

# MSc/Postgraduate Diploma in Medical Mycology

by DVD and web-based distance learning  
Centre for Medical Microbiology



**UCL**



British Society for  
Medical Mycology

## Introduction

This programme is designed to provide a systematic training in the increasingly relevant subject of fungal infection. There will be a particular focus on the practical elements of diagnosis, identification of pathogenic fungi and the application of molecular techniques. The programme is intended to provide graduates with the knowledge and skills for working and participating in a broad-based mycology service. Students may select an MSc or Postgraduate Diploma level qualification depending on their individual needs.

## Entry Requirements

MSc/Postgraduate Diploma Medical Mycology students should have a minimum of a first degree (upper second-class) in Microbiology or another biomedical science (including Medicine).

All applicants will need to complete successfully the 'Learning to use WebCT' unit before being able to fulfil final registration for the programme.

It will be a prerequisite to the programme that all students have regular access to a personal computer and the Internet and have acquired basic skills in their use. Please contact the Programme Administrator for further information and required minimum IT specifications.

## How is the Programme Taught?

This programme comprises eight modules (nine for the MSc) which will be taught through the use of DVDs and the Internet, although there will be a strong practical element and the requirement to complete a project based on original research. Though the majority of the programme is delivered via distance learning, support is offered through a supervisory structure of local and UCL-based tutors. There will be three practical courses that will cover elements across the spectrum of the syllabus and will require prior completion of the relevant modules. The practical courses also offer the opportunity to meet other students and teachers on the programme.

Using a customised version of a commercial software package (WebCT) and DVDs we have created an interactive programme which includes:

- DVD resource media containing structured videoed teaching from subject experts, intercut with audio visuals/slides and incorporating learning activities
- informal virtual discussion fora for interaction between students on course topics
- a private e-mail link to your personal tutor
- a virtual library, with links to UCL's wide range of online journals and databases
- detailed personal feedback on each assignment from a module tutor who is aware of the student's professional background and priorities.

Interaction using WebCT does not occur in 'real time' – i.e. students are not required to log on simultaneously. We expect students to log on every few days to check their post-box and view the comments of their tutor and fellow students.

## Aim of the Programme

The programme aims to enhance the knowledge, skills and experience of individuals working in the field of medical mycology via distance and reflective learning, a series of practical classes and a research project.

The objectives of this programme are to provide knowledge in all aspects of medical mycology including:

- the isolation and identification of fungal pathogens
- fungal taxonomy
- superficial and systemic fungal infection
- diagnosis of fungal infection
- fungal pathogenicity
- the basics of fungal genetics
- molecular methods for diagnosis, identification, taxonomy and strain typing
- the epidemiology and changing spectrum of fungal disease
- antifungal chemotherapy.

On completion of the programme we anticipate that students will be able to:

- access, understand and apply published research evidence as applied to the practice of medical mycology
- develop, evaluate and maintain best laboratory practice within a diagnostic medical mycology service
- develop the necessary skills to continue their own professional development.

## Programme Structure and Award Offered

Completion of the programme will lead to the award of an MSc or Postgraduate Diploma in Medical Mycology (DipMedMyc). It will take a minimum of three years and a maximum of five years to complete.

Completion of the unit 'Learning to use WebCT' (0 credits) is a prerequisite to final registration. This unit will introduce the concept of distance learning and provide training in the use of the course material and WebCT.

The programme consists of eight modules (nine for the MSc), all of which are compulsory:

- 1 Introduction to the Principles and Practice of Medical Mycology
- 2 Mycoses
- 3 Therapy of Fungal Infections
- 4 Molecular Methods in Medical Mycology
- 5-7 Practical Sessions
- 8 Research Project and Report (Dissertation for the MSc)
- 9 Research Methodology (MSc module).

Modules 1 and 2 are prerequisites to Modules 5 and 6. Module 4 is the prerequisite to Module 7.

## Module Outlines

### 1. Introduction to the Principles and Practice of Medical Mycology (15 credits)

This module will form a basic introduction to the principles of fungi and fungal infection. It will introduce the concept of fungal taxonomy and identification, characteristics of fungal growth, fungal pathogenicity, and fungal infection and its diagnosis and treatment.

The syllabus includes:

- Introduction to fungi and fungal taxonomy
- Introduction to fungal infection
- Characteristics of fungal growth
- Fungal pathogenicity and pre-disposing factors
- Changing spectrum of fungal infection
- Diagnosis of fungal infection:
  - Specimen collection, direct examination and culture
  - Serological diagnosis
  - Molecular diagnosis
  - Histological diagnosis
- Taxonomy and identification of fungal pathogens
- Laboratory safety and safe handling of specimens, preservation and storage of fungi
- Introduction to principles and practice of antifungal therapy.

### 2. Mycoses (15 credits)

This will focus individually on all aspects of the major and some less common mycoses.

The syllabus includes:

- Dermatophytosis
- Other superficial infections
- Candidosis and other yeast infections
- Aspergillosis
- Cryptococcosis
- Zygomycosis
- *Pneumocystis jiroveci* pneumonia
- Hyalophomycosis
- Phaeohyphomycosis
- Dimorphic fungal infections
- Subcutaneous fungal infections.

