



# BMSC13011 *Advanced Transfusion Science*

## Term 2 - 2023

Profile information current as at 01/05/2024 12:10 pm

All details in this unit profile for BMSC13011 have been officially approved by CQUUniversity 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

This unit enables you to develop an advanced knowledge and understanding of the principles of Transfusion Science, building on the knowledge and understanding of the principles gained in earlier units. You will gain vital knowledge on topics such as safe blood storage and handling, blood typing and the detection and identification of antibodies significant in transfusion. You will also perform compatibility testing and discuss the potential adverse outcomes of blood transfusions plus pre-natal, antenatal and postnatal screening. 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. The theoretical and practical sessions will allow you to develop skills in critical steps necessary in providing safe blood for transfusion in routine and emergency situations.

#### 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

Pre-requisites: BMSC12003 Haematology and Transfusion Science AND BMSC13009 Immunology OR BMSC13023 Applied Immunology

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 - 2023

- 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. **Case Study**

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 SUTE

##### **Feedback**

Students found residential school challenging.

##### **Recommendation**

Consider ways to increase student support during residential school.

#### Feedback from SUTE

##### **Feedback**

Some students commented that the sound quality of some lectures was suboptimal.

##### **Recommendation**

Continue to update lectures with improved audio clarity.

#### Feedback from Informal feedback during residential school

##### **Feedback**

Students found the laboratory manual well written and easy to follow.

##### **Recommendation**

Continue with current format and layout of the laboratory manual.

#### Feedback from Informal feedback during residential school

##### **Feedback**

Some students found the unit content enjoyable and relevant to industry expectation.

##### **Recommendation**

Continue with current unit content format for relevancy.

## Unit Learning Outcomes

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

1. Discuss the production, labelling, storage and transportation of human blood products and their medical uses
2. Perform advanced testing in Transfusion Science including pre-transfusion, compatibility testing, antenatal and the testing for autoantibodies
3. Demonstrate the correct interpretation and reporting of test results in Transfusion Science
4. Examine the role of antibodies in erythrocyte destruction and their effect on the principles of transfusion including adverse transfusion outcomes
5. Critique the importance of quality control in transfusion science and explain the results
6. Discuss the factors contributing to adverse transfusion outcomes and their effects in transfusion science.

### **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

**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



### Alignment of Assessment Tasks to Learning Outcomes

Assessment Tasks	Learning Outcomes					
	1	2	3	4	5	6
1 - Case Study - 20%				•		•
2 - Practical Assessment - 30%		•	•			
3 - Examination - 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

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#### Prescribed

##### **Modern Blood Banking and Transfusion Practices**

Edition: 7th (2018)

Authors: Denise M Harmening

F.A. Davis Company

Pennsylvania , PA , USA

ISBN: 9780803668881

Binding: Hardcover

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#### Supplementary

##### **Basic & Applied Concepts of Blood Banking and Transfusion Practices**

Edition: 4th (2016)

Authors: Paula R Howard

Elsevier - Health Sciences Division

St Louis , Missouri , USA

ISBN: 9780323697392

Binding: Paperback

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#### Supplementary

##### **Immunohaematology: Principles and Practice**

Edition: 3rd (2011)

Authors: Eva D. Quinley

Jones & Bartlett ( now BPS )

Sydney , NSW , Australia

ISBN: 978-0781782043

Binding: Hardcover

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#### Supplementary

##### **Transfusion and Transplantation Science**

Edition: 2nd edn (2017)

Authors: Avent, Neil

Oxford University Press UK

Oxford , UK

ISBN: 9780198735731

Binding: Paperback

[View textbooks at the CQUniversity Bookshop](#)

### IT Resources

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

- CQUniversity Student Email
- Internet
- Unit Website (Moodle)

## Referencing Style

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

- [Harvard \(author-date\)](#)
- [American Psychological Association 7th Edition \(APA 7th edition\)](#)

For further information, see the Assessment Tasks.

