

MLS101 Foundations in Medical Science

School: School of Health - Biomedicine

2025 | Semester 1

UniSC Sunshine Coast
UniSC Moreton Bay

**BLENDED
LEARNING**

Most of your course is on campus but you may be able to do some components of this course online.

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

1. What is this course about?

1.1. Description

This course will provide you with the foundational knowledge and practical skills that are required to study medical science at university. You are introduced to the sub-disciplines of medical science; analytical methods and instrumentation used in medical science laboratories; specimen collection and processing; laboratory safety and regulations; quality management in the laboratory; clinical interpretation of laboratory test results; scientific report writing; and professional ethics and confidentiality. Applied laboratory mathematics and statistical tests are also covered in the course.

1.2. How will this course be delivered?

ACTIVITY	HOURS	BEGINNING WEEK	FREQUENCY
BLENDED LEARNING			
Tutorial/Workshop 1 – Interactive synchronous tutorials to gain in depth understanding of core course content. Small class tutorial with interactive, collaborative learning and case studies	2hrs	Week 2	6 times
Laboratory 1 – The laboratory classes will provide students with the opportunity to develop skills and competencies required for working in medical science laboratories.	3hrs	Week 1	7 times
Learning materials – Asynchronous Emodules containing course learning materials supplemented with formative quizzes, podcasts, interviews, simulations, screencasts and recorded discussions.	1hr	Week 1	13 times
Tutorial/Workshop 2 – Weekly workshop to engage with theory content and work through problems	1hr	Week 1	13 times

1.3. Course Topics

History of medical science and the modern medical science laboratory.
Measurements in medical science.
Safety and hazards in the medical science laboratory.
Common laboratory equipment in the medical science laboratory.
Laboratory maths and solution preparation.
Human specimen collection.
Techniques and instrumentation in medical science.
Professional ethics in medical science.
Laboratory statistics.
Quality assessment and quality control.

2. What level is this course?

100 Level (Introductory)

Engaging with discipline knowledge and skills at foundational level, broad application of knowledge and skills in familiar contexts and with support. Limited or no prerequisites. Normally, associated with the first full-time study year of an undergraduate program.

3. What is the unit value of this course?

12 units

4. How does this course contribute to my learning?

COURSE LEARNING OUTCOMES	GRADUATE QUALITIES
On successful completion of this course, you should be able to...	Completing these tasks successfully will contribute to you becoming...
1 Demonstrate laboratory skills and competencies required to work in medical science.	Empowered
2 Enact professional responsibilities according to appropriate decision-making frameworks and codes of conduct to practice ethically.	Ethical
3 Demonstrate current knowledge of the various disciplines of medical science.	Knowledgeable
4 Synthesise and evaluate knowledge produced from a variety of sources to reach conclusions.	Knowledgeable
5 Demonstrate awareness of ecologically and economically sustainable laboratory practices.	Sustainability-focussed

5. Am I eligible to enrol in this course?

Refer to the [UniSC Glossary of terms](#) for definitions of “pre-requisites, co-requisites and anti-requisites”.

5.1. Pre-requisites

Enrolled in Program SC211, SC355, SC357, SC385, SC201, SC301, UB001 or (SE303 and a registered Chemical Science Major)

5.2. Co-requisites

Not applicable

5.3. Anti-requisites

Not applicable

5.4. Specific assumed prior knowledge and skills (where applicable)

It is recommended that students have some prerequisite knowledge in core mathematics, and basic biology and chemistry.

6. How am I going to be assessed?

6.1. Grading Scale

Standard Grading (GRD)

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

6.2. Details of early feedback on progress

You will be completing two assessment sub-tasks during the first third of the semester that will provide you with early feedback on your progression in the MLS101 course. This includes an online measurement quiz in week 2, Pre-laboratory quiz in week 3 and laboratory exercises for Practical 2 in week 3. Together these assessment sub-tasks are worth 15% of your final grade for the course. You will have an opportunity to discuss your marks for these assessment sub-tasks with an MLS101 tutor either in class or during a weekly drop-In Session.

