BIOLOGICAL SCIENCES
Undergraduate
Biology is the study of all living things on Earth: from the smallest virus and bacteria to Hibiscus rosa-sinensis, the Malaysian national flower, and Malayan tigers. Without a doubt, Biology has an enormous impact on our daily life. Biological knowledge is expanding rapidly, with new discoveries leading to improved technologies for the betterment of society (particularly in the areas of health and environment).

At Sunway University’s School of Science and Technology, the Department of Biological Sciences provides high quality education and training in applying biological knowledge to the world of medical sciences. The Department’s degree programmes continually embrace new knowledge and technologies in the biological science industries. The objective is to equip students with the vital skills necessary to work in this industry.

In addition to various forms of classroom activities and learning, significant emphasis is placed on industry engagement and training, and company site visit(s). The Department established industry links with international and local companies for internship and potential future employment. These companies comprise (but not limited to) hospitals, diagnostic laboratories, healthcare organisations, research institutions and medical device companies.

Career prospects of biology graduates are broad. Not only can they work in pharmaceutical industries, they can also thrive in other industries that rely on biological science knowledge, such as scientific writing, patent law, or the insurance industry.

It is the Department’s mission to groom prospective undergraduates into competent graduates who will excel in biology and health-related careers. Our biology degrees are validated by Lancaster University, one of the top universities in the United Kingdom (UK) and in the world.

- BSc (Hons) Biology with Psychology
- BSc (Hons) Medical Biotechnology
- BSc (Hons) Biomedicine
PATHWAY

PhD

Masters in Life Science

BSc (Hons) Biology with Psychology
BSc (Hons) Medical Biotechnology
BSc (Hons) Biomedicine

Pre-University
Sunway Foundation in Science and Technology /
A-Level / Australian Matriculation / 
Canadian International Matriculation Programme / 
Monash University Foundation Year / 
STPM / UEC or equivalent

OR

Diploma
[Biology or Biotechnology-related]
*Completed 2 science subjects in any Pre-U or Diploma [Chemistry, Biology and/or Physics]

*Completed 2 science subjects in any Pre-U or Diploma [Chemistry, Biology and/or Physics]
This innovative biology degree incorporates behavioural sciences to make it more relevant, relatable, and applicable in today’s world. With 75% of the subjects focusing on biology, graduates will be equipped with a strong foundation to further their studies at the postgraduate level in the area of neuroscience, and in clinical or pharmaceutical research.

Alongside academic studies, students will be given the opportunity to develop research skills and practical experience through working on innovative independent research projects during the final year, as well as gaining valuable experience working in healthcare or biotechnology industries through internship.

Acquire the skills you need to explore career opportunities in academia, healthcare sector, pharmaceutical industry, food industries, environmental consultancy and related disciplines.

This degree is validated by Lancaster University and upon successful completion of the programme, graduates are awarded two certificates; one from Sunway University and another from Lancaster University.

This programme is accredited by Malaysian Qualifications Agency.

DEGREE > MASTERS

Graduates of the BSc (Hons) Biology with Psychology can choose to pursue postgraduate studies in either MSc or Ph.D. in related disciplines. Students have the option of pursuing their postgraduate studies at Monash University Malaysia and Sunway University.
### PROGRAMME STRUCTURE - Subjects

#### Year 1
- Cell Biology
- Human Anatomy
- Human Physiology
- Impact of Microbes on Human Life
- Principles of Genetics
- Introduction to Organic Chemistry
- Introduction to Psychology I
- Introduction to Psychology II
- English for Life Sciences
- Communication Skills

#### Year 2
- Biochemistry
- Biodiversity
- Human Molecular Genetics
- Medical Microbiology
- Social & Professional Responsibilities
- Abnormal Psychology
- Biological Psychology
- Cognitive Psychology
- Sensation & Perception

#### Year 3
- Bioinformatics
- Immunology
- Neurobiology
- Research Project
- Internship
- Health and Safety in Laboratory Management
- Research & Publications

### ADDITIONAL MOHE COMPULSORY GENERAL STUDIES SUBJECTS

- For Local students:
  - Islamic & Asian Civilisations
  - Ethnic Relations
  - Community Service
  - Bahasa Melayu A (applicable to students who did not sit for SPM or did not obtain a Credit in SPM Bahasa Melayu)

- For International students:
  - Malay Language for Communication 2
  - Malaysian Studies 3
  - Community Service
Studying in Sunway University was an enjoyable experience. Having the privilege of being part of an academically diverse programme enabled me to engage in a variety of scientific fields. This benefited me greatly as there is great emphasis on multidisciplinary knowledge in the academic world today.