### 3. Therapy of Fungal Infection (10 credits)

This module will provide a broad understanding of the complex issues relating to antifungal chemotherapy.

The syllabus includes:

- Potential targets for antifungal agents
- Antifungal agents' modes of action
  - Established
  - Developmental
- Antifungal agents in clinical practice
  - Established
  - Developmental
- Susceptibility testing
- Antifungal drug resistance
- Monitoring antifungal therapy
- Immunotherapy and surgery
- Critical appraisal of published studies.

### 4. Molecular Medical Mycology (10 credits)

The aim of this module is to offer an understanding of the principles and application of molecular methods in the field of medical mycology.

The syllabus includes:

- Fungal genetics
- Theory of molecular methods in medical mycology
- Molecular methods in the diagnosis of fungal infection
- Molecular methods in taxonomy and for the identification of fungal pathogens
- Strain typing techniques, sampling techniques and epidemiology.

### Practical Sessions (30 credits)

The practical sessions build on the theoretical foundation provided by modules 1-4 and extend the principles into the laboratory practice of medical mycology. This will enable participants to develop confidence in handling routine laboratory mycology and to ultimately provide and take responsibility for a broad-based routine mycology service.

The syllabus includes:

- Module 5: An intensive residential five-day practical course on all aspects of the diagnosis of fungal infection conducted by the Mycology Reference Laboratory, University of Leeds.  
Prerequisite: Module 1
- Module 6: A three-day course on the identification of pathogenic fungi conducted by the National Mycology Reference Laboratory, University of Bristol.  
Prerequisite: Module 2
- Module 7: Four-day bench-teaching sessions on molecular methods at the Mycology Reference Laboratory, University of Leeds.  
Prerequisite: Module 4

### Experimental Design and Research Methods for Medical Mycology (MSc module – 10 credits)

Students will be given a set of experimental data to collate, analyse and present in a format suitable for publication. A choice of study type will be available.

### Project Report (Postgraduate Diploma module 40 credits)

This module will help students acquire the skills and confidence to undertake supervised original research in the field of medical mycology and to formulate their ideas and communicate their findings effectively through the production of a report. Students will undertake critical reading, appraisal and analysis of the research literature and be expected to produce a project report of at least 5,000 words. The project should be original work conducted in the student's base laboratory but involving close supervision by their tutor and a local supervisor.

### Project Dissertation (MSc module – 90 credits)

The project is chosen in the same way as for the Postgraduate Diploma, but the student is expected to produce a 10,000 word dissertation. This will provide a more in-depth discussion and analysis of the project and the research background.

## Assessment

For all modules coursework will be submitted electronically and all final-year assessments will require attendance at UCL.

## Coursework

MSc:

- Four 2,000-word structured essays (one following each lecture-based module).
- One essay following the research methodology module
- One 10,000-word dissertation based on original research and submitted before sitting the final examination.

Postgraduate Diploma:

- Four 2,000-word structured essays (one following each lecture-based module).
- One 5,000-word report based on original research and submitted before sitting the final examination.

## Practical Assessment

- At the end of each practical course there will be an unseen practical examination.

## Final Assessment

- Unseen written examination.

## Supervision

Students will have two supervisors, one approved by the British Society for Medical Mycology (BSMM) and a Tutor nominated by the Centre for Medical Microbiology, UCL.

The BSMM Supervisor will be located within a reasonable travelling distance of the student's locality and will provide:

- specialist advice
- tutorial support
- review of self-evaluation exercises
- project supervision.

The Tutor, located at UCL, will act as an academic tutor and provide:

- non-specialist academic advice
- project supervision.

In addition, we ask students to identify a person who works in their own department or institution who can act as their local mentor. The mentor should be someone with whom the student

is in regular if not daily contact in the context of their normal working environment; for example, Laboratory Manager, Senior BMS or Clinical Scientist, or Consultant Microbiologist. The responsibilities of the Mentor should include:

- general facilitation
- non-specialist technical advice
- possible facilitation of the student's project.

Further details of the mentoring role are available on request from the Programme Administrator.

## The Programme Team

### UCL

Dr Chris Kibbler (Programme Director)

Dr Tim McHugh

Ms Anne Dickens (Programme Administrator)

### BSMM

Professor Frank Odds

Dr Elizabeth Johnson

Dr Ruth Ashbee

Dr Rosemary Barnes

Dr Gillian Shankland

Dr Lynda Fenelon

## Fees

The fees for the MSc/Postgraduate Diploma programme are set by a central UCL committee and adjusted every year. Please contact the Programme Administrator for up-to-date information.

## How to Apply

For further information and application forms please contact:

Anne Dickens, (Programme Administrator),  
Centre for Medical Microbiology,  
Royal Free and University College Medical School,  
Royal Free Campus, Rowland Hill Street, London NW3 2PF.

E-mail: [a.dickens@medsch.ucl.ac.uk](mailto:a.dickens@medsch.ucl.ac.uk)

Telephone: 020 7794 0500 ext. 33546

Further details may be found on the following websites:  
[www.ucl.ac.uk](http://www.ucl.ac.uk) and [www.BSMM.org](http://www.BSMM.org)