USC

Course Outline

Code: MLS110
Title: Haematology

School of: Health & Sport Science
Teaching Session: Semester 2
Year: 2019
Course Coordinator: Dr Rebecca Donkin Email: rdonkin@usc.edu.au
Course Moderator: Assoc Prof Lin Fung Email: ylfung@usc.edu.au

Please go to the USC website for up to date information on the teaching sessions and campuses where this course is usually offered.

1. What is this course about?

1.1 Description

This course provides an introduction to haematology, an area of general pathology that is concerned with diseases that affect the blood, such as blood clotting disorders, anaemias, lymphomas, leukaemias, thrombosis, coagulation disorders and haemoglobinopathies. Blood transfusion and bone marrow transplantation also will be discussed during the course. Competencies in haematological techniques conducted in pathology laboratories including, complete blood count, blood grouping, blood films, differential count, staining methods for microscopy, and coagulation tests will be assessed.

1.2 Course topics

Introduction to types of blood cells – structure, function and production
Blood cell counting
Anaemias and polycythaemia
Acute and chronic leukaemias
Malignant lymphomas and multiple myeloma
Blood coagulation pathways and coagulation disorders
Thrombosis and antithrombotic therapy
Introduction to blood transfusion and blood banking
Other haematological concepts
Basic practical techniques in haematology
· Safety in the laboratory
· Complete blood count
· Blood grouping and blood films
· Differential count for leucocytes
· Staining methods for microscopy
· Tests for coagulation pathway

2. What level is this course?

100 level Introductory - Discipline knowledge and skills at foundational level, broad application of knowledge and skills in familiar contexts and with support. Normally associated with the first full-time year of an undergraduate program

3. What is the unit value of this course?

12 units

4. How does this course contribute to my learning?

Specific Learning Outcomes On successful completion of this course you should be able to:	**Assessment Tasks** You will be assessed on the learning outcome in task/s:	**Graduate Qualities or Professional Standards mapping** Completing these tasks successfully will contribute to you becoming:
Identify the different components, production and functions of blood	Tasks 1,2,3	Knowledgeable. Creative and critical thinkers.
Understand the theory and interpret the results of routine haematology laboratory tests	Tasks 1,2,3	Knowledgeable. Creative and critical thinkers.
Identify and describe the features, classification and diagnostic tests for the major haematological malignancies and disorders outlined.	Tasks 1,2,3	Knowledgeable. Creative and critical thinkers.
Show competency in routine practical techniques in haematology	Task 3	Engaged. Knowledgeable.

5. Am I eligible to enrol in this course?

Refer to the USC Glossary of terms for definitions of "pre-requisites, co-requisites and anti-requisites".

5.1 Enrolment restrictions

You must be enrolled in SC385, SC211, SC355 or SC357

5.2 Pre-requisites

Nil

5.3 Co-requisites

Nil

5.4 Anti-requisites

Nil

5.5 Specific assumed prior knowledge and skills (where applicable)

Nil

6. How am I going to be assessed?

6.1 Grading scale

Standard – High Distinction (HD), Distinction (DN), Credit (CR), Pass (PS), Fail (FL)

6.2 Details of early feedback on progress

Formative and summative quizzes will be available in the first third of the course to provide feedback on your academic progress. You will be introduced to patient case studies and can attempt calculations, haematology terminology and morphology identification through the in-class activities that will also provide you with feedback and help prepare you for the assessment tasks in the course.

6.3 Assessment tasks

Task No.	Assessment Tasks	Individual or Group	Weighting %	What is the duration / length?	When should I submit?	Where should I submit it?
1	Review Quizzes	Individual	30% (5% per quiz)	20 mins per quiz	Weeks 3, 5, 7, 9, 11 and 13	Online on Blackboard
2	Case Studies	Group	20%	1000 words +/- 10%	Due week 9	Online on Blackboard
3	Practical Haematology Exam	Individual	50%	4-hours	Weeks 11 and 12	Practical class
			100%			

Assessment Task 1: Review Quizzes

Goal:	Using haematology knowledge and critical thinking satisfactorily identify the different components, production and functions of blood and how they are analysed in the laboratory
Product:	Review Quizzes
Format:	Multiple choice/short answer questions
Criteria:	You will be assessed on your ability to: - recall information from the MLS110 Haematology teaching materials - solve problems based on theoretical material and information covered in lectures, laboratories and tutorials

Assessment Task 2: Case Studies

Goal:	Complete case studies describing the features, interpretation and diagnostic tests for erythrocyte disorders (anaemia).
Product:	Two case studies
Format:	Students will be asked to work in pairs to complete two haematology case studies related to an erythrocyte disorder (anaemia). Students will self-select their group. While working as a team each student will contribute to both case studies. Students will deliver their case studies online through a blended learning approach for each case study in week 9. Assessment will be based on overall group performance of the completed case studies, rather than on an individual basis. Further directions about the assessment requirements will be available in the tutorials held in weeks 1, 5 and 7 and information provided to students by the course coordinator on the MLS110 Haematology portal site.
Criteria:	You will be assessed on your ability to: - Calculate and interpret parameters of automated results - Provide comments on the peripheral blood films - Complete differential white cell counts - Provide summaries of the patients including a differential diagnosis - Explain with reason the patient presentation, the significance of the results and tests and any further recommendations for the patient.

