



**TAYLOR'S
UNIVERSITY**
Wisdom · Integrity · Excellence

**SCHOOL OF
BIOSCIENCES**



MASTER OF SCIENCE

2014



Taylor's University

Since 1969, Taylor's University has been committed to developing the nation's youth into well-rounded and competitive contributors with global perspectives for the nation's economic growth and prosperity. Today, we are one of Malaysia's most successful and reputable private education institutions of higher learning with over 65,000 graduates – many of whom have moved on to become leaders in their chosen field.

Taylor's University offers a myriad of foundation, diploma, undergraduate, postgraduate and professional programmes that adhere to the highest standards. Students can enroll in courses encompassing fields, such as Architecture, Computer Science, Design, Engineering, Quantity Surveying, Biosciences, Law, Business, Communications, Hospitality, Tourism & Culinary Arts, Medicine and Pharmacy. These programmes are benchmarked against and conducted in collaboration with top-rated partner universities.

We pride ourselves in delivering a holistic education that leads to excellent academic accomplishments and produces graduates with qualities that are highly sought after in the global marketplace.



Taylor's School of Biosciences

Taylor's School of Biosciences is committed to providing a stimulating and supportive learning environment for our students.

Our mission is to strategically focus on the latest cutting-edge biosciences research and bring the research into our classrooms to train, educate and transform students to be innovative and creative in science — always striving for in-depth research studies; and most importantly to create innovative scientific solutions for the global marketplace and betterment of the world's living environment.

We provide the opportunities for students to explore important disciplines in the field of life sciences, namely biomedical science, biotechnology and food science & nutrition. These will provide key knowledge, information and concepts that future scientists must master.

We are proud of our faculty members, who are highly regarded for their innovative teaching, pioneering research and dedication to student development.

From developing natural remedies for the treatment of illnesses to environmental health, their diverse, yet complementary research interests and expertise create a vibrant research and development culture in the School.

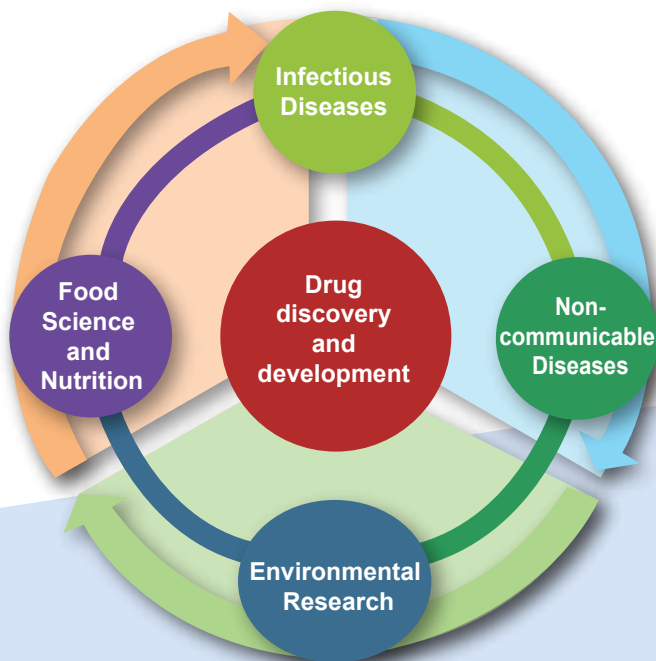
They actively share their research at local and international conferences, publish their work in respected journals and attract substantial grants to further their discoveries. By constantly upgrading their expertise in the biosciences, our academicians are able to enrich classroom learning by transferring their body of knowledge and skills to students, who are the next generation of leaders in the biosciences industry.

Students in our School enjoy many opportunities to engage in cutting edge research. To facilitate their learning, we have invested in a range of modern infrastructures and equipments.

Master of Science (MSc)

KPT/JPS (N/400/7/0003) 12/15

Research in the School of Biosciences encompasses four broad themes and is supported by a core group of researchers in bioactive compounds (Drug Discovery & Development Team):



Research Clusters

• *Infectious Diseases*

The rich biodiversity of Malaysia enables the discovery of novel compounds to fight infectious diseases. At Taylor's University, the identified natural compounds will be examined for their bioactive properties as well as their mode of action. In addition to the antimicrobial research, the host-pathogen interaction research is focused to understand the disease manifestation in host cells.

• *Non-communicable Diseases*

Diet, smoking, alcohol consumption, a sedentary lifestyle and stress have contributed to greater incidences of heart disease, respiratory disease, diabetes and cancer, among others. Available drugs for these diseases are often accompanied by undesirable side effects, not selective enough or simply too expensive. Hence, this cluster targets the discovery of novel lead compounds and to scientifically validate natural remedies for lifestyle-related chronic diseases

• *Environmental Research*

Research conducted in this cluster focuses in bioremediation, taxonomic identification of marine flora and to facilitate the development of mechanisms or processes that are in compliance with environmental laws. It will target improvement in resources savings, waste disposal and resolving environmental stress issues. In addition, researchers in this cluster also provide consultation and training in environmental management systems

• *Food Science and Nutrition*

The broader aim of research in this cluster is to study the fundamentals and applied aspects of new functional foods, medical foods and nutraceuticals as well as new technologies that facilitate development of novel consumer products that enhance human health, food safety and functionality.

