



# BMSC13001 *Advanced Haematology*

## Term 1 - 2024

Profile information current as at 09/05/2024 09:40 pm

All details in this unit profile for BMSC13001 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

In this unit you will apply your foundation knowledge of haematology to the study of how haematological disorders manifest and are diagnosed through changes in number, cytogenetics and morphology of cells. Diseases of haemostasis including therapeutic management with anticoagulants will also be discussed. This advanced unit builds on the knowledge and skills taught in previous units and will prepare you for work as a Medical Laboratory Scientist in Haematology. You will be required to attend a compulsory residential school in Rockhampton and an assessment task will be completed on campus during this residential school.

#### Details

Career Level: *Undergraduate*

Unit Level: *Level 3*

Credit Points: 6

Student Contribution Band: 8

Fraction of Full-Time Student Load: 0.125

#### Pre-requisites or Co-requisites

Prerequisites: BMSC12003 Haematology and Transfusion Science

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 1 - 2024

- 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).

#### Residential Schools

This unit has a Compulsory Residential School for distance mode students and the details are:

Click here to see your [Residential School Timetable](#).

#### 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. **Written Assessment**

Weighting: 20%

#### 2. **Practical Assessment**

Weighting: 30%

#### 3. **Examination**

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.

##### **Feedback**

Some students suggested there was too much content in the final exam.

##### **Recommendation**

Examine the unit's assessment tasks and ensure the end of term exam is used to assess only the second half of the term's learning.

#### Feedback from SUTE

##### **Feedback**

Some students felt their feedback did not enhance their learning.

##### **Recommendation**

Provide students with more detailed and personal feedback on their assessment tasks.

#### Feedback from Self reflection

##### **Feedback**

On reflection, the addition of more case studies would enhance students learning.

##### **Recommendation**

Add more case studies to improve students learning and ability to incorporate the units material into real life clinical scenarios.

#### Feedback from Self reflection

##### **Feedback**

Increase the morphology content and improve some of the lectures

##### **Recommendation**

Improve the morphology training through live tutorials and develop some new recordings for some of the lectures.

## Unit Learning Outcomes

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

1. Distinguish benign from malignant haematological disorders based on numerical, cytogenetic and morphological changes in the cells.
2. Discuss the detection and monitoring of blood diseases using laboratory tests appropriate to the patient's clinical condition.
3. Discuss disorders of haemostasis and the use of anticoagulant therapies.
4. Analyse results of hematological tests and provide provisional and differential diagnoses with suggested further testing to support and confirm the diagnosis.
5. Perform morphological analysis of peripheral blood smears to make a differential diagnosis.

### **Competency Based Standards for Medical Scientists, December 2009.**

**Unit 1:** Collection, preparation and analysis of clinical material - **Elements** 1.1.1 - 1.1.3; 1.1.6 - 1.1.8; 1.2.4; 1.3.1 - 1.3.5; 1.5.1 - 1.5.5 & 1.6.1 - 1.6.8;

**Unit 2:** Correlation and validation of results of investigations using knowledge of method(s) including analytical principles and clinical information - **Elements** 2.1.1 - 2.1.2; 2.2.1; 2.3.1 & 2.3.2

**Unit 3:** Interpretation, reporting and issuing of laboratory results - **Elements** 3.1.1; 3.2.1 - 3.2.3; 3.2.6 - 3.2.7 & 3.3.1 - 3.3.2

**Unit 4:** Maintenance of documentation, equipment, resources and stock - **Elements** 4.2.1 - 4.2.6



















**Unit 5:** Maintenance and promotion of safe working practices - **Elements** 5.1.3; 5.2.1; 5.3.4; 5.3.9; 5.4.1 - 5.4.5

**Unit 6:** Professional accountability and participation in continuing professional development - **Elements** 6.5.6 & 6.5.7

## Alignment of Learning Outcomes, Assessment and Graduate Attributes

 N/A Level	 Introductory Level	 Intermediate Level	 Graduate Level	 Professional Level	 Advanced Level
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### Alignment of Assessment Tasks to Learning Outcomes

