

PRACTICAL AND BIOMEDICAL BACTERIOLOGY - 2024/5

Module code: BMS1035

Module Overview

This is a practical module, the aim of which, is to equip students with the critical technical skills used in bacteriology and to familiarize them with key diagnostic tests that are relevant to students on BSc programmes in Biomedical Sciences, Microbiology and Biochemistry. This module builds upon critical concepts and practical techniques covered in BMS1026, and introduces students to a range of medically and environmentally globally important bacteria, and is a key module for the microbiology programme.

Module provider

School of Biosciences

Module Leader

MEHAT Jai (Biosciences)

Number of Credits: 15

ECTS Credits: 7.5

Framework: FHEQ Level 4

Module cap (Maximum number of students): N/A

Overall student workload

Independent Learning Hours: 114

Laboratory Hours: 26

Guided Learning: 7

Captured Content: 3

Module Availability

Semester 2

Prerequisites / Co-requisites

BMS1026 MICROBIOLOGY: AN INTRODUCTION TO THE MICROBIAL WORLD

Module content

Key bacteriological techniques e.g. microscopy, culture, enumeration of bacteria, identification and antimicrobial susceptibility, framed around clinical scenarios.

Brief introduction to important clinical and environmental genera of bacteria and to be aware of their global significance. The module addresses critical SDGs including Good Health & Wellbeing, and **Sustainability**.

Assessment pattern

Assessment type	Unit of assessment	Weighting
Coursework	COURSEWORK	60
Practical based assessment	Practical Exam	40

Alternative Assessment

Alternative assessment for 'Practical Exam' is an 'Online test covering practical questions'

Assessment Strategy

The assessment strategy is designed to provide students with the opportunity to demonstrate: their understanding of the techniques, and ability to physically carry these out, through a practical exam, a written report, and a short online assessment. In addition, students will work in small groups in successive practicals.

Thus, the summative assessment for this module consists of:

- 1. Coursework of practical write up/case study-60%
- 2. A practical exam – 40% of total marks

Formative assessment and feedback

A formative practical report proforma, which is not graded, will be completed by the students in the practical session with immediate feedback to inform students on subsequent submission of the full practical write-up. Written feedback will be provided on the coursework.

Feedback

We provide the students with written feedback on their formative write up in person in the laboratory sessions.

Module aims

- To develop students’ skills in basic bacteriology including microscopy, culture, identification, antimicrobial sensitivity testing, standardised operating procedures and the importance of pre-analytical variables.

- To train students in a variety of techniques for isolating and enumerating important bacteria from environmental and clinical sources including using a variety of selective and differential growth media and identification techniques.
- To introduce students to antibiotic producing organisms and techniques for antimicrobial susceptibility testing and analysis of the data digitally.
- To enhance peer to peer learning, teamwork and time management by working in pairs and small groups in sequential practical sessions thereby enhancing employability and resilience .

Learning outcomes

		Attributes Developed
001	Upon successful completion of this module, students will be able to perform key bacteriological techniques, including those that incorporate point-of-care testing and formal ISO protocols	KCP
002	Through undertaking this module students will be able to apply knowledge to identify unknown bacteria from clinical and environmental strains	KCP
003	Student will able to present analyses and results of experiments in a scientific format	KCT
004	To develop time and data management skills by performing practical laboratory experiments, a key aspect of employability, resourcefulness, and resilience.	CPT

Attributes Developed

C - Cognitive/analytical

K - Subject knowledge

T - Transferable skills

P - Professional/Practical skills

Methods of Teaching / Learning

The learning and teaching strategy is designed to: equip students with the essential practical skills and provide them with the background knowledge required for basic experimental bacteriology. Through practical hands-on experience it is also designed to familiarize them with **globally** important groups of bacteria.

The learning and teaching methods include hands-on and direct practical experience of the techniques and bacteria and **digital** data analysis. Student understanding is assessed and reinforced through the practical write ups and feedback. Working in pairs, the students also get the opportunity to work together on successive linked practical’s and develop their **resilience and employability**.

Indicated Lecture Hours (which may also include seminars, tutorials, workshops and other contact time) are approximate and may include in-class tests where one or more of these are an assessment on the module. In-class tests are scheduled/organised separately to taught content and will be published on to student personal timetables, where they apply to taken modules, as soon as they are finalised by central administration. This will usually be after the initial publication of the teaching timetable for the relevant semester.

Reading list

<https://readinglists.surrey.ac.uk>

Upon accessing the reading list, please search for the module using the module code: **BMS1035**

Other information

The School of Biosciences and Medicine is committed to developing graduates with strengths in Employability, Digital Capabilities, Global and Cultural Capabilities, Sustainability, and Resourcefulness and Resilience. This module is designed to allow students to develop knowledge, skills, and capabilities in the following areas:

- 1. Resourcefulness & resilience:** The module fosters independent- and group- working within a laboratory setting. This encourages independent learning, peer support and peer feedback
- 2. Global & cultural capabilities:** The module introduces students to the identification and characterization of bacterial species of national and global health importance. Students learn about bacteria that are of significant impact to human, animal and environmental health. The also learn about the role of certain bacterial families in antibiotics production.
- 3. Sustainability:** The module addresses critical SDGs including Good Health & Wellbeing, and Sustainability. Students will gain understanding of a range of infectious diseases that cause significant global health burdens, as well as a foundation of knowledge and skills required for diagnosis of, and research into, bacterial disease.
- 4. Digital capabilities:** Student use online databases for identification of test organism in their laboratory practical sessions
- 5. Employability:** Students acquire and reinforce transferable skills (e.g. scientific writing) and technical skills (e.g. bacterial subculturing, Gram staining etc). The module content is linked to key Biomedical Scientist skills standards set by the Institute of Biomedical Sciences and the Royal Society of biology.

Programmes this module appears in

Programme	Semester	Classification	Qualifying conditions
Biochemistry BSc (Hons)	2	Optional	A weighted aggregate of 40% overall and a pass on the pass/fail unit of assessment is required to pass the module
Biochemistry MSci (Hons)	2	Optional	A weighted aggregate of 40% overall and a pass on the pass/fail unit of assessment is required to pass the module
Microbiology BSc (Hons)	2	Compulsory	A weighted aggregate mark of 40% is required to pass the module

Please note that the information detailed within this record is accurate at the time of publishing and may be subject to change. This record contains information for the most up to date version of the programme / module for the 2024/5 academic year.