CAN THO UNIVERSITY

AUN-QA
SELF-ASSESSMENT REPORT

ASEAN University Network

ADVANCED PROGRAM IN BIOTECHNOLOGY

BIOTECHNOLOGY RESEARCH AND DEVELOPMENT INSTITUTE

August 2014

BIOTECHNOLOGY RESEARCH AND DEVELOPMENT INSTITUTE

Can Tho University

Campus 2, 3/2 Str. Ninh Kieu Dist. Can Tho City

http://birdi.ctu.edu.vn/

ASEAN University Network

SELF-ASSESSMENT REPORT

THE ADVANCED BIOTECHNOLOGY PROGRAM

We hereby confirm to approve this Self-Assessment Report by the Advanced Biotechnology Program belonging to the Biotechnology Research and Development Institute – Can Tho University to be officially accredited in accordance to AUN-QA Criteria in 2014.

Assoc. Prof. Dr. TRAN NHAN DUNG

Director

Biotechnology Research and Development Institute

BỘ GIÁO DỤC VÀ ĐÀO TẠO
TRƯỜNG ĐẠI HỌC CẦN THƠ

Assoc. Prof. Dr. HA THANH TOAN

Rector

Can Tho University

LIST OF ABBREVIATIONS

AUN	ASEAN University Network
BiRDI	Biotechnology Research and Development Institute
CTU	Can Tho University
ELOs	Expected Learning Outcomes
IQA	Internal Quality Assurance
LRC	Learning Resource Center
MDR	The Mekong Delta Region
MHO	Joint Financing Programme for Cooperation in Higher Education (MHO7 Project: "Biotechonolgy: Training, Research and Technology Transfer to Can Tho University")
MOET	(The Vietnamese) Ministry of Education and Training
MSU	Michigan State University
QATC	Quality Assurance and Testing Center
VLIR	Vlaamse Interuniversitaire Raad Fleming Interuniversity Council

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I. INTRODUCTION

1. Can Tho University (CTU) http://www.ctu.edu.vn/

Established in 1966, Can Tho University (CTU) is an important public higher education institution and a cultural, scientific and technical center of the Mekong Delta Region and Viet Nam. The academic year 2013-2014 has seen CTU with about 48,315 undergraduate students, 2,958 Master students, and 226 Ph.D candidates. CTU currently has 2,042 staff including 1,194 teaching staff and 848 supporting staff. From a university with a few fields of study in the early days, CTU has developed into a multidisciplinary university. Currently, it has 92 undergraduate training programs (including 02 college-level programs), 31 Master programs and 13 Doctoral training programs. Every year, in addition, CTU receives students from the U.S, Belgium, Japan and so on under internship programs, or students under agreements between their universities and CTU.

(Source: http://websrv2.ctu.edu.vn/dept/dap/index.php?option=com_content&task=view&id=55&Itemid=98)

1.1. Vision of Can Tho University

CTU targets to be one of the leading higher education institutions in Viet Nam and recognized as one of the top universities in Asia-Pacific in training and research in 2022 *[Exh.0.01 Annual Report 2013]*.

1.2. Mission of Can Tho University

CTU operates its resources to become the leading national center for training, scientific research and technology transfer, making significant contributions to the development of high quality human resources, fostering the talents and the advancement of science and technology to cater for the regional and national socio-economic development. Can Tho University is the crucial driving factor for the development of the Mekong Delta Region *[Exh.0.01 Annual Report 2013]*.

In particular, CTU takes on the duties to

i) train high quality human resources to serve the demands of society;
ii) conduct scientific researches and transfer technology to solve practical problems in the Mekong Delta region (MDR);
iii) function as the leader of the MDR in terms of international relations, global integration and applications of advance in science and technology; and
iv) operate as the center to provide scientific and technological information as well as experts and theoretical bases to the region.

