

BACHELOR IN BIOTECHNOLOGY (ADVANCED PROGRAM)

Programme name	Bachelor in Biotechnology (Advanced Program)
Administration unit	Institute of Food and Biotechnology (IFB)
University name	Can Tho University (CTU)
Award	Bachelor of Sciences
Training time	4.5 years (maximum 9 years)
Training language	English

1. Program Objective

1.1 General objective

The program aims to cultivate highly skilled human resources and fulfill the growing demand for biotechnology professionals in the Mekong Delta region and the entire country with knowledge and skills in biotechnology for solving problems in the field, using information technology for adapting to current trend in research, applying scientific research for country requirement and development, following higher education and working on biotechnology in Vietnam and in other countries.

1.2 Detail objectives

The programme has 5 POs as follows:

PO1. Equip students with basic and specialised knowledge in the field of biotechnology to meet the National Qualifications Framework of Vietnam;

PO2. Equip students with proficient practical skills; solve problems in biotechnology and related fields;

PO3. Equip students with theoretical knowledge of politics, national defence - security, basic information technology skills according to current regulations and foreign language proficiency to meet international integration (equivalent to level B2 of the Vietnamese Framework of Foreign Language Proficiency);

PO4. Train students with independent and professional working style, communication skills, lifelong learning skills, good ethics, civic consciousness, health, professional responsibility, and social responsibility.

PO5. To train students capable for positions as lecturers, researchers, experts, technicians, managers, and consultants in biotechnology-related enterprises both at home and abroad.

2. Program Learning Outcomes

2.1 Knowledge

2.1.1 General knowledge

PLO1. Demonstrate basic understanding of Marxist-Leninist Physical Education guidelines and policies of the Communist Party of Vietnam; Ho Chi Minh's ideology, physical education and knowledge of national defence education to meet the requirements of national construction and

PLO2. Demonstrate basic knowledge of general law, social sciences and humanities, and natural sciences to meet the requirements of acquiring professional knowledge;

PLO3. Master the fundamental knowledge of English/French equivalent to the Vietnamese Framework of Foreign Language Proficiency.

PLO4. Master the fundamental knowledge in relation to information technology (computers, office software and other basic software...) in line with current regulations.

2.1.2 Fundamental knowledge

PLO5. Master the fundamental knowledge of the biotechnology industry such as molecular biology, biochemistry, microbiology, virology, mycology, genetics, and biostatistics...

PL06. Master the fundamental knowledge of conducting scientific research and the basic knowledge of specialised practical skills.

PL07. Master the knowledge of foreign languages for specific purposes

2.1.3 Specialised knowledge

PL08. Master in-depth knowledge of the specialized fields of Biotechnology, such as Genetic Engineering, Genomics and Applications, Protein and Enzyme Science, Cell and Animal Tissue Culture Technology, Immunology, Genomic Technology, etc

PL09. Master in-depth knowledge of the applications of Biotechnology in various fields, such as Biomedical Biotechnology, Agricultural Biotechnology, Environmental Biotechnology, and Food Biotechnology

2.2 Skills

2.2.1 Professional Skills

PL010. Apply knowledge and specialised skills related to biotechnology to work effectively at production facilities, research institutions, training institutions, and state management agencies.

PL011. Apply specialised knowledge to provide technical advice and design laboratory facilities for biotechnology.

PL012. Present, explain, and critically analyse issues related to biotechnology in some areas trained in both Vietnamese and English languages.

PL013. Use skills in information technology and foreign languages to serve job requirements at the workplace

PL014. Develop scientific research capabilities and solve theoretical and practical problems in the field of biotechnology and related fields at institutes, universities, agencies, companies, and enterprises.

2.2.2 Soft Skills

PL015. Apply the ability to build, implement, and manage short-term, medium-term, and long-term plans for individuals and groups.

PL016. Have skills to work independently and in group Be proactive and confident in professional research, activities, and management

PL017. Develop fundamental communication skills

2.3 Autonomy/Responsibilities

PL018. Form disciplinary awareness and industrial style, improve political quality, ethics, civic duty; respect and comply with the assignment and deployment of work of the manager

PL019. Comply with professional ethics of their pursued profession, demonstrate confidence, enthusiasm, passion, adaptability to change, have a progressive attitude and overcome difficulties

PL020. Develop the qualities of sociability, patience, dynamism and creativity, and know how to overcome difficulties to fulfill tasks

3. Job Opportunities

- Universities, research institutes with the mandate in modern Biotechnology research
- Government agencies for industrial biotechnology and intellectual property management
- Graduate education overseas
- Organizations, agencies for food services, food quality and safety management, environmental and public health
- International and domestic companies involved in Biotechnological production and trading