6.3. Assessment tasks

DELIVERY MODE	TASK NO.	ASSESSMENT PRODUCT	INDIVIDUAL OR GROUP	WEIGHTING %	WHAT IS THE DURATION / LENGTH?	WHEN SHOULD I SUBMIT?	WHERE SHOULD I SUBMIT IT?
All	1	Portfolio	Individual and Group	50%	Multiple elements equivalent to approx. 2000 words total	Throughout teaching period (refer to Format)	To be Negotiated
All	2	Quiz/zes	Individual	20%	One hour	Week 7	In Class
All	3	Examination - Centrally Scheduled	Individual	30%	Two hours	Exam Period	Online Test (Quiz)

All - Assessment Task 1: Professional Skills Development Portfolio

GOAL:	Medical science is a complex field and you will have to develop skills and competencies including: safety in the medical science laboratory; technical laboratory skills and communication of findings; maths and computation skills; and report writing and knowledge of professional ethics. These skill sets come together and will be evidenced in this portfolio of activities as you advance your professional development, which includes developing a mastery of medical science practice, content and theory.	
PRODUCT:	Portfolio	
FORMAT:	<p>This portfolio will include:</p> <p>Task 1a. Online Measurements Quiz. 5%: Individual - Week 2.</p> <p>Task 1b: Pre-Laboratory Quizzes. 10% total: Individual - Weeks 3,5,9,11.</p> <p>Task 1c: Laboratory Exercises for Practicals 2,3,4 and 5. 20% total: Individual or Pair - Weeks 3,5,9,11.</p> <p>Task 1d. Case Study Report for Practicals 2. (Assessment of accuracy and precision for basic laboratory techniques) and 3 (Determination of Total Serum Protein).7.5%: Individual or Pair - Week 6</p> <p>Task 1e. Case Study Report for Practical 4 (Working with the compound light microscope ad preparation of a blood smear) and 5 (Staining techniques for the identification of microorganisms using the compound light microscope and oil immersion microscopy).7.5% total: Individual or Pair - Week 12</p> <p>Please refer to the MLS101 assessment folder in Canvas for specific details for task description, format and submission instructions.</p>	
CRITERIA:	No.	Learning Outcome assessed
	1 Safe and professional laboratory skills and techniques for medical science	1 4
	2 Professional ethical codes of conduct	2
	3 Medical science discipline knowledge	3
	4 Application of sustainable lab practice	5
	5 Scientific communication	2 4
GENERIC SKILLS:	Collaboration, Problem solving, Organisation, Applying technologies	

All - Assessment Task 2: Review Quiz (20%)

GOAL:	This review quiz will allow you to demonstrate your understanding of the medical science discipline and related areas of study. You will show your understanding of the disciplines in medical science; common laboratory equipment; laboratory safety and hazards; laboratory maths and solution preparation and graphing techniques.	
PRODUCT:	Quiz/zes	
FORMAT:	Multiple choice questions and/or short answer questions	
CRITERIA:	No.	Learning Outcome assessed
	1 Demonstrate knowledge and understanding of the course content covered in Weeks 1 to 6 of the course.	1 3 4
	2 Apply theoretical knowledge identified in the course lecture, practical and tutorial material to solve problems	1 3 4
GENERIC SKILLS:	Problem solving	

All - Assessment Task 3: End-of-Semester Exam (30%)

GOAL:	This exam will allow you to demonstrate your knowledge and understanding of the course topics covered from Week 5 including: human specimen collection; techniques and instrumentation in medical science; and quality assessment and quality control.		
PRODUCT:	Examination - Centrally Scheduled		
FORMAT:	Multiple-choice and/or short answer questions.		
CRITERIA:	No.		Learning Outcome assessed
	1	Demonstrate knowledge and understanding of the course content covered in Weeks 5 to 13 of the course	1 3 4 5
	2	Apply theoretical knowledge identified in the course lecture, practical and tutorial material to solve problems	1 3 4 5
GENERIC SKILLS:	Problem solving		

7. Directed study hours

A 12-unit course will have total of 150 learning hours which will include directed study hours (including online if required), self-directed learning and completion of assessable tasks. Student workload is calculated at 12.5 learning hours per one unit.

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

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

8.1. Prescribed text(s) or course reader

Please note that you need to have regular access to the resource(s) listed below. Resources may be required or recommended.

