

# BIOLOGICAL SCIENCE

- Prospectus -  
2024

**SUNWAY**  
UNIVERSITY



A CLASS ABOVE



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## SUNWAY IS ONE OF THE TOP 150 UNIVERSITIES IN THE WORLD UNDER 50 YEARS OLD

As one of Malaysia's leading and internationally recognised private universities, Sunway University is positioned amongst top universities in the world by QS World University Rankings. Sunway University is ranked #586 globally in the QS World University Rankings 2024 and is the #1 non-government linked private university in Malaysia in the Times Higher Education World University Rankings 2023.

Sunway University has been awarded #1 in Graduate Employability among all universities in Malaysia by Talentbank Group for two consecutive years (2022, 2023) through the National Graduate Employability Index.

The University emerged as an Overall 5 Star rated (Excellent) institution in the QS Stars University Ratings, as well as Five-Star ratings for the individual categories: teaching, facilities, employability, social responsibility, inclusiveness, academic development and internationalisation.

Collaborating with world class partners - Lancaster University and Le Cordon Bleu International, Sunway University offers premier education with international repute. The University also partners University of Oxford, University of Cambridge, Harvard University, Massachusetts Institute of Technology and University of California, Berkeley.

**MALAYSIA'S #1**  
**NON-GLU\* PRIVATE UNIVERSITY**  
 as awarded by  
**Times Higher Education**



\*Government-Linked University



EXCELLENT





# INTRODUCTION

In 2024, the significance of a bio-science degree has never been more pronounced as the world grapples with complex issues such as climate change, pandemics, and environmental degradation. Bio-scientists are at the forefront of finding solutions to these challenges; from developing innovative medical treatments to pioneering sustainable agricultural practices, the impact of biological science permeates every aspect of our lives.

At our department, we offer three distinctive undergraduate programs: Bachelors in Science (Honours) in Biomedicine, Medical Biotechnology, and Biology with Psychology. All three undergraduate programs are validated by a leading university in the UK, Lancaster University. Additionally, we also offer two postgraduate programs at the Masters and PhD levels, both research-based. Our curriculum is meticulously crafted to nurture intellectual curiosity, critical thinking, and practical skills, ensuring that our graduates are well-prepared for the challenges of the 21st century.

What sets our department apart is our unwavering commitment to producing well-rounded graduates. We firmly believe that academic achievements are just one facet of a successful career. Therefore, our programs are designed not only to impart in-depth knowledge but also to cultivate 21st-century skills. Our graduates stand out in the working world due to their exceptional communication skills, problem-solving abilities, and entrepreneurial mindset. These efforts to produce well-rounded graduates have resulted in Sunway University being awarded Malaysia's No. 1 in graduate employability for two consecutive years. This achievement serves as a testament to our department's dedication to nurturing talent that is not only academically proficient but also industry-ready.

We achieve this by fostering robust partnerships with leading organizations. Through internships, bio-science-targeted career days, and continuous exchanges with various industrial partners, our students gain invaluable practical experience and a deep understanding of the industry's demands.

We warmly welcome you to a department with a vibrant community of faculty members who are passionate about educating the next generation and are research-active in their respective fields. Together, we look forward to guiding our students in exploring the intricacies of life sciences and preparing them for successful and impactful careers in the ever-evolving world of biological science.

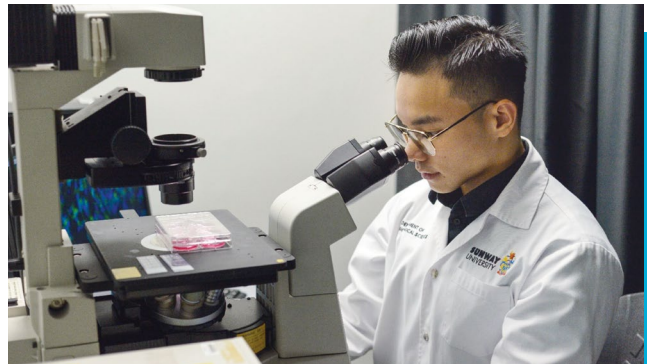
## Real-world applications beyond labs and classrooms



Field trip of Biodiversity students to Gua Damai, Batu Caves.



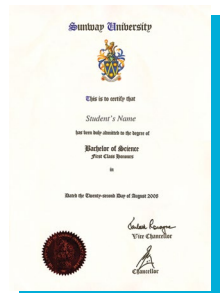
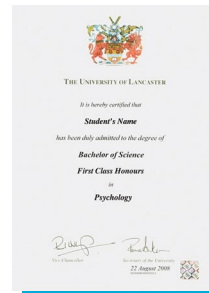
Department of Biological Sciences students undergoing a 5-day Pharma Ready Programme at AstraZeneca



Yong Shin Jie, a Masters of Life Sciences student, and an alumnus of the BSc (Hons) Biology with Psychology programme has been featured in the top 2% scientist by Stanford University in 2023.

Upon successful completion of the programme, graduates are awarded 2 certificates; one from Sunway University and another from Lancaster University.

VALIDATED BY:



# DISTINCTIVE SUNWAY EXPERIENCE

## FACILITIES & LAB

Equipped with state-of-the-art facilities for the best learning experience.

### ■ Precision Microtome

Used to make thin slices of tissue for microscopy observation.

### ■ High Performance Liquid Chromatography

Sophisticated instrument to separate and identify biological components in a mixture.

### ■ Flow cytometry

Analysis of individual cells labelled with fluorescent tags.

