



MEDICAL BIOTECHNOLOGY

Together, Learning for Health

Medical Biotechnology



“Students of the IMU Medical Biotechnology programme will be well-trained not only in research skills but will also be exposed to entrepreneurial skills and business communication skills. Exposure to the industry and research institutes during the internship module offers not only training in the actual working environment but also provides job opportunities. A career in the field of medical biotechnology will never be boring as novel discoveries will bring much excitement, gratification and monetary rewards.”

PROF CHU WAN LOY

Professor and
Programme Coordinator
BSc (UKM), PhD (UM)

Ever wonder how new drugs and vaccines are discovered? Why there are improved and accelerated drug testing, better diagnostic capabilities, and the availability of foods which enhance nutritional values? This progress has tremendously improved healthcare and is viewed by many scientists as only a beginning to the great era of medical biotechnology. Scientists believe that the availability of “targeted therapies” for diseases and individuals should dramatically improve drug safety and efficacy, and the development of predictive technologies may lead to a new era in disease prevention, particularly in some of the world’s rapidly developing economies. This sound rationale holds great potential and promise in the field of medical biotechnology.

The IMU Medical Biotechnology programme has incorporated key features to prepare the modern Medical Biotechnologist for challenges beyond tomorrow. These features offer an appreciable advantage to students as there is significant emphasis on concepts and theories important for creating a stable platform to develop technical know-how and skills.

The technical skills of the student begins with learning in a controlled laboratory environment. As the student progresses, he/she will be taught to think and solve problems analytically through modules that were specially designed for them to make independent decisions.

Furthermore, IMU has a myriad of expertise in the field of medical and pharmaceutical sciences. The faculty members are already engaged in active research work, providing a suitable environment for the medical biotechnology student to experience the thinking, planning, application and discussion related to research.

01 | Why choose this programme?

Biotechnology applies scientific and engineering principles and practices to utilise biological resources for development of mankind. Medical Biotechnology applies the wealth of knowledge in biotechnology for the advancement of health sciences.

02 | What is the structure of the programme?

The philosophy of the IMU Medical Biotechnology programme is an outcome-based curriculum, which begins with a foundation phase in biological and physical sciences. The foundation phase emphasises on concepts and theories important for creating a stable platform to develop technical know-how and skills introduced in the transition and final phases of the course. In the intermediate phase of the course, much emphasis will be given to technical hands-on skills, culminating in the advanced phase, whereby students conduct independent research project. Interwoven into the curriculum are modules related to human and community aspects such as laws, ethical issues, enterprise management and communication skills. The advanced phase of the course also introduces an internship programme where attachments to biotechnology industry players are assigned.

03 | What are the key features of the programme?

- Solid foundation in knowledge for biotechnology today and tomorrow
- Progressive development of technical skills from Year 1 to Year 3
- Opportunity to work in industry during internship
- Experience in original research work in an active environment
- Exposed to entrepreneurial skills and business communications
- Emphasis on diagnosis and drug discovery for diseases

04 | What are the teaching-learning approaches used?

Methods of curriculum delivery include plenaries, laboratory practicals, small group teaching (Problem based-learning and Tutorials), workshops, computer-aided learning (CAL), seminars, presentations, industrial visits, video reviews, internships, guided reading and portfolio as well as original and independent research work.

KEY FACTS

DEGREE

Bachelor of Science
(Hons) Medical
Biotechnology (IMU) or
Degree from Partner
University

TOTAL DURATION

3 – 4 years

INTAKE

July

Credit transfer option
to the University of
Newcastle, Australia.



A medical biotechnologist ensures high safety standards in the diagnostic laboratory

05 | Who are the teaching staff?

The University has PhD qualified academic staff with teaching and research experience in the field of medical and pharmaceutical biotechnology.

06 | How will I be assessed?

Students will be assessed through their class tests, practical reports, workshops, portfolios, projects, logbooks, written reports, presentations, dissertations and end-of-semester examinations.

07 | Are there any industrial placements?

This programme has a biotechnology internship module whereby the University facilitates placement in industries related to medical biotechnology.

08 | What is the medium of instruction?

The medium of instruction is English. Students who come from a system of education in which the medium of instruction is not English are strongly recommended to improve their proficiency in English by making their own arrangements to attend additional English Language classes before entering the IMU.

