BMSC12003 *Haematology and Transfusion Science*

Term 2 - 2022

Profile information current as at 12/10/2024 02:04 pm

All details in this unit profile for BMSC12003 have been officially approved by CQUniversity and represent a learning partnership between the University and you (our student).The information will not be changed unless absolutely necessary and any change will be clearly indicated by an approved correction included in the profile.

General Information

Overview

On successful completion of this unit, you will be able to discuss fundamentals of haematology and transfusion science, including erythrocyte, leukocyte, reticulocyte and platelet morphology, enumeration and function. Skills in enumeration of blood cells and tests of haematological function will be developed during practical exercises. You will learn to contrast normal blood cell function with disorders of haemostasis affecting blood clotting and iron metabolism affecting blood cell numbers.

Details

Career Level: *Undergraduate*
Unit Level: *Level 2*
Credit Points: *6*
Student Contribution Band: *8*
Fraction of Full-Time Student Load: *0.125*

Pre-requisites or Co-requisites

Pre-requisites: BMSC11002 Human Body Systems 2 OR BMSC11008 Medical Anatomy and Physiology 2 OR BMSC11011 Human Anatomy and Physiology 2AND BUSN11016 Introduction to Study and Professional Practice OR BMSC11003 Professional Practice in Medical Sciences
Important note: Students enrolled in a subsequent unit who failed their pre-requisite unit, should drop the subsequent unit before the census date or within 10 working days of Fail grade notification. Students who do not drop the unit in this timeframe cannot later drop the unit without academic and financial liability. See details in the Assessment Policy and Procedure (Higher Education Coursework).

Offerings For Term 2 - 2022

- Mixed Mode
- Rockhampton

Attendance Requirements

All on-campus students are expected to attend scheduled classes – in some units, these classes are identified as a mandatory (pass/fail) component and attendance is compulsory. International students, on a student visa, must maintain a full time study load and meet both attendance and academic progress requirements in each study period (satisfactory attendance for International students is defined as maintaining at least an 80% attendance record).

Website

This unit has a website, within the Moodle system, which is available two weeks before the start of term. It is important that you visit your Moodle site throughout the term. Please visit Moodle for more information.

Class and Assessment Overview

Recommended Student Time Commitment

Each 6-credit Undergraduate unit at CQUniversity requires an overall time commitment of an average of 12.5 hours of study per week, making a total of 150 hours for the unit.

Class Timetable

Regional Campuses
Bundaberg, Cairns, Emerald, Gladstone, Mackay, Rockhampton, Townsville

Metropolitan Campuses
Adelaide, Brisbane, Melbourne, Perth, Sydney

Assessment Overview

1. **Case Study**
Weighting: 20%
2. **Laboratory/Practical**
Weighting: Pass/Fail
3. **Practical Assessment**
Weighting: 30%
4. **Online Test**
Weighting: 50%

Assessment Grading

This is a graded unit: your overall grade will be calculated from the marks or grades for each assessment task, based on the relative weightings shown in the table above. You must obtain an overall mark for the unit of at least 50%, or an overall grade of 'pass' in order to pass the unit. If any 'pass/fail' tasks are shown in the table above they must also be completed successfully ('pass' grade). You must also meet any minimum mark requirements specified for a particular assessment task, as detailed in the 'assessment task' section (note that in some instances, the minimum mark for a task may be greater than 50%). Consult the University's Grades and Results Policy for more details of interim results and final grades.

CQUniversity Policies

All University policies are available on the CQUniversity Policy site.
You may wish to view these policies:

- Grades and Results Policy
- Assessment Policy and Procedure (Higher Education Coursework)
- Review of Grade Procedure
- Student Academic Integrity Policy and Procedure
- Monitoring Academic Progress (MAP) Policy and Procedure – Domestic Students
- Monitoring Academic Progress (MAP) Policy and Procedure – International Students
- Student Refund and Credit Balance Policy and Procedure
- Student Feedback – Compliments and Complaints Policy and Procedure
- Information and Communications Technology Acceptable Use Policy and Procedure

This list is not an exhaustive list of all University policies. The full list of University policies are available on the CQUniversity Policy site.