Assessment Task 3: Practical Haematology Exam

Goal:	To develop satisfactory laboratory skills and competencies in Haematology that would meet the requirements of the QLD pathology industry for training medical science technicians. Students must complete the training for this assessment in the preceding labs **before** attending the exam, this includes a minimum of 80% attendance of the laboratory practical. This is a health and safety requirement.
Product:	Practical examination of Haematology techniques and practical knowledge
Format:	You will bring in records of the preceding lab training sessions to gain entrance into this exam. Your tutor will sign your lab book for each lab and associated lab work completed. This is your evidence that you have been appropriately trained and can demonstrate appropriate health and safety measures to undertake this exam at industry standard. The practical exam will be 4-hours in duration (over 2 x 2hr sessions) and will take place during the practical classes in weeks 11 and 12. The practical exam will consist of a series of practical tests designed to assess your competency in haematology techniques.
Criteria:	You will be assessed on: · knowledge and practice of the safety requirements in the haematology laboratory ·interpreting the results from basic haematological techniques covered during the practical classes ·performance of a differential count on a blood film ·knowledge of specific staining procedures in haematology ·identification of blood film morphology using light microscopy and still images

7. What are the course activities?

7.1 Directed study hours

The directed study hours listed here are a portion of the workload for this course. A 12 unit course will have total of 150 learning hours which will include directed study hours (including online if required), self-directed learning and completion of assessable tasks. Directed study hours may vary by location. Student workload is calculated at 12.5 learning hours per one unit.

Location:	Directed study hours for location:
USC Sunshine Coast	2-hours lecture each week (comprised of 1-hr lecture followed by 1-hr lectorial) 2-hours of compulsory laboratory each week 2-hours tutorial each fortnight 1-hour pre-class activity each week

7.2 Course content

Week # / Module #	What key concepts/content will I learn?
1	**Introduction to Haematology (RD)** · Blood cell types: structure and function · Safety in the Haematology laboratory · Specimen collection · Care and use of the microscope
2	**Blood Cell Development and Examination (RD)** · Haematopoiesis · Preparing and examining a blood film · Bone marrow preparation and examination
3	**Erythrocytes (RD)** · Normal red blood cell production & destruction · Membrane physiology and structure · Haemoglobin and iron metabolism · Routine tests for RBC

4	**Leucocytes (RD)** · Leucocyte development, structure, function · Differential count · Other tests for white blood cells · Normal bone marrow morphology
5	**Blood Cell Counting (LF)** · Automated full blood analysers · Discrepancies in instrument counts · Correlation of the peripheral blood film and full blood count
6	**Introduction to erythrocyte disorders (RD)** · General principles · Classification · Diagnostic tests
7	**Anaemia (RD)** · Common anaemia disorders · Approach to diagnosis
8	**Platelets & Blood Coagulation Pathways (LF)** · Platelet production, structure & function · Normal haemostasis & coagulation · Vascular, platelet and coagulation phases
9	**Coagulation Tests (LF)** · Routine tests for haemostasis · Disorders of haemostasis · Fibrinolysis · Fibrin split and degradation products · Thrombosis and Antithrombotic Therapy
10	**Blood Transfusion and Banking (LF)** · Blood typing & basic immunology concepts · Haemolytic disease of the newborn (online lecture due to public holiday)
11	**Introduction to Leucocyte Disorders (GS)** · General principals · Non-malignant leucocyte disorders · Diagnostic tests
12	**Malignant Leucocyte Disorders (GS)** · General principles · Leukaemias and lymphomas · Diagnostic tests
13	**Advanced Haematology Concepts (RD)** · Introduction to molecular diagnostics · Cytogenetics, cytochemistry, flowcytometry (online lecture)

Please note that the course activities may be subject to variation.

8. What resources do I need to undertake this course?

Please note that course information, including specific information of recommended readings, learning activities, resources, weekly readings, etc. are available on the course Blackboard site. Please log in as soon as possible.

8.1 Prescribed text(s)

Please note that you need to have regular access to the resource(s) listed below as they are required:

Author	Year	Title	Publisher
E.M. Keohane, L.J. Smith, J.M. Walenga	2016	Rodak's Hematology Clinical Principles and Applications	Elsevier Saunders, Missouri, USA.