(Source: http://www.ctu.edu.vn/BCTN2013/index.html#/0)

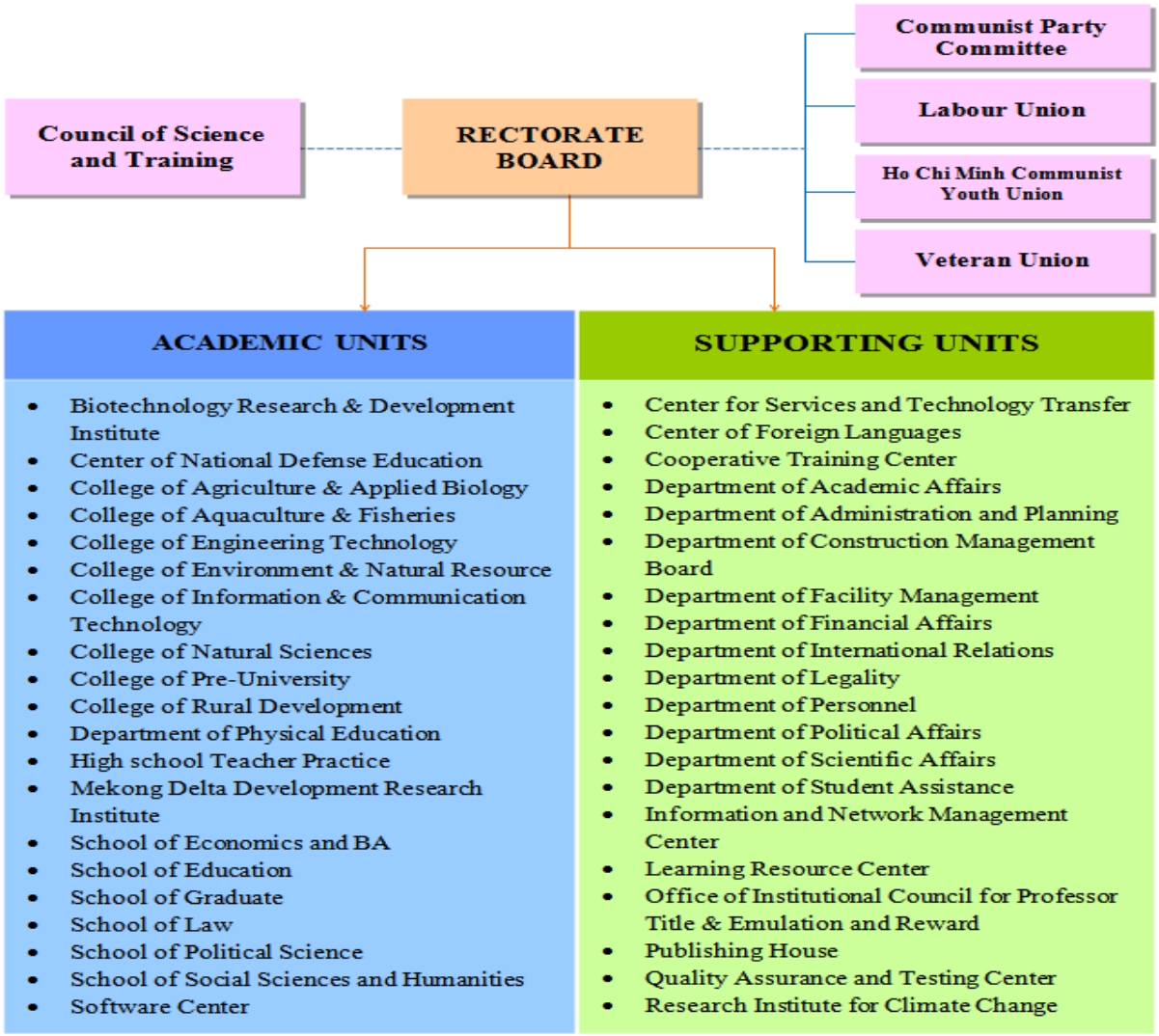


Figure 1: The structure of CTU and units

2. Biotechnology Research and Development Institute http://birdi.ctu.edu.vn/

In 1981, CTU established the Biological Nitrogen Fertilizer Research Center. The key mission of the center was to conduct researches to exploit nitrogen from bacterial sources. In addition, the center was also in charge of offering courses such as *General Microbiology*, *Soil Microbiology*, *Veterinary Microbiology*, and *Aquaculture Microbiology* as well as supervising graduation dissertations by students from other faculties and centers in the MDR.

