



SUBJECT OUTLINE

Subject Name:

Pharmacology

Subject Code:

BIOP211

SECTION 1 – GENERAL INFORMATION

Award/s:	Total Course Credit Points:	Level:
Bachelor of Health Science (Acupuncture)	128	Core 3 rd Year
Bachelor of Health Science (Naturopathy)	128	Core 2 nd Year
Bachelor of Health Science (Nutritional and Dietetic Medicine)	96	Core 2 nd Year
Bachelor of Complementary Medicine	48	Elective 3 rd Year

Duration: 1 Semester

Subject Coordinator: Dr Nitish Agrawal (Brisbane Campus)

Subject is: Core or Elective as noted **Subject Credit Points:** 2

Student Workload:

No. timetabled hours per week:	No. personal study hours per week:	Total hours per week:
3	2	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: Online Quiz - Week 2; Summary Table 1 - Week 2; Summary Table 2 - Week 3; Research Assignment - Week 4; Summary Table 3 - Week 5; Final Written Exam - Week 6 Full Time Part Time	
Pre-requisites:	SOCQ121, BIOH122	
Co-requisites:	BIOC211	



SECTION 2 – ACADEMIC DETAILS

Subject Rationale

This subject introduces pharmaceutical drugs used in conventional medicine as a basis for understanding their impact on a client's health and disease. Mechanism of action, pharmacodynamics and toxic effects are examined for different classes of drugs in treating disease, the way the body works on the drugs and the dynamic way drugs work on the body. Drug interactions are also studied for their importance in clinical practice as well as a prelude to understanding herb-drug-nutrient interactions that can occur with traditional medicines.

Learning Outcomes

1. Identify and describe the principles underpinning pharmacology, pharmacodynamics and pharmacokinetics and how these principles connect with conventional medicine.
2. Discuss common drug classes, indications, actions, main adverse effects and contraindications as applied to physiological systems within the body.
3. Identify the potential adverse effects resulting from interactions of conventional drug treatments.
4. Identify and describe the principles underpinning toxicology and discuss what constitutes a toxic agent.
5. Evaluate scientific evidence of contemporary and emerging trends in conventional pharmaceutical medicines and its relation to physiological processes.

Assessment Tasks

Type	Learning Outcomes Assessed	Session Content Delivered	Due	Weighting
Online Quiz	1, 3 & 4	1-4	Week 5	15%
Summary Table 1	2 & 3	5-7	Week 7	5%
Research Assignment (1500 words)	5	5-9	Week 10	30%
Summary Table 2	2 & 3	8-10	Week 11	5%
Summary Table 3	2 & 3	11-13	Week 14	5%
Final Written Exam multiple-choice questions, short answer questions and extended responses (2 hours)	2 & 3	5-13	Final Examination Period	40%

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



Prescribed Readings:

1. Bryant, B., Knights, K., Darroch, S., & Rowland, A. (2019). *Pharmacology for health professionals* (5th ed.). Elsevier. [ebook available]

Recommended Readings:

1. Aldred, E. M. (2009). *Pharmacology: A handbook for complementary healthcare professionals*. Churchill Livingstone. [ebook available]
2. Bullock, S., & Manias, E. (2017). *Fundamentals of pharmacology* (8th ed.). Pearson. [ebook available]
3. Klaassen, C. D., & Watkins, J. B. (Eds.). (2010). *Casarett and Doull's essentials of toxicology* (2nd ed.). McGraw Hill Medical.
4. MIMS Australia (2020). *MIMS Online*. <https://www-mimsonline-com-au.ezproxy.endeavour.edu.au/Search/Search.aspx>
5. Murray, L., Daly, F., Little, M., & Cadogan, M. (2011). *Toxicology handbook* (2nd ed.). Churchill Livingstone Elsevier. [ebook available]
6. Ralston, S. H., Penman, I. D., Strachan, M. W. J., & Hobson, R. P. (Eds.). (2018). *Davidson's principles and practice of medicine* (23rd ed.). Elsevier. [ebook available]
7. The Pharmaceutical Press (2020). *Martindale: The complete drug reference*. Retrieved from <https://www-medicinescomplete-com.ezproxy.endeavour.edu.au/mc/martindale/current/>
8. Timberlake, K. C. (2015). *General, organic, and biological chemistry: Structures of life* (5th ed.). Pearson.
9. Tortora, G. J., Derrickson, B., Burkett, B., Peoples, G., Dye, D., Cooke, J., Diversi, T., McKean, M., Samalia, L., & Mellifont, R. (2019). *Principles of anatomy and physiology* (2nd Asia-Pacific ed.). Wiley. [ebook available]

