

Subject Outline

Subject Name:	Western Diagnostic Techniques
Subject Code:	BIOT221
Award(s):	Bachelor of Health Science (Nutritional Medicine) Bachelor of Health Science (Naturopathy) Bachelor of Health Science (Musculoskeletal Therapy)
Core/Elective:	Core – 2 credit points
Pre/co-requisites:	BIOC211
Student Workload:	39 contact hours 36 hours self-directed study
Delivery Mode:	<p>Face to face</p> <ul style="list-style-type: none"> • 2 hours lecture • 1 hour tutorial <p>E-learning</p> <ul style="list-style-type: none"> • Narrated PowerPoint • Asynchronous tutor moderated discussion forums and activities • Student Handouts, Web based resources <p>Full Time Part Time</p>
Subject Coordinator	Kunjal Dave (Brisbane Campus)
Subject Rationale:	<p>In this unit of study, students receive the necessary grounding in pathology diagnostic techniques, including pathology laboratory testing, electro-diagnostic, endoscopy medical imaging, and how to apply findings from these techniques to the development of their modality specific diagnosis.</p> <p>These procedures and the information that can be gained from them are viewed as necessary to confirm and re-assess clinical data generated through the modality specific consultative process to enable students to be safe and well-rounded practitioners.</p>

Learning Outcomes:

1.	Analyse and evaluate techniques and investigative methods used in pathology testing and practice.
2.	Analyse and evaluate techniques and investigative methods used for imaging the body.
3.	Analyse and evaluate techniques and investigative methods used in endoscopic and electrodiagnostic testing and practice.
4.	Determine, apply and interpret relevant pathology tests as part of case management.
5.	Determine, apply and interpret relevant imaging techniques as part of case management.
6.	Determine and interpret relevant endoscopic and electrodiagnostic tests as part of case

	management.
7.	Analyse and evaluate techniques used in modern day genetic testing and where relevant apply and interpret as part of case management.

Content:

Week	Topics	Tutorials	Online
1.	<p>Introduction – (Subject Outline/Subject Aims/Assessment/ Teaching Resources)</p> <ul style="list-style-type: none"> Understanding the clinical and ethical issues associated with the use of conventional and analytical diagnostic techniques within modern medicine Identifying the resources and regulatory requirements necessary for proper test preparation and performance Blood Based Pathology Testing Prothrombin Time and INR 	<p>Relevant activities for all teaching sessions are directed by the lecturers/tutors through in class discussion and activities. Teaching and learning activities may be modified or adapted to suit the particular learning strategies and delivery style.</p> <p>Activities are developed to allow the students to explore relevant concepts, expand on ideas and have peer and lecture/tutor interaction. Activities also allow for formative assessment and feedback.</p> <p>Lectures and tutorials are supported by the use of current relevant research papers and the use of clinical case scenarios to explain the topics under discussion and place them in a relevant clinical context for the student.</p> <ul style="list-style-type: none"> Completion of weekly review quiz Students will be given Additional reading relevant to this topic Discussion of assessment requirements and the relevant impact of the regulatory requirements 	<p>Relevant activities for all teaching sessions are directed by the tutors through learning activities or via the student discussion forum. Teaching and learning activities may be modified or adapted to suit the particular learning strategies and delivery style.</p> <p>Activities are developed to allow the students to explore relevant concepts, expand on ideas and have peer and lecture/tutor interaction. Activities also allow for formative assessment and feedback.</p> <p>Lectures and tutorials are supported by the use of current relevant research papers and the use of clinical case scenarios to explain the topics under discussion and place them in a relevant clinical context for the student.</p> <ul style="list-style-type: none"> Completion of weekly review quiz Students will be given Additional reading relevant to this topic Tutor facilitated discussion of assessment requirements and the relevant impact of the regulatory requirements
2.	<p>Blood Based Pathology Testing</p> <ul style="list-style-type: none"> Full Blood Count (FBC) Electrolytes Liver Function Test (LFT), Serum Urea and Creatinine Cholesterol study (VLDL, HDL, LDL) 	<ul style="list-style-type: none"> Application of test results/reports to relevant clinical situations using case studies Group discussion of the relevant use of 	<ul style="list-style-type: none"> Application of test results/reports to relevant clinical situations using case studies Tutor facilitated group discussion of the