## Teaching Contacts

**Roxina Sharma** Unit Coordinator  
[r.r.sharma@cqu.edu.au](mailto:r.r.sharma@cqu.edu.au)

## Schedule

### Week 1 - 10 Jul 2023

Module/Topic	Chapter	Events and Submissions/Topic
1. Introduction to Advanced Transfusion Science 2. Genetics 3. Immunological Principles	Part I - Chapters 2 and 3	Week 1 quiz

### Week 2 - 17 Jul 2023

Module/Topic	Chapter	Events and Submissions/Topic
Blood and Blood Components	Part III - Chapters 13, 14, 15, 16, 18	Week 2 quiz

### Week 3 - 24 Jul 2023

Module/Topic	Chapter	Events and Submissions/Topic
ABO and Rh Blood Group Systems	Part I - Chapter 4 Part II - Chapters 6 and 7	Pre-recorded Tutorials x2 - Case studies

### Week 4 - 31 Jul 2023

Module/Topic	Chapter	Events and Submissions/Topic
1. Other Blood Groups 2. The HLA System 3. Bone Marrow and Organ Transplant	Part II - chapters 8, 9, 19, 23, 24	Week 4 online quizzes.

### Week 5 - 07 Aug 2023

Module/Topic	Chapter	Events and Submissions/Topic
Principles of Serologic and Compatibility Testing	Part II - Chapters 5, 10, 11	Pre-recorded Tutorials x3 - Antibody identification and pretransfusion testing <b>Assessment 1</b> - Case Study Analysis available Friday 12/08/23, comprises 20% of the overall unit mark.

### Vacation Week - 14 Aug 2023

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

### Week 6 - 21 Aug 2023

Module/Topic	Chapter	Events and Submissions/Topic
Clinical Conditions Associated with Transfusion Science	Part III - Chapters 17 and 21	Pre-recorded tutorial - Case study. <b>Assessment 1 Case Study Analysis</b> Due: Week 6 Friday (25 Aug 2023) 11:59 pm AEST

### Week 7 - 28 Aug 2023

Module/Topic	Chapter	Events and Submissions/Topic
Haemolytic Disease of the Foetus and the Newborn.	Part III - Chapter 20	Pre-recorded tutorial - Case study

### Week 8 - 04 Sep 2023

Module/Topic	Chapter	Events and Submissions/Topic
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Transfusion of Specific Blood Factions	Part III - Chapter 16	Week 8 online quiz.
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### Week 9 - 11 Sep 2023

Module/Topic	Chapter	Events and Submissions/Topic
Quality Assurance, Quality Control, Regulatory and Compliance Issues	Part V – Chapters 25, 26, 28, 29	Recorded tutorial - case study

### Week 10 - 18 Sep 2023

Module/Topic	Chapter	Events and Submissions/Topic
Compulsory Residential School - Monday September 18th - Thursday September 21st.	Laboratory Manual Laboratory Workbook Practical Exam	<p>During this Residential School, your competency will be assessed on your ability to safely perform and correctly interpret and analyse a number of transfusion science techniques.</p> <p>The <b>Laboratory Workbook (10%)</b> is to be uploaded to Moodle by 5 PM Monday September 25th.</p> <p>The <b>Practical Exam (20%)</b> will be conducted on day 4 of the residential school, Thursday 21st September.</p> <p><b>Practical Assessments</b> Due: Week 10 Thursday (21 Sept 2023) 12:00 pm AEST</p>

### Week 11 - 25 Sep 2023

Module/Topic	Chapter	Events and Submissions/Topic
1. Automation in Transfusion Science 2. Transfusion Science in Summary	Part II – Chapter 12	Week 11 Quiz

### Week 12 - 02 Oct 2023

Module/Topic	Chapter	Events and Submissions/Topic
Unit revision and exam preparation.	On-line Q&A session	

### Review/Exam Week - 09 Oct 2023

Module/Topic	Chapter	Events and Submissions/Topic
Revision / Exam		<p>The <b>End-of-unit exam</b> will be scheduled in the CQUniversity examination period between 12/10/23 - 20/10/23. The exact date will be advised on the unit Moodle page.</p> <p>The End-of-unit exam comprises 50% of the overall unit mark.</p>

### Exam Week - 16 Oct 2023

Module/Topic	Chapter	Events and Submissions/Topic
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## Term Specific Information

Unit Contacts for 2023

Unit Coordinator / Lecturer / Tutor / Assessor:

Roxzina Sharma: r.r.sharma@cqu.edu.au

Pre-recorded lectures will be used throughout the term and will be available to students at the start of each lecture week. Pre-recorded tutorials will be available in most weeks, other weeks will have a formative quiz - please refer to the Moodle site for further details. It is advisable to review the weekly lectures before each tutorial session.

Students have e-access to the prescribed textbook, additional reading resources and some of the supplementary textbooks via the eReading Lists on the Moodle page.

Attendance to the Residential School is compulsory for all students. Further details will be provided on your Moodle page during the term.