Previous Student Feedback

Feedback, Recommendations and Responses

Every unit is reviewed for enhancement each year. At the most recent review, the following staff and student feedback items were identified and recommendations were made.

Feedback from Student feedback, peer course review and personal reflection.

Feedback
The introduction of a foundation unit in immunology would assist students to better understand the content of this unit.

Recommendation
A new unit, Foundations of Immunology will be introduced into the first year of the Bachelor of Medical Science (CG93) and the Bachelor of Medical Laboratory Science (CL10) to better prepare students for this second year unit Haematology and Transfusion Science (BMSC12003) and other units later in the course

Feedback from Student feedback.

Feedback
Students generally appreciated the format and content of the Residential School as it allowed them to put theory into practice in a timely manner.

Recommendation
Continue the same format and content of the Residential School.

Feedback from Student feedback.

Feedback
Some students felt that the return of assessments and feedback could be improved to support learning.

Recommendation
Continue to find ways to improve the turnaround of assessments to ensure prompt feedback.

Feedback from Peer course review and personal reflection.

Feedback
The provision of additional virtual tools to aid in the understanding of cell morphology will improve performance.

Recommendation
Continue to develop a library of resources to assist in the cell morphology training.

Unit Learning Outcomes

On successful completion of this unit, you will be able to:

1. Describe the physiological process of haematopoiesis
2. Distinguish between normal and abnormal erythrocyte, leukocyte, reticulocyte and platelet morphology
3. Describe the causes and diagnosis of selected haematologic and haemostatic disorders
4. Interpret a full blood count and related basic haematological tests
5. Discuss the principle of operation for selected automated and non automated haematological laboratory test procedures
6. Test and conduct quality control of basic haematological, immunohaematological and coagulation procedures in the laboratory.

Alignment of Learning Outcomes, Assessment and Graduate Attributes

N/A Level | Introductory Level | Intermediate Level | Graduate Level | Professional Level | Advanced Level

Alignment of Assessment Tasks to Learning Outcomes

Assessment Tasks	Learning Outcomes					
	1	2	3	4	5	6
1 - Case Study - 20%	•	•	•	•		
2 - Laboratory/Practical - 0%						•
3 - Practical Assessment - 30%		•		•		
4 - Online Test - 50%	•	•	•	•	•	

Alignment of Graduate Attributes to Learning Outcomes

Graduate Attributes	Learning Outcomes					
	1	2	3	4	5	6
1 - Communication	•		•	•	•	
2 - Problem Solving		•	•	•	•	
3 - Critical Thinking		•	•	•	•	
4 - Information Literacy	•		•	•		
5 - Team Work						•
6 - Information Technology Competence		•		•		•
7 - Cross Cultural Competence						
8 - Ethical practice						•
9 - Social Innovation						
10 - Aboriginal and Torres Strait Islander Cultures						

Textbooks and Resources

Textbooks

BMSC12003

Prescribed

Clinical Hematology Atlas
Edition: 6th (2022)
Authors: Jacqueline H. Carr
Elsevier
St Louis , Missouri , USA
ISBN: 9780323711920
Binding: Spiral
BMSC12003

Prescribed

Rodak's Hematology Clinical Principles and Applications
Edition: 6th (2020)
Authors: Elaine Keohane, Larry Smith and Jeanine Walenga
Elsevier
St Louis , Missouri , USA
ISBN: 9780323530453
Binding: Hardcover
BMSC12003

Supplementary

Modern Blood Banking & Transfusion Practcies
Edition: 7th (2019)
Authors: Denise M Harmening
FA Davis
Philadelphia , Penn , USA
ISBN: 9780803668881
Binding: Hardcover

Additional Textbook Information
Both paper and eBook copies can now be purchased at the CQUni Bookshop here: http://bookshop.cqu.edu.au (search on the Unit code).