REQUIRED?	AUTHOR	YEAR	TITLE	EDITION	PUBLISHER
Required	Mary Louise Turgeon	2019	Linne and Ringsrud's Clinical Laboratory Science	(8th Edn.)	Mosby

8.2. Specific requirements

A MLS101 Course Manual will be available for purchasing from USC Mail and Print Services (MaPS). You will require this manual for your practical and tutorial classes. MLS101 is structured to provide you with knowledge and practical skills necessary to meet industry established proficiency standards. It is therefore an expectation of both the University and our industry partners that you will participate in all the directed study activities (online learning materials, lectorials, laboratories, tutorials/workshops) and demonstrate satisfactory proficiency in the practical assessment. To gain such proficiency you must attend and participate in at least 80% of the laboratory practicals throughout the semester. You are required to provide and wear appropriate protective equipment during the laboratory practical, including: covered, non-slip shoes, laboratory coat/gown and safety glasses. Disposable gloves and other protective equipment will be provided when required.

9. How are risks managed in this course?

Risk assessments have been performed for all laboratory classes and a moderate level of health and safety risk exists. Moderate risks are those associated with laboratory work such as working with chemicals and hazardous substances. You will be required to undertake laboratory induction training and it is also your responsibility to review course material, search online, discuss with lecturers and peers and understand the health and safety risks associated with your specific course of study and to familiarise yourself with the University's general health and safety principles by reviewing the [online induction training for students](#), and following the instructions of the University staff

10. What administrative information is relevant to this course?

10.1. Assessment: Academic Integrity

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

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

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

10.2. Assessment: Additional Requirements

Eligibility for Supplementary Assessment

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

- (a) The final mark is in the percentage range 47% to 49.4%; and
- (b) The course is graded using the Standard Grading scale

Attendance

Students enrolled in MLS101 must attend and participate in all on-campus practical classes.

10.3. Assessment: Submission penalties

Late submissions may be penalised up to and including the following maximum percentage of the assessment task's identified value, with weekdays and weekends included in the calculation of days late:

- (a) One day: deduct 5%;
- (b) Two days: deduct 10%;
- (c) Three days: deduct 20%;
- (d) Four days: deduct 40%;
- (e) Five days: deduct 60%;
- (f) Six days: deduct 80%;
- (g) Seven days: A result of zero is awarded for the assessment task.

The following penalties will apply for a late submission for an online examination:

- Less than 15 minutes: No penalty
- From 15 minutes to 30 minutes: 20% penalty
- More than 30 minutes: 100% penalty

10.4. SafeUniSC

UniSC is committed to a culture of respect and providing a safe and supportive environment for all members of our community. For immediate assistance on campus contact SafeUniSC by phone: [07 5430 1168](tel:0754301168) or using the [SafeZone](#) app. For general enquires contact the SafeUniSC team by phone [07 5456 3864](tel:0754563864) or email safe@usc.edu.au.

The SafeUniSC Specialist Service is a Student Wellbeing service that provides free and confidential support to students who may have experienced or observed behaviour that could cause fear, offence or trauma. To contact the service call [07 5430 1226](tel:0754301226) or email studentwellbeing@usc.edu.au.

10.5. Study help

For help with course-specific advice, for example what information to include in your assessment, you should first contact your tutor, then your course coordinator, if needed.

If you require additional assistance, the Learning Advisers are trained professionals who are ready to help you develop a wide range of academic skills. Visit the [Learning Advisers](#) web page for more information, or contact Student Central for further assistance: +61 7 5430 2890 or studentcentral@usc.edu.au.

10.6. Wellbeing Services

Student Wellbeing provide free and confidential counselling on a wide range of personal, academic, social and psychological matters, to foster positive mental health and wellbeing for your academic success.

To book a confidential appointment go to [Student Hub](#), email studentwellbeing@usc.edu.au or call 07 5430 1226.

10.7. AccessAbility Services

Ability Advisers ensure equal access to all aspects of university life. If your studies are affected by a disability, learning disorder mental health issue, injury or illness, or you are a primary carer for someone with a disability or who is considered frail and aged, [AccessAbility Services](#) can provide access to appropriate reasonable adjustments and practical advice about the support and facilities available to you throughout the University.

To book a confidential appointment go to [Student Hub](#), email AccessAbility@usc.edu.au or call 07 5430 2890.

10.8. Links to relevant University policy and procedures

For more information on Academic Learning & Teaching categories including:

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

For more information, visit <https://www.usc.edu.au/explore/policies-and-procedures#academic-learning-and-teaching>

10.9. Student Charter

UniSC is committed to excellence in teaching, research and engagement in an environment that is inclusive, inspiring, safe and respectful. The [Student Charter](#) sets out what students can expect from the University, and what in turn is expected of students, to achieve these outcomes.

10.10. General Enquiries

In person:

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

Tel: +61 7 5430 2890

Email: studentcentral@usc.edu.au