Assessment Tasks	Learning Outcomes				
	1	2	3	4	5
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

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#### Prescribed

##### **Clinical Haematology Atlas**

Edition: 6th (2021)

Authors: Jacqueline H. Carr

Elsevier

St Louis , Missouri , United States of America

ISBN: 9780323711920

Binding: Spiral

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#### Prescribed

##### **Rodak's Haematology, Clinical Principles and Applications**

Edition: 6th (2019)

Authors: Elaine Keohane, Catherine Otto, Jeanine Walenga

Elsevier

St Louis , Missouri , United States of America

ISBN: 9780323530453

Binding: Hardcover

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#### Supplementary

##### **Blood cells**

6th Edition (2022)

Authors: Bain, Barbara

John Wiley & Sons, Inc

New Jersey , USA

ISBN: 1-119-82029-4

Binding: Hardcover

[View textbooks at the CQUniversity Bookshop](#)

### IT Resources

**You will need access to the following IT resources:**

- CQUniversity Student Email
- Internet
- Unit Website (Moodle)
- Zoom (both microphone and webcam capability)
- WBC Counter App on mobile device
- BM Counter App on mobile device

## 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

**Jacqui Dennis** Unit Coordinator

[j.dennis@cqu.edu.au](mailto:j.dennis@cqu.edu.au)

## Schedule

### Week 1 - 04 Mar 2024

Module/Topic	Chapter	Events and Submissions/Topic
1. Introduction to Advanced Haematology 2. FBE Analysis and Automation	Rodak's: Ch 1, 11, 12 & 13 Clinical Hematology Atlas: Ch 1-4	Tutorial: Blood Film morphology revision

### Week 2 - 11 Mar 2024

Module/Topic	Chapter	Events and Submissions/Topic
Haemolytic Anaemia 1. Increased RBC Destruction 2. Intrinsic Defects 3. Extrinsic Defects - Immune and Non-Immune Cause.	Rodak's : Ch 5, 20-23 Clinical Hematology Atlas: Ch 10, 11, 12, 13	Tutorial: Red cell morphology overview and revision

### Week 3 - 18 Mar 2024

Module/Topic	Chapter	Events and Submissions/Topic
1. Paediatric and Geriatric Haematology 2. Bone Marrow	Rodak's: Ch 43, 14, 19 Clinical Hematology Atlas: Ch 23	Tutorial: Diagnostics and interpretation of Laboratory haematology.

### Week 4 - 25 Mar 2024

Module/Topic	Chapter	Events and Submissions/Topic
1. Haemostasis: Laboratory Testing and Anticoagulants 2. Thrombosis and Coagulopathies	Rodak's: Ch 35, 36, 39-42	Tutorial: Diagnostic Haemostasis

### Week 5 - 01 Apr 2024

Module/Topic	Chapter	Events and Submissions/Topic
1. Non-malignant Leucocyte disorders. 2. Haematological malignancy; development, genetics and nomenclature	Rodak's: Ch 26, 27 Clinical Hematology Atlas: Ch 5-9, 14	Tutorial: White cell morphology overview and revision <b>Written Assessment - Case Study Report available</b> The written assessment - Case Study Report comprises 20% of the overall unit mark.

### Vacation Week - 08 Apr 2024

Module/Topic	Chapter	Events and Submissions/Topic
Independent study week - an opportunity for self-directed learning, mid-unit revision and catch up.		No lectures

### Week 6 - 15 Apr 2024

Module/Topic	Chapter	Events and Submissions/Topic
1. Myeloid Leukaemia 2. Molecular Haematology and Cytogenetics	Rodak's: Ch 29, 30, 31 Clinical Hematology Atlas: Ch 15	Tutorial: Myeloid Leukaemia morphology and diagnostics.

### Week 7 - 22 Apr 2024

Module/Topic	Chapter	Events and Submissions/Topic
1. Lymphoid Leukaemia 2. Flow cytometry	Rodak's: Ch 28, 31 Clinical Hematology Atlas: Ch 16, 19	Tutorial: Lymphoid Leukaemia morphology and diagnostics

### Week 8 - 29 Apr 2024

Module/Topic	Chapter	Events and Submissions/Topic
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1. Lymphomas
2. Myelomas

Rodak's: Ch 34  
Clinical Hematology Atlas: Ch 16,19

Tutorial:  
Lymphoma morphology and diagnostics.

