COURSE OUTLINE

MLS101 Foundations in Medical Science

School: School of Health - Biomedicine

2026 | Trimester 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 unisc.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	6 times
Learning materials – Asynchronous Emodules containing course learning materials supplemented with formative quizes, podcasts, interviews, simulations, screencasts and recorded discussions.	1hr	Week 1	12 times
Tutorial/Workshop 2 – Weekly workshop to engage with theory content and work through problems	1hr	Week 1	12 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 On successful completion of this course, you should be able to...	GRADUATE QUALITIES MAPPING Completing these tasks successfully will contribute to you becoming...	PROFESSIONAL STANDARD MAPPING * Australian Institute of Medical and Clinical Scientists
1 Demonstrate laboratory skills and competencies required to work in medical science.	Empowered	1.1.1, 1.1.2, 1.1.3, 1.1.4, 1.2.2, 1.2.3, 1.3.1, 1.3.2, 1.3.3, 1.3.4, 1.3.5, 1.6.1, 1.6.2, 1.6.3, 1.6.4, 1.6.7, 2.1.1, 2.1.2, 2.2.1, 2.3.1, 3.2.1, 3.3.1, 3.3.2, 5.1.5, 5.2.1, 5.3.3, 5.3.4, 5.4.1, 6.2.4, 7.1.2
2 Enact professional responsibilities according to appropriate decision-making frameworks and codes of conduct to practice ethically.	Ethical	1.3.1, 1.3.2, 2.1.1, 2.1.2, 3.2.1, 3.2.2, 3.3.1, 3.3.2, 3.3.3, 5.2.1, 5.3.3, 5.3.4, 5.3.9, 5.4.1, 7.1.2, 7.3.2
3 Demonstrate current knowledge of the various disciplines of medical science.	Knowledgeable	6.2.4, 6.3.1
4 Synthesise and evaluate knowledge produced from a variety of sources to reach conclusions.	Knowledgeable	2.1.1, 2.1.2, 2.2.1, 2.3.1

COURSE LEARNING OUTCOMES	GRADUATE QUALITIES MAPPING	PROFESSIONAL STANDARD MAPPING *
On successful completion of this course, you should be able to...	Completing these tasks successfully will contribute to you becoming...	Australian Institute of Medical and Clinical Scientists
5 Demonstrate awareness of ecologically and economically sustainable laboratory practices.	Sustainability-focussed	4.1.3, 5.2.1, 5.1

* Competencies by Professional Body

CODE	COMPETENCY
AUSTRALIAN INSTITUTE OF MEDICAL AND CLINICAL SCIENTISTS	
1.1.1	Ensure the appropriateness of sample collection procedures: Correct request form is received as set out in established protocol.
1.1.2	Ensure the appropriateness of sample collection procedures: Identification of patient and demographic information is established.
1.1.3	Ensure the appropriateness of sample collection procedures: Appropriate action is taken when request appears inconsistent with patient information data.
1.1.4	Ensure the appropriateness of sample collection procedures: Patient preparation and specimen collection is consistent with test(s) requested.
1.2.2	Ensure the appropriateness of specimen reception procedures: Collection errors are identified and corrective action taken.
1.2.3	Ensure the appropriateness of specimen reception procedures: Specimen suitability for further processing is established.
1.3.1	Evaluate specimen suitability prior to analysis: Correct and satisfactory labelling and matching of subject details is established.
1.3.2	Evaluate specimen suitability prior to analysis: Confirmation is made that the nature of the specimen is consistent with requested analysis.
1.3.3	Evaluate specimen suitability prior to analysis: Specimen is received in correct container (i.e., containing correct anticoagulant or fixative if appropriate) and in accordance with collection and delivery protocols.
1.3.4	Evaluate specimen suitability prior to analysis: Quality of specimen meets defined acceptability criteria.
1.3.5	Evaluate specimen suitability prior to analysis: Appropriate action, as per defined criteria, is taken upon receipt of an unsuitable specimen.
1.6.1	Read and validate results - Equipment based testing: Laboratory instrumentation is operated within established procedures (including quality control, troubleshooting instrument problems and performing preventative and corrective maintenance).
1.6.2	Read and validate results - Equipment based testing: Validity of test results is confirmed in terms of protocols (including standards, quality control data and performance of analytical systems) and problems are identified and remedied or notified to the appropriate staff member.
1.6.3	Read and validate results - Equipment based testing: Results are calculated from data outputs according to documented procedures.
1.6.4	Read and validate results - Equipment based testing: Test data, calculations, results and acceptance/rejection of analytical procedure outcome are documented.
1.6.7	Read and validate results - Observation based testing: Critical observations are made and recorded.
2.1.1	Assess validity of data/results against possible range of outcomes: Initial observation and limited interpretation for significance of the raw data/results is undertaken.
2.1.2	Assess validity of data/results against possible range of outcomes: Implausible results, results inconsistent with clinical information or expected outcomes based on other test results or those outside defined criteria are investigated further using defined troubleshooting strategies.
2.2.1	Validation of results: Possible causes for implausible or inconsistent results or outcomes are determined.