View textbooks at the CQUniversity Bookshop

IT Resources

You will need access to the following IT resources:

- CQUniversity Student Email
- Internet
- Unit Website (Moodle)
- Virtual Microscopy Image Viewer

Referencing Style

All submissions for this unit must use the referencing styles below:

- Harvard (author-date)
- Vancouver

For further information, see the Assessment Tasks.

Teaching Contacts

Wayne Pederick Unit Coordinator
w.pederick@cqu.edu.au

Schedule

Week 1 - 11 Jul 2022

Module/Topic	Chapter	Events and Submissions/Topic
1. Introduction to unit, Learning Outcomes, Assessments etc. 2. Haematopoiesis, cells of the blood, structure, morphology and function	N/A Rodak's Hematology: 1 & 4 and Clinical Hematology Atlas: 1 - 3	Tutorial - Overview of the unit and FAQ's

Week 2 - 18 Jul 2022

Module/Topic	Chapter	Events and Submissions/Topic
1. RBC nomenclature, classification & production 2. Hb and iron production, metabolism and destruction 3. Automation and POC Testing	Rodak's Hematology: 1, 4 - 6; Clinical Hematology Atlas: 1 - 3; 10 - 13 Rodak's Hematology: 7 & 8 Rodak's Hematology: 11 & 12	Tutorial on Week 1 material

Week 3 - 25 Jul 2022

Module/Topic	Chapter	Events and Submissions/Topic
1. The FBC, Reference Ranges 2. Abnormal RBC morphology, RBC inclusions	Rodak's Hematology: 13 Rodak's Hematology: 13; Clinical Hematology Atlas: 12 & 13	Tutorial on Week 2 material

Week 4 - 01 Aug 2022

Module/Topic	Chapter	Events and Submissions/Topic
1. Introduction to the Anaemias • Microcytic anaemia • Normocytic anaemia • Macrocytic anaemia • Haemolytic anaemia 2. The Haemoglobinopathies	Rodak's Hematology: 17 & 24 Rodak's Hematology: 19 Rodak's Hematology: 18 Rodak's Hematology: 20 - 23 Rodak's Hematology: 16 - 25; Clinical Hematology Atlas: 10 - 13	Tutorial on Week 3 material

Week 5 - 08 Aug 2022

Module/Topic	Chapter	Events and Submissions/Topic
1. Introduction to Haemostasis - the Coagulation Cascade & Platelet Function and laboratory diagnosis of coagulation disorders 2. Anticoagulant therapy & monitoring	Rodak's Hematology: 35 - 39 & 41 - 42 Rodak's Hematology: 40	Tutorial on Week 4 material.

Vacation Week - 15 Aug 2022

Module/Topic	Chapter	Events and Submissions/Topic
No classes scheduled this week.	N/A	Revision and reflection and completion of Assessment Task 1.

Week 6 - 22 Aug 2022

Module/Topic	Chapter	Events and Submissions/Topic
1. Introduction to Transfusion Science - the Blood Group Systems	Modern Blood Banking & Transfusion Practices:10 - 12 Supplemental readings will also be made available for those without access to the supplemental text.	Tutorial on Week 5 material. **Case Study** Due: Week 6 Monday (22 Aug 2022) 11:45 pm AEST

Week 7 - 29 Aug 2022

Module/Topic	Chapter	Events and Submissions/Topic

1. Transfusion Science - Ab screening, Identification and the Crossmatch 2. Blood components, product and the Massive Transfusion Protocol 3. Haemolytic Disease of the Foetus and Newborn (HDFN)	Modern Blood Banking & Transfusion Practices: 13 - 19 Modern Blood Banking & Transfusion Practices: 2, 6 - 8; Immunohematology: 4, 9 - 11 Modern Blood Banking & Transfusion Practices: 20 Supplemental readings will also be made available for those without access to the supplemental text.	Tutorial on Week 6 material

Week 8 - 05 Sep 2022

Module/Topic	Chapter	Events and Submissions/Topic
Introduction to White Blood Cells 1 • the structure and function of white blood cells. • the differential white cell count.	Rodak's Hematology: 9; Clinical Hematology Atlas: 14	Tutorial on Week 7 material

Residential School - 09 Sep 2022

Module/Topic	Chapter	Events and Submissions/Topic
Residential School - September 9th - 11th inclusive.	Practical Workbook	A tutorial will be held during the Residential School as a general discussion, Q&A session.