4. Curriculum

No.	Code	Courses	Credits	Require credits	Elective credits	Prerequisite Course	
1	FL001H	Listening & Speaking 1	3	3			
2	FL002H	Listening & Speaking 2	2	2			
3	FL003H	Reading 1	2	2			
4	FL004H	Reading 2	2	2			
5	FL005H	Writing 1	2	2			
6	FL006H	Writing 2	2	2			
7	FL007H	Pronunciation in practice	2	2			
8	FL008H	Grammar in use	3	3			
9	FL009H	Presentation Skills	2	2			
I. General Knowledge			51	46	5		
10	QP006	National Defense Education 1 (*)	2	2			
11	QP007	National Defense Education 2 (*)	2	2			
12	QP008	National Defense Education 3 (*)	3	3			
13	QP009	National Defense Education 4 (*)	1	1			
14	TC100	Physical Education 1+2+3 (*)	3		3		
15	TN033	Basic Informatics (*)	1	1			
16	TN034	Basic Informatics in Labs (*)	2	2		TN033	
17	ML014	Marxist- Leninist Philosophy	3	3			
18	ML016	Marxist- Leninist Political Economy	2	2		ML014	
19	ML018	Science Socialism	2	2		ML016	
20	ML019	History of The Communist Party of Viet Nam	2	2		ML018	
21	ML021	Ho Chi Minh's Ideology	2	2		ML019	
22	KL001	General Law	2	2	2		
23	ML007	General Logic	2				
24	XH011	Basic Vietnamese culture	2				
25	XH012	Vietnamese in use	2				
26	XH014	General management documents and archives	2				
27	XH028	Overview of Sociology	2				
28	KN001	Transferable Skills	2				
29	KN022	Entrepreneurship and Innovation	2				
30	BS110C	General Biology 1	3	3			
31	BS210C	Practical general Biology 1	1	1			
32	BS111C	General Biology 2	3	3		BS110C	
33	BS211C	Practical general Biology 2	1	1		BS210C	
34	BT227	General Chemistry I	3	3			
35	BT224	Fundamental Chemistry Laboratory	1	1			
36	BT228	Organic Chemistry	3	3			
37	BT229	Experiments of Organic Chemistry	1	1			
38	BT220	Advanced Mathematics	3	3			
39	BT214	Physics	3	3			
40	BT215	Physics Lab	1	1			
II. Fundamental Knowledge			35	35	0		
41	MI301C	Introductory Microbiology	3	3		BS111C	
42	MI302C	Introductory Microbiology Lab	1	1		BS211C	
43	BC461C	Biochemistry I	3	3		BT288	
44	BT230	Biochemistry Laboratory I	1	1		BT289	

No.	Code	Courses	Credits	Require credits	Elective credits	Prerequisite Course
45	BC462C	Biochemistry II	3	3		BC461C
46	BT231	Biochemistry Laboratory II	1	1		BT230
47	EN103C	Writing in Science and Technology	3	3		
48	BT202	Fundamental Genetics	3	3		BS111C
49	BT203	Fundamental Genetics Lab	1	1		
50	BT225	Biotechnology Seminar I	2	2		
51	BT226	Biotechnology Seminar II	2	2		BT225
52	BT300C	Scientific Research Methods	2	2		
53	CS464C	Biological Statistics	3	3		
54	BT303C	Bio-Informatics	3	3		BT302
55	BT200C	Field trip	1	1		
56	BT216	Basic Biotechnology	3	3		
57	BT480C	Practical Training Industry	3	3		
III. Professional Knowledge			55	24	21	
58	BT480C	Practical Training Industry	3	3		
59	BT302	Molecular Biology	3	3		BC462C
60	BT303	Molecular Biology Lab.	1	1		
61	HR486C	Biotechnology in Agriculture: Applications and Ethical issues	3	3		
62	MM413C	General Virology	2	2		MI301C
63	MM414C	General Virology Lab.	1	1		MI302C
64	BT223	Genetic Engineering	2	2		
65	BT217	Genomics and Its Application Lab	1	1		
66	BT218	Biotechnology in medical and pharmaceutical science	2	2		
67	BT219	Environmental biotechnology	2	2		
68	BT220	Food Biotechnology	2	2		
69	BT221	Microbial biotechnology	2	2		
70	MM433C	Microbial Genomics	2		21	BT302
71	MM434C	Microbial Genomics lab	1			BT302
72	BT306C	Proteomics	3			BC462C
73	BT406C	Proteomics Lab.	1			
74	BT304C	Food Fermentation	2			MI301C
75	BT404C	Food Fermentation Lab.	1			MI302C
76	CS344C	Food Biochemistry	2			BC462C
77	CS345C	Food Biochemistry Lab.	1			BC472C
78	FS440C	Food Microbiology	2			MI301C
79	FS441C	Food Microbiology Lab.	1			MI302C
80	AN407C	Food and Animal Toxicology	3			MI301C
81	BT307C	Social and Economical Aspects of Biotechnology	2			
82	CS072C	Animal Physiology	2			BS111C
83	CS073C	Animal Physiology Lab.	1			
84	CS443C	Aquaculture Biotechnology	2			BT302
85	CS444C	Aquaculture Biotechnology Lab	1			
86	BT313	Biodiversity	2			BS111C
87	BT305C	Plant Tissue Culture	2			
88	BT405C	Plant Tissue Culture Lab.	1			
89	CS441C	Plant Breeding and Biotechnology	2			BT302

No.	Code	Courses	Credits	Require credits	Elective credits	Prerequisite Course
90	CS442C	Plant Breeding and Biotechnology Lab.	1			
91	CS465C	Plant Physiology	2			BS111C
92	CS466C	Plant Physiology Lab.	1			
93	BT441	Plant Molecular Biology	2			BT302
94	BT412	Plant Molecular Biology Lab	1			BT302
IV. Thesis			10	10	0	
95	BT499C	Graduate Thesis	10	10	0	
Total: 141 credits (Required credits: 115; Elective credits: 26) and 20 Intensive English credits						