Medical Biotechnology

Cell therapy, personalised medicine, regenerative medicine, drug discovery, clinical diagnostics, genetic engineering – do these terms excite you? Do you want to be involved in the research and development that leads to new biological discoveries for improving healthcare and our everyday life? Or do you want to play a part in assisting medical doctors' diagnosis through performing a range of laboratory tests to help identify diseases? If your answer is yes, this course is for you.

The future of medicine relies on biotechnology. Demand for more sensitive and earlier detection tests will continue to fuel the biotechnology industry. This course provides detailed knowledge of key concepts in cell technology, molecular analysis, microbiology technology, biochemical analysis, clinical diagnostics, and how these approaches are applied in areas relevant to medical applications such as restoring functions of tissues or organs that are injured or diseased, using stem cells to treat diseases, developing customised treatment to individual patient, performing tests to assist medical doctors' diagnosis, etc.

Not only does this course equip you with broad theoretical knowledge and critical understanding of principles in biotechnology and clinical diagnostics, but it also helps you to gain the practical skills required to underpin a career within a research or clinical environment. You will also be exposed to new emerging technologies, such as stem cell therapy, point-of-care diagnostic testing, and personalised medicine research that would transform medicine and revolutionise the healthcare system.

After developing a solid foundation in biotechnology and clinical diagnostics in the first three semesters, you will choose one of the two diploma options in the 4th semester. The Personalised Medicine Research option mainly trains you to be research and production technologists in research institutes and biotechnology companies. The Medical Laboratory Technology option mainly trains you to be clinical technologists working in hospital clinical laboratories.

The elective subjects that you will take in the third year will allow you greater specialisation in your selected field, especially in the areas of translational medical research or clinical laboratory practice. To further hone your technical skills, you will undergo a six-month attachment either locally or overseas in the clinical laboratories, or biotechnology and biomedical industries.

Career Opportunities

Our graduates have found work in research institutions (both A*STAR and non-A*STAR), universities, hospitals, biotechnology companies and also government ministries and statutory boards. You may also work as a medical laboratory technologist at hospitals, clinical research technologist assisting in pre-clinical trials at contract research organisations, or in laboratory operations and maintenance at research and teaching institutions. Your solid broad-based training will also enable you to be employed as a marketing or product specialist for life sciences instruments and products. The laboratory skills and knowledge gained by our graduates are applicable worldwide.

Graduation Requirements

Cumulative Grade Point Average : min 1.0
TP Fundamentals Subjects : 40 credit units
Diploma Subjects
Core Subjects : 71 credit units
Elective Subjects : min 9 credit units
Total Credit Units Completed : min 120 credit units

Application

Apply during the Joint Admissions Exercise following the release of the GCE O Level results. For other categories of local applicants, please refer to the section on “Admission and Requirements”. For international students, please refer to the section on “Information for International Students”.

Entry Requirements for Singapore-Cambridge GCE O Level Qualification Holders

To be eligible for consideration for admission, applicants must obtain 26 points or better for the net ELR2B2 aggregate score (i.e. English Language, 2 relevant subjects and best 2 other subjects, including CCA Bonus Points) and meet the minimum entry requirements of this course. CCA cannot be used to meet the minimum entry requirements.

For details on GCE O Level Minimum Entry Requirements, refer to page 6.

Course Structure

TP FUNDAMENTALS (TPFun) SUBJECTS			
SUBJECT CODE	SUBJECT	LEVEL	CREDIT UNITS
ACS1005	Communication & Information Literacy (IComm)	1	2
ACS1006	Workplace Communication (WkComm)	1	2
ACS1007	Persuasive Communication (PComm)	1	2
AGS1002	Global Studies	1	3
AGS1003	Managing Diversity at Work*	1	3
AGS1004	Global Citizenship & Community Development*	1	3
AGS1005	Expressions of Culture*	1	3
AIN1001	Innovation & Entrepreneurship	1	2
GCC1001	Current Issues & Critical Thinking	1	2
LEA1011	Leadership: Essential Attributes & Practice 1	1	1
LEA1012	Leadership: Essential Attributes & Practice 2	1	1
LEA1013	Leadership: Essential Attributes & Practice 3	1	1
LSW1002	Sports & Wellness	1	2
MCR1001	Career Readiness 1	1	1
MCR1002	Career Readiness 2	1	1
MCR1003	Career Readiness 3	1	1
TGL1001	Guided Learning	1	3
ASI3027	Student Internship Programme	3	16

** Students must choose one of these three subjects or TGL1001 Guided Learning.*

DIPLOMA SUBJECTS – CORE SUBJECTS

SUBJECT CODE	SUBJECT	LEVEL	CREDIT UNITS
ABT1001	Cell Biology	1	4
ACH1009	Principles of Inorganic & Physical Chemistry 1	1	4
AMB1002	Human Anatomy & Physiology	1	5
AMB1004	Basic Microbiology	1	3
AMT1001	Biochemistry	1	5
AMT1002	Cell Technology	1	3
AMT1003	Molecular Biology	1	5
ABM2016	Biological Data Analysis	2	5
AMT2001	BioAnalytical Technology	2	5
AMT2002	Molecular Diagnostic Technology	2	5
AMT2003	BioApplication	2	4
AMP3017	Major Project	3	8

DIPLOMA SUBJECTS – OPTION SUBJECTS

SUBJECT CODE	SUBJECT	LEVEL	CREDIT UNITS
ABM2014	Clinical Chemistry	2	5
ABM2017	Histopathology	2	5
AMB2008	Clinical Microbiology	2	5
APM2001	Stem Cells & Tissue Engineering	2	5
APM2002	Synthetic Biology	2	5
APM2003	Systems Biology	2	5

DIPLOMA SUBJECTS – ELECTIVE CLUSTER SUBJECTS

Students will be required to read an Elective Cluster offered by the School and complete a minimum of 9 credit units. The Elective Cluster to be offered by the course, and the subjects under this Cluster, are summarised below.

SUBJECT CODE	SUBJECT	LEVEL	CREDIT UNITS
Clinical Laboratory Practice			
AMT3001	Blood Banking	3	4
AMT3002	Haematology	3	5
Translational Medical Research			
AMT3003	Translational Medical Science	3	9
Free Electives			
APH3004	Pharmaceutical Manufacturing Technology	3	4
APH3011	Current Good Manufacturing Practice & Process Improvement	3	4