

# SCIENCE AND MEDICINE

## Introduction

Buckingham's Science School is at the cutting edge of international research. Thus we provide a stimulating environment for both undergraduate and postgraduate studies and research - where staff and researchers are available to give guidance outside formal classes and where student projects have led to work being published in international journals.

The Applied Computing department is able to respond to the rapid changes in computing and computational technologies. We support a significant range of research interests and are actively involved in real-time technology projects. We attract funding from a variety of sources, including the European Union, and enjoy collaborative links with other universities and research establishments both in the UK and overseas.

Psychology, the study of the human mind and behaviour, is a large and diverse discipline, extending from behavioural neuroscience to cross-cultural comparison of social customs. At one extreme, there are psychologists who model the complex structure of the billions of tiny nerve cells that make up our brains, and the effects these

have on our behaviour. At the other extreme, there are psychologists who view the entire person as one of many similar units that make up large social, cultural and work groupings. The Buckingham degree programmes are shaped around this diversity and recognise the considerable inter-relations between Psychology and other disciplines such as Business Studies, Information Systems and Media Communications.

Diabetes, Obesity and Metabolic Disease have become the modern epidemic in the developed and developing

world. The University of Buckingham is an internationally recognised centre of excellence for research into the discovery and validation of new molecular targets that could be the site of novel pharmacology and enable the examination of the therapeutic potential of pioneering agents including plant-derived therapies.

The Postgraduate Medical School, run in conjunction with the West London Medical School at Ealing Hospital, offers qualified doctors from overseas the opportunity to gain experience in UK hospitals and to obtain a Clinical MD.



## Faculty

Our permanent faculty includes:

**Professor Mike Cawthorne**, Dean of Science and Director of Metabolic Research, was formerly Group Director of diabetes and obesity research at SmithKline Beecham. He is the author of more than one hundred peer-reviewed publications and has been awarded the Society of Medicine's Research Award for Drug Discovery for the discovery and development of the insulin sensitiser drug Avandia.

**Professor Karol Sikora**, Dean of Medicine, has been Clinical Director for Cancer Services at the Hammersmith Hospital for 12 years and has established a major cancer research laboratory there funded by the Imperial Cancer Research Fund. He has published over 300 papers, written or edited 20 books, and is the founding editor of *Gene Therapy and Cancer Strategy*. He was a member of the UK Health Department's Expert Advisory Group on Cancer and of the Committee on Safety of Medicines, and he remains an advisor to the World Health Organization.

**Professor Jon Arch**, Deputy Director of Metabolic Research, was formerly a Director at SmithKline Beecham

and GlaxoSmithKline R&D, where he was involved in the discovery of candidate drugs for the treatment of obesity, type 2 diabetes and asthma. He is the author of more than one hundred peer-reviewed publications.

**Dr Claire Stocker** was the 2002 winner of the International Association for the Study of Obesity New Investigator Award for her research on metabolic programming in utero and early life to prevent obesity and insulin resistance.

**Dr Kenneth Langlands** specialises in skin research, particularly in relation to the ageing process. He also leads our bioinformatics research.

**Dr Jacqueline O'Dowd** is searching for new molecular targets in pancreatic islet cells.

**Mr Ed Wargent** specialises in pre-clinical evaluation of pioneering therapies.

**Dr Mohamed Zaibi** specialises in pre-clinical evaluation of novel agents.

**Professor Chris Adams** has worked in the field of

computer networks since the 1970's and is currently sponsored to research into broadband wireless networks in difficult geographical regions.

**Professor Sabah Jassim**, Head of Applied Computing, is working on formal methods in computing and computational aspects of image processing. He is currently sponsored to research facial biometrics for mobile phone and PDA transactions.

**Mr Hongbo Du** is researching into databases, in particular data-mining techniques and discovery problems and solutions, classification, association, and clustering.

**Mr Naseer Al-Jawad** is researching wavelet-based analysis, feature recognition and extraction in still and video images.