### ■ Electroporation system

Introducing foreign genetic material into cells as part of cloning experimental works.

### ■ High resolution gel imaging

To capture high quality agarose and protein gels for visualisation and quantification of biological samples.

### ■ Microscopes fitted with digital cameras

Visualise biological samples by either taking images or capturing cellular activity on video.

### ■ CTL Immunospot S6 Versa

Analysis of a variety of microtitre plate-based bioassays involving bacteria, yeast, stem cell, viral plaques, and tumor colonies.

### ■ Real-Time Quantitative PCR

The most sensitive technique for mRNA detection and quantification. Mostly used for molecular diagnostics and targeted gene expressions.

### ■ Microplate reader

Analysis of biochemical and cell-based assays. Application can be ranging from basic ELISA to high throughput detection such as absorbance, fluorescence and luminescence.

### ■ AKTA Pure Chromatography

A flexible entry system that can be used for a wide variety of fast purification such as peptides, proteins and nucleic acids.

## Future-ready graduates



A career talk by Zuellig Pharma Sdn Bhd on the various career opportunities in the pharmaceutical industry to students of the department. Similar career talks are a regular feature of the Department of Biological Sciences to provide avenues for its students to engage with industrial partners.

## Engagement with the community



To better address SDG 12 Responsible Consumption and Production, Biological Sciences students from School of Medical and Life Sciences, Sunway University organised a charity food compost sale to raise funds. The collection was donated to #BenderaPutih Fund through GivingHub and NGO such as The Lost Food Project.

## Eco-warriors



Student ambassadors from the Department of Biological Sciences conducted a workshop on preparing "Seed Bombs". This hands-on activity conducted during the Sunway Education Open Day encouraged the participants to prepare little balls of seeds encased in food compost and clay that both protects the seeds, and provides nutrition for growth.

## Fostering positive mental health



In line with Health Week 2023, Sunway Biological Society (SBioS) organized a nature walk through Bukit Jalil Recreational Park. With activities such as nature exploring and art sessions, the walk encourages the participant to foster a positive mental health status.



# DISTINCTIVE SUNWAY EXPERIENCE

## ACADEMIC LEADERS

### DEPARTMENT OF BIOLOGICAL SCIENCES ACADEMIC MEMBERS

#### Associate Professor Dr Kavita Reginald

Head - Department of Biological Sciences

##### Immunology

**Research interests:** Allergens and hypersensitivity; Genetics of asthma and atopy; Hypoallergenic vaccines.

#### Associate Professor Dr Felicia Chung Fei Lei

Programme Leader (BSc (Hons) Medical Biotechnology)

##### Cancer cell biology

**Research interests:** Cancer epigenomics and genomics; Etiological factors of urothelial cancers.

#### Associate Professor Dr Yow Yoon Yen

Programme Leader (MSc in Life Sciences)

##### Plant Biology/Ecology

**Research interests:** Application of algae biotechnology in neuroscience; Cosmeceuticals; Anti-microbial and algal biomaterial.

#### Professor Goh Bey Hing

##### Biofunctional Molecules

**Research interests:** Biomedical Science; Pharmacology; Drug Discovery Biology.

#### Associate Professor Dr Hwang Jung Shan

##### Autoimmune diseases

**Research interests:** Pore-forming toxins; Animal toxins; Rheumatoid arthritis; Autoimmune diseases; Autoantibodies.

#### Dr Ravinder Kaur

##### Ecology, Hornbill conservation

**Research interests:** Conservation; Ecology; Science communication; Animal-plant interactions.

#### Dr Lim Hui Xuan

##### Cellular Immunology

**Research interests:** Innate immunity; Adaptive immunity; T cell responses; Activation and differentiation of immune cells; Virus and vaccine research; Immunotherapy for cancer.

#### Professor Abhi Veerakumarasivam

Provost, Sunway University

##### Medical Genetics/Science Communication & Leadership

**Research interests:** Medical genetics; Cancer genetics; Research ethics; Science leadership; Science communication.

#### Associate Professor Dr Chew Jacty

Associate Dean (Education)

##### Infectious diseases/Microbiology

**Research interests:** Bacterial antibiotic resistance; Antibacterial development; Bacterial transmission pathogenesis.

#### Dr Ser Hooi Leng

Programme Leader (BSc (Hons) Biomedicine)

##### Microbiology/Drug discovery

**Research interests:** Microbiome; Bacterial systematics and taxonomy; Bioprospecting and drug discovery from microbes and plants; Multidrug-resistant organisms.

#### Dr Wu Yuan Seng

Programme Leader (PhD in Biology)

##### Molecular Pharmacology/Therapeutics

**Research interests:** Cancer drug discovery and therapeutics; Tumor microenvironment; Dengue infection; Molecular target identification, Nano-targeting and nano-drug delivery; Pharmacogenosy; Neuropharmacology; Metabolic diseases.

#### Professor Rebecca Wong

##### Medical Education

**Research interests:** Medical Education; Stem cells; Cancer research.

#### Associate Professor Dr Ayaz Anwar

##### Chemistry/Infectious diseases

**Research interests:** Cancer cell biology; Epithelial biology (skin biology); Natural product research; Experimental therapeutics (anti-cancer drugs); Gene therapy and virology.

#### Dr Amar Daud Iskandar Abdullah

##### Neuroscience/Brain diseases

**Research interests:** In vitro/in vivo models of neurodegenerative diseases; Traumatic brain injury; Neuroinflammation; Apoptosis; Molecular techniques.