Students are encouraged to use the Moodle Q&A for all communication purposes. This will be monitored and responded to in a timely manner (within 48 hours).

Live Q&A sessions will be held via Zoom from week 2 onwards - please refer to the Moodle site for further details.

## Assessment Tasks

### 1 Assessment 1 Case Study Analysis

#### Assessment Type

Case Study

#### Task Description

You will be provided an authentic clinical case study analysis on the unit Moodle site. The following information regarding the case will be available to you: a pathology request form with patient information, tests requested and clinical notes for a potential blood transfusion. You are required to analyse the dataset and answer the related questions using the assessment template and the marking guide provided on the Moodle site. Answers to be provided are a combination of short and long answers. A guide to number of words per question is provided within the assessment answer template.

#### Assessment Due Date

Week 6 Friday (25 Aug 2023) 11:59 pm AEST

Answers must be submitted on the template provided.

#### Return Date to Students

Week 8 Friday (8 Sept 2023)

Online two weeks after the due date.

#### 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. A minimum of 50% is required to pass this assessment.

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. Assessments that have been submitted more than 20 calendar days late with an approved extension will be marked with the maximum marks being zero of the total achievable marks.

#### Referencing Style

- [Harvard \(author-date\)](#)
- [American Psychological Association 7th Edition \(APA 7th edition\)](#)

#### Submission

Online

#### Submission Instructions

A PDF version to be uploaded to the Moodle site.



### Learning Outcomes Assessed

- Examine the role of antibodies in erythrocyte destruction and their effect on the principles of transfusion including adverse transfusion outcomes
- Discuss the factors contributing to adverse transfusion outcomes and their effects in transfusion science.

## 2 Practical Assessments

### Assessment Type

Practical Assessment

### Task Description

For Medical Scientists working in a Transfusion Laboratory, it is essential that laboratory techniques are performed and interpreted correctly each and every time. Failure to do so may lead to potentially fatal consequences. For this reason, demonstration of individual practical competence is vital.

During the residential school you will complete:

**(A) Laboratory Workbook (10%):** answer a set of questions in the laboratory workbook and interpret results as you perform each practical task. Completion of the workbook will provide evidence for student engagement and understanding of the principles behind the laboratory tests. Detailed answers associated with each task / question are to be completed. Completed workbooks are to be submitted online on the Moodle site by the due date.

**(B) Practical Exam (20%):** you will undertake a practical exam in the last session of the residential school in which you will be required to accurately perform routine blood banking techniques in order to obtain valid results. You will also be required to correctly interpret the results in order to achieve safe transfusion outcomes. You will be provided with a patient sample and a number of donor units to determine the compatibility of the donor units to prevent any adverse transfusion outcomes. On completion, this assessment must be handed to the assessor for marking before the end of the final day of residential school.

### Assessment Due Date

Week 10 Thursday (21 Sept 2023) 12:00 pm AEST

(A) Laboratory Workbook to be uploaded to Moodle site by 5PM on Monday 25th September 2023. Practical Exam (20%) to be handed to the assessor on completion.

### Return Date to Students

Week 10 Thursday (21 Sept 2023)

At the end of the last day of residential school (Thursday 21st September).

### Weighting

30%

### Minimum mark or grade

50% of total attainable marks for Laboratory Workbook and 80% of total attainable marks for Practical Exam.

### Assessment Criteria

(A) Laboratory workbook (10%): You must achieve a minimum of 50% of total marks in order to pass this assessment.

(B) Practical assessment (20%): You must achieve a minimum of 80% of total marks in order to pass this assessment.

Students who pass the first attempt will be awarded the achieved grade, up to 100% of the total marks, which is 20% of the total unit grade. 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, prior to completion of the residential school session. The repeat attempt will be a pass/fail. You must achieve a minimum of 80% of the total marks to pass the second attempt, with the maximum marks awarded being 50% of the total achievable marks, which is 10% of the total assessment grade.

### Referencing Style

- [Harvard \(author-date\)](#)
- [American Psychological Association 7th Edition \(APA 7th edition\)](#)

### Submission

Offline

### Submission Instructions

(A) Laboratory Workbook to be uploaded to Moodle site by 5PM on Monday 25th September 2023. Practical Exam (20%) to be handed to the assessor on completion.

### Learning Outcomes Assessed

- Perform advanced testing in Transfusion Science including pre-transfusion, compatibility testing, antenatal and

- the testing for autoantibodies
- Demonstrate the correct interpretation and reporting of test results in Transfusion Science

## 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