**Dr Harin Sellahewa** is researching biometric based recognition and biomedical imaging.

**Dr Philip Fine** is researching the psychology of music, including sight-reading and sight-singing.

**Dr Alan Martin**, Head of Psychology, is researching children's understanding of science.

**Miss Linda Luckhurst** specialises in counselling psychology and the role of psychotherapy.

**Professor Alan Smithers**, whose research interests include educational psychology, is also Head of Buckingham's Centre for Educational Research.

**Dr Jane Tapsell** focuses on psychology in business, with particular respect to high-performance teams.

**Mr Eddie Shoemith** specialises in statistics in relation to data analysis and experimental design.

**Professor Jayantha Arnold**, Joint Director of the Clinical MD programme, is a senior consultant in gastroenterology at Ealing Hospital. He trained in gastroenterology at Kings College Hospital, London and in Cardiff.

**Professor Rajat Mathur**, Joint Director of the Clinical MD programme, is senior consultant physician in respiratory

medicine and Royal College tutor at Ealing Hospital, London, with special interest, training and experience in sleep disorders.

#### Visiting Faculty

**Professor David McLoughlin** is a chartered psychologist specialising in education and occupational psychology. He is founder of the Independent Dyslexia Consultants.

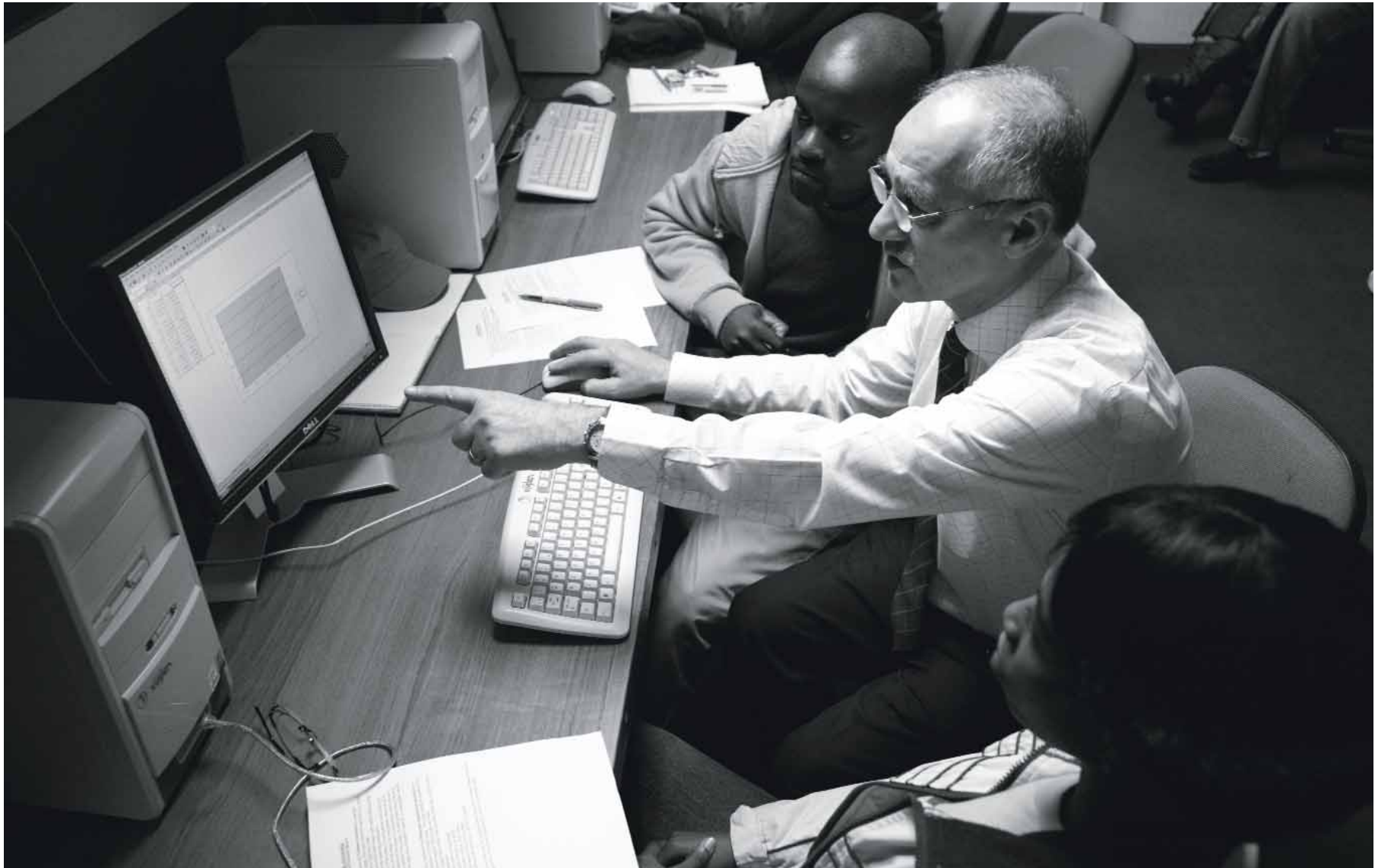
**Dr Chris Allen** is a leading clinical psychologist with many years' experience in clinical practice, teaching and research.

