Lu, C. M., Pignone, M., & McPhee, S. J. (2012). *Pocket guide to diagnostic tests* (6th ed.). New York, NY: McGraw-Hill Medical.

Subject Content		
Week	**Lectures**	**Tutorials**
1.	**Introduction** (Subject Outline / Subject Aims / Assessment / Teaching Resources) **Introduction to Clinical Diagnostic Techniques** • Australian Government, Department of Health: National Pathology Accreditation Advisory Council (NPAAC) • Testing standards, populations and reference ranges (including outliers) • Ranges for optimal health • Gender and age variation **Screening Blood Tests** • Electrolyte/Liver Function Test (E/LFT) • Full Blood Count (FBC) • Iron studies	Case study • Describe clinical characteristics that correlate with pathology test findings • Assess pathology test reports in the context of the case
2.	**Screening Blood Tests (continued)** • Blood lipids (Cholesterol, triglycerides, LDL and HDL) • Homocysteine **Inflammation** • C-Reactive Protein (CRP) • Erythrocyte Sedimentation Rate (ESR)	Case study • Describe how clinical characteristics correlate with the findings of pathology reports for cholesterol blood lipids and inflammation • Discuss implications for test results/reports
3.	**Glucose/Insulin Regulation** • HbA1c • Fasting glucose and insulin • Glucose/Insulin Tolerance Test (GITT) • Glucose/Insulin Tolerance Test + Cortisol (GITT+Cortisol) • Glucagon • HOM-IR	Case study • Describe clinical characteristics that correlate with results of blood glucose investigation reports • Discuss the results with clients • Consider the strengths and limitations of blood glucose and cortisol testing from a naturopathic case analyses perspective
4.	**Allergy Testing** • Immunoglobulins (IgE, IgG, IgA, IgM) • Antibody food panels • Scratch testing • In-office testing **Autoimmune Testing** • Specific Antibodies (Rheumatoid Factor, Thyroid, ANA)	Case study • Describe clinical characteristics that indicate investigation of allergy • Interpret the results of allergy investigations • Outline a single naturopathic intervention and discuss ways to monitor the effectiveness of the treatment
5.	**Micronutrient Assessments** • Serum and red cell tests • Plasma tests • Micronutrient assessments • Pyrrole testing	Case study • Describe clinical characteristics that correlate with findings of micronutrient investigations • Discuss strengths and limitations of testing techniques • Appraise the evidence for the in-clinic assessment of zinc

6.	**Hormone Testing** • Cortisol • Oestrogen, Progesterone, Testosterone, DHT, DHEA, Follicle Stimulating Hormone (FSH), Luteinising Hormone (LH), Sex hormone binding globulin, pregnancy • Menstrual cycle assessment using Sympto-thermal charts • 24 hour urine- estrogen metabolites • Thyroid: Thyroid Stimulating Hormone (TSH), fT3, fT4, reverse T3, TSH receptor antibodies	**Mid-semester Written Exam**
7.	**Hormone Testing (continued)** • Antidiuretic Hormone (ADH) • Parathyroid Hormone (PTH) **Urine Testing** • In-office urine testing • Urine test: specific gravity, pH, colour, protein, odour, oxalate crystals, bacteria, blood, glucose, pregnancy • Organic Acid Metabolic Profile: energy cycle metabolites, markers of neurotransmitter, detoxification and bacterial metabolism	Appraise the evidence for • Assessing female hormone concentration in saliva • Metabolic acids assessment via urine spot checks • Mineral analyses in hair tissue • Essential fatty acid assessments
	NON-TEACHING WEEK (note that 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 non-teaching week falls between Weeks 7 and 8	
8.	**Stool Testing** • GIT integrity, inflammation and immunity • Culture growth and antimicrobial sensitivity • Microflora genetic/PCR testing • Parasites	Case study • Describe clinical indications for metabolic assessment and analyses of metabolites in stool • Incorporate findings into naturopathic case analyses
9.	**Electrodiagnostic Tests** • Electrocardiography • Electroencephalography • Electromyography • Holter monitoring • Bio-impedance analyses **Imaging** • X ray • Ultrasound • Magnetic Resonance Imaging (MRI) • CT Scans • DEXA • Nuclear Scanning – radionucleotide testing • Clinical Digital Thermography	Case study • Interpret electro-diagnostic and imaging test reports and inform follow-up case strategy • Outline other relevant investigations • Prepare a report for a medical practitioner
10.	**Detoxification and Toxicity Testing** • Phase I and Phase II detoxification assessments • Toxins, metals – hair, nails and urine • Environmental pollutants • Reliability of tests	Case study • Describe clinical characteristics that may correlate with insufficient liver detoxification and increased toxic load • Develop naturopathic treatment strategy

11.	**Essential Fatty Acid Profiles** • Clinical characteristics • Omega-3-DPA,DHA, EPA, ALA • Omega 6- LA, DGLA, AA • Reliability of tests	Case study • Interpret complex case • Discuss strengths and limitations of retrospective naturopathic treatment in the context of a follow up consultation
12.	**Amino Acids** • Gastro-intestinal markers • Mineral and vitamin metabolism markers • Neurotransmitter markers • Urea cycle and detox factors • Reliability and dependability	Case study • Describe clinical characteristics that may correlate with findings of an amino acid profile report • Assess the reliability of tests procedures, meaning of results and implications in case analyses • Report results to clients
13.	**Genetic Testing** • Basic Genetic Marker Testing (e.g. HLA-B27) • DNA profile testing • Ethical issues	• Discuss the ethical issues associated with genetic testing
14.	**Non-Teaching Week/Practical Examination Week 1** Note that make-up classes may be scheduled in this week	
15.	**Non-Teaching Week/Practical Examination Week 2** Note that make-up classes may be scheduled in this week	
16.	**Final Examination Week 1** **On campus enrolled students:** Refer to the Examination 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 Examination Weeks for subjects offered online are identified in the Online Calendar	
17.	**Final Examination Week 2** **On campus enrolled students:** Refer to the Examination 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 Examination Weeks for subjects offered online are identified in the Online Calendar	