#### Dr Gothai Sivapragasam

##### Cancer Biology

**Research interests:** Colorectal Cancer; Natural Product Research; Neurodegenerative; Disease.

#### Professor Chai Lay Ching

Pro Vice-Chancellor (Education)

##### Food Safety & Microbiology

**Research interests:** Food safety and risk assessment; Food and waterborne microorganisms; Emerging technologies in food quality and safety control.

#### Professor Long Chiau Ming

Associate Dean

(Research and Postgraduate Studies)

##### Clinical Pharmacy/Health Economics

**Research interests:** Health services research; Budget impact analysis; Evidence synthesis.

#### Dr Lau Tze Pheng

Programme Leader (BSc (Hons) Biology with Psychology)

##### Molecular Oncology

**Research interests:** Colorectal cancer; Systemic lupus erythematosus; Molecular diagnostics; Molecular pathology.

#### Professor Lee Learn Han

##### Microbial Genetics

**Research interests:** Multidrug-resistant pathogens; Microbial systematics; Microbiome and bioprospection.

#### Associate Professor Dr Jane Gew Lai Ti

##### Chemistry/Nanotechnology

**Research interests:** Colloid and surface chemistry; Drug delivery; Nanocoating; Green chemistry.

#### Dr Ong Seng Kai

##### Genetics/Molecular Biology

**Research interests:** Cancer genetics; Therapeutic development and discovery for pathogenic microorganisms.

#### Dr Say Yee How

##### Genetics/Nutrition

**Research interests:** Nutrigenetics; Genetic epidemiology; Obesity research; Nutritional behaviour; Neurodegeneration; Neoplasm.

#### Dr Chook Jack Bee

##### Virology/Ethics

**Research interests:** Molecular and medical virology; PCR assay design; Chronic hepatitis B; Data modelling; Ethics.

**#CampusWithAConscience** is an underlying principle that embraces everything you will experience during your time at Sunway Education Group. This is the fundamental spirit at the heart Sunway Campus Life as we educate, encourage, and engage all aspects of our diverse community to adopt a lifestyle and lifestyle habits that truly reflect a society determined to create a better living environment for this generation and generations to come.

This # campaign aims to encourage conscientious efforts of the Sunway campus community in areas such as...

1. The goals of the UN SDGs;
2. Acceptance and tolerance towards each community member of the campus and the wider national and global community;
3. Inclusiveness of all and unity with all;
4. Well-being, both physical and mental;
5. Doing things right for society.

Join our journey as we seek to create a better environment for all, starting with you.

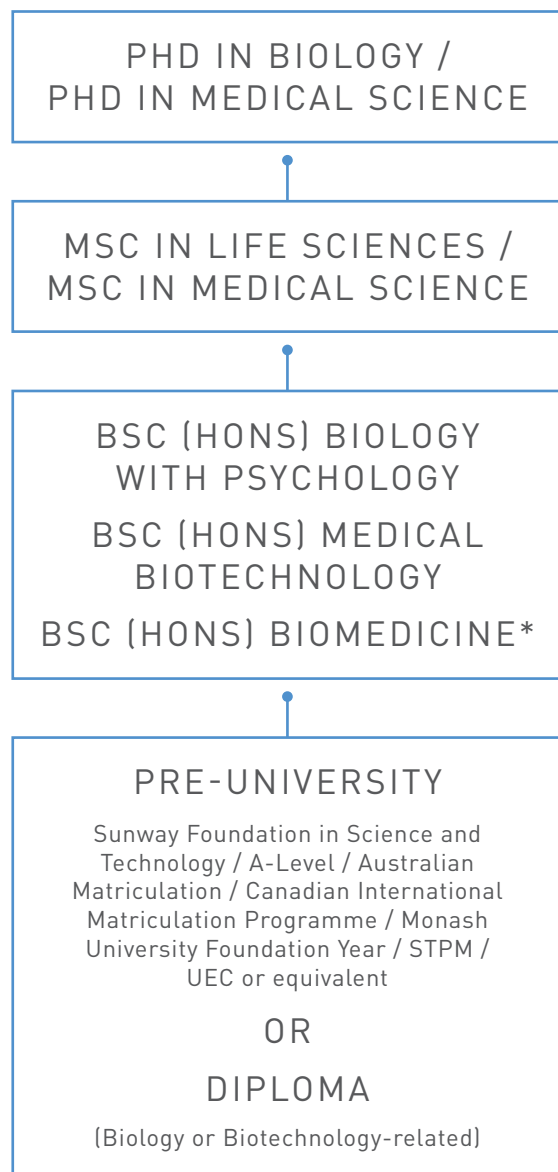
**#MostHappeningCampus** is a vibrant concept to promote a positive sense of inclusiveness whilst also generating a genuine feeling of community spirit. This # campaign has been successful in developing positive energy, togetherness and working as a team towards a common goal. It encompasses all the energy of Sunway life and supports student activities that happen on our campus.

May it be iconic events hosted on campus, unique student activities, academic presentations, or even visits by global personalities that inspire us, **#MostHappeningCampus** expresses our feeling of positive energy and encourages all our community to work together and develop personal attributes and qualities that will support their academic achievements at Sunway.

The most happening part of our campus is YOU.

# DISTINCTIVE SUNWAY EXPERIENCE

## BIOSCIENCES PATHWAYS IN SUNWAY UNIVERSITY



\*Completed 2 science subjects in any Pre-U or  
Diploma (Chemistry, Biology and/or Physics)

One of the best things about a degree in biological sciences is that it lends itself to postgraduate study. Specialising by undertaking a master's degree and Doctor of Philosophy (PhD) is almost a natural step forward to an academic career.

