# Module Specification

## ABOUT THIS DOCUMENT

This module specification applies for the academic year 2019-20

**Last revised** 28 August 2019 by Martin Taylor

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## GENERAL INFORMATION

<table>
<thead>
<tr>
<th>Module name</th>
<th>Molecular Biology &amp; Recombinant DNA Techniques</th>
</tr>
</thead>
<tbody>
<tr>
<td>Module code</td>
<td>3131</td>
</tr>
<tr>
<td>Module Organiser</td>
<td>Dr Martin C. Taylor</td>
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<td>Contact email</td>
<td><a href="mailto:Martin.Taylor@lshtm.ac.uk">Martin.Taylor@lshtm.ac.uk</a></td>
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<tr>
<td>Home Faculty</td>
<td>Infectious &amp; Tropical Diseases</td>
</tr>
<tr>
<td>Level</td>
<td>Level 7 (postgraduate Masters ‘M’ level) of the QAA <a href="http://www.qaa.ac.uk">Framework for Higher Education Qualifications</a> in England, Wales &amp; Northern Ireland (FHEQ).</td>
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<tr>
<td>Credit</td>
<td>15 credits</td>
</tr>
<tr>
<td>Accreditation</td>
<td>Not currently accredited by any other body.</td>
</tr>
<tr>
<td>Keywords</td>
<td>Molecular biology; recombinant DNA; PCR; cloning sequencing.</td>
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## AIMS, OBJECTIVES AND AUDIENCE

**Overall aim**

To provide a basic understanding and practical experience of a range of reagents and methods that are the essential tools of the molecular biologist.

**Intended learning outcomes**

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

- Demonstrate knowledge and understanding of the principles underpinning important techniques in molecular biology
- Demonstrate knowledge and understanding of some applications of these techniques in laboratory research on infectious diseases
- Demonstrate the ability to carry out laboratory experiments in molecular biology and bioinformatic analyses, and interpret the results
- Demonstrate the ability to read, comprehend and assess the relevant scientific literature

**Target audience**

This module is intended for all students who require theoretical knowledge and practical experience of standard molecular biology techniques.

## CONTENT

**Session content**

The module is expected to include sessions addressing the following topics:

- PCR (lecture and practical)
| DNA cloning (lecture and practical) |
| Bacterial transformation (lecture and practical) |
| Plasmid DNA purification (lecture and practical) |
| Restriction digestion analysis of DNA (lecture and practical) |
| DNA sequencing (lecture and practical) |
| Sequence analysis (lecture and practical) |
| Genomics and genome editing technology (lecture) |

**TEACHING, LEARNING AND ASSESSMENT**

**Study resources provided or required**
Module Information can be found on the Virtual Learning Environment (Moodle) containing information about each session. Lecture notes and links to journal article examples will be provided via Moodle. Students should have access to a basic molecular biology text such as *Gene cloning and DNA analysis* by T.A. Brown (Blackwell). Several copies of this are held by the LSHTM library.

**Teaching and learning methods**
A range of teaching methods will be used including laboratory practicals, Bioinformatics computing practicals, formal lectures and group work. Approximately 40% of contact time is devoted to practicals, 20% to lectures, and the remainder to group work and revision sessions. There also will be several full and half days set aside for private study.

**Assessment details**
There will be two components to the assessment:

1. **Practical results** (including bioinformatic analyses) will be written up and assessed to evaluate understanding of the practical portion.

2. **A short answer written test** will be held at the end of the module to evaluate literature comprehension.

The grades for each component will be equally weighted and combined to give an overall GPA; written feedback is given on both. Resit/deferred/new attempts - The task will be an exam based on lecture content from the module and a journal article comprehension exam.

**Assessment dates**
Assessment deadlines will be notified at the start of the module. Resit/deferred/new attempts - The next assessment deadline will be during mid/late September of the current academic year.

**Language of study and assessment**
English (please see 'English language requirements' below regarding the standard required for entry).

**TIMING AND MODE OF STUDY**

**Duration**
5 weeks at 2.5 days per week

**Dates**
Monday morning to Wednesday lunchtime

**Timetable slot**
Term 2 - slot C1

**Mode of Study**
The module is taught face-to-face in London. Both full-time and part-time students follow the same schedule.

**Learning time**
The notional learning time for the module totals 150 hours, consisting of:

- Contact time ≈ 35 hours
- Directed self-study ≈ 10 hours
- Self-directed learning ≈ 51.5 hours
- Assessment, review and revision ≈ 53.5 hours

APPLICATION AND ADMISSION

**Pre-requisites**
It is expected that all students will have obtained a basic understanding of nucleic acids, gene expression and protein synthesis from having completed the formative assessment for the term 1 module Molecular Biology (3333), which is a prerequisite. This module’s content is coordinated with Advanced Training in Molecular Biology (3158).

**English language requirements**
A strong command of the English language is necessary to benefit from studying the module. Applicants whose first language is not English or whose prior university studies have not been conducted wholly in English must fulfil LSHTM’s English language requirements.

**Student numbers**
20-24 (numbers may be capped due to limitations in facilities or staffing)

**Student selection**
Preference will be given to LSHTM MSc students [particularly those registered for specific programmes or who have taken specific prior modules, where applicable] and LSHTM research degree students. Other applicants meeting the entry criteria will usually be offered a place in the order applications are received, until any cap on numbers is reached. Applicants may be placed on a waiting list and given priority the next time the module is run.

Full Registration (full participation) by LSHTM research degree students is required for this module, although the assessment for research degrees students is optional.