These areas are important because they address pertinent issues in human health and sustainability. Current work emphasises fundamental research activities that will allow a better understanding of cancer, infectious diseases and lifestyle diseases via the use of molecular and cellular biology techniques. This will be complemented with research in bioactive natural products, particularly for medicinal and nutraceutical uses to treat and prevent diseases. Ultimately, the main goal is to improve human health and identify affordable alternative therapies. Environmental research will focus on developing mechanisms to save energy resources and use biological indicators to monitor and detect the source of microbial contaminants in our water and food systems.

Programme Structure

	Minimum period	Maximum period
Full-time	1 year (12 months)	4 years (48 months)
Part-time	2 years (24 months)	6 years (72 months)

Research Methodology

Students are required to pass the module, Scientific Research Practices and Entrepreneurship in the first year of their candidature.

Conversion to PhD Candidacy

Students may elect to convert their MSc programme to the PhD programme after one year of study. Candidates must demonstrate outstanding work such as publications or creation of intellectual property which extends existing boundary of knowledge.

Steps to apply for admission

Step 1 Check your qualifications for admission

Step 2 Identify your potential supervisor

Step 3 Refine your research proposal

Step 4 Submit your application



Admission

Entry Requirements

- A Bachelor's degree in Science with minimum of CGPA 2.75 with research project component in related field or 2 years working experience in Science related industry **OR**
- A Bachelor's degree with CGPA between 2.50 to 2.75, candidates will be subject to rigorous internal assessment **OR**
- Any other equivalent qualification recognised by the Malaysian Government or accepted by the Taylor's University Senate **AND**
- Any of condition of the above would require student's research proposal to be approved by School Postgraduate Committee

English Requirements

You must include supporting evidence of your English language proficiency if your first language is not English, or if your undergraduate degree was not taught entirely in the English language. The supporting evidence can be fulfilled in one of the following forms base on the approved English requirement by Taylor's University Senate.

- International English Language Test (IELTS)
- Test of English as a Foreign Language (TOEFL)
- Malaysian University English Test (MUET)
- Taylor's Intensive English Programme
- Taylor's English Entrance Test (EET)

Note:

Incomplete application forms will not be processed by the Taylor's Graduate School and applications received are first processed at Taylor's Graduate School to ensure proper documentation before forwarding to the respective Schools (Postgraduate Committee) for approval. This approval stage includes the assignment of supervisors to the applicant if the application is successful. Finally, Taylor's Graduate School would issue offer or rejection letter to the applicant.

Researchers Profile



Dean

Dr. Anthony Ho Siong Hock

PhD, Universiti Putra Malaysia

Email: anthony.ho@taylors.edu.my

Research Focus:

Mechanisms of action of bioactive natural products in combating diseases and development of new bioassays for drug screening



Professor in Food Science

Dr. Kailasapathy Kasipathy

PhD, Pennsylvania State University
MBA, University of Western Sydney

Email: kailasapathy.kasipathy@taylors.edu.my

Research Focus:

Probiotic bacteria and prebiotic substances to enhance health of consumers using innovative bioencapsulation techniques and new product development



Deputy Dean

Dr. Lai How Yee

PhD, Monash University

Email: howyee.lai@taylors.edu.my

Research Focus:

Bioactivity & chemical characterization of bioactive compounds from plants for pharmaceutical, nutraceutical or cosmeceutical potential



Senior Lecturer

Dr. Kambiz Shamsi

PhD, RMIT University

Email: kambiz.shamsi@taylors.edu.my

Research Focus:

Enhancing the nutritional value of yoghurt by incorporating antioxidants from mangosteen fruit



Associate Dean

(Research & Development)

Dr. Phelim Yong Voon Chen

PhD, Universiti Putra Malaysia

Email: phelim.yong@taylors.edu.my

Research Focus:

Host pathogen interaction research, molecular fungal pathogenesis and development of antifungal drugs



Senior Lecturer

Dr. Looi Mee Lee

PhD, Universiti Kebangsaan Malaysia

Email: meelee.looi@taylors.edu.my

Research Focus:

Cancer biomarker discovery by proteomics approach, molecular mechanisms of anticancer activity of natural products; pharmacogenomics and personalized medicine.



Programme Director

Dr. Wong Ching Lee

PhD, Universiti Malaya

Email: chinglee.wong@taylors.edu.my

Research Focus:

Marine seaweeds research



Senior Lecturer, Postgraduate Coordinator

Dr. Tam Sheh May

PhD, University of Cambridge

Email: shehmay.tam@taylors.edu.my

Research Focus:

Evolutionary genetics, tomato genetics, plant biotechnology, molecular phylogenetics and biodiversity of wild species.