## AREAS OF RESEARCH IN BIOSCIENCES AT SUNWAY UNIVERSITY



### INFECTIOUS DISEASES

- Amoebic diseases
- Viruses (Dengue, HIV-1, HFMD)
- Antibiotic-resistant microorganisms

#### Did you know?

- Dr Jacty has shown that certain bacteria can survive inside amoeba, allowing them to thrive better in the environment<sup>1</sup>.
- Dr Ayaz has identified different drug-based nanoparticles that are capable of killing parasitic amoeba<sup>2</sup>.
- Dr Chook Jack Bee has shown that drinking three cups or more of coffee per day reduces Hepatitis B virus circulating in bloodstream<sup>3</sup>.
- Dr Lim Hui Xuan has been developing new vaccines to fight against Hand Foot and Mouth Disease (HFMD) that is common among young children<sup>4</sup>.



### NON-COMMUNICABLE DISEASES

- Cancer
- Neurodegenerative diseases
- Allergy & hypersensitivity
- Obesity and metabolic disorders

#### Did you know?

- Dr Kavita discovered that Der f 22 protein is a clinically important allergen among dust mite allergic individuals<sup>5</sup>.
- Dr Yow discovered that a specific species of Malaysian brown algae has potential anti-depression effects<sup>6</sup>.
- Dr Ong has developed a method for identifying side-effect free cancer drug targets<sup>7</sup>.
- Dr Felicia Chung showed that epigenetic changes are early events in cancers that may be targeted to induce cancer cell-specific cell death in vitro<sup>8</sup>.
- Dr Amar Abdullah discovered a protein named STING involves in the progression of traumatic brain injury, which could lead to better treatment for brain injuries<sup>9</sup>.
- Prof. Long's team pioneers mobile health (mHealth) and digital health research to enhance patient care<sup>10</sup>.
- Dr Wu Yuan Seng has discovered that curcumin has a potential in fighting against liver cancer<sup>11</sup>.
- Dr Hwang Jung Shan and her team discovered the use of a protein from cnidarian jellyfish to combat various cancer<sup>12</sup>.
- Dr Ser Hooi Leng discovered a new bacteria from Malaysian mangrove soil that can fight against human cancer<sup>13</sup>.
- Dr Lau Tze Pheng has been developing new ways to diagnose colorectal cancer<sup>14</sup>.



Read more about the research areas in our School of Medical and Life Sciences

<https://sunwayuniversity.edu.my/school-of-medical-life-sciences/research>



## BIOFUNCTIONAL MOLECULES & BIOTECHNOLOGY

- Genetic testing to identify candidate genes of complex diseases.
- Discovery of bioactive natural products with medicinal or cosmeceutical properties.

### Did you know?

- Dr Say has found that among Malaysians, gene variants in the dopamine receptor (DRD2) influences eating behaviour<sup>15</sup>.
- Prof Lee discovered a novel bacteria *Streptomyces monashensis* with antioxidant potential<sup>16</sup>.
- Prof Goh identified that seeds of the mahogany tree have anti-pigmentation properties that can be developed into skin-whitening agents<sup>16</sup>.
- Dr Gothai discovered that *Moringa oleifera* (drumstick) leaves have wound-healing properties, due to their antibacterial and antioxidant properties<sup>18</sup>.
- Prof Chai discovered that two fungi species were responsible for green-mold contamination in mushroom farming<sup>19</sup>.



## ENVIRONMENT & SUSTAINABILITY

- Coral symbiosis interaction and heat tolerance of dinoflagellate algae
- Evaluation of environmental pollution levels using microplastics

### Did you know?

- Dr Jane has successfully converted glycerol into diacylglycerol, which is useful in the food industry<sup>20</sup>.
- Dr Chen genetically modified dinoflagellate algae which has the potential to assist coral reefs against bleaching<sup>21</sup>.



## BIODIVERSITY & CONSERVATION

- Hornbill research and conservation

### Did you know?

- Dr Ravinder is a multiple award-winning conservationist, including the latest Star Award 2022, and has an NGO named Gaia dedicated towards research and conversation of wildlife in Malaysia particularly hornbills.



## R&D ECOSYSTEM

- Science integrity
- Science leadership
- Science communication

### Did you know?

- Prof Abhi Veerakumarasivam is a geneticist<sup>22</sup>, award-winning science communicator and promotes science through leadership excellence and integrity<sup>22</sup>.

- <https://doi.org/10.1016/j.exppara.2020.107862>
- <https://doi.org/10.1016/j.exppara.2020.107979>
- <https://doi.org/10.3390/v11090808>
- <https://doi.org/10.1016/j.lfs.2021.120097>
- <https://doi.org/10.1038/s41598-018-30224-z>
- <https://doi.org/10.1016/j.sjbs.2020.04.042>
- <https://www.nature.com/articles/s41598-018-25042-2>
- <https://doi.org/10.3390/cancers14030487>
- <https://doi.org/10.1186/s12974-018-1354-7>
- <https://doi.org/10.2196/19796>
- <https://doi.org/10.33892/Ffphar.2022.820806>
- <https://doi.org/10.7717/peerj.6639>
- <https://doi.org/10.1038/srep24247>
- <https://doi.org/10.1038/srep15671>
- <https://doi.org/10.6133/apjcn.092017.09>
- <https://doi.org/10.1038/s41598-019-39592-6>
- <https://doi.org/10.1016/j.biopha.2023.114659>
- [http://doi.org/10.4103/pm.pm\\_368\\_16](http://doi.org/10.4103/pm.pm_368_16)
- <https://doi.org/10.1111/jam.15327>
- <https://pubs.acs.org/doi/10.1021/acs.iecr.0c00298>
- <https://doi.org/10.7554/eLife.45292.001>
- <https://doi.org/10.1038/s41598-019-50222-z>
- <https://generationt.asia/people/abhi-veerakumarasivam>