**CALVIN GOH BOK SUN**
**JEFFREY CHEAH CONTINUING SCHOLARSHIP RECIPIENT**

This programme has allowed me to further understand the biological and psychological aspects of the human mind and body. The programme has greatly improved my critical thinking and communication skills which can be adapted easily in any situation or working environment. I hope to pursue further in the neuroscience field later after gaining more working experience.

**YAP PEI YI**
**STUDENT**

By taking this course, it helped me to understand the importance of self-motivated studying (initiative), doing extensive research, being critical and analytical. This helps me in my Master’s degree which I’m currently pursuing (Child Psychology), in which skills are needed for research, critical reviewing, and producing good psychoeducational reports.

**EUNICE YEE**
**STUDENT**

This programme has trained my critical thinking skill, and developed the necessary skills to correlate behavioural studies with biological studies. Those who are interested in the field of neuroscience will gain knowledge from both fields of life sciences and psychology, as well as basic lab skills and techniques.

**WINNIE FOO**
**CURRENT MSC IN LIFE SCIENCES STUDENT AT SUNWAY UNIVERSITY**

To help graduates transit successfully into the workforce, Sunway University combines a well-rounded academic experience and learning, both inside and outside the classroom, with the goal of using these experiences to prepare graduates for a career.

- IQVIA (formerly known as QuintilesIMS)
- Entropia Global
- Pathlab Malaysia
- Durachem Sdn Bhd

This programme includes an internship component that helps open doors for Sunway graduates to successfully bridge the gap from university to industry.

- Biolife Lab Sdn Bhd
- Bornean Sun Bear Conservation Centre
- Cancer Research Malaysia
- First Base Laboratory
- Genein Bio Sdn Bhd
- KPMC Puchong Specialist Centre
- Myco Medic Sdn Bhd
- Penang Tech Centre Berhad
- Ramsay Sime Darby Healthcare
- Sunway Medical Centre Sdn Bhd
- Universiti Putra Malaysia
In the early days, diseases caused by simple bacterial/viral infection were deadly and often fatal. These unfortunate incidents sparked the birth of a specialised sector known as Medical Biotechnology. Exciting new developments have led the way to new treatments to combat previously life-threatening diseases. Medical Biotechnology is a subset of biotechnology that enriches us with biological knowledge on all living organisms and teaches us how to use these organisms to create products that can help us lead more productive lives and live longer. The world has benefited from many amazing medical discoveries (the past and the present); Dr Edward Jenner for creating the world’s first vaccine for smallpox, the use of insulin to treat diabetes, and designing non-invasive small capsules to evaluate gastrointestinal condition. All the biological science knowledge you learn during foundation year will be used in Medical Biotechnology classes such as Medical Microbiology, Molecular Diagnostics, Molecular Biology and Pharmaceutical Technology.

In the BSc (Hons) Medical Biotechnology programme, the theoretical component of the programme enhances the learning experience through practical application. Graduates of this programme will learn how to contribute towards developing beneficial products to prevent or treat human diseases and learn how to communicate scientific findings to the general public.

The teaching methodologies conducted in the programme include: face-to-face lectures, laboratory practical, small group teaching, workshops, seminars, presentations, industrial visits and independent research work. As a preparation to join the workforce, students will intern in various biotechnology companies during Year 3.