09 | What are the semester contents?

Semesters 1 and 2 of the course introduce students to concepts and theories in the basic sciences of biotechnology and help students develop competence in basic areas of laboratory practices. The students will also be taught essential skills in the application of IT knowledge that are relevant to a medical biotechnologist. In Semesters 3 and 4, students will be shown how to apply core knowledge in basic science in areas of medical biotechnology and develop skills to critically evaluate the concepts, techniques and applications of medical biotechnology. Students are also made aware of the relationship between medical biotechnology and community needs. In the final semesters of 5 and 6, students will be given the opportunity to develop cognitive and practical know-how in designing and conducting biotechnological research that meet the requirements of the industry.

Semester 1

- Basic Mathematics
- Biological Science
- General Chemistry
- Essential of Genetics I
- Human Physiology
- Organic Chemistry I
- Biostatistics
- English
- Pengajian Islam / Moral

Semester 2

- Animal and Plant Physiology:

Foundations for Biotechnology

- General Pharmacology
- Physical Chemistry
- Bahasa Malaysia
- Organic Chemistry 2
- IT for Biotechnologists
- Physics for Instrumentations
- Diversity of Life

Semester 3

- Natural Products
- Microbiology for Biotechnologists

- Analytical Chemistry for Biotechnologists I
- Cell and Molecular Biology
- Pathology for Biotechnologists
- Essential of Genetics II
- An Introduction to Bioinformatics
- Applied Biochemistry

Semester 4

- Toxicology and Toxinology
- Immunology

- Analytical Chemistry for Biotechnologists II
- Utilisation of Biological Resources
- Pengajian Malaysia
- Cell and Tissue Culture Techniques
- Genomics and Molecular Diagnostics
- Instrumentation, Biosafety and Standardisation

Semester 5

- Bioprocess Technology

- Biopharming
- Enterprise Management
- Forensic Science
- Utilisation of Structural Information
- Cancer Biotechnology
- Biotechnology Internship
- Selective: Neurochemistry
- Selective: Chemistry of Palm Oil

Semester 6

- Research Methodology
- Research Project
- Current Trends in Biotechnology
- Essential Biotechniques
- Communications Skills and Etiquette
- Legal, Ethical and Social Aspects of Biotechnology

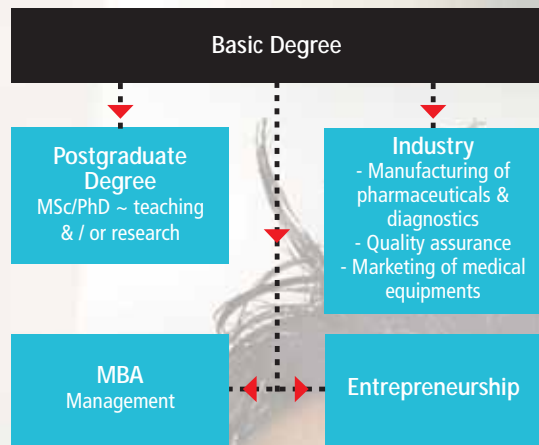
10 | Who will award the degree?

The Bachelor of Science (Hons) Medical Biotechnology degree is awarded by IMU. The partner university will award the respective degree to students who transfer to the school.





Career Paths for Medical Biotechnologists in Malaysia



“Medical biotechnology is the fusion of biology and technology. IMU has expertise in the field of medical and pharmaceutical sciences, thus providing me a suitable platform to achieve my goal.”

Kho Mee Teck
1st year
Medical Biotechnology
student

There are career prospects for a medical biotechnologist in forensics and diagnostics

11 | What sort of jobs/careers can be undertaken with this degree?

Medical biotechnologists can be employed in R&D departments/quality control divisions/commercial divisions of pharmaceutical, fermentation and food science industries. This area of expertise can also be utilised in agricultural, supplementary diets, healthcare technology and environmental industries, hospitals, universities/colleges and writing/journalism.

In Malaysia, employment opportunities can be found in both public and private hospitals and universities, research organisations like PORIM, SIRIM, CARIF, INFORMM, IMR amongst others or multinationals like GSK, Pfizer, Astra-Zeneca and a plethora of public-listed companies in the agrobio industry. Employment opportunities are also available abroad, for example in neighbouring Singapore, Australasia, Europe and United States of America where the biotechnology industry is critically in need of a skilled work force.