# ENTRY REQUIREMENTS

PROGRAMME	ENTRY REQUIREMENTS	SPECIFIC REQUIREMENTS	ENGLISH REQUIREMENTS
<b>BSC (HONS) BIOLOGY WITH PSYCHOLOGY</b>	<b>STPM</b> Average C+ or CGPA 2.33 (Minimum 2 principals)	<b>BSC (HONS) BIOLOGY WITH PSYCHOLOGY, BSC (HONS) MEDICAL BIOTECHNOLOGY</b>  Minimum 3 credits in Mathematics, 1 Science subject and 1 more subject at SPM or Pre-University or its equivalent	<b>IELTS or equivalent</b> 6.0  <b>MUET</b> Band 4  <b>SPM English</b> B3 or B+  <b>UEC English</b> B4  <b>O-Level English (1119)</b> Credit  <b>Sunway Intensive English Programme (IEP)</b> Pass Level 4 with minimum 65%  <b>ESL/English</b> Satisfactory level in Pre-University programmes, where the medium of instruction is English
<b>BSC (HONS) MEDICAL BIOTECHNOLOGY</b>	<b>A-Level</b> Minimum 12 points (Minimum Grade D in at least 2 subjects)		
<b>BSC (HONS) BIOMEDICINE</b>	<p><b>Australian Matriculation</b> ATAR 60</p> <p><b>Canadian International Matriculation Programme</b> 60%</p> <p><b>MUFY</b> 60%</p> <p><b>Sunway Foundation in Science &amp; Technology</b> CGPA 2.30</p> <p><b>UEC</b> Maximum 26 points from 5 subjects (all Grade Bs)</p> <p><b>IB Diploma</b> Completed with minimum 25 points (excluding bonus points)</p> <p><b>Other qualifications</b> Any other qualifications will be considered on a case-to-case basis</p>		
		<p><b>BSC (HONS) BIOMEDICINE</b></p> <p><b>STPM/Pre-University</b> 2 principals in two of the following subjects at STPM/Pre-University/Matriculation level in: Biology, Physics/Mathematics or Chemistry</p> <p><b>A-Level</b> Minimum Grade D in two of the following subjects: Biology, Physics / Mathematics and Chemistry</p> <p><b>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</b></p>	

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

Note: The credit requirement at SPM level can be waived should the grades obtained at the Pre-University level be equivalent or higher.

## INTAKES

- JANUARY
- APRIL
- SEPTEMBER

## DURATION

3 YEARS





# BSC (HONS) BIOLOGY WITH PSYCHOLOGY

## PROGRAMME INTRODUCTION

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.

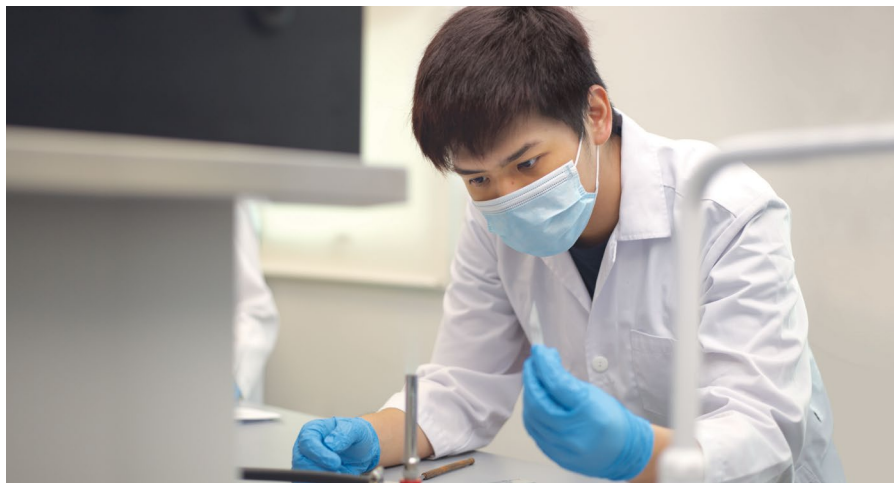
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## PROGRAMME STRUCTURE - Subjects