Subject Content		
Week	Lecture	Tutorial
1.	Subject Outline / Subject Aims / Assessment / Teaching Resources Introduction to Pharmacology and Pharmacodynamics ➤ Drugs, medicines and health professionals ➤ Legal and ethical foundations of pharmacotherapy ➤ Introduction to Pharmacology ➤ Pharmacology vs Pharmacognosy vs Pharmacogenomics ➤ Over the counter drugs and complementary therapies ➤ Pharmacodynamics ➤ Action of drugs on four main types of regulatory proteins	➤ Tutorial covering key lecture concepts ➤ Research assignment requirements ➤ Handout: Legal and ethical foundations of pharmacotherapy



	<ul style="list-style-type: none"> ➤ Agonists and antagonists 	
2.	<p>Introduction to Pharmacokinetics and Dosing Regimens</p> <ul style="list-style-type: none"> ➤ Different routes of administration ➤ Drug absorption ➤ Bioavailability ➤ Drug distribution ➤ Metabolism ➤ Routes of excretion 	<ul style="list-style-type: none"> ➤ Tutorial covering key lecture concepts ➤ Activities on factors of lifestyle that can affect drug dosing regimens and pharmacokinetics ➤ Handout: An example of dosing parameters calculation
3.	<p>Immunisation</p> <ul style="list-style-type: none"> ➤ Introduction ➤ Why immunise with vaccines? ➤ How vaccines mediate immunity? ➤ Routes of administration of vaccines ➤ Australian National Immunisation program schedule ➤ Safety of vaccines ➤ Cancer vaccine and immunotherapy 	<ul style="list-style-type: none"> ➤ Tutorial covering key lecture concepts ➤ Discussion on future of vaccines in cancer prevention
4.	<p>Principles and Mechanisms of Toxicology</p> <ul style="list-style-type: none"> ➤ Scope of toxicology, risk assessment, exposure, dose ➤ Dose-response curves, uses and shapes including hormesis, threshold measures ➤ Absorption, distribution and excretion of toxins ➤ Biotransformation of xenobiotics <ul style="list-style-type: none"> ⊗ Toxicodynamics ⊗ Toxicokinetics 	<ul style="list-style-type: none"> ➤ Tutorial covering key lecture concepts
5.	<p>Drugs Affecting Micro-organisms and Parasites</p> <ul style="list-style-type: none"> ➤ Principles and examples of antibiotic treatment ➤ Principles and examples of anti-fungals ➤ Principles and examples of anti-virals ➤ Principles and examples of anti-retrovirals ➤ Overview of drug used in treatment of Malaria 	<ul style="list-style-type: none"> ➤ Tutorial covering key lecture concepts
6.	<p>Drugs Affecting Body Defences</p> <ul style="list-style-type: none"> ➤ Mechanism of action of NSAIDs; multiple effects and adverse effects of aspirin ➤ Mechanism of action and adverse effects of paracetamol ➤ Drugs used in treatment and management of Gout and Rheumatoid arthritis 	<ul style="list-style-type: none"> ➤ Tutorial covering key lecture concepts ➤ Discussion on the importance of clinical trials like Aspirin in Reducing Events in the Elderly ASPREE