8.2 Specific requirements

MLS110 is structured to provide you with knowledge and practical skills necessary to meet industry established proficiency standards. **It is therefore an expectation of both the University and our industry partners that you will participate in all of the directed study activities (lectures, laboratories, tutorials) and demonstrate satisfactory proficiency in the practical assessment in order to evidence your preparedness for the placement. To gain such proficiency you must attend and participate in at least 80% of the laboratory practicals throughout the semester before you are permitted to complete Assessment Task 3 (practical exam) and you must attain a minimum 50% result for Task 3.** You are required to complete the WHS laboratory induction and successfully complete the quiz before the first practical session, wear appropriate personal protective equipment (PPE) during the practical component, including covered, non-slip shoes, laboratory coat/gown and safety glasses, long hair should be tied back.

9. Risk management

There is minimal health and safety risk in the laboratory components of this course. However, once you are on placement or working following graduation, you may handle infectious and other samples and be exposed to other risks. Development and demonstration of competencies through participation in laboratory practicals are critical to prepare you for working in industry. It is your responsibility to familiarise yourself with the Health and Safety policies and procedures. The practical manual provides information regarding safety in the laboratory, information for handling or working with equipment and consumables in a safe manner. The laboratories are used for practicals involving human tissues and fluids, and there is to be no eating or drinking in the laboratories. It is your responsibility to be safety conscious for yourself and those around you. Be aware of the safety precautions when handling equipment, chemical solutions, glass and tissues/fluid.

10. What administrative information is relevant to this course?

10.1 Assessment: Academic Integrity

Academic integrity is the ethical standard of university participation. It ensures that students graduate as a result of proving they are competent in their discipline. This is integral in maintaining the value of academic qualifications. Each industry has expectations and standards of the skills and knowledge within that discipline and these are reflected in assessment.

Academic integrity means that you do not engage in any activity that would be considered academic fraud; including plagiarism, collusion or outsourcing any part of any assessment item to any other person. You are expected to be honest and ethical by completing all work yourself and indicating in your work which ideas and information were developed by you and which were taken from others. You cannot provide your assessment work to others. You are also expected to provide evidence of wide and critical reading, usually by using appropriate academic references.

To minimise incidents of academic fraud, this course may require that some of its assessment tasks, when submitted to Blackboard, are electronically checked through SafeAssign. This software allows for text comparisons to be made between your submitted assessment item and all other work that SafeAssign has access to.

10.2 Assessment: Additional requirements

Eligibility for Supplementary Assessment

Your eligibility for supplementary assessment in a course is dependent of the following conditions applying:

a) The final mark is in the percentage range 47% to 49.4%
b) The course is graded using the Standard Grading scale
c) You have not failed an assessment task in the course due to academic misconduct

10.3 Assessment: Submission penalties (does not apply to Task 1 or practical exam)

Late submission of assessment tasks will be penalised at the following maximum rate:

- 5% (of the assessment task's identified value) per day for the first two days from the date identified as the due date for the assessment task.
- 10% (of the assessment task's identified value) for the third day
- 20% (of the assessment task's identified value) for the fourth day and subsequent days up to and including seven days from the date identified as the due date for the assessment task.
- A result of zero is awarded for an assessment task submitted after seven days from the date identified as the due date for the assessment task.

Weekdays and weekends are included in the calculation of days late.
To request an extension, you must contact your Course Coordinator and supply the required documentation to negotiate an outcome.

10.4 Study help

In the first instance, you should contact your tutor, then the Course Coordinator. Additional assistance is provided to all students through Academic Skills Advisers. To book an appointment or find a drop-in session go to Student Hub.

Contact Student Central for further assistance: +61 7 5430 2890 or studentcentral@usc.edu.au

10.5 Links to relevant University policy and procedures

For more information on Academic Learning & Teaching categories including:

- Assessment: Courses and Coursework Programs
- Review of Assessment and Final Grades
- Supplementary Assessment
- Administration of Central Examinations
- Deferred Examinations
- Student Academic Misconduct
- Students with a Disability

Visit the USC website:
http://www.usc.edu.au/explore/policies-and-procedures#academic-learning-and-teaching

10.6 General Enquiries

In person:

- **USC Sunshine Coast** - Student Central, Ground Floor, Building C, 90 Sippy Downs Drive, Sippy Downs
- **USC South Bank** - Student Central, Building A4 (SW1), 52 Merivale Street, South Brisbane
- **USC Gympie** - Student Central, 71 Cartwright Road, Gympie
- **USC Fraser Coast -** Student Central, Student Central, Building A, 161 Old Maryborough Rd, Hervey Bay
- **USC Caboolture -** Student Central, Level 1 Building J, Cnr Manley and Tallon Street, Caboolture

Tel: +61 7 5430 2890

Email: studentcentral@usc.edu.au