**Dr Jeremy Martin** is a visiting fellow and is a software developer in chemoinformatics in the pharmaceutical industry. Jeremy did his DPhil at Buckingham.

**Dr Andrew Edmonds** is a visiting fellow and specialises in tools for data-mining unstructured data in XML including problems in artificial intelligence.

**Dr Robert Ngala** is at the University of Kumasi in Ghana. He is a visiting fellow to undertake studies in skeletal muscle metabolism.





Computer Room

## Computing (Undergraduate)

We are unique in being able to provide you with a fast track to success:

- Small group teaching by stimulating and dedicated staff.
- You may start your undergraduate Computing programme in January or September.
- Because Buckingham forgoes the long summer vacation, you will be able to complete the equivalent of a conventional 3-year honours degree in two four-term years (nine terms if you start in September).
- As a graduate of the Buckingham programme you will be able to undertake a variety of careers in the IT industry including programming, systems analysis and design, network and systems management and user support. Alternatively you can advance your career in research in Computing or Computer Science at Buckingham, other UK universities or universities abroad.

### BSc (Hons) Computing (G500)

This core programme will give you an up-to-date knowledge of ICT at an advanced level and will enable you to apply what you learn to solve problems in a real-world environment. The programme builds on the Department's research strengths in biometrics (facial recognition) and

broadband network access using wireless techniques. Other areas of particular interest include data mining and its use in e-commerce and e-business, image processing applications, cryptography and authentication, database and human-computer interaction. You will be taught to programme in C++ and Java.

First year courses include: Information and Communications Technologies, Mathematics for Computing, Quantitative Methods (Statistics), Introduction to Web Design, Human Computer Interaction, Fundamentals of Database Systems, Structured Programming, Network Applications and their Environments and Object Oriented Programming.

Second year courses include: Multimedia Systems, Advanced Programming, Web-based Computing, Information Security, Evolutionary Computing, Algorithms, Software Engineering, Database Technologies and Information Discovery.

Computing can also be studied with Accounting and Finance, (G4N4), Business Studies, (G4N1), Communication Studies, (G4Q3), and Economics, (G4L1).

### Assessment

Most courses are assessed by a combination of continuous assessment and written examination (typically, 40% continuous assessment and 60% written examination).

Courses are assessed in six month blocks, with the final classification decided on the basis of courses taken in the last 18 months of the programme.

### Entry Requirements

- At least 240 points at A-Level or the equivalent school leaving qualification.
- At least five subjects, including Mathematics, at grade C or above at GCSE, or equivalent.
- The School is able to be flexible for mature students and certain approved professional qualifications may also be considered.
- If English is not your first language, an IELTS score of 6.0 or a computer-based TOEFL score of 213+.

See page 80 for 'How to Apply'.