Week 9 - 12 Sep 2022

Module/Topic	Chapter	Events and Submissions/Topic
Introduction to White Blood Cells 2 • 'Benign' leucocyte disorders and investigations	Rodak's Hematology:13; Clinical Hematology Atlas: 5 - 9 Rodak's Hematology: 26; Clinical Hematology Atlas:14	Tutorial on Week 8 material **In Class Practical Assessment** Due: Week 9 Monday (12 Sept 2022) 11:45 pm AEST

Week 10 - 19 Sep 2022

Module/Topic	Chapter	Events and Submissions/Topic
Introduction to White Blood Cells 3 • 'Malignant' leucocyte disorders and investigations	Rodak's Hematology: 27 - 34; Clinical Hematology Atlas: 15 - 20	Tutorial on Week 9 material **Laboratory Workbook** Due: Week 10 Monday (19 Sept 2022) 11:59 pm AEST

Week 11 - 26 Sep 2022

Module/Topic	Chapter	Events and Submissions/Topic
No scheduled class this week.	N/A	Tutorial on Week 10 material

Week 12 - 03 Oct 2022

Module/Topic	Chapter	Events and Submissions/Topic
Revision lecture and preparation for final assessment.	N/A	Tutorial on On-Line Test Preparation.

Review/Exam Week - 10 Oct 2022

Module/Topic	Chapter	Events and Submissions/Topic
No scheduled class this week	N/A	Preparation for End of Term On-line Test.

Exam Week - 17 Oct 2022

Module/Topic	Chapter	Events and Submissions/Topic
No scheduled class this week	N/A	Assessment Task 4 - End of Term Online Test will be held during the University Exam Period, the exact day and time to be confirmed.

Term Specific Information

The **Unit Coordinator** for this Unit is **Wayne Pederick** who can be contacted by e-mail (**w.pederick@cqu.edu.au**) or via the Moodle forums.
Lectures will all be pre-recorded in smaller 'modules' and will be posted on the Moodle page.
There are weekly Tutorials that will be linked to Zoom and will also be recorded and posted to the Moodle page.
We will also be using a suite of virtual microscopy tools for cell morphology, you will require a web-browser and internet access to access these. There are also a range of free software applications available, details will be posted on the Moodle page.
There are two prescribed textbooks, "Rodak's Hematology, Clinical Principles and Applications", 6th Edition (2018), Elaine Keohane, Larry Smith and Jeanine Walenga and "Clinical Hematology Atlas", 5th (2016), Bernadette F. Rodak and Jacqueline H. Carr.
Both of these texts are also the prescribed texts for BMSC13001, Advanced Haematology.
There is also a supplementary Text, "Modern Blood Banking & Transfusion Practices", 7th Edition, Denise M. Harmening that may be helpful for the Transfusion Science modules. If you are planning to study BMSC13011, Advanced Transfusion Science you may consider acquiring a copy of it however this is not mandatory.

Assessment Tasks

1 Case Study

Assessment Type
Case Study

Task Description
You will be provided with an authentic clinical case study on the Moodle site.
The following information regarding the case will be available to you: clinical presentation, patient history, blood smear morphology, haematological parameters (provided by an automated analyzer) and biochemical changes (if any).
You are then required to answer a series of questions in a Moodle Quiz to obtain further information and test results. This quiz is worth 40% of the marks for this assessment.
You are then required to write a report (around 1,000 words) using a case study approach describing the pathology observed, aetiology, specific morphological or haematological characteristics observed that led to the diagnosis, differential diagnosis, treatment options and any recommended further tests. This case report is worth 60% of the marks for this assessment.
Guidelines to complete the report, marking rubric and a template will be available on the Moodle site.