Year 1	Year 3
<ul style="list-style-type: none"> <li>■ Cell Biology</li> <li>■ Communication Skills</li> <li>■ English for Life Sciences</li> <li>■ Human Anatomy</li> <li>■ Human Physiology</li> <li>■ Impact of Microbes on Human Life</li> <li>■ Introduction to Psychology</li> <li>■ Principles of Genetics</li> <li>■ Research Methodology in Psychology 1</li> </ul>	<ul style="list-style-type: none"> <li>■ Immunology</li> <li>■ Internship</li> <li>■ Neurobiology</li> <li>■ Personality Psychology</li> <li>■ Psychological Testing</li> <li>■ Research Project</li> <li>■ Social Psychology</li> <li>■ Free Elective I</li> </ul>
Year 2	
<ul style="list-style-type: none"> <li>■ Abnormal Psychology</li> <li>■ Biochemistry</li> <li>■ Biological Psychology</li> <li>■ Cognitive Psychology</li> <li>■ Community Service for Planetary Health</li> <li>■ Developmental Psychology</li> <li>■ Entrepreneurial Mindset &amp; Skills</li> <li>■ Integrity &amp; Anti-Corruption</li> <li>■ Research &amp; Publications</li> </ul>	
	<p><b>Year 2 and Year 3 Electives (Choose 3)</b></p> <ul style="list-style-type: none"> <li>■ Biodiversity</li> <li>■ Bioinformatics</li> <li>■ Human Molecular Genetics</li> <li>■ Medical Microbiology</li> <li>■ Pharmacology and Toxicology</li> </ul> <p><b>MOHE COMPULSORY GENERAL STUDIES SUBJECTS</b></p> <p><b>For Local students:</b></p> <ul style="list-style-type: none"> <li>■ Appreciation of Ethics &amp; Civilisation</li> <li>■ Philosophy &amp; Current Issues</li> <li>■ Bahasa Kebangsaan A <i>(Applicable to students who did not sit for SPM or did not obtain a Credit in SPM Bahasa Melayu) OR</i></li> <li>■ Critical Thinking</li> </ul> <p><b>For International students:</b></p> <ul style="list-style-type: none"> <li>■ Appreciation of Ethics &amp; Civilisation</li> <li>■ Critical Thinking</li> <li>■ Malay Language for Communication 2</li> </ul>

Free electives are courses offered university-wide. Students are encouraged to take the electives offered by other schools and departments.



# BSC (HONS) MEDICAL BIOTECHNOLOGY

## PROGRAMME INTRODUCTION

Medical Biotechnology is the study and use of living cells and organisms to develop products, techniques, or devices for medical and healthcare applications. The world of medicine has been revolutionized by numerous applications of medical biotechnology, such as the production of synthetic insulin for diabetes treatment, the creation of non-invasive capsules for assessing gastrointestinal conditions, and the invention of vaccines.

The BSc (Hons) Medical Biotechnology curriculum is updated to include the latest advances in Biotechnology, delivered by research-active faculty members. Students are also taught practical laboratory techniques, foundations of scientific research, and critical thinking and communication skills. These skills help them navigate the dynamic and thrilling world of medical biotechnology.

VALIDATED BY:



## PROGRAMME STRUCTURE - Subjects

### Year 1

- Basic Biostatistics
- Cell Biology
- Clinical Chemistry
- Communication Skills
- English for Life Sciences
- Human Anatomy
- Human Physiology
- Impact of Microbes on Human Life
- Introduction to Organic Chemistry
- Principles of Genetics

### Year 2

- Biochemistry
- Bioinformatics
- Community Service for Planetary Health
- Entrepreneurial Mindset and Skills
- Epidemiology & Public Health
- Human Molecular Genetics
- Instrumental Analysis
- Integrity & Anti-Corruption
- Pharmacology and Toxicology
- Medical Microbiology
- Research & Publications
- Free Elective I
- Free Elective II

### Year 3

- Immunology
- Internship
- Research Project

### Electives (Choose 3)

- Biodiversity
- Current Topics in Biomedical Science
- Pharmaceutical Technology
- Molecular Diagnostics
- Neurobiology

### MOHE COMPULSORY GENERAL STUDIES SUBJECTS

#### For Local students:

- Appreciation of Ethics & Civilisation
- Philosophy & Current Issues
- Bahasa Kebangsaan A  
*(Applicable to students who did not sit for SPM or did not obtain a Credit in SPM Bahasa Melayu) OR*  
Critical Thinking

#### For International students:

- Appreciation of Ethics & Civilisation
- Critical Thinking
- Malay Language for Communication 2

Free electives are courses offered university-wide. Students are encouraged to take the electives offered by other schools and departments.



# BSC (HONS) BIOMEDICINE

## PROGRAMME INTRODUCTION

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.

VALIDATED BY:



## PROGRAMME STRUCTURE - Subjects

Year 1	Year 3
<ul style="list-style-type: none"> <li>■ Basic Biochemistry</li> <li>■ Basic Biostatistics</li> <li>■ Basic Genetics</li> <li>■ Cell Biology</li> <li>■ Clinical Chemistry</li> <li>■ Communication Skills</li> <li>■ English for Life Sciences</li> <li>■ Ethics in Healthcare Science</li> <li>■ General Microbiology</li> <li>■ Human Anatomy</li> <li>■ Human Physiology</li> </ul>	<ul style="list-style-type: none"> <li>■ Clinical Biochemistry Practice</li> <li>■ Haematology &amp; Transfusion Science</li> <li>■ Histology &amp; Cytology</li> <li>■ Immunology</li> <li>■ Molecular Diagnostics</li> <li>■ Internship</li> <li>■ Neurobiology</li> <li>■ Parasitology &amp; Virology</li> <li>■ Research Project</li> </ul>
Year 2	
<ul style="list-style-type: none"> <li>■ Bioinformatics</li> <li>■ Community Service for Planetary Health</li> <li>■ Entrepreneurial Mindset &amp; Skills</li> <li>■ Epidemiology &amp; Public Health</li> <li>■ Human Molecular Genetics</li> <li>■ Integrity &amp; Anti-Corruption</li> <li>■ Medical Biochemistry</li> <li>■ Medical Microbiology</li> <li>■ Pathology</li> <li>■ Pharmacology &amp; Toxicology</li> <li>■ Research &amp; Publications</li> </ul>	<p><b>Electives (Choose 1)</b></p> <ul style="list-style-type: none"> <li>■ Current Topics in Biomedical Science</li> <li>■ Pharmaceutical Technology</li> </ul> <p><b>MOHE COMPULSORY GENERAL STUDIES SUBJECTS</b></p> <p><b>For Local students:</b></p> <ul style="list-style-type: none"> <li>■ Appreciation of Ethics &amp; Civilisation</li> <li>■ Philosophy &amp; Current Issues</li> <li>■ Bahasa Kebangsaan A <i>(Applicable to students who did not sit for SPM or did not obtain a Credit in SPM Bahasa Melayu) OR</i> Critical Thinking</li> </ul> <p><b>For International students:</b></p> <ul style="list-style-type: none"> <li>■ Appreciation of Ethics &amp; Civilisation</li> <li>■ Critical Thinking</li> <li>■ Malay Language for Communication 2</li> </ul>
<p><b>Electives (Choose 1)</b></p> <ul style="list-style-type: none"> <li>■ Instrumental Analysis</li> <li>■ Medical Entomology</li> </ul>	





