



The University of Southern Queensland

Course specification

The current and official versions of the course specifications are available on the web at
<<http://www.usq.edu.au/coursespecification/current>>.
Please consult the web for updates that may occur during the year.

Description: Introductory Microbiology

Subject	Cat-nbr	Class	Term	Mode	Units	Campus
BIO	2205	90178	2, 2009	ONC	1.00	Toowoomba

Academic group:	FOSCI
Academic org:	FOS002
Student contribution band:	6
ASCED code:	010911

STAFFING

Examiner: Bernadette McCabe
Moderator: Michael Kotiw

REQUISITES

Pre-requisite: BIO1101

OTHER REQUISITES

Recommended prior study: BIO2103 and BIO2201

RATIONALE

Microbiological considerations are important in most areas of biology including medical sciences, animal, plant and microbial biotechnologies and general plant and environmental sciences. It is thus important that professionals in any of these fields become aware of the potential involvement of microorganisms in their fields of study and become sufficiently familiar with the subject to gain an appreciation of the role played by microorganisms in our daily lives and the environment.

SYNOPSIS

This introductory study in microbiology is aimed at providing knowledge to professionals on the relevance of this subject to different fields of biology and the impact it can have on improving our daily lives and the environment. Explored in this course are the history and diversity of microorganisms, cell structure and function, metabolism and growth, genetics of microbes and its relevance to different areas of biomedical, rural and environmental biotechnology, factors affecting the interactions of microorganisms including bacteria, viruses, fungi and protists with plants, animals and humans and their impact on the environment including public health, significance to industrial microbiology, and the way the human or animal body defends itself against attack by foreign invaders.

OBJECTIVES

On successful completion of this course students will be able to:

1. show sufficient familiarity with the history and study of microbiology to explain past misconceptions and current conventional wisdom (Mid Semester Test; End Semester Exam);
2. make meaningful comments about each of the microbiological terms encountered during the course (Mid Semester Test; End Semester Exam);
3. demonstrate a useful knowledge of the taxonomy and morphological features of the various organisms normally regarded as microorganisms - viruses, bacteria, fungi and protozoa (Mid Semester Test; End Semester Exam);
4. show an understanding of the various metabolic processes found in bacteria and the role of these in ecological, biotechnological and pathogenic functions (Mid Semester Test; End Semester Exam);
5. describe the general characteristics, classification, in vivo and in vitro replication of viruses (Mid Semester Test; End Semester Exam);
6. demonstrate an awareness of the conditions that make patients susceptible to infections (End of Semester Exam);
7. demonstrate an awareness of the role of the host and pathogen in the development of infections (End of Semester Exam);
8. demonstrate an understanding of the fundamentals of microbial pathogenesis (End of Semester Exam);
9. demonstrate an understanding of the basics of virus structure, replication and pathogenesis (End of Semester Exam);
10. show a general awareness of the significance of fungal infections (End of Semester Exam);
11. show a general awareness of the significance of parasitic infections (End of Semester Exam);
12. demonstrate a capacity to perform laboratory experiments, as well as analyze and report on experimental (Laboratory Reports).

TOPICS

	Description	Weighting (%)
1.	History and diversity of micro-organisms	4.00
2.	Microscopy	4.00
3.	Overview of cell structure and function	8.00
4.	Nutrition, growth and control of micro-organisms	12.00
5.	Microbial metabolism	12.00
6.	Microbial genetics	8.00
7.	Introduction to the viruses	4.00
8.	Introduction to the fungi	4.00
9.	Microbial ecosystems: general concepts	8.00
10.	Introduction to medical microbiology	4.00
11.	Microbial pathogenesis	8.00
12.	Bacterial pathogens	8.00
13.	Viral pathogens	8.00
14.	Mycoses	4.00

TEXT and MATERIALS required to be PURCHASED or ACCESSED

ALL textbooks and materials are available for purchase from USQ BOOKSHOP (unless otherwise stated). Orders may be placed via secure internet, free fax 1800642453, phone 07 46312742 (within Australia), or mail. Overseas students should fax +61 7 46311743, or phone +61 7 46312742. For costs, further details, and internet ordering, use the 'Textbook Search' facility at <http://bookshop.usq.edu.au> click 'Semester', then enter your 'Course Code' (no spaces).

Black, JG 2008, *Microbiology: Principles and Explorations*, 7th edn, John Wiley & Sons Inc, ISBN 0471420840 (Trade Cloth).

McCabe B, and Kotiw, M 2009, *BIO2205 Introductory Microbiology Course Handbook*, USQ Publication, Toowoomba.

REFERENCE MATERIALS

Reference materials are materials that, if accessed by students, may improve their knowledge and understanding of the material in the course and enrich their learning experience.

Benjamini, E et al 2003, *Immunology: A short course*, 5th edn, Wylie-Liss, Davis, Calif.

Bergey, D 1993, *Bergey's Manual of Determinative Bacteriology*, 9th edn, Lippincott Williams and Wilkins, Baltimore.

Ingraham, JL & Ingraham, CA 2004, *An Introduction to Microbiology: A case history approach*, 3rd edn, Thomson Brooks/Cole, Pacific Grove, Ca.