Assessment Due Date
Week 6 Monday (22 Aug 2022) 11:45 pm AEST

The documents are to be uploaded to Moodle.

Return Date to Students
Week 8 Monday (5 Sept 2022)

Results will be posted on Moodle. There will be an opportunity to discuss this assessment during the Residential School.

Weighting
20%

Minimum mark or grade
50%

Assessment Criteria
The written assessment task is marked according to how well you have met the specific requirements and in accordance with the criteria outlined below:
Presentation: The report is presented in the required template. Clarity of purpose and coherence of expression (spelling, grammar, syntax); Clear and organised flow of information.
Abstract: Provides a clear overview and overall summary of the case study.
Introduction: Provides necessary background information and pathophysiology of the case. Does not discuss the final diagnosis rather supports the intended diagnosis via arguments.
Materials and Methods: Briefly describes all the methods used to aid in diagnosis. Discusses further tests to be employed to confirm the diagnosis.

Results: All data presented clearly with reference ranges. Layout is clear with further tests and expected results discussed.
Discussion: Clear discussion of the results with supporting arguments and reasoning for arriving at the final diagnosis.
References: Harvard or Vancouver referencing system used with appropriate in-text references.

Referencing Style

- Harvard (author-date)
- Vancouver

Submission
Online

Submission Instructions
The documents are to be uploaded to Moodle.

assessmentOutcome

- Describe the physiological process of haematopoiesis
- Distinguish between normal and abnormal erythrocyte, leukocyte, reticulocyte and platelet morphology
- Describe the causes and diagnosis of selected haematologic and haemostatic disorders
- Interpret a full blood count and related basic haematological tests

assessmentGradAttribute

2 Laboratory Workbook

Assessment Type
Laboratory/Practical

Task Description
You will be provided with a laboratory workbook on the Moodle site.
This workbook will contain all the tasks that need to be completed during the residential school block.
It will also contain a series of short questions and patient reports to be completed in relation to the authentic cases provided.
Group experimental activities during the residential school will foster team work and provide hands-on experience of the haematological techniques used in pathology laboratories.
Completion of the workbook will evidence student engagement and understanding of the principles behind the haematological tests.
Laboratory staff or demonstrators will assess your individual experimental capability during residential school to ensure your understanding of the learning outcomes.
You will be required to submit the completed version of the laboratory workbook on the Moodle site.

Assessment Due Date
Week 10 Monday (19 Sept 2022) 11:59 pm AEST

The documents are to be uploaded to Moodle.

Return Date to Students
Week 12 Monday (3 Oct 2022)

Results will be posted on Moodle.

Weighting
Pass/Fail

Minimum mark or grade
50%

Assessment Criteria
Each section will have respective assigned marks depending on the complexity of the task to be performed.
The laboratory workbook template will contain the weightage of marks associated with the tasks and subsequent questions/reports to be completed.
The Workbook is a PASS/FAIL Assessment.
The laboratory staff will provide immediate verbal feedback to you on the practical hands-on aspect of this assessment item.

Referencing Style

- Harvard (author-date)

- Vancouver

Submission
Online

Submission Instructions
A scanned version of the laboratory workbook will be submitted on the Moodle page following the Residential School

assessmentOutcome

- Test and conduct quality control of basic haematological, immunohaematological and coagulation procedures in the laboratory.

assessmentGradAttribute

3 In Class Practical Assessment

Assessment Type
Practical Assessment

Task Description
On the final day of your residential school block you will have a final practical assessment.
Further details regarding the practical assessment will be available on the Moodle page.