	<p>and ratio considerations)</p> <ul style="list-style-type: none"> • Iron study • Homocysteine <p>Explanation of how these tests are taken and the procedures used within investigation.</p> <p>Application of the test results/reports provided for completing the clinical picture.</p>	<p>these techniques between the different clinical modalities taught at the college.</p> <ul style="list-style-type: none"> • Completion of weekly review quiz • Students will be given Additional reading relevant to this topic 	<p>relevant use of these techniques between the different clinical modalities taught at the college.</p> <ul style="list-style-type: none"> • Completion of weekly review quiz • Students will be given Additional reading relevant to this topic
3.	<p>Blood Based Pathology Testing</p> <ul style="list-style-type: none"> • Immunoglobulins (IgE, IgG, IgA, IgM), • Antibodies (AntiGliadin, Rheumatoid Factor, Thyroid), • C-Reactive Protein (CRP) and Erythrocyte Sedimentation Rate (ESR) <p>Explanation of how these tests are taken and the procedures used within investigation.</p> <p>Application of the test results/reports provided for completing the clinical picture</p>	<ul style="list-style-type: none"> • Application of test results/reports to relevant clinical situations using case studies • Group discussion of the relevant use of these techniques between the different clinical modalities taught at the college • Completion of weekly review quiz • Students will be given Additional reading relevant to this topic 	<ul style="list-style-type: none"> • Application of test results/reports to relevant clinical situations using case studies • Tutor facilitated Group discussion of the relevant use of these techniques between the different clinical modalities taught at the college • Completion of weekly review quiz • Students will be given Additional reading relevant to this topic
4.	<p>Blood Based Pathology Testing</p> <ul style="list-style-type: none"> • Serum minerals (eg. Magnesium) and vitamins B12) • Red cell vitamins (eg. Folate) • Fasting serum Glucose • Glucose Tolerance Test (GTT) • HbA1C <p>Explanation of how these tests are taken and the procedures used within investigation.</p> <p>Application of the test results/reports provided for completing the clinical picture</p>	<ul style="list-style-type: none"> • Application of test results/reports to relevant clinical situations using case studies • Group discussion of the relevant use of these techniques between the different clinical modalities taught at the college • Completion of weekly review quiz • Students will be given Additional reading relevant to this topic 	<ul style="list-style-type: none"> • Application of test results/reports to relevant clinical situations using case studies • Tutor facilitated group discussion of the relevant use of these techniques between the different clinical modalities taught at the college • Completion of weekly review quiz • Students will be given Additional reading relevant to this topic
5.	<p>Blood Based Pathology Testing Hormones</p> <p>Cortisol, Oestrogen, Testosterone, Follicle Stimulating Hormone (FSH), Luteinising Hormone (LH), Thyroid Stimulating Hormone (TSH), Antidiuretic Hormone (ADH), Parathyroid Hormone (PTH)</p> <p>Explanation of how these tests are</p>	<ul style="list-style-type: none"> • Application of test results/reports to relevant clinical situations using case studies • Group discussion of the relevant use of these techniques between the different clinical modalities 	<ul style="list-style-type: none"> • Application of test results/reports to relevant clinical situations using case studies • Tutor facilitated group discussion of the relevant use of these techniques between the different clinical



