COURSE OUTLINE

MBT301 Pharmaceutical and Food Microbiology

School: School of Science, Technology and Engineering

2023 | 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

In this course you learn the essential microbiological processes that play significant roles in the current and future global food and pharmaceutical industries. You learn how to implement relevant microbiological safety, preservation and quality assurance strategies to prevent food spoilage and food-borne infections. Laboratory practicals are designed to complement your learning. The course also addresses ethical and professional issues related to both industries. Gain of laboratory skills is an essential component of the course as well as understanding the theory behind each experiment.

1.2. How will this course be delivered?

ACTIVITY	HOURS	BEGINNING WEEK	FREQUENCY
BLENDED LEARNING			
Learning materials – Asynchronous learning material	1hr	Week 1	13 times
Tutorial/Workshop 1 – Online Tutorial	2hrs	Week 1	13 times
Tutorial/Workshop 2 – On campus Tutorial	2hrs	Week 1	4 times
Laboratory 1 – Laboratory sessions every fortnight	3hrs	Week 3	6 times

1.3. Course Topics

The Big Picture; Pharmaceutical and Food Microbiology and current issues related to these industries

Food borne diseases and Food handling and safety

Principals and industrial aspects of food and pharmaceutical fermentation

Fermentation related to beverage industry

Fermentation related to dairy and meat industry

Exotic foods and microbial biomass as food source

Principals and stages of pharmaceutical fermentation and microbial products

Advanced laboratory skills, ethics, communication and professionalism

2. What level is this course?

300 Level (Graduate)

Demonstrating coherence and breadth or depth of knowledge and skills. Independent application of knowledge and skills in unfamiliar contexts. Meeting professional requirements and AQF descriptors for the degree. May require pre-requisites where discipline specific introductory or developing knowledge or skills is necessary. Normally undertaken in the third or fourth 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 Completing these tasks successfully will contribute to you becoming...
1	Describe and apply theoretical and practical knowledge of:fermentative production of beverages and food; pharmaceutical industry related strategies used to discover new drugs or produce the known ones effectively current issues related to food borne diseases and food safety	Knowledgeable Empowered
2	Interpret and analyse data and other information related to food fermentation and spoilage as well as testing of pharmaceutical/health compounds of microbial origin	Knowledgeable Empowered Ethical
3	Act professionally by demonstrating graduate level laboratory skills and biosafety adhering to ethical codes of conduct in data collection and analysis	Knowledgeable Empowered Ethical

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

MBT263 or LFS261

5.2. Co-requisites

Not applicable

5.3. Anti-requisites

Not applicable

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

Competent laboratory skills and scientific report writing

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

A formative exam will take place in week 4 covering the first 3 weeks of the learning materials of the course, this early assessment item will prepare students to the mid-term exam. In addition, in weeks 5-7 of the semester students will be provided additional information on the laboratory report writing.

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	Quiz/zes	Individual	0%	1 hour	Week 4	Online Test (Quiz)
All	2	Examination - not Centrally Scheduled	Individual	20%	2 hour	Week 7	In Class
All	3	Practical / Laboratory Skills	Individual	50%	a] 30min quiz b] report, up to 3000 words	Throughout teaching period (refer to Format)	In Class
All	4	Examination - Centrally Scheduled	Individual	30%	2 hours	Exam Period	Exam Venue

All - Assessment Task 1: Early Assessment Quiz

GOAL:	This is an important quiz that allows you to consider how you are managing the foundational theoretical knowledge and progress in the course and will help you in being successful for the mid-term exam.
PRODUCT:	Quiz/zes
FORMAT:	Online multiple choice exam related to the contents of the learning materials from weeks 1 to 3
CRITERIA:	**No.** — **Learning Outcome assessed** 1 Application of theoretical and practical knowledge of food borne diseases and food spoilage — 1 2 Assessment criteria are mapped to the course learning outcomes. — 1 2 3
GENERIC SKILLS:	Communication, Information literacy

All - Assessment Task 2: Mid-term exam

GOAL:	You will demonstrate your knowledge of principles and strategies covered in the learning material of the weeks 1 to 6. In particular, you will apply pharmaceutical and food microbiology knowledge to practical issues encountered in food industry.
PRODUCT:	Examination - not Centrally Scheduled
FORMAT:	Two hour written exam composed of multiple choice questions and essay question(s)
CRITERIA:	**No.** — **Learning Outcome assessed** 1 Application of theoretical knowledge of: i) principles of food fermentation & beverage production ii) strategies and current issues related to food safety — 1 2 Critical interpretation of learnings on: i) effectiveness of food safety strategies ii) concept of fermentation iii) large scale production of fermented beverages in industrial context — 1
GENERIC SKILLS:	Communication, Problem solving, Information literacy