### Admissions Tutor

Hongbo Du, BEng (Beijing), MSc, MPhil (Essex)  
Email: [hongbo.du@buckingham.ac.uk](mailto:hongbo.du@buckingham.ac.uk)

### Admissions Enquiries

Cherrienne Boniface  
Tel: +44 (0) 1280 828204  
Fax: +44 (0) 1280 828295  
Email: [science-admissions@buckingham.ac.uk](mailto:science-admissions@buckingham.ac.uk)

## Computing (Postgraduate)

### Postgraduate Certificate in Computing

This programme is intended primarily for graduates from a non-Computing background. It will equip you with a fundamental knowledge and understanding of a range of core subjects in Computing and Information Systems and allow you to develop simple software systems and database applications. In particular it will allow you to develop skills in Microsoft application software, programming in industry standard languages (VB or C++ and Java), database development and system analysis and design.

### Postgraduate Diploma in Computing (Pre-Masters)

This programme is intended primarily for graduates from a non-Computing background who want to develop a strong understanding of IT and Computing in their own area of speciality or who want to redirect their careers into the IT and Computing fields. Students who gain the Diploma are eligible for entry to the MSc in Innovative Computing (below).

### MSc in Innovative Computing

This taught programme is designed for holders of a first

degree in computing or a related discipline. All courses are based on state-of-the-art development of specific computing technologies. Close collaboration with research groups within the Department provides you with direct access to up-to-date research results. In particular you will have the chance to study secure mobile and wireless communications, biometrics and authentication, data mining and knowledge discovery, and imaging techniques and applications.

A substantial individual project will enable you to apply knowledge and skills learnt from the taught courses to solving a realistic problem, while an industrial placement scheme offers a valuable opportunity to gain commercial experience. As a graduate of this programme, you will be able to undertake a variety of careers in the IT industry, ranging from data analyst to technical consultant, in areas such as security, network planning and image processing. Or you can advance your career in research at Buckingham or other universities.



SECUREPHONE - Successful EU Research Project

### MSc Innovative Computing (Bioinformatics)

This programme has the same core as the MSc in Innovative Computing but provides intensive training in software development, database technologies and modern molecular genetics for graduate scientists from both biological and non-biological backgrounds. As a graduate of this programme you will be equipped to undertake a career in various industries including pharmaceutical, healthcare, bio-imaging and information processing.

### Entry Points

The Postgraduate Certificate in Computing is a full-time, six month programme, starting in July.

The Postgraduate Diploma in Computing is a full-time nine month (April start) or 12 month (January start) programme.

A part-time, 24 month programme is also available - please contact the Admissions Tutor for details.

The MSc programme starts in January and runs for one year (full-time) or two years (part-time).

### Entry requirements

- A first or second-class honours degree from a UK university, or an equivalent academic qualification from an overseas institution. For MSc applicants this should be in Computing, Computer Science, Information Systems or a related discipline.
- Certain approved professional qualifications may be considered in the absence of this requirement.
- If English is not your first language, an IELTS score of 6.0 is required or computer-based TOEFL score of 213+.
- You should apply direct to the University.

See page 80 for 'How to Apply'.

### Admissions Tutor

Hongbo Du, BEng (Beijing), MSc, MPhil (Essex)

Email: [hongbo.du@buckingham.ac.uk](mailto:hongbo.du@buckingham.ac.uk)

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Email: [science-admissions@buckingham.ac.uk](mailto:science-admissions@buckingham.ac.uk)

### Web:

[www.buckingham.ac.uk/appliedcomputing/postgrad/](http://www.buckingham.ac.uk/appliedcomputing/postgrad/)



# Psychology (Undergraduate)

We are unique in being able to provide you with a fast track to success:

- Study psychology single honours or with one of several minor combinations (see below).
- Two-year psychology degree programme: the same amount of teaching time as a three-year programme in two years.
- A variety of subjects to give you a good coverage of applied psychology including Clinical Psychology, Forensic Psychology, Counselling and Psychotherapy, Health Psychology and more.
- Excellent staff to student ratio so you are not simply another face in the crowd.
- Small group tutorials, of around six students, conducted by course lecturers not teaching assistants or postgraduate students.