	<p>taken and the procedures used within investigation.</p> <p>Application of the test results/reports provided for completing the clinical picture</p>	<p>taught at the college</p> <ul style="list-style-type: none"> • Completion of weekly review quiz • Students will be given Additional reading relevant to this topic 	<p>modalities taught at the college</p> <ul style="list-style-type: none"> • Completion of weekly review quiz • Students will be given Additional reading relevant to this topic
6.	<p>Urine Based Pathology</p> <ul style="list-style-type: none"> • Testing (both Analytical and Conventional) • Urine 'dipstix' • Haematuria, Protein, Microbiology, pH etc <p>Explanation of how these tests are taken and the procedures used within investigation.</p> <p>Application of the test results/reports provided for completing the clinical picture</p>	<ul style="list-style-type: none"> • Application of test results/reports to relevant clinical situations using case studies • Group discussion of the relevant use of these techniques between the different clinical modalities taught at the college • Completion of weekly review quiz • Students will be given Additional reading relevant to this topic <p>Quiz 1 – this week</p>	<ul style="list-style-type: none"> • Application of test results/reports to relevant clinical situations using case studies • Tutor facilitated group discussion of the relevant use of these techniques between the different clinical modalities taught at the college • Completion of weekly review quiz • Students will be given Additional reading relevant to this topic <p>Quiz 1 – this week</p>
7.	<p>Stool Based Pathology</p> <ul style="list-style-type: none"> • Testing (both Analytical and Conventional); • Faecal occult blood, Microbiological testing, Fat content etc <p>Explanation of how these tests are taken and the procedures used within investigation.</p> <p>Application of the test results/reports provided for completing the clinical picture.</p>	<ul style="list-style-type: none"> • Application of test results/reports to relevant clinical situations using case studies • Group discussion of the relevant use of these techniques between the different clinical modalities taught at the college • Completion of weekly review quiz • Students will be given Additional reading relevant to this topic 	<ul style="list-style-type: none"> • Application of test results/reports to relevant clinical situations using case studies • Tutor facilitated group discussion of the relevant use of these techniques between the different clinical modalities taught at the college • Completion of weekly review quiz • Students will be given Additional reading relevant to this topic
8.	<p>NON-TEACHING WEEK</p> <p>Semester 1 – This aligns with the week after Easter so it may fall between weeks 6 to 8.</p> <p>Semester 2 – Week 8.</p> <p>Online students – Please continue studying during this week. You will have an extra non-teaching week after Session 13.</p>		
9.	<p>Electrodiagnostic tests</p> <ul style="list-style-type: none"> • Electrocardiography • Electroencephalography • Electromyography • Holter Monitoring 	<ul style="list-style-type: none"> • Application of test results/reports to relevant clinical situations using case studies • Group discussion of 	<ul style="list-style-type: none"> • Application of test results/reports to relevant clinical situations using case studies • Tutor facilitated group



	<p>Explanation of how these tests are taken and the procedures used within investigation.</p> <p>Application of the test results/reports provided for completing the clinical picture.</p>	<p>the relevant use of these techniques between the different clinical modalities taught at the college</p> <ul style="list-style-type: none"> • Completion of weekly review quiz • Students will be given Additional reading 	<p>discussion of the relevant use of these techniques between the different clinical modalities taught at the college</p> <ul style="list-style-type: none"> • Completion of weekly review quiz • Students will be given Additional reading
10.	<p>Imaging</p> <ul style="list-style-type: none"> • X rays <p>Explanation of how these tests are taken and the procedures used within investigation.</p> <p>Application of the test results/reports provided for completing the clinical picture.</p>	<ul style="list-style-type: none"> • Application of test results/reports to relevant clinical situations using case studies • Group discussion of the relevant use of these techniques between the different clinical modalities taught at the college • Completion of weekly review quiz • Students will be given Additional reading 	<ul style="list-style-type: none"> • Application of test results/reports to relevant clinical situations using case studies • Tutor facilitated group discussion of the relevant use of these techniques between the different clinical modalities taught at the college • Completion of weekly review quiz • Students will be given Additional reading
11.	<p>Imaging</p> <ul style="list-style-type: none"> • Ultrasound <p>Explanation of how these tests are taken and the procedures used within investigation.</p> <p>Application of the test results/reports provided for completing the clinical picture.</p>	<ul style="list-style-type: none"> • Application of test results/reports to relevant clinical situations using case studies and examples of relevant images • Group discussion of the relevant use of these techniques between the different clinical modalities taught at the college • Completion of weekly review quiz • Students will be given Additional reading 	<ul style="list-style-type: none"> • Application of test results/reports to relevant clinical situations using case studies and examples of relevant images • Tutor facilitated group discussion of the relevant use of these techniques between the different clinical modalities taught at the college • Completion of weekly review quiz • Students will be given Additional reading
12.	<p>Imaging</p> <ul style="list-style-type: none"> • Magnetic Resonance Imaging (MRI) • CT Scans • Nuclear Scanning – radionucleotide testing • Clinical Digital Thermography <p>Explanation of how these tests are taken and the procedures used within investigation.</p>	<ul style="list-style-type: none"> • Application of test results/reports to relevant clinical situations using case studies and examples of relevant images • Group discussion of the relevant use of these techniques between the different clinical modalities 	<ul style="list-style-type: none"> • Application of test results/reports to relevant clinical situations using case studies and examples of relevant images • Tutor facilitated group discussion of the relevant use of these techniques between the different clinical



