

LF909-10 Medical Diagnostics

24/25

Department

Life Sciences

Level

Taught Postgraduate Level

Module leader

Marwan Albuhtori

Credit value

10

Module duration

2 weeks

Assessment

100% coursework

Study location

University of Warwick main campus, Coventry

Description

Introductory description

This module introduces the students to the scientific principles underpinning the format and application of biotechnologically based diagnostics assays and technologies.

[Module web page](#)

Module aims

The focus is on medical diagnostics. The aim is to give the students a clear understanding of medically oriented diagnostics and the role of biotechnology in realising the clinical and commercial potential.

Outline syllabus

This is an indicative module outline only to give an indication of the sort of topics that may be covered. Actual sessions held may differ.

1. Diagnostic techniques: sensitivity and specificity. Selection of analytical methods and evaluation of advantages and limitations.
2. Biotechnological techniques used in diagnosis, such as:

Nucleic acid-based techniques, including PCR based methods, microarrays and hybridisation techniques

Protein based techniques, including immunoassays.

Biological imaging techniques, including microscopy-based methods.

Mass spec methods, including biomarker detection and analysis of exhale gas or other volatile samples.

1. Application of these techniques to specific areas of medical diagnosis, for example pre-natal screening, cancer diagnosis, neurodegenerative disorders, genetic disorders, preventative medicine or personalised medicine.
2. Advantages and disadvantages of point-of-care and lab-based techniques

Learning outcomes

By the end of the module, students should be able to:

- Identify the advantages and disadvantages, issues and limitations of biotechnologically based diagnostic techniques.
- Demonstrate an understanding of the scientific principles and attendant biotechnological techniques being exploited in medical diagnostics.
- Discuss the issues and problems in the clinical application of biotechnologically based diagnostic systems.
- Interact effectively with medics and clinicians on the validation/implementation of diagnostic techniques and assays via oral, written and visual means.
- Compare and discuss the alternative approaches to biotechnologically based assay and techniques in medicine based on a critical assessment of the known data.

Indicative reading list

Comprehensive Biotechnology 2nd edition Editor: Murray Moo-Young; Editor. Elsevier (2011)
ISBN 978-0-44-453352-4

Biotechnology: Applying the Genetic Revolution. D.P. Clark and N.J. Pazdernik. Elsevier (2009)
ISBN 13: 978-0-12-175552-2

Biology and Biotechnology: Science, applications and issues. H. Kreuzer and A. Massey. ASM Press (2005) ISBN 1-55581-304-6

[View reading list on Talis Aspire](#)

Subject specific skills

Compare and discuss the alternative approaches to biotechnologically based assay and techniques in medicine based on a critical assessment of the known data.

Transferable skills

Interact effectively with medics and clinicians on the validation/implementation of diagnostic techniques and assays via oral, written and visual means.

Study

Study time

Type	Required
Lectures	5 sessions of 1 hour (5%)
Seminars	4 sessions of 1 hour (4%)
Practical classes	15 sessions of 1 hour (15%)
External visits	1 session of (0%)
Private study	76 hours (76%)
Total	100 hours

Private study description

Self-teaching / study / seminar preparation time.

Costs

No further costs have been identified for this module.

Assessment

You do not need to pass all assessment components to pass the module.

Students can register for this module without taking any assessment.

Assessment group A6

	Weighting	Study time	Eligible for self-certification
Individual Poster	100%		Yes (extension)

Each student should prepare and submit a poster that includes an evaluation of the diagnostics of a particular disease/group of diseases and an initial evaluation whether there is a business opportunity in developing a new diagnostic for the disease/group of diseases

Feedback on assessment

Written individual feedback to each student on poster and seminar assessments. Face-to-face

feedback on any assessment provided on request from the student.

Availability

Courses

This module is Core for:

- Year 1 of TLFS-J7N2 Postgraduate Medical Biotechnology and Business Management