This degree is validated by Lancaster University and upon the successful completion of the programme, graduates are awarded two certificates: one from Sunway University and another from Lancaster University.
Library equipped with latest textbooks and publications for academia use
Staff undergoes academic-related training to enhance teaching experience
Academic staff with years of research and industry experience in their respective fields and received awards for their contribution in science
Best Teaching Awards
3-year undergraduate degree with honours award
Internship opportunities within Malaysia and globally
A range of Biology research projects: Microbiology, Chemistry, Ecology, Cancer Biology
Integrated research institutions for cross-discipline teaching and research (Sunway Institute for Healthcare Development, Centre for Virus and Vaccine Research, Research Center for Crystalline Materials)
Field trips to medical biotechnology-related companies
Clubs and societies with guidance and support from the Student LIFE and Student Council
Invited speakers from Harvard University and Cambridge University to give seminars/workshops
Scholarships to students with financial difficulty

PROGRAMME STRUCTURE - Subjects

Year 1
- Introduction to Biosciences
- Human Anatomy
- English for Life Sciences
- Introduction to Statistics
- Introduction to Organic Chemistry
- Human Physiology
- Principles of Genetics
- Impact of Microbes on Human Life
- Cell Biology
- Communication Skills

Year 2
- Molecular Biology
- Medical Biotechnology
- Biochemistry
- Cell & Tissue Culture
- Human Molecular Genetics
- Molecular Diagnostics
- Instrumental Analysis
- Medical Microbiology
- Current Issues in Biomedical Sciences
- Social & Professional Responsibilities
- Electives
  - Biodiversity*

Year 3
- Bioinformatics
- Immunology
- Pharmaceutical Technology
- Research Project
- Research & Publications
- Internship
- Health and Safety in Laboratory Management

ADDITIONAL MOHE COMPULSORY GENERAL STUDIES SUBJECTS

For Local students:
- Islamic & Asian Civilisations
- Ethnic Relations
- Community Service
- Bahasa Kebangsaan A
  (applicable to students who did not sit for SPM or did not obtain a Credit in SPM Bahasa Melayu)

For International students:
- Malay Language for Communication 2
- Malaysian Studies 3
- Community Service

*This is an optional subject for BSc (Hons) Medical Biotechnology and is subject to space availability.
*BSc (Hons) Medical Biotechnology students can choose either Biodiversity or Current Issues in Biomedical Sciences.
I am so fortunate to have undertaken Sunway University’s Medical Biotechnology programme because I have gained invaluable insights and exposure in the field of medical science through the effective, intellectually stimulating and well-structured courses. The dedicated and passionate lecturers were one of the highlights of the programme where they have helped me develop and improve my analytical, creative and critical thinking skills. The experience I have acquired throughout the three memorable years has boosted my self-esteem and will definitely help me in my future career.

ADRIAN A/L KANNAN
JEFFREY CHEAH FOUNDATION SCHOLARSHIP RECIPIENT

This programme provided me a strong foundation in the medical biotechnology field by learning theoretical concepts and also allowed me to develop industrially applicable laboratory techniques. The highlight of this programme is the research project during my final year, where I was given an opportunity to carry out research on my own under supervision. Here is where I discovered my main interest and I have decided to go deep into the area at postgraduate level. The experiences gained in these three years will definitely play a significant role in my future career.

WONG YI RU
SIN CHEW SCHOLARSHIP RECIPIENT

Choosing to pursue my degree in Medical Biotechnology in Sunway University was definitely the best thing ever as the friendly and engaging lecturers in daily classes really helped us in learning the subjects in a better way. The knowledge taught, both scientifically and not, has also really helped me in my career progression and in building my confidence level.

WONG SHEN NI
JEFFREY CHEAH FOUNDATION SCHOLARSHIP RECIPIENT

Studying Medical Biotechnology at Sunway University was an enriching experience that has forged my interpersonal skills and technical expertise. SunU provides access to an excellent academic framework and state-of-the-art campus facilities. Throughout this fabulous 3-year venture, I was lucky to assist top-notch lecturers in groundbreaking research at cutting-edge laboratories, carving opportunities for future scientific endeavors.

MOSAHEB MAHNOOR UMMUL-WARAH FAATEEMAH ZEHRA
JEFFREY CHEAH ENTRANCE SCHOLARSHIP RECIPIENT
INTERN AT CENTRE FOR VIRUS AND VACCINE RESEARCH

To help graduates transit successfully into the workforce, Sunway University combines a well-rounded academic experience and learning, both inside and outside the classroom, with the goal of using these experiences to prepare graduates for a career.