# BRINGING YOU FURTHER

## INTERNSHIP COMPANIES & COMPANIES OUR GRADUATES WENT TO

### Biotechnology

#### (Pharmaceutical, Diagnostic lab, medical supply and services, scientific supply)

- Abbott Labs
- Absolute Genetic Technologies
- Acumen Scientific Sdn. Bhd.
- Advance Genomics Sdn. Bhd.
- Agilent Technologies LDA (M) Sdn. Bhd.
- AGTC Genomics Sdn. Bhd.
- AHS Laboratories Supplies
- AJ Pharma Holding Sdn. Bhd.
- Alpha Fertility Centre
- ALS Technichem (M) Sdn. Bhd.
- Asia Assistance
- AstraZeneca Sdn. Bhd.
- Attest Research Sdn. Bhd.
- Asia Pacific Special Nutrients Sdn. Bhd.
- Boehringer Ingelheim Malaysia
- Biocon Sdn. Bhd.
- Biolife Lab Sdn. Bhd.
- Biomarketing Services Sdn. Bhd.
- Bionexus Gene Lab Sdn. Bhd.
- Biovalence Sdn. Bhd.
- CellSafe International Sdn. Bhd.
- Chemvi Laboratory Sdn. Bhd.
- Codon Genomics Sdn. Bhd.
- Compesti Sdn. Bhd.
- Cryocord Sdn. Bhd.
- Ecolab Malaysia Sdn. Bhd.
- Eppendorf Asia-Pacific Sdn. Bhd.
- ECRI Berhad
- Fisher Scientific (M) Sdn. Bhd.
- Gribbles Pathology
- IKA Works Sdn. Bhd.
- Interscience Sdn. Bhd.
- IQVIA (Formerly known as QuintilesIMS)
- Klinsel Sdn. Bhd.
- Medi-Life (M) Sdn. Bhd.
- Metro IVF Fertility Center
- Myco Medic Sdn. Bhd.
- Mygenome Sdn. Bhd.
- Neogenix Laboratoire Sdn. Bhd.
- Next Gene Scientific Sdn. Bhd.
- Peerhealth Malaysia
- Roche (Malaysia) Sdn. Bhd.
- SG Global Biotech Sdn. Bhd.
- Speedy Assay Sdn. Bhd.
- SuperDNA Sdn. Bhd.

- TeleMe Technologies Sdn. Bhd.
- Venn Biosciences Sdn. Bhd.
- Vision Diagnostic Centre
- Vivantis Technologies Sdn. Bhd.

### Education & Research (Including research institution)

- Burnet Institute, Australia
- Center for Drug Research, USM
- Clinical Research Malaysia
- EcoKnights
- Food and Drug Authority, Maldives
- Galen Centre for Health and Social Policy
- Malaysia Genome Institute
- Malaysian Biotechnology Information Centre (MABIC)
- Monash University Malaysia
- Nepal Health Research Council
- RIMBA
- Sunway Lagoon Wildlife Park
- University of Bristol
- University of Hong Kong
- University of Malaya
- University of Manchester

### Hospital

- Beacon International Specialist Centre
- Biolife Lab Sdn. Bhd.
- CMH Specialist Hospital
- Dawn Diagnostic Laboratory, Zambia
- Gribbles Pathology (M) Sdn. Bhd.
- Jerudong Park Medical Centre, Brunei
- Jesselton Medical Centre
- Pantai Premier Pathology
- Pathlab (Pathology & Clinical Laboratory Sdn. Bhd.)
- Prima Lab Sdn. Bhd.
- Subang Jaya Medical Centre
- Sunway Medical Centre
- Treetop Health Pvt. Ltd., Maldives



**Sunway University**  
awarded #1 in  
Graduate Employability

## CAREER PROSPECTS

- Academia
- Academia (specialist educators)
- Clinical research scientist
- Entrepreneurs and marketing professionals
- Food industries (new food manufacturing processes, probiotics formulation)
- Forensics (DNA fingerprinting, paternity identification)
- Healthcare research (research officer in CRO, therapeutic medicines, innovation of diagnostic detection kits)
- Insurance industry (insurance product development)
- Medical and scientific product specialist
- Patent law (intellectual property consultants, regulatory affairs specialists)
- Pharmaceutical industries (quality assurance personnel, product specialists, bioprocessing and biomanufacturing executives)
- Pharmaceutical research and development
- Writer (scientific writer, novelist)

## MOBILITY & STUDY ABROAD

PROGRAMME	MOBILITY OPTIONS			
	Lancaster University			Korean Summer/Winter programme
	Summer programme	Study abroad	1+2 articulation	
DURATION	3 weeks	1 semester (during year 2)	2 years	2 weeks
Biology with Psychology	✓	✓	✓	✓
Medical Biotechnology	✓	✓	✓	✓
Biomedicine	✓	✓	✓	✓

For more information about Lancaster mobility options, visit <https://sunwayuniversity.edu.my/sunway-university-lancaster-university>

WHERE ARE OUR GRADUATES NOW?