Lecturer

Dr. Lee Khai Wooi

PhD, Universiti Putra Malaysia

Email: khaiwooi.lee@taylors.edu.my

Research Focus:

Nanoparticles & virus-like particles as gene & drug delivery vehicles into cells; peptide display and characterization; diagnostic kit & vaccine development for infectious diseases



Lecturer

Dr. Adeline Chia Yoke Yin

PhD, Monash University

Email: yokeyin.chia@taylors.edu.my

Research Focus:

Nutritional biochemistry in relation to female reproductive system, endocrinology focusing towards metabolic syndrome and insulin resistance from the epidemic of diabetes.



Lecturer

Dr. Ng Jeck Fei

PhD, National University of Singapore

Email: jeckfei.ng@taylors.edu.my

Research Focus:

Biocatalysis, immobilization, recombinant whole cell, biomaterial synthesis, microreactor.



Lecturer

Dr. Jee Jap Meng

PhD, Universiti Putra Malaysia

Email: japmeng.jee@taylors.edu.my

Research Focus:

Isolation and preservation of microorganism, screening of bioactive compounds and enzymes



Lecturer

Dr. Yan See Wan

PhD, Universiti Putra Malaysia

Email: seewan.yan@taylors.edu.my

Research Focus:

Cancer chemopreventive potential of novel natural products with nutritional composition, antioxidant and phytochemical properties

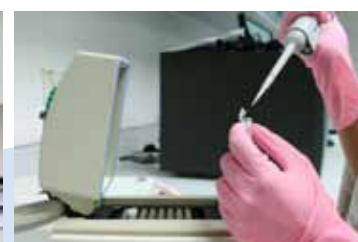
Facilities Suites for Biosciences

The study of biosciences requires a range of facilities so that students can engage in hands-on training and cutting-edge research. From modern lecture theaters to computer laboratories with the latest hardware and software to specialised high-tech laboratories, Taylor's School of Biosciences is equipped with world-class teaching and research facilities. We ensure our students and faculty members have access to up-to-date equipments that inspire them to learn, teach and conduct groundbreaking research in biosciences.

Proteomics and Genomics Laboratory

Function:

Students will be able to explore biological processes at the molecular level, such as translation and transcription of genetic material that influence cell differentiation, motility, viral infections and microbial infectivity and susceptibility to drugs. The facilities allow research and experiments using tools of bioinformatics, molecular cloning and protein expression to aid discovery of new products ranging from drugs for vaccines and molecular diagnostic kits to novel bacterial species for bio-mining.



Well equipped Proteomics and Genomics laboratory

Natural Products Laboratory

Function:

Students will learn to apply basic and advanced techniques in extraction and separation of natural products and elucidate chemical structures from spectroscopic data. This laboratory complements other core facilities to enable research on bio-active compounds, for example, anti-microbials, anti-virals and anti-tumour agents.

Tissue Culture & Bio-imaging Facility

Function:

The core of this facility is the tissue culture room that houses the biohazard laminar flow and incubator for the maintenance of human cell lines used for teaching and research. Students will also learn imaging of cell morphology and quantification of cellular markers using advanced microscopy equipment.



Tissue-culture facility which houses laminar air flow hood, biohazard laminar flow and inverted microscope



Students performing an experiment with Spirometer

Students working with Organ Bath

Physiology and Pharmacology Laboratory

Function:

The Physiology laboratory helps students investigate the human body system using real and simulated experiments. The PowerLab data acquisition system is a powerful computer simulation system which offers versatile data acquisition and analysis solutions. One of the key features in the Pharmacology laboratory is the tissue/organ bath set-up. With this system, drugs can be tested for effects on isolated strips of tissue which will allow investigation of mechanisms of activity in physiologically relevant experiments.

Microbiology Laboratory

Function:

The Microbiology laboratory houses all the resources needed for study of microorganisms. It is well equipped to identify unknown microorganisms and houses various assays to test anti-microbial potency, water and food microbial qualities and various other microbiological related tests. This laboratory supports research in environmental health, food safety, infectious diseases and drug discovery.



Student performing microbiological work in laminar air flow hood

Food Analysis Facility

Function:

This facility allows student to investigate principles of food chemistry. Measurements of subtle differences in moisture, acidity, refractive index, caloric content and viscosity of food samples are possible in this facility. We emphasise the importance of measuring the quality of food objectively using a wide-range of laboratory techniques.



Electronic Moisture Analyser at Food Analysis Facility

Chemical Analysis Facility

Function:

The Chemical Analysis Facility is outfitted with state-of-the-art instrumentation operated and maintained by qualified personnel. The facility provides routine chemical and biological sample analysis as well as training of undergraduates and postgraduates students and, is open to collaborative research. Analyses of chemical and biological samples are performed utilising a variety of sample introduction, separation, and ionisation techniques.



Students performing their research activity in the Chemical Analysis Facility



HPLC System in the Chemical Analysis Facility



GC System in the Chemical Analysis Facility



Taylor's Graduate School

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www.taylors.edu.my

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