BMSC13011 *Advanced Transfusion Science*
Term 2 - 2024

Profile information current as at 16/07/2025 05:02 am

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 - 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).

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: 25%
2. **Laboratory/Practical**
Weighting: 25%
3. **Practical Assessment**
Weighting: Pass/Fail
4. **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
Some students felt that more examples and elaborations were required in some areas of the unit.

Recommendation
Continue to review and update lecture material as required.

Feedback from SUTE

Feedback
Some students did not interact much during the residential school and throughout the term.

Recommendation
Continue to increase use of interactive sessions throughout the term and during residential school.

Feedback from SUTE and self reflection

Feedback
The implementation of a virtual weekly quizzes via Kahoot enhanced student learning experience.

Recommendation
Continue to increase use of virtual kahoot quizzes in more areas of this unit for continued student experience.

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

— 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 - 25%				•		•
2 - Laboratory/Practical - 25%		•	•		•	
3 - Practical Assessment - 0%		•	•			
4 - 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

BMSC13011

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
BMSC13011

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
BMSC13011

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

Additional Textbook Information
If you prefer to study with a paper copy, they can be purchased at the CQUni Bookshop at: http://bookshop.cqu.edu.au (search on the Unit code).
eBook version of the prescribed textbook can be purchased at:
https://www.fadavis.com/product/modern-blood-banking-transfusion-practices-harmening-7
Electronic access to prescribed and supplementary textbooks are available via the eReading Lists on the Moodle page.

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)
- Vancouver

For further information, see the Assessment Tasks.

Teaching Contacts

Roxina Sharma Unit Coordinator
r.r.sharma@cqu.edu.au

Schedule

Week 1 - 08 Jul 2024

Module/Topic	Chapter	Events and Submissions/Topic
1. Introduction to Advanced Transfusion Science 2. Genetics 3. Immunological Principles	Part I – Chapters 2 and 3	Discussion forum: - Introduction to unit plus, revision quiz

Week 2 - 15 Jul 2024

Module/Topic	Chapter	Events and Submissions/Topic
Blood and Blood Components	Part III – Chapters 13, 14, 15, 16, 18	Discussion forum - Week 1 content

Week 3 - 22 Jul 2024

Module/Topic	Chapter	Events and Submissions/Topic
ABO and Rh Blood Group Systems	Part I - Chapter 4 Part II – Chapters 6 and 7	Discussion forum - Week 2 content

Week 4 - 29 Jul 2024

Module/Topic	Chapter	Events and Submissions/Topic
1. Other Common Blood Group Systems 2. Uncommon Blood Group Systems 3. Atypical Antibodies and the Coombs Test	Part II - chapters 8, 9, 5	Discussion forum - Week 3 content - Case studies

Week 5 - 05 Aug 2024

Module/Topic	Chapter	Events and Submissions/Topic
Principles of Serologic and Pretransfusion Compatibility Testing	Part II – Chapters 10, 11	Discussion forum - Week 4 content

Vacation Week - 12 Aug 2024

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

Week 6 - 19 Aug 2024

Module/Topic	Chapter	Events and Submissions/Topic
Clinical Conditions Associated with Transfusion Science	Part III – Chapters 17 and 21	Discussion forum- Week 5 content - Case studies **Case Study Analysis** Due: Week 6 Friday (23 Aug 2024) 5:00 pm AEST

Week 7 - 26 Aug 2024

Module/Topic	Chapter	Events and Submissions/Topic
Haemolytic Disease of the Foetus and the Newborn (HDFN)	Part III – Chapter 20	Discussion forum - Week 6 content - Case study

Week 8 - 02 Sep 2024

Module/Topic	Chapter	Events and Submissions/Topic
1. The HLA System 2. Haemopoietic Stem Cell (HSCT) and Organ Transplant 3. Laboratory Analysis of Haemopoietic Stem Cell Transplant	Part II - chapters 19, 23, 24	Discussion forum - Week 7 content - Case study

Week 9 - 09 Sep 2024

Module/Topic	Chapter	Events and Submissions/Topic
Quality Assurance, Quality Control, Regulatory and Compliance Issues	Part V – Chapters 25, 26, 28, 29	Discussion forum - Week 8 content - Case study

Week 10 - 16 Sep 2024

Module/Topic	Chapter	Events and Submissions/Topic
Compulsory Residential School - Monday September 16th - Thursday September 19th.	Laboratory Manual Laboratory/Practical Workbook Practical Exam	**No tutorials this week.** 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. **Laboratory /Practical Assessment (Pass/Fail)** Due: Week 10 Thursday (19 Sept 2024) 1:00 pm AEST

Week 11 - 23 Sep 2024

Module/Topic	Chapter	Events and Submissions/Topic
1. Transfusion of Specific Blood Factions 2. Automation in Transfusion Science	Part II – Chapter 16 Part III - Chapter 12	Discussion forum - Week 9 content - Case study **Laboratory /Practical Workbook** Due: Week 11 Monday (23 Sept 2024) 5:00 pm AEST

Week 12 - 30 Sep 2024

Module/Topic	Chapter	Events and Submissions/Topic
Unit revision and exam preparation. 1. Transfusion Science in Summary.		Discussion forum - Week 11 content + Revision

Review/Exam Week - 07 Oct 2024

Module/Topic	Chapter	Events and Submissions/Topic
Revision / Exam		The End-of-unit exam will be scheduled in the CQUniversity examination period between 10/10/24 - 18/10/24. The exact date will be advised on the unit Moodle page.