Martinko, JM, Madigan, MT & Parker, J 2003, *Brock Biology of Microorganisms*, 10th edn, Prentice Hall, Englewood Cliffs.

Prescott, LM, Harley, JP & Klein, DA 2002, *Microbiology*, 5th edn, McGraw Hill, New York.

Raven, PH, Evert, RF & Eichhorn, SE 2005, *Biology of Plants*, 7th edn, WH Freeman & Company, New York.

Roitt, I, Brostoff, J & Male, D 2006, *Immunology*, 7th edn, Mosby, Edinburgh.

Rose, NR, MacArio, E and Folds, JD (eds) 2003, *Manual of Clinical Laboratory Immunology*, 8th edn, ASM Press, Washington.

(There are 2 volumes to this set)

Tate, RL 1995, *Soil Microbiology*, Wiley & Sons, New York.

STUDENT WORKLOAD REQUIREMENTS

ACTIVITY	HOURS
Examinations	2.00
Laboratory or Practical Classes	27.00
Lectures	26.00
Private Study	103.00

ASSESSMENT DETAILS

Description	Marks out of	Wtg (%)	Due date
PRACTICAL ASSIGNMENTS	20.00	20.00	20 Jul 2009 (see note 1)
MID SEMESTER TEST	50.00	30.00	20 Jul 2009 (see note 2)
2 HOUR CLOSED EXAM	100.00	50.00	END S2 (see note 3)

NOTES

1. Lecturers to advise the due dates for practical reports.
2. Lecturers to advise the date of the mid-semester test.
3. Examination dates will be available during the Semester. Please refer to the examination timetable when published.

IMPORTANT ASSESSMENT INFORMATION

- 1 Attendance requirements:
It is the students' responsibility to attend and participate appropriately in all activities (such as lectures, tutorials, laboratories and practical work) scheduled for them, and to study all material provided to them or required to be accessed by them to maximise their chance of meeting the objectives of the course and to be informed of course-related activities and administration.
- 2 Requirements for students to complete each assessment item satisfactorily:
To complete each of the assignments satisfactorily, students must obtain at least 50% of the marks available for the test. To complete the examination satisfactorily, students must obtain at least 50% of the marks available for the examination. To complete the practical component satisfactorily, students must obtain at least 50% of the marks available in the practical assignments.
- 3 Penalties for late submission of required work:
If students submit assignments after the due date without (prior) approval of the examiner then a penalty of 5% of the total marks gained by the student for the assignment may apply for each working day late up to ten working days at which time a mark of zero may be recorded. No assignments will be accepted after model answers have been posted.
- 4 Requirements for student to be awarded a passing grade in the course:
To be assured of receiving a passing grade a student must achieve at least 50% of the total weighted marks available for the course.
- 5 Method used to combine assessment results to attain final grade:
The final grades for students will be assigned on the basis of the weighted aggregate of the marks obtained for each of the summative assessment items in the course.
- 6 Examination information:
In a Closed Examination, candidates are allowed to bring only writing and drawing instruments into the examination.
- 7 Examination period when Deferred/Supplementary examinations will be held:
Any Deferred or Supplementary examinations for this course will be held in the fourth week of the semester 1 of the following year and the examiner will advise students involved in writing of the date time and location of any such examination.

8 University Regulations:

Students should read USQ Regulations 5.1 Definitions, 5.6. Assessment, and 5.10 Academic Misconduct for further information and to avoid actions which might contravene University Regulations. These regulations can be found at the URL <http://www.usq.edu.au/corporateservices/calendar/part5.htm> or in the current USQ Handbook.

ASSESSMENT NOTES

- 9 In order to attend laboratory classes, students must provide and wear appropriate personal protective equipment. This shall include a laboratory coat, closed in shoes, and safety glasses. Such equipment must be approved by supervising staff. Failure to provide and wear the appropriate safety equipment will result in students being excluded from classes.
- 10 Students who, for medical, family/personal, or employment-related reasons, are unable to complete an assignment or to sit for an examination at the scheduled time may apply to defer an assessment in a course. Such a request must be accompanied by appropriate supporting documentation. One of the following temporary grades may be awarded IDS (Incomplete-Deferred Examination); IDM (Incomplete Deferred Make-up); IDB (Incomplete - Both Deferred Examination and Deferred Make-up).
- 11 The examiner of a course may grant an extension of the due date of an assignment in extenuating circumstances. The Faculty will normally only accept assessments that have been written, typed or printed on paper-based media. The Faculty will NOT accept submission of assignments by facsimile. Students who do not have regular access to postal services or who are otherwise disadvantaged by these regulations may be given special consideration. They should contact the examiner of the course to negotiate such special arrangements.
- 12 IT requirements: All students, particularly those studying in external mode, are strongly encouraged to have access to the Internet and to have a computer capable of running the latest versions of Internet web browsers such as Netscape Communicator or Internet Explorer. To achieve this level of capacity, the following standards are recommended as a minimum: Pentium 3, 500MHz or higher; or equivalent, 256Mb Ram, 10Gb free Hard disk space, video card - 64MB VRAM, Windows 2000 Professional, Windows XP (preferred), Mac System 8.1 or higher, Windows XP Home Edition, mouse, sound card, 24 x CDROM drive, 56 K v.90 modems that are flash upgrade-able.