The programme is designed so that at the beginning students are introduced to psychology; this is to help those who have not studied psychology before. After the preliminary introductory period you will cover the core theoretical components of a modern psychology degree:

Individual Differences; Biological, Cognitive, Developmental and Social Psychology; and the History of Psychology.

In the final part of the degree programme you will take courses in some of the most popular areas of applied psychology such as: Business Psychology, Clinical Psychology, Counselling Psychology, Educational Psychology, Forensic Psychology, Health Psychology, and Neuropsychology.

The following Psychology honours degree programmes are offered:

- C800 Psychology**
- C8N1 Psychology with Business Studies**
- C8Q2 Psychology with English Literature**
- C8R1/R4 Psychology with French/Spanish**
- C8G5 Psychology with Information Systems**
- C8N5 Psychology with Marketing**
- C8P3 Psychology with Media Communications**

## Assessment

Most courses are assessed by a combination of continuous assessment and written examination (typically, 40% continuous assessment and 60% written examination). Courses are assessed in six month blocks,

with the final classification decided on the basis of courses taken in the last 18 months of the programme.

## Entry Requirements

- At least 240 points at A-Level or the equivalent school leaving qualification.
- Mathematics at GCSE or equivalent is preferable.
- The School is able to be flexible for mature students and certain approved professional qualifications may also be considered.
- If English is not your first language, an IELTS score of 6.5 is required.

See page 80 for 'How to Apply'.

## Programme Director and Admissions Tutor

Alan Martin, BSc (East London), DPhil (East London)

Email: [alan.martin@buckingham.ac.uk](mailto:alan.martin@buckingham.ac.uk)

## Admissions Enquiries

Cherrienne Boniface

Tel: +44 (0) 1280 828204

Fax: +44 (0) 1280 828295

Email: [psychology@buckingham.ac.uk](mailto:psychology@buckingham.ac.uk)

Web: [www.buckingham.ac.uk/psychology/](http://www.buckingham.ac.uk/psychology/)

# Applied Computing

## Research

The Applied Computing Department offers research programmes leading to the degrees of MSc (one year), MPhil (two years) and DPhil (three years) by thesis.

We support a range of research interests including data-mining (and its use in e-commerce and e-business), image processing applications, networking and network applications, and cryptography and authentication.

Currently we have two significant research grants in the European Framework 6th programme:

- Biometric research, where we are investigating facial recognition using wavelet compression techniques. These image recognition techniques, together with smart cards, will be used to enhance security access.
- Wireless networking, where we are investigating the provision of broadband network access using wireless techniques. This is especially important in rural areas with poor infrastructure and island or mountain communities.
- Bioinformatics research in conjunction with the

Diabetes, Obesity and Metabolic Research group to investigate programming and data-mining problems associated with biological data.

### Research Enquiries: Applied Computing

Research Officer: Professor Sabah Jassim BSc, MSc (Baghdad), PhD (Swansea)

Email: [sabah.jassim@buckingham.ac.uk](mailto:sabah.jassim@buckingham.ac.uk)

### Web:

[www.buckingham.ac.uk/appliedcomputing/research/](http://www.buckingham.ac.uk/appliedcomputing/research/)

# Psychology

## Research

The Psychology department offers a one year full-time or two year part-time research programme leading to an MSc degree.

Our main areas of interest include aspects of cognition and perception, psychology of music, social psychology, developmental psychology, the psychology of language (including readership), and object and face recognition.

### Research Enquiries: Psychology

Research Officer: Philip Fine, MA (Cambridge), DPhil (Oxford)

Email: [philip.fine@buckingham.ac.uk](mailto:philip.fine@buckingham.ac.uk)

Web: [www.buckingham.ac.uk/psychology/postgrad/](http://www.buckingham.ac.uk/psychology/postgrad/)





Clore Laboratory

## Diabetes, Obesity and Metabolic Disease Research

This internationally recognised research group, housed in the purpose-built Clore Laboratory, has interests in molecular genetics, biochemistry, pharmacology, nutrition, the physiology of metabolic diseases - particularly diabetes and obesity, the physiology of skin and bioinformatics.