**Case Study Report** Due: Week 8  
Wednesday (1 May 2024) 11:45 pm  
AEST

#### Week 9 - 06 May 2024

Module/Topic	Chapter	Events and Submissions/Topic
1. Myelodysplastic Syndromes 2. Myeloproliferative Neoplasms	Rodak's: Ch 32-33 Clinical Hematology Atlas: Ch 17-18	Tutorial: Introduction to Stem cell harvests and infusions

#### Week 10 - 13 May 2024

Module/Topic	Chapter	Events and Submissions/Topic
Residential School: 17/05/24- 19/5/24	Laboratory Manual Laboratory Workbook Practical Assessment	Compulsory Residential School During the Residential School, you will be assessed on your ability to perform a number of morphological analyses as presented in your practical manual. The practical assessment comprises 30% of the overall unit mark.

#### Week 11 - 20 May 2024

Module/Topic	Chapter	Events and Submissions/Topic
1. Malaria	Rodak's: Ch 2, 22 Clinical Hematology Atlas: Ch 12, 21	Tutorial: Malaria morphology and laboratory diagnosis.  <b>Practical Portfolio and Workbook</b> Due: Week 11 Tuesday (21 May 2024) 12:00 am AEST

#### Week 12 - 27 May 2024

Module/Topic	Chapter	Events and Submissions/Topic
Quality in Haematology Laboratory Revision week	Rodak: Ch 2	Tutorial: Revision

#### Review/Exam Week - 03 Jun 2024

Module/Topic	Chapter	Events and Submissions/Topic
Exam		

#### Exam Week - 10 Jun 2024

Module/Topic	Chapter	Events and Submissions/Topic
<b>End-of-Term Exam</b>		The End-of-Term Exam will be scheduled in the CQUniversity examination period. The exact date will be advised on the unit Moodle page. The end of term exam comprises 50% of the overall unit mark.

## Term Specific Information

Lectures will be recorded for this unit and will be available to students at the start of each week. Tutorials will run once a week live and also recorded for students to watch later. The live tutorials provide the opportunity for students to attend and ask questions from each weeks learning as well. It is advisable that students revise the weekly lectures and recommended reading before attending the tutorials. Students are required to attend the compulsory 3 day residential school. Please check the timetable for dates and complete registration in MYCQU.

## Assessment Tasks

### 1 Case Study Report

#### Assessment Type

Written Assessment

#### Task Description

You will be provided with an authentic clinical case study on the unit 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 analyser) and biochemical changes (if any).

You are required to analyse a case study, in the format of short answer questions, describing the pathology observed, aetiology, specific morphological or haematological characteristics observed that lead to the provisional diagnosis, differential diagnosis, treatment options and any recommended further tests. Guidelines to complete the report, marking rubric and a template will be available on the Moodle site.

Students are permitted to use Generative AI for this assessment in the following ways:

- developing literature search strategies
- compiling suitable literature sources and locating data
- guidance for structuring the assignment

If Generative AI is used in any way, it must be cited as per the CQU Guidelines (Academic Learning Centre).

As per academic writing requirements and assessment criteria; citations of information should be of the primary source. (i.e. statistics returned by AI must be fact-checked and referenced from their original source as well as the AI source).

Failure to cite primary sources as well as AI sources could be considered breach of academic integrity.

Your use of Generative AI must be clearly outlined in an appendix as a separate file which includes the prompt used and Generative AI response (in line with marking rubric). Failure to include an appendix may result in academic integrity investigation.

#### Assessment Due Date

Week 8 Wednesday (1 May 2024) 11:45 pm AEST

Answers must be submitted and uploaded to the Moodle site

#### Return Date to Students

Week 10 Friday (17 May 2024)

Feedback will be provided on the Moodle site.

#### Weighting

20%

#### Minimum mark or grade

50% of total attainable marks.