Exam Week - 14 Oct 2024

Module/Topic	Chapter	Events and Submissions/Topic

Term Specific Information

Unit Coordinator / Lecturer / Tutor / Assessor:
MS Roxzina (Roxina) Sharma: r.r.sharma@cqu.edu.au
Pre-recorded lectures will be used throughout the term and will be available to students at least a week prior to the start of each lecture week.
Live tutorial / discussion forum / quiz sessions will be available in all weeks except in residential school week. You are strongly encouraged to participate in tutorials, as studies have shown that students who attend the tutorials and participate in discussions have higher rates of success (Karnik et al., 2020). It is advisable to review the weekly lectures before each tutorial / discussion / quiz session.
Weekly study questions are also provided to reinforce the knowledge you have gained from the lectures and to support your learning experience in this unit. Please refer to the Moodle site for further details.
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).
There are no resubmissions of assessments in this unit. You must earn an overall grade of 50% to pass this unit.
As per Australian educational standards, you are expected to commit 150 hours of engagement to your study of this unit. This is broken down as:
2 - 3 hours per week attending or watching recorded lectures and revising the content through study notes
3 - 4 hours per week completing the weekly readings and other material on the unit's Moodle site.
1 - 2 hours per week attending the weekly tutorial and contributing to discussions and revising the content provided.
3 - 4 hours per week preparing your assessments or studying for your exams.
Karnik, A., Kishore, P., & Meraj, M. (2020). Examining the linkage between class attendance at university and academic performance in an International Branch Campus setting. Research in Comparative and International Education, 15(4), 371-390. https://doi.org/10.1177/1745499920958855

Assessment Tasks

1 Case Study Analysis

Assessment Type
Case Study

Task Description
You will be provided an authentic clinical case study 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.

Assessment Due Date
Week 6 Friday (23 Aug 2024) 5:00 pm AEST

Return Date to Students
Week 8 Friday (6 Sept 2024)

Weighting
25%

Minimum mark or grade
50% of total attainable marks.

Assessment Criteria
Students will be assessed on the following criteria.

1. Accuracy in the analysis of clinical data provided.
2. Correct interpretation and explanation of results.
3. A detailed explanation of how you derived your conclusions from the clinical information provided.

A detailed marking guide will be provided on the Moodle page.
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 without an approved extension will be marked with the maximum marks being zero of the total achievable marks.

Referencing Style

- Harvard (author-date)
- Vancouver

Submission
Online

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 Laboratory /Practical Workbook

Assessment Type
Laboratory/Practical

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 the following.
Part (A) Compulsory Practical Workbook (Pass/Fail): Students are required to transcribe all results and interpretations of each practical task in the relevant sections of this workbook. Completion of the workbook will evidence student engagement and understanding of the principles behind compatibility testing for safe transfusion practices.
Part (B) Laboratory Practical Online Test (25%): Students are required to answer a set of online questions related to the practical tasks performed during the course of the residential school.

Assessment Due Date
Week 11 Monday (23 Sept 2024) 5:00 pm AEST

Return Date to Students
Week 12 Friday (4 Oct 2024)

Weighting
25%

Minimum mark or grade
50% for each assessment item - Part (A) and Part (B)

Assessment Criteria
Students will be assessed on the following criteria.

1. Correct interpretation and explanation of results.
2. Demonstrate critical thinking ability in how you derived your conclusions from the clinical information provided.
3. Ability to define key concepts related to practical task performed during residential school.

Part (A) Compulsory Practical Workbook (Pass/Fail): will be marked in class during the course of the Residential School at completion of each task.
Part (B): Laboratory Practical Online Test (25%): This will consist of short and long answer analytical questions online.

Referencing Style

- Harvard (author-date)
- Vancouver

Submission
Offline Online

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

- Critique the importance of quality control in transfusion science and explain the results

3 Laboratory /Practical Assessment (Pass/Fail)

Assessment Type
Practical Assessment

Task Description
You will undertake an invigilated practical assessment in the last session of the residential school. You will be provided with a patient sample and a number of donor units to determine compatibility for safe transfusion outcomes. You will be required to accurately perform routine blood banking techniques to obtain valid results leading to the prevention of adverse transfusion outcomes.

Assessment Due Date
Week 10 Thursday (19 Sept 2024) 1:00 pm AEST

To be handed to the assessor on completion.

Return Date to Students
Week 10 Thursday (19 Sept 2024)

Weighting
Pass/Fail

Minimum mark or grade
80% of the total attainable marks.

Assessment Criteria
On completion, this assessment must be handed to the assessor for marking before the end of the final day of residential school.
You will be assessed on accurately performing the following criteria.

1. Correct patient and sample identification.
2. Correct interpretation of testing techniques.
3. Obtain and correctly transcribe valid results.
4. Correctly analyse results using critical thinking.
5. Determine compatibility of the donor units with a patient sample.
6. Explain how your results have achieved safe transfusion outcomes.

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.

Referencing Style

- Harvard (author-date)
- Vancouver

Submission
Offline

Submission Instructions
On completion, this assessment must be handed to the assessor for marking before the end of the final day of residential school.

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