Current academic collaborating institutes include: the University of Sydney, Australia; the Garvan Institute, Sydney, Australia; the University of Geneva, Switzerland; the School of Biological Sciences, Southampton; University of Stockholm, Sweden; King's College London, UK; the Molecular Medicine Centre, University of Edinburgh, UK; the Department of Clinical Biochemistry, University of Cambridge, UK; Liverpool University and Aberdeen University.

The Clore Laboratory also has strategic research alliances and collaborations with a number of pharmaceutical companies. Members of the research group have a proven record in drug discovery and development, and a possibly unique understanding of the requirements of industry.

The Director welcomes approaches for new strategic alliances and collaborations.

Students benefit from the holistic nature of our research, which allows laboratory studies at the molecular and cellular level to be integrated with whole-body physiology.

Bioinformatics studies are fully integrated into the diabetes, obesity and metabolic disease research programme and the Applied Computing department's expertise in algorithms development, scripting language and database mining.

Supervision of postgraduate students is under the control of the Director, with each student supervised in the laboratory by an experienced researcher. Where students cannot be resident in Buckingham, but have full-time access to laboratory facilities, it may still be possible to register for an MPhil/DPhil degree, subject to the proposed research programme and the availability of local supervision.

For further details of the research group, current research areas and recent news items, see the Laboratory's website, [www.buckingham.ac.uk/clore/](http://www.buckingham.ac.uk/clore/)

### Research Enquiries: Clore Laboratory

Research Officer: Professor Jon Arch, MA, DPhil (Oxford)

Email: [jon.arch@buckingham.ac.uk](mailto:jon.arch@buckingham.ac.uk)

### Collaboration Proposals: Clore Laboratory

Director of Metabolic Research: Professor Mike

Cawthorne, BSc (Liverpool), PhD (London), CBiol, FIBiol

Email: [mike.cawthorne@buckingham.ac.uk](mailto:mike.cawthorne@buckingham.ac.uk)

Tel: +44 (0)1280 820309

Web: [www.buckingham.ac.uk/clore/](http://www.buckingham.ac.uk/clore/)

# Medicine

Medicine today poses considerable challenges. Ageing populations, innovative technology and a far more consumerist approach to healthcare are changing the educational requirements for doctors globally.

At Buckingham we are creating novel courses to meet the demands of this new age, giving our students the ability to be more effective throughout their medical careers.

## Clinical MD in General Internal Medicine

The recently introduced MMC programme for junior doctor training in UK, with subsequent changes in Home Office rules, has made it very difficult for international medical graduates to gain structured medical training in the UK. The Buckingham Clinical MD is designed to fulfil the resulting need. It is delivered by the West London Postgraduate Medical School under the Joint Directors of the programme, Professor Rajat Mathur and Professor Jayantha Arnold.

Doctors undertaking the two-year structured Clinical MD in General Internal Medicine are taught both at Buckingham and at Ealing Hospital.

The MD programme is fully quality assured and is equivalent to an MD from any other UK university. As with all university degrees, international recognition is on a country-by-country basis in accordance with local regulations.

The programme is divided into seven clinical modules of 10 weeks each, covering all sub-specialities of Internal Medicine. In addition, the Buckingham module focuses on ethics, accountancy, legal issues, molecular medicine, statistics, management and audit.

For further details please see our website:  
[www.buckingham.ac.uk/medicine/](http://www.buckingham.ac.uk/medicine/)

## Admissions Tutors

Dr Kenny Langlands, BSc (Edin), PhD (Edin)  
Email: [kenneth.langlands@buckingham.ac.uk](mailto:kenneth.langlands@buckingham.ac.uk)  
Professor Rajat Mathur, MBBS, MD, FRCP, PhD(Edin)  
Email: [rajat.mathur@buckingham.ac.uk](mailto:rajat.mathur@buckingham.ac.uk)

## Admissions Enquiries

Cherrienne Boniface  
Tel: +44 (0) 1280 828204  
Fax: +44 (0) 1280 828295  
Email: [medicine@buckingham.ac.uk](mailto:medicine@buckingham.ac.uk)