Assessment Due Date
Week 9 Monday (12 Sept 2022) 11:45 pm AEST

Return Date to Students
Week 12 Monday (3 Oct 2022)

Results will be posted on Moodle.

Weighting
30%

Minimum mark or grade
50%

Assessment Criteria
The in-class practical assessment will be conducted on the final of the Residential School is worth 30% of your final grade.
Further information on the practical assessment will be available on the Moodle page.

Referencing Style

- Harvard (author-date)
- Vancouver

Submission
Offline

Submission Instructions
Assessments are to be handed in at the conclusion of the assessment on the final day of the Residential School.

assessmentOutcome

- Distinguish between normal and abnormal erythrocyte, leukocyte, reticulocyte and platelet morphology
- Interpret a full blood count and related basic haematological tests

assessmentGradAttribute

4 End of Term Online Test

Assessment Type
Online Test

Task Description
An on-line test will be conducted during the University Examination period, the exact day and time to be confirmed.
The online test will consist of **three (3) sections;**
Section A: Short answer questions,
Section B: Long answer questions,
Section C: Case studies.
Further information on the online test will be available on the Moodle site.

Assessment Due Date

Exact day and time TBC.

Return Date to Students

Results will be available after Certification of Grades, Friday, November 4th.

Weighting
50%

Minimum mark or grade
50%

Assessment Criteria
Students must receive at least 50% of the final online test mark to pass the unit.

Referencing Style

- Harvard (author-date)
- Vancouver

Submission
Online

Submission Instructions
The online test is to be completed in Moodle

assessmentOutcome

- Describe the physiological process of haematopoiesis
- Distinguish between normal and abnormal erythrocyte, leukocyte, reticulocyte and platelet morphology
- Describe the causes and diagnosis of selected haematologic and haemostatic disorders
- Interpret a full blood count and related basic haematological tests
- Discuss the principle of operation for selected automated and non automated haematological laboratory test procedures

assessmentGradAttribute

Academic Integrity Statement

As a CQUniversity student you are expected to act honestly in all aspects of your academic work.

Any assessable work undertaken or submitted for review or assessment must be your own work. Assessable work is any type of work you do to meet the assessment requirements in the unit, including draft work submitted for review and feedback and final work to be assessed.

When you use the ideas, words or data of others in your assessment, you must thoroughly and clearly acknowledge the source of this information by using the correct referencing style for your unit. Using others' work without proper acknowledgement may be considered a form of intellectual dishonesty.

Participating honestly, respectfully, responsibly, and fairly in your university study ensures the CQUniversity qualification you earn will be valued as a true indication of your individual academic achievement and will continue to receive the respect and recognition it deserves.

As a student, you are responsible for reading and following CQUniversity's policies, including the **Student Academic Integrity Policy and Procedure**. This policy sets out CQUniversity's expectations of you to act with integrity, examples of academic integrity breaches to avoid, the processes used to address alleged breaches of academic integrity, and potential penalties.

What is a breach of academic integrity?
A breach of academic integrity includes but is not limited to plagiarism, self-plagiarism, collusion, cheating, contract cheating, and academic misconduct. The Student Academic Integrity Policy and Procedure defines what these terms mean and gives examples.

Why is academic integrity important?
A breach of academic integrity may result in one or more penalties, including suspension or even expulsion from the University. It can also have negative implications for student visas and future enrolment at CQUniversity or elsewhere. Students who engage in contract cheating also risk being blackmailed by contract cheating services.

Where can I get assistance?
For academic advice and guidance, the Academic Learning Centre (ALC) can support you in becoming confident in completing assessments with integrity and of high standard.

What can you do to act with integrity?

Be Honest
If your assessment task is done by someone else, it would be dishonest of you to claim it as your own

Seek Help
If you are not sure about how to cite or reference in essays, reports etc, then seek help from your lecturer, the library or the Academic Learning Centre (ALC)

Produce Original Work
Originality comes from your ability to read widely, think critically, and apply your gained knowledge to address a question or problem