- Abbott Labs
- AJ Pharma Holding Sdn Bhd
- Alpha Fertility Center
- Asia Assistance
- AstraZeneca Sdn Bhd
- Biomarketing Services Sdn Bhd.
- CellSafe International Sdn Bhd.
- Cryocord Sdn Bhd
- Dawn Diagnostic Laboratory, Zambia
- Medi-life (M) Sdn Bhd
- Metro IVF Fertility Center
- Monash University Malaysia
- Peerhealth Malaysia
- IQVIA (formerly known as QuintilesMSI)
- Sun Pharmaceutical Sdn Bhd.
- Sunway Medical Center Sdn Bhd.

Malaysia biotechnology and research institutions
- Abbott Labs
- Agilent Technologies LDA Malaysia Sdn Bhd
- ALS Technichem (M) Sdn Bhd.
- Beacon International Specialist Centre
- Biocorp Sdn Bhd
- Biocorp Lab Sdn Bhd
- Biomarketing Services Sdn Bhd.
- Cancer Research Malaysia
- Center for Drug Research, USM
- Cryocord Sdn Bhd.
- Eppendorf Asia-Pacific Sdn Bhd.
- Esco Micro Sdn Bhd.
- Fisher Scientific (M) Sdn Bhd
- GeneoBio Sdn Bhd
- IKA Works Sdn Bhd.
- Jesselton Medical Centre
- Kinsei Sdn Bhd.
- Myco Med Sdn Bhd
- Neogenix Laboratoire
- Pantai Premier Pathology
- StemLife Berhad
- Sunway Medical Center Sdn Bhd
- Sun Pharmaceutical Industries Ltd.
- UPHA Pharmaceutical Manufacturing Sdn Bhd.

International institutions
- Burnet Institute, Australia
- Clinique Fortis Darne, Mauritius
- University of Hong Kong
- University of Manchester

ENHANCED CAREER PROSPECTS

TESTIMONIALS
Get involved in the healthcare sector with this medically-oriented degree. Our biomedicine degree provides an ideal platform for careers in biology and biomedicine, including further postgraduate study.

Biomedicine is a branch of medical science that deals with the development of diagnostic modalities and treatments for current and emerging threats to human health. This programme imparts the knowledge of anatomy, physiology, pharmacology, biochemistry, cell biology, and genetics which are important for modern medicine and public health. Graduates will develop fundamental skills in critical thinking, problem solving, and communication which are invaluable in understanding the global health trends and biomedical research advances.

Graduates of the BSc (Hons) Biomedicine can choose to pursue postgraduate studies in either MSc or PhD in the field of medical sciences. Students have the option of pursuing their postgraduate studies at Sunway University or other tertiary institutions.


DISTINCTIVE SUNWAY EXPERIENCE

- 3-year undergraduate degree with honours award
- Internship linkage with Sunway Medical Centre and other hospitals within Klang Valley
- World-class researchers in their respective fields
- Distinguished professors
- Library equipped with latest textbooks and publications for academic use
- Staff undergoes academic-related training to enhance teaching experience
- Lecturers with Excellence in Teaching Awards
- Internship opportunities within Malaysia and globally
- A range of Biology research projects: infectious diseases, antimicrobials, cancer biology and therapeutics, neurodegenerative diseases, non-communicable diseases, and drug synthesis and delivery using nanotechnology
- Integrated research institutions for cross discipline teaching and research (Sunway Institute for Healthcare Development, Research Center for Biomedical Science, Research Center for Crystalline Materials)
- Clubs and society with guidance and support from the Student LIFE and Student Council
- Invited speakers from Harvard University and Cambridge University to give seminars/workshops
- Scholarships to students with financial difficulty

PROGRAMME STRUCTURE - Subjects

Year 1

- Human Physiology
- General Microbiology
- Basic Biochemistry
- Human Anatomy
- Basic Biostatistics
- English for Life Sciences
- Cell Biology
- Clinical Chemistry
- Basic Genetics
- Histology and Histopathology Techniques
- Communication Skills
- Ethics in Healthcare Science