All - Assessment Task 3: Laboratory Portfolio

GOAL:	This assessment has been designed for you to specifically develop your competencies in the laboratory - which is an essential skill for Biomed students and for many other disciplines under general science umbrella including microbiology and biotechnology. At the end of the course you should have graduate level competence that is essential for gaining employment.
PRODUCT:	Practical / Laboratory Skills
FORMAT:	Laboratory quizzes: 30 min exam after completion of each practical composed of four essay questions.Only students who actively participated in the laboratory activity can take these quizzes (20%). Laboratory report: Individual report (up to 3000 words) from practical number #1 (Probiotics and microbiology of milk and dairy products) that adheres to the given report structure (rubric) to be provided by the Course-Coordinator (30%). Submission will be online with plagiarism check report included. Submit: Quizzes, weeks 5, 7, 9, 11, 13. Report, end of the semester.
CRITERIA:	

No.		Learning Outcome assessed
1	Demonstration and application of theoretical and practical knowledge gained in the practicals Interpretation and analysis of data and other information (e.g. water quality and safety, probiotics, microbial content of fresh and frozen food, beverage p	2 3
2	Interpretation and analysis of data and other information (probiotics) Application of ethical codes of conduct Scientific communication	2 3

GENERIC SKILLS:	Communication, Organisation, Applying technologies, Information literacy

All - Assessment Task 4: Final Exam

GOAL:	Describe and apply theoretical and practical knowledge of: fermentative production of food; pharmaceutical industry related strategies used to discover new drugs or produce the known ones effectively covering the material from weeks 7 to 13
PRODUCT:	Examination - Centrally Scheduled
FORMAT:	Two hours - a written examination composed of five essay questions
CRITERIA:	

No.		Learning Outcome assessed
1	Application of theoretical knowledge of: - specific food and pharmaceutical products and their production	1
2	Critical interpretation of information/data from case examples to assess the following in different industrial contexts: effective production and quality and safety of fermented products	1
3	Act professionally by identifying issues related to: i) safe food production and biosafety ii) ethical codes of conduct in pharmaceutical, food and beverage industries	1

GENERIC SKILLS:	Communication, Problem solving, Applying technologies, Information literacy

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	Bibek Ray,Arun Bhunia	0	Fundamental Food Microbiology, Fifth Edition	Latest edition	CRC Press
Recommended	James G. Cappuccino,Natalie Sherman	0	Microbiology	Latest Ed	Benjamin-Cummings Publishing Company
Recommended	Michael J. Waites,Neil L. Morgan,John S. Rockey,Gary Higton	0	Industrial Microbiology	Latest Ed	Wiley-Blackwell

8.2. Specific requirements

Protective clothing for laboratory and strict adherence to the laboratory safety guidelines. Students fail to adhere the code or do not present a hard copy of their online laboratory safety quiz results in the first laboratory practical will not be admitted to the laboratory.

9. How are risks managed in this course?

Risk assessments have been performed for all studio and laboratory classes and a low level of health and safety risk exists. Some risk concerns may include equipment, instruments, and tools; as well as manual handling items within the laboratory. It is your responsibility to review course material, search online, discuss with lecturers and peers and understand the 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:

The final mark is in the percentage range 47% to 49.4%
The course is graded using the Standard Grading scale
You have not failed an assessment task in the course due to academic misconduct

10.3. Assessment: Submission penalties

Late submission of assessment tasks may be penalised at the following maximum rate (the rates are cumulative):
- 5% (of the assessment task's identified value) per day for the first two days from the date identified as the due date for the assessment task.
- 10% (of the assessment task's identified value) for the third day
- 20% (of the assessment task's identified value) for the fourth day and subsequent days up to and including seven days from the date identified as the due date for the assessment task.
- A result of zero is awarded for an assessment task submitted after seven days from the date identified as the due date for the assessment task.

Weekdays and weekends are included in the calculation of days late.
To request an extension you must contact your course coordinator to negotiate an outcome.

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 or using the SafeZone app. For general enquires contact the SafeUniSC team by phone 07 5456 3864 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 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