	Application of the test results/reports provided for completing the clinical picture.	<p>taught at the college</p> <ul style="list-style-type: none"> • Completion of weekly review quiz • Students will be given Additional reading 	<p>modalities taught at the college</p> <ul style="list-style-type: none"> • Completion of weekly review quiz • Students will be given Additional reading
13.	<p>Imaging</p> <ul style="list-style-type: none"> • Endoscopy <p>Explanation of how these tests are taken and the procedures used within investigation.</p> <p>Application of the test results/reports provided for completing the clinical picture.</p>	<ul style="list-style-type: none"> • Application of test results/reports to relevant clinical situations using case studies and examples of relevant images • Group discussion of the relevant use of these techniques between the different clinical modalities taught at the college • Completion of weekly review quiz • Students will be given Additional reading 	<ul style="list-style-type: none"> • Application of test results/reports to relevant clinical situations using case studies and examples of relevant images • Tutor facilitated group discussion of the relevant use of these techniques between the different clinical modalities taught at the college • Completion of weekly review quiz • Students will be given Additional reading
14.	<p>Genetic Testing</p> <ul style="list-style-type: none"> • Basic Genetic Marker Testing (eg. HLA-B27) • DNA testing <p>Explanation of how these tests are taken and the procedures used within investigation.</p> <p>Application of the test results/reports provided for completing the clinical picture</p> <p>Assessment 3: Case Study Report Due</p>	<ul style="list-style-type: none"> • Application of test results/reports to relevant clinical situations using case studies • Group discussion of the relevant use of these techniques between the different clinical modalities taught at the college • Completion of weekly review quiz • Students will be given Additional reading 	<ul style="list-style-type: none"> • Application of test results/reports to relevant clinical situations using case studies • Tutor facilitated group discussion of the relevant use of these techniques between the different clinical modalities taught at the college • Completion of weekly review quiz • Students will be given Additional reading
15-16	Non-Teaching Weeks. Note that make-up classes may be scheduled in this week.		
17-18	<p>Final Exam Period</p> <p>On campus enrolled students: Please refer to the Exam Timetable for your local campus for the exact day and time of exam.</p> <p>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 for the current calendar year.</p>		

Set Text Requirements:

1. Pagana, KD, Pagana, TJ, 2010, *Mosby's Manual of Diagnostic and Laboratory Tests*, 5th edn, Mosby Elsevier, St. Louis



Recommended readings:

1. Pagana & Pagana, <i>Mosby's Diagnostic and Laboratory Test Reference</i> . 11 th edn, Mosby Elsevier, St. Louis
2. Nicoll, D, McPhee, SJ, Pignone, M, Detmer, WM, Chou, TM & Dunstan, RH (eds.) 2012, <i>Pocket Guide to Diagnostic Tests</i> . 6th edn. McGraw Hill, Australia.
3. Lee, G & Bishop, P 2006, <i>Microbiology and Infection Control for Health Professionals</i> , 5th edn, Frenchs Forest, Pearson Education, NSW
4. Tortora, G & Derrickson, B 2012, <i>Principles of Anatomy and Physiology</i> , 14th edn, John Wiley, USA
5. Web resource: www.labtestsonline.org

Assessments

Assessment Item	Topic/s	Learning Outcomes assessed	Weeks Content Delivered	Week Due	Weighting
1. Quiz 1 (MCQ, Short Answer questions – 45 minutes) - Summative	Introduction and Blood Based pathology testing	1, 4	Weeks 1 - 5	6	30%
2. Case Study Review Q and A Student will be presented with various case study review questions including results of tests and clinical procedures. Students will be required to interpret these reports/tests in relationship to the case and determine their relevance In addition they should adequately explain the procedure for obtaining the samples necessary by answering the questions.	Urine and stool pathology testing and electro-diagnostic testing, Interpretation of imaging test results/ reports and their application to case management	1, 2, 3, 4, 5, 6	Weeks 1 - 13	14	30%
3. Final Exam MCQ, Short Answer questions, extended response, case analysis (1.5 hours)	Imaging and genetic testing	2, 3, 5, 6, 7	Weeks 10 - 14	Final Exam Period	40%

Formative assessment will be undertaken early in the subject and then on a regular basis throughout the duration of the subject to provide students and staff with feedback on the learning. It may take the form of quizzes, small group and classroom presentations, writing activities, peer review where appropriate.

Early formative assessment would be used to determine any necessary intervention strategies to ensure students are able to complete the program in the normal subject duration.

Feedback will also be provided on summative assessment undertaken during semester.