CODE	COMPETENCY
2.3.1	Make decisions about reporting results, repeating procedures, consulting senior staff and carrying out further tests within established guidelines: Appropriate decisions about repeating procedures, carrying out further tests within established guidelines, rejection or reporting of results are made. Senior staff are appropriately consulted.
3.2.1	Use the administrative systems in place to communicate the results: Results are communicated in a timely manner and according to laboratory protocols.
3.3.1	Ensure that results with important diagnostic or treatment implications are communicated as per established protocols: Significant results, as defined by the laboratory, are identified
3.3.2	Ensure that results with important diagnostic or treatment implications are communicated as per established protocols: Results are interpreted in the light of clinical information provided and knowledge of the test(s) and limitations.
3.2.2	Use the administrative systems in place to communicate the results: Confidentiality of results is assured at all times.
3.3.3	Ensure that results with important diagnostic or treatment implications are communicated as per established protocols: Urgent or significant results are communicated to appropriate personnel so they understand the significance, purpose of the communication and action required. This action is documented.
4.1.3	Coordinate supplies of stocks and reagents: Expired or dangerous materials are disposed of according to regulations.
5.1.5	Prepare and store reagents and solutions: Reagents are handled as required by regulatory guidelines.
5.2.1	Identify and respond to unsafe work practices and breaches of regulations: All safe work practices (as laid down by legislative guidelines) are understood and promoted.
5.3.3	Ensure correct procedures are followed for acquisition, collection, storage, transportation and disposal of biological, chemical, toxic and radioactive wastes: The disposal of biological, chemical, toxic and radioactive material is performed as per current legislation and guidelines.
5.3.4	Ensure correct procedures are followed for acquisition, collection, storage, transportation and disposal of biological, chemical, toxic and radioactive wastes: Protocols for incidents such as spills of biological, chemical, toxic and radioactive substances are followed in accordance with current regulations and guidelines.
5.4.1	Respond appropriately to emergency situations: Appropriate safety equipment and personal protective equipment (PPE) is available and used according to documented protocols.
5.3.9	Ensure correct procedures are followed for acquisition, collection, storage, transportation and disposal of biological, chemical, toxic and radioactive wastes: Laboratory workplace safety requirements are met when handling biological, chemical, toxic or radioactive substances.
5.1	Maintenance and promotion of safe working practices: Prepare and store reagents and solutions
6.2.4	Maintain and update scientific/technical knowledge and skills: Opportunities to enhance learning from investigation of unusual clinical cases and/or results are pursued.
6.3.1	Develop skills relevant to the enhancement of professional growth: An understanding of all aspects of laboratory operation and the place of laboratories in health care systems is demonstrated.
7.1.2	Accepts responsibility for own actions/omissions: Tasks are checked to ensure they are completed.
7.3.2	Demonstrates knowledge of contemporary ethical issues impinging on Medical Science: Rights of individuals/groups are recognised and protected.

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.

5.5. Microcredential Information

Not applicable

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 quater of the trimester that will provide you with early feedback on your progression in the MLS101 course. This includes a pre-laboratory quiz in week 3 and laboratory exercises for Practical 2 in week 3. Together these assessment sub-tasks are worth 7% 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 6	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
AUTHORSHIP STATEMENT:	
FORMAT:	This portfolio will include: Task 1a: Pre-Laboratory Quizzes. 10% total: Individual - Weeks 3, 5, 7, 9, 11. Task 1b: Laboratory Exercises for Practicals 2, 3, 4, 5, and 6. 25% total: Individual or Pair - Weeks 3, 5, 7, 9, 11. Task 1c. Case Study Report for Practicals 2, 3, 4, 5, and 6. 15%: Individual or Pair - Week 11 Please refer to the MLS101 assessment folder in Canvas for specific details for task description, format and submission instructions.

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
AUTHORSHIP STATEMENT:	
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, Applying technologies

All - Assessment Task 3: End-of-Trimester 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
AUTHORSHIP STATEMENT:	
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 12 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

You need regular access to the resource(s) below. Many texts are available as ebooks through the Library at no additional cost.

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 successfully complete the UB001 Bachelor of Medical Laboratory Science (Pathology) and meet accreditation requirements of AIMS, UB001 students enrolled in MLS101 are expected to attend and participate in laboratory practical classes, and attendance will be recorded.
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. 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

10.5. 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.

10.6. General Enquiries

For course-specific questions, contact your teaching staff or Course Coordinator.

For other enquiries or to access support, please contact Student Central:

- UniSC Student Central
- UniSC Adelaide Student Central