**LYDIA ESRA ATAK  
BINTI HIKMET ATAK  
BSC (HONS) MEDICAL  
BIOTECHNOLOGY**

Company:  
Boehringer Ingelheim

Position:  
Medical Science  
Liaison



**JACQUELINE  
TUNG YEE CHIEN  
BSC (HONS)  
BIOMEDICINE**

Company:  
ICON plc

Position:  
Site Management  
Associate



**MUHAMMAD  
ESMIRRAFIL HELMI BIN  
SHAHABUDIN HELMI  
BSC (HONS) MEDICAL  
BIOTECHNOLOGY**

Company:  
Belfast Health & Social  
Care Trust (BHSCT) in the  
Royal Victoria Hospital,  
Belfast, Northern Ireland

Position:  
Medical Laboratory  
Assistant



**FOO PAO JIA  
BSC (HONS) BIOLOGY  
WITH PSYCHOLOGY**

Company:  
Boehringer Ingelheim


Position:  
Medical Sales  
Representative



**ETHAN  
YEOH ZHEN HSIEN  
BSC (HONS) MEDICAL  
BIOTECHNOLOGY**

Company:  
NextGene Scientific  
Sdn Bhd


Position:  
Product Manager



**RAAHILAH ZAHIR  
ESSA  
BSC (HONS)  
BIOMEDICINE**

PhD student at  
Sunway University

Research area:  
Nasopharyngeal  
carcinoma



**ARJUN A/L  
THANARAJU  
BSC (HONS) BIOLOGY  
WITH PSYCHOLOGY**

PhD student at  
Sunway University

Research area:  
Socioeconomic status  
and brain ageing



**HO KEAT YIE  
BSC (HONS)  
BIOMEDICINE**

Company:  
Sunway Medical  
Centre

Position:  
Medical Lab  
Scientist



# STUDENTS' ACHIEVEMENTS & ACTIVITIES



## Student Achievement

Soo Teik Yuan, a Medical Biotechnology student, and his group won third place in Fuel Asia 2022 among over 400 participants. Fuel Asia 2022 is a 9-day innovation challenge aiming to create new healthcare solutions to tackle non-communicable diseases.



## Student Achievement

BSc (Hons) Biomedicine student, Mazen Wardany received the Conference Facilitator's Choice Prize at the Lancaster University Undergraduate Research Conference 2022. His research title is "Investigating new anti-amoebic agents to treat amoebic infections by combining Fluconazole with graphene oxide."



## School of Medical & Life Sciences Industry Networking (iNET) Series 2023

The iNET series was designed to address our students' concerns about their futures and the state of industry, and to provide them with insights into the dynamic and thriving bioscience industry within Malaysia. It is a unique platform to connect with leading field experts in the industry.

iNET 2023 (19th & 20th October 2023) was launched with a session exploring how AI is impacting the job market, and navigating employment in the post-ChatGPT era. An expert panel discussion on 'Rethinking Career Growth and Development in the Era of Artificial Intelligence' saw participants interacting with expert panellists from Bioeconomy Corporation, the lead development agency for the bio-based industry in Malaysia, and pharmaceutical giants Roche Services and Solutions and AstraZeneca Sdn Bhd. The panellists spoke of the various opportunities awaiting graduates in the biosciences field, the skills they need to hone before graduation, and their views on AI's impact on the industry.

At the Industry Meet & Mingle session, students, faculty, and other industry stakeholders mingled and shared on opportunities for employment, internship, and collaboration. A career talk by Zuellig Pharma Sdn Bhd representatives, which touched on the various open doors within the company for graduates of the biological and life sciences, wrapped up the event.



## Celebrating Success: A Triumph in Science Communication

In an era defined by rapid technological advancements and complex global challenges, effective science communication has never been more crucial. It serves as the bridge that connects scientific discovery with the wider public, fostering understanding and engagement.



In June 2023, the Departments of Biological Sciences and Psychology jointly organized the inaugural ScienceBites competition for undergraduate students at the School of Medical and Life Sciences. The audience witnessed outstanding presentations that showcased groundbreaking research, innovative ideas, and a profound understanding of various scientific disciplines.

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UNIVERSITY



A CLASS ABOVE

**MALAYSIA'S**

# **1** *Again*

**IN GRADUATE  
EMPLOYABILITY**

**2022 & 2023**

Sunway University is honoured to be recognised as Malaysia's No. 1 in Graduate Employability\* for the 2<sup>nd</sup> consecutive year and would like to thank all the local & international brands who selected graduates from Sunway University as the nation's best for 2022 and once again in 2023.

We are immensely proud of our graduates who have gone on to excel in their chosen fields and made such a huge positive impact to the performances of Malaysia's and some of the world's biggest companies.

**Sunway University Graduates, Truly A CLASS ABOVE.**



[sunwayuniversity.edu.my](http://sunwayuniversity.edu.my)



**SUNWAY UNIVERSITY** DU 025 (B) A member of Sunway Education Group No.5, Jalan Universiti, Bandar Sunway, 47500 Selangor Darul Ehsan.

\*Talentbank GE Index 2023