#### Assessment Criteria

The case study assessment is worth 20% of your total unit marks.

The assessment task is marked according to how well you have met the specific requirements and in accordance with the detailed marking rubric, which is available on the Moodle site.

Please note that all late submissions will be penalised 5% per calendar day unless an application for an extension has been approved.

All extension requests must be made through the extension request system on Moodle with the appropriate documentation.

#### Referencing Style

- [Harvard \(author-date\)](#)
- [Vancouver](#)

#### Submission

Online

#### Submission Instructions

Assessment should be submitted via Moodle by midnight on due date.

#### Learning Outcomes Assessed



- Discuss the detection and monitoring of blood diseases using laboratory tests appropriate to the patient's clinical condition.
- Analyse results of hematological tests and provide provisional and differential diagnoses with suggested further testing to support and confirm the diagnosis.
- Perform morphological analysis of peripheral blood smears to make a differential diagnosis.

## 2 Practical Portfolio and Workbook

### Assessment Type

Practical Assessment

### Task Description

For medical laboratory scientists within the area of Haematology in a pathology laboratory, it is essential that analysis of a wide range of benign and malignant disorders of different types of blood cells in adult and children are performed and interpreted correctly. Individual activities will provide hands-on experience of haematological techniques in analysis of a wide range of clinical conditions. Completion of the Laboratory Workbook will evidence student's engagement and understanding of the principles behind the haematological tests.

During the residential school you are required to complete:

**(A) Laboratory workbook (Pass/Fail):** You will be provided with the laboratory workbook on the Moodle site prior to residential school. This will contain a set of blood films with authentic cases to be reviewed and results interpreted based on the data provided.

**(B) Practical Assessment (30%):** This will be conducted on the final day of the residential school. It will encompass skills practiced on the days leading up to this assessment. You will be provided a set of blood films with authentic cases to be reviewed and results interpreted based on the data provided.

### Assessment Due Date

Week 11 Tuesday (21 May 2024) 12:00 am AEST

Part A will be due the week following Residential school. Part B will be conducted on the final day of Residential school

### Return Date to Students

Week 12 Wednesday (29 May 2024)

Feedback will be provided on the Moodle site.

### Weighting

30%

### Minimum mark or grade

50% of total attainable marks each for Laboratory Workbook and Practical Examination.

### Assessment Criteria

**(A) Laboratory workbook (Pass/Fail):** The laboratory workbook will contain a detailed assessment scheme associated with the tasks and questions/reports to be completed. The laboratory staff will provide immediate verbal feedback to you on the practical hands-on aspect of this assessment item. You are required to submit the completed version of the laboratory workbook on the Moodle site. You must achieve a pass grade in order to pass this assessment. Students who do not achieve the required 50% on the 1st attempt may be granted an opportunity to reattempt the assessment. The re-attempt must be submitted within seven consecutive days after receiving a mark for the initial assessment.

**(B) Practical Assessment (30%):** You must achieve a minimum of 50% marks in order to pass this examination. Students who pass the first attempt will be awarded the achieved grade, up to 100% of the total marks. Students who fail the 1st attempt will be granted a second attempt. The second attempt will be conducted in the second half of the final day. The repeat attempt will be a pass/fail, with the maximum marks being 50% of the total achievable marks.

### Referencing Style

- [Harvard \(author-date\)](#)
- [Vancouver](#)

### Submission

Offline Online

**Submission Instructions**

Hand practical exam to assessor at completion on the final day of residential school. Submit the completed version of the laboratory workbook on the Moodle site in the week following Residential school.

**Learning Outcomes Assessed**

- Distinguish benign from malignant haematological disorders based on numerical, cytogenetic and morphological changes in the cells.
- Perform morphological analysis of peripheral blood smears to make a differential diagnosis.

## Examination

**Outline**

Complete an invigilated examination.

**Date**

During the examination period at a CQUniversity examination centre.

**Weighting**

50%

**Length**

180 minutes

**Minimum mark or grade**

50%

**Exam Conditions**

Closed Book.

**Materials**

Dictionary - non-electronic, concise, direct translation only (dictionary must not contain any notes or comments).

## 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