<p>7.</p>	<p>Drugs Affecting the Reproductive Systems</p> <ul style="list-style-type: none"> ➤ Contraceptives and their effects ➤ Hormone replacement therapy; the risks and benefits of HRT ➤ Selective oestrogen receptor modulators (SERMS) in treating post-menopausal symptoms ➤ Bisphosphonates and SERMS and treatment of osteoporosis <p>Drugs Used in Neoplastic Disease</p> <ul style="list-style-type: none"> ➤ Cancer and action of cancer chemotherapy drugs ➤ Alkylating and antimetabolite agents ➤ Chemotherapy agents ➤ Adverse effects of chemotherapy agents 	<ul style="list-style-type: none"> ➤ Tutorial covering key lecture concepts
<p>NON-TEACHING WEEK (note that make-up classes may be scheduled in this 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 & Online students – The non-teaching week falls between Weeks 7 and 8</p>		
<p>8.</p>	<p>Drugs Affecting the Blood</p> <ul style="list-style-type: none"> ➤ Antiplatelet agents actions and adverse effects ➤ Anticoagulant drugs actions and adverse effects ➤ Thrombolytics agents actions and adverse effects <p>Drugs Affecting the Gastrointestinal System: PUD, GORD</p> <ul style="list-style-type: none"> ➤ Proton pump inhibitors and H₂-antagonists ➤ Cytoprotective agents and antacids ➤ Antispasmodics ➤ Antiemetics; dystonic reactions <p>Lipid Lowering Drugs</p> <ul style="list-style-type: none"> ➤ HMG-CoA reductase inhibitors ➤ Fibrates ➤ Bile acid sequestrants ➤ Nicotinic acid 	<ul style="list-style-type: none"> ➤ Tutorial covering key lecture concepts ➤ Practice the use of MIMS online and other online drug/herb monographs to answer case studies on drugs affecting the blood, and gastrointestinal system
<p>9.</p>	<p>Drugs Affecting the Endocrine System</p> <ul style="list-style-type: none"> ➤ Hypo and hyper thyroid agents ➤ Treatment of diabetes ➤ Acarbose, repaglinide and glitazones ➤ Pharmacological actions of corticosteroids on humans 	<ul style="list-style-type: none"> ➤ Tutorial covering key lecture concepts



10.	Drugs Affecting the Peripheral Nervous System <ul style="list-style-type: none"> ➤ SNS and PNS neurotransmitters and their receptors review ➤ Antimuscarinic drugs and their effects ➤ Adrenergic and antiadrenergic drugs and their effects 	<ul style="list-style-type: none"> ➤ Tutorial covering key lecture concepts
11.	Drugs Affecting the Central Nervous System <ul style="list-style-type: none"> ➤ Benzodiazepines ➤ MAO-inhibitors, SNRIs, SSRIs, TCAs- ➤ Lithium ➤ Anti-epileptic drugs ➤ Antipsychotics 	<ul style="list-style-type: none"> ➤ Tutorial covering key lecture concepts ➤ Discussion on the effects of alcohol across body systems and interaction of alcohol with drugs affecting the central nervous system
12.	Drugs Affecting the Central Nervous System II <ul style="list-style-type: none"> ➤ Levodopa-carbidopa ➤ Endogenous substances involved in pain ➤ Opioid analgesics, opioid receptor agonists and antagonists ➤ Non-opioid analgesics 	<ul style="list-style-type: none"> ➤ Tutorial covering key lecture concepts
13.	Drugs Affecting the Cardiovascular System <ul style="list-style-type: none"> ➤ Antihypertensives and their mode of action ➤ Antianginal drugs and their mode of action ➤ The mode of action and important features of drugs used to manage heart disease Drugs Affecting the Respiratory System <ul style="list-style-type: none"> ➤ Asthma drugs 	<ul style="list-style-type: none"> ➤ Tutorial covering key lecture concepts ➤ Handouts: Antihistamines, antitussives, expectorants, mucolytics and decongestants
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 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.	
17.	Final Examination Week 2 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.	