Year 2

- Medical Biochemistry
- Human Molecular Genetics
- Medical Microbiology
- Pathology
- Medical Immunology
- Medical Entomology
- Pharmacology and Toxicology
- Medical Statistics and Epidemiology
- Social and Professional Responsibilities
- Current Issues in Biomedical Sciences
- Histopathology and Cytology Practice

Electives (Choose 1)
- Cell and Tissue Culture
- Molecular Diagnostics

Year 3

- Haematology and Transfusion Science
- Clinical Biochemistry Practice
- Infection, Immunity, Inflammation and Therapy
- Parasitology and Virology
- Research Project
- Internship
- Research and Publications

Electives (Choose 1)
- Neurobiology
- Bioinformatics
- Pharmaceutical Technology

ADDITIONAL MOHE COMPULSORY GENERAL STUDIES SUBJECTS

For Local students:
- Islamic & Asian Civilisations
- Ethnic Relations
- Community Service
- Bahasa Melayu A (applicable to students who did not sit for SPM or did not obtain a Credit in SPM Bahasa Melayu)

For International students:
- Malay Language for Communication 2
- Malaysian Studies 3
- Community Service

3-year undergraduate degree with honours award
Internship linkage with Sunway Medical Centre and other hospitals within Klang Valley
World-class researchers in their respective fields
Distinguished professors
Library equipped with latest textbooks and publications for academic use
Staff undergoes academic-related training to enhance teaching experience
Lecturers with Excellence in Teaching Awards
Internship opportunities within Malaysia and globally
A range of Biology research projects: infectious diseases, antimicrobials, cancer biology and therapeutics, neurodegenerative diseases, non-communicable diseases, and drug synthesis and delivery using nanotechnology
Integrated research institutions for cross discipline teaching and research (Sunway Institute for Healthcare Development, Research Center for Biomedical Science, Research Center for Crystalline Materials)
Clubs and society with guidance and support from the Student LIFE and Student Council
Invited speakers from Harvard University and Cambridge University to give seminars/workshops
Scholarships to students with financial difficulty
ENTRY REQUIREMENTS

DEGREE

<table>
<thead>
<tr>
<th>Degree/Qualification</th>
<th>Biology with Psychology</th>
<th>Medical Biotechnology</th>
<th>Biomedicine</th>
<th>English Language Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>STPM</td>
<td>Average B- or CGPA 2.67 (Minimum 2 principals)</td>
<td>Average B- or CGPA 2.67 (Minimum 2 principals)</td>
<td>Minimum 14 points</td>
<td>IELTS or equivalent 6.0</td>
</tr>
<tr>
<td>A-Level*</td>
<td>Minimum 14 points</td>
<td>Minimum 14 points</td>
<td>Minimum 14 points</td>
<td>MUET Band 5</td>
</tr>
<tr>
<td>Australian Matriculation</td>
<td>ATAR 65</td>
<td>ATAR 65</td>
<td>Minimum 14 points</td>
<td>SPM English</td>
</tr>
<tr>
<td>Canadian International Matriculation Programme</td>
<td>65%</td>
<td>65%</td>
<td>Minimum 14 points</td>
<td>A2 or A-</td>
</tr>
<tr>
<td>MUAYF</td>
<td>65%</td>
<td>65%</td>
<td>Minimum 14 points</td>
<td>UEC English</td>
</tr>
<tr>
<td>Sunway Foundation in Science &amp; Technology</td>
<td>CGPA 2.5</td>
<td>CGPA 2.5</td>
<td>Minimum 14 points</td>
<td>B3</td>
</tr>
<tr>
<td>UEC</td>
<td>Maximum 24 points from 5 subjects (all Grade Bs excluding Chinese and non-academic subjects)</td>
<td>Maximum 24 points from 5 subjects (all Grade Bs excluding Chinese and non-academic subjects)</td>
<td>Maximum 24 points from 5 subjects (all Grade Bs excluding Chinese and non-academic subjects)</td>
<td>SPM English</td>
</tr>
<tr>
<td>IB Diploma</td>
<td>Completed with minimum 26 points (excluding bonus points)</td>
<td>Completed with minimum 26 points (excluding bonus points)</td>
<td>Completed with minimum 26 points (excluding bonus points)</td>
<td>O-Level English (1119)</td>
</tr>
<tr>
<td>Other Qualifications</td>
<td>Any other equivalent qualifications</td>
<td>Any other equivalent qualifications</td>
<td>Any other equivalent qualifications</td>
<td>Sunway Intensive English Programme (IEP)</td>
</tr>
<tr>
<td>SPECIFIC REQUIREMENT</td>
<td>Pass 2 science subjects OR have experience/strong interest in biological sciences</td>
<td>Pass 2 science subjects OR have experience/strong interest in biological sciences</td>
<td>Pass in two of the following subjects: Biology, Physics/Mathematics, Chemistry, and/or have experience and strong interest in Biological Sciences</td>
<td>Satisfactory level in Pre-University programmes, where the medium of instruction is English</td>
</tr>
<tr>
<td>Pre-University</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