EXAMPLE OF WORK AREAS FOR MEDICAL BIOTECHNOLOGY

| INDUSTRY | AREAS OF WORK |
|--------------------------|---|
| Healthcare | <ul style="list-style-type: none"> Innovative drugs - development of various medicines, vaccines and diagnostics Diagnostics - diagnostic and detection kits for AIDS, hepatitis, Nipah virus, SARS etc Gene therapy and stem cell research |
| Forensics | <ul style="list-style-type: none"> DNA fingerprinting for crime solving Paternity identification |
| Bioinformatics | <ul style="list-style-type: none"> Human Genome Project Rice Genome Project |
| Industrial & environment | <ul style="list-style-type: none"> Production of industrial enzymes, biopesticides, bioherbicides and biofertilisers. Treatment of hazardous wastes (e.g. heavy metals) in the environment Development of waste bioremediation process Developing new products and processes for the manufacture of food |
| Agriculture | <ul style="list-style-type: none"> Molecular marker-assisted breeding Using genetic engineering and genome mapping (trying to locate genes to improve crop production or crop resistance to pests and diseases) Plants producing pharmaceuticals & plants with value added traits - high sugar tomato, vitamins enriched rice, canola with improved oils etc |

12 | When do I apply for a place in IMU?

You can apply using forecast or actual results.

MINIMUM ENTRY REQUIREMENTS

All qualifications should include any two science subjects (Biology, Chemistry, Mathematics, Physics) at STPM / A-Levels / equivalent examination.

| EXAMINATIONS | REQUIREMENTS |
|---|--|
| A-Levels | CCD (2 Sciences) |
| STPM | CCC (2 Sciences) |
| Australian Matriculation | TER/UAI 75 or 65% Aggregate (2 Sciences) |
| NCEA Level 3 | 60% (2 Sciences) |
| Canadian Grade 12/13 | 70% Aggregate (2 Sciences) |
| Unified Examination Certificate (UEC) | B5 B6 B6 B6 B6 (2 Sciences) |
| Australian University Foundation Programmes | 70% Aggregate (2 Sciences) |
| Indian Pre-University | 70% Aggregate (2 Sciences) |
| Ministry of Education Matriculation | cGPA 2.5 (2 Sciences) |
| Diploma in Science (UiTM) | cGPA 2.5 (2 Sciences) |
| Diploma in Microbiology (UiTM) | cGPA 2.5 (2 Sciences) |
| International Baccalaureate (IB) | 26 points (2 Sciences) |
| American High School Diploma with Advanced Placement (AP) | cGPA 2.7 (2 Sciences at AP) |
| Foundation in Biosciences | cGPA 2.5 |
| Foundation in Engineering | cGPA 2.5 |
| Foundation in Science | cGPA 2.5 |
| Degree | Refer to university |
| Diploma | cGPA 2.5 (in a related field) |

Please refer to the University for any variation on entry requirement. The IMU reserves the right to change these admission requirements from time to time.

English Language Requirement

Applicants are required to have one of these at the point of entry:

| | |
|-------|--|
| MUET | Band score of 4 (for Malaysian students only) |
| IELTS | Overall band score of 6.5 |
| TOEFL | At least 550 (Paper based test) or 79-80 (Internet based test) |

The Ministry of Higher Education stipulates that all students entering universities in Malaysia must sit for MUET regardless of having other English qualifications. International students are not required to sit for the MUET. All registered students are required to take the IMU Diagnostic Language Test during the first and fourth semester.

The International Medical University began in 1992 as the International Medical College, or IMC, Malaysia's first private medical college. IMC became a University in 1999, but the University has remained true to key elements of the IMC vision, which are to widen access to professional healthcare education, and to use innovative, integrated and student-centred means in providing that education.

This vision required strong links to be forged, from the outset, with reputable Partner Medical Schools committed to excellence and who share our educational philosophy. It was our progressive, systems based, integrated medical curriculum that first caught the imagination of our Partner Medical Schools, and today we collaborate with such Schools in Australasia, North America, Ireland and the United Kingdom. We have a Partner Pharmacy School in Scotland and in Australia and are establishing more partnerships in Australia.

Since 1999, the University's growth and development has been in developing clinical schools in Seremban and Batu Pahat, our own Honours degree courses in Pharmacy and Nursing, and in establishing research as a core activity, together with development of postgraduate research Masters and PhD programmes. We are already the preferred private school for medicine and pharmacy in Malaysia. Our growth has been supported by heavy investment in infrastructure development and expansion at Bukit Jalil and Seremban, and in the recruitment of staff of high calibre. In 2008, we have introduced Honours degree courses in Dentistry, Nutrition & Dietetics, Medical Biotechnology, Psychology, Biomedical Science and in Pharmaceutical Chemistry. In common with our MBBS, BPharm and BNursing, these courses have been designed from first principles by our faculty. Bachelor of Nursing Science (Hons) was introduced in 2009, a programme targeted solely for registered nurses to upgrade their qualification from diploma level to a degree level. In 2010, we introduced Chiropractic programme, the first of its kind and only complete educational programme in Malaysia as well as in all of Southeast Asia. In future, the university is planning to offer an undergraduate programme in Chinese Medicine. We believe our courses to be progressive and innovative, and we strive to use best practice in their delivery and assessment.

IMU Clinical School, Batu Pahat



IMU Clinical School, Seremban

IMU Bukit Jalil Campus





INTERNATIONAL MEDICAL UNIVERSITY
MALAYSIA

Main Campus, Kuala Lumpur

126, Jalan 19/155B, Bukit Jalil,
57000 Kuala Lumpur, Malaysia.
Tel : 603-8656 7228
Fax : 603-8656 7229

Clinical School, Seremban

Jalan Rasah, 70300 Seremban,
Negeri Sembilan Darul Khusus, Malaysia.
Tel : 606-767 7798
Fax : 606-767 7709

Clinical School, Batu Pahat

12, Jalan Indah, Taman Sri Kenangan,
83000 Batu Pahat,
Johor Darul Takzim, Malaysia.
Tel : 607-432 2787, 607-432 0580
Fax : 607-432 5575

Clinical School, Kuala Pilah

Lot No. 1743, Tingkat 1,
Bangunan Persatuan Hainan Kuala Pilah,
Jalan Wira 2/1, Taman Wira Jaya,
72000 Kuala Pilah,
Negeri Sembilan Darul Khusus, Malaysia.
Tel : 606-481 9635
Fax : 606-481 9639

enquiry@imu.edu.my
www.imu.edu.my

Programmes Available:

- Medicine
KP/JPS(A1223)10/09
- Dentistry
KPT/JPS(KA8358)12/2012
- Pharmacy
KP/JPS(KR6707)10/2010, KPT/JPS(A1746)7/2014
- Pharmaceutical Chemistry
KPT/JPS(KA8229)12/2012
- Nursing
KP/JPS(A4675)4/2014
- Nursing Science (for registered nurses)
KPT/JPS(KA9377)01/2013
- Medical Biotechnology
KPT/JPS(KA8228)8/2012
- Nutrition & Dietetics
KPT/JPS(KA8176)8/2012
- Psychology
KPT/JPS(KA8177)8/2012
- Biomedical Science
KPT/JPS(KA8230)11/2012
- Chiropractic
KPT/JPS(KA9294)7/2014
- Postgraduate (MSc & PhD by research)
KP/JPS(A1468)12/2010, KP/JPS(KN3767)5/2010

All enquiries regarding student admissions
should be directed to:

Department of
Student Services and Marketing

INTERNATIONAL MEDICAL UNIVERSITY

126, Jalan 19/155B, Bukit Jalil,
57000 Kuala Lumpur, Malaysia.
Tel : 603-2731 7272
Fax : 603-8656 1018

KP/JPS/5195/US/2, KP(JPS)/DFT/US/W03

Obtain latest information on the IMU
programmes (including tuition fees),
submit an online application or download
application forms via **www.imu.edu.my**



Cert No : KLR 0500119

The IMU has been certified with MS ISO 9001:2000
for the provision of tertiary education in medicine,
pharmacy and health sciences.

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given in this brochure but it is subject to alteration without notice.
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Please consult the Department of Student Services and Marketing
for the most up-to-date information.

Printed in January 2010.

Published by The Marketing & Communications Department, IMU.