Note: For A-Level points calculation A = 10 points B = 8 points C = 6 points D = 4 points E = 2 points

---

*For Malaysian students entering using an entry qualification whereby the medium of instruction is not in English, MQA requires the student to possess a MUET or international English proficiency qualification in order to register for the programme.

**Specified Entry Requirements**

- **Biology with Psychology**: Average B- or CGPA 2.67 (Minimum 2 principals)
- **Medical Biotechnology**: Average B- or CGPA 2.67 (Minimum 2 principals)
- **Biomedicine**: Minimum 14 points (Minimum Grade D in two of the following subjects: Biology, Physics/Mathematics and Chemistry)
- **English Language Requirements**: IELTS or equivalent 6.0
OUR ACADEMIC LEADERS

The Department of Biological Sciences believes in integration and communication among different scientific disciplines to drive teaching and research. All academic staff in our department have doctoral degrees and specialise in a variety of areas related to biology. Many are award winners (international and local). An excellent team of administrative staff and laboratory technicians support the department.

Students will engage with distinguished professors and staff from different research institutions at Sunway University: the Centre for Virus and Vaccine Research, the Research Centre for Crystalline Materials, School of Healthcare and Medical Sciences and the Research Centre for Nano-Materials and Energy Technology.

Students from BSc (Hons) Biology with Psychology will get the opportunity to learn under the guidance of academic staff from the Department of Psychology.

ACADEMIC MEMBERS

HEAD OF DEPARTMENT
Distinguished Professor
Dr Naveed Ahmed Khan
(Infectious Diseases/Microbiology)

Programme Chair – BSc (Hons) Medical Biotechnology
Dr Tommy Tong
(Immunology/Microbiology)

Teaching, Learning and Assessment Deputy Director
*Associate Professor
Shyamala Ratnayake
(Ecology and Conservation)

Teaching, Learning and Assessment Director
*Dr Jactty Chew
(Infectious Disease/Microbiology)

Dr Chandrajit Lahiri
(Infectious Disease/Bioinformatics)

Dr Kavita Reginald
(Immunology)

Dr Ayaz Anwar
(Chemistry/Infectious Diseases)

Professor Poh Chit Laa
(Centre for Virus and Vaccine Research)

Professor Peh Suat Cheng
(School of Healthcare and Medical Sciences (SHMS))

Professor Saidur Rahman
(Research Centre for Nano-Materials and Energy Technology)

Professor Mohamed Kheireddine Arona
(Research Centre for Carbon Dioxide Capture and Utilization)

Professor Edward Tiekink
(Research Centre for Crystalline Materials (RCCM))

Professor Shyamala Ratnayake
(Ecology and Conservation)

*Best Teaching award

DEPARTMENT AFFILIATIONS

Professor Poh Chit Laa
(Centre for Virus and Vaccine Research)

Professor Peh Suat Cheng
(School of Healthcare and Medical Sciences (SHMS))

Professor Saidur Rahman
(Research Centre for Nano-Materials and Energy Technology)

Professor Mohamed Kheireddine Arona
(Research Centre for Carbon Dioxide Capture and Utilization)

Professor Edward Tiekink
(Research Centre for Crystalline Materials (RCCM))

*Best Teaching award