In 1991, the Minister of the Ministry of Education and Training (MOET) signed the decision to rename the Biological Nitrogen Fertilizer Research Center as the Biotechnology Research and Development Center and stipulate it to operate under the authority of CTU. Then, according to Decision No. 2960/GD&DT issued on August 26th in 1995, the Minister of the MOET renamed the center as the Biotechnology Research and Development Institute (BiRDI) under the authority of CTU.

When the MOET permitted CTU to offer the Microbiology PhD program (1985), the Master of Biotechnology program (1997) and the Bachelor of Biotechnology program (2001), the lecturers specializing in Microbiology of BiRDI played an essential role in teaching these programs. Since 2006, BiRDI has been officially in charge of offering undergraduate programs including the Biotechnology Program taught in Vietnamese (2006), the Biotechnology Program taught in English, also known as the Advanced Program in Biotechnology (2006), and the Microbiology Program taught in Vietnamese (2010).

2.1. Vision of BiRDI

In 2022, the Biotechnology Research and Development Institute will be an excellent research and technology transfer center and provide well-trained and highly qualified students majoring in Biotechnology and Microbiology for the Mekong Delta region. BiRDI will be a strong organization in human resources, with excellent and enthusiastic lecturers possessing profound academic knowledge and advanced management approaches.

2.2. Mission of BiRDI

To mainstream its mission with CTU's mission, BiRDI has to fulfill the following mission tasks:

i) train highly qualified human resources specializing in Biotechnology in order to meet the skilled labor demands of the society;
ii) conduct scientific researches and transfer technology to support optimal solutions to practical biotechnology problems in the MDR; and
iii) become the focal point linking CTU with other research centers in the MDR for efficient cooperation in Biotechnology which facilitates development in advanced technology among partners and stakeholders in the MDR and around the world.

Development strategy of BiRDI from 2013-2017 towards 2020:

CTU has the general strategy to develop the whole university which sets priority for the development of high-tech areas of expertise, especially Biotechnology *[Exh.0.02 Project "Plans for the overall key developments of CTU up to 2020"]*. Thanks to its strengths and reputation in the field, BiRDI is responsible for the training and development of Biotechnology.

Priority-set fields relating to Biotechnology from 2013-2017 towards 2020 will be carried out by BiRDI in cooperation with other training and research centers in the MDR and from overseas.

2.3. Activities

2.3.1. Training activities

In terms of training activities, BiRDI has to

i) train the Bachelor of Biotechnology program in accordance with national and international standards (such as those by AUN (Asian University Network)) in which students are able to communicate fluently in English;
ii) apply effective self-financing activities in managing Bachelor and Master of Biotechnology programs;
iii) focus on self-evaluation training programs, especially the Advanced Biotechnology program;
iv) follow the general strategy and master plan by CTU;
v) continue to improve the quality of the programs and scale up these training programs;
vi) review and adjust the current Bachelor and Master programs;
vii) add courses such as *Human* and *Animal Physiology* to further support stem-cell researches and other biomedicine disciplines;
viii) prepare human resources and facilities necessary for teaching of the Advanced Program in Biotechnology; and
ix) offer new majors such as Bachelor of Biological techniques, Master of Microbiology; design materials and prepare capacities to offer majors taught in English (to be named with *Advanced* or *International*)

2.3.2. Scientific research and technology transfer

In terms of scientific research and technology transfer activities, BiRDI has to

i) strengthen and scale up the research and technology collaboration with local authorities; take advantage of this collaboration to carry out national-level projects, treaties, making use of bilateral cooperation to solve the issues related to Biotechnology disciplines in the MDR;

ii) represent for the whole MDR in response to Biotech researches; act as a focal point to receive up-to-date techniques from all around the world

[Exh.0.03 Development strategic plan of BiRDI from 2013-2017 towards 2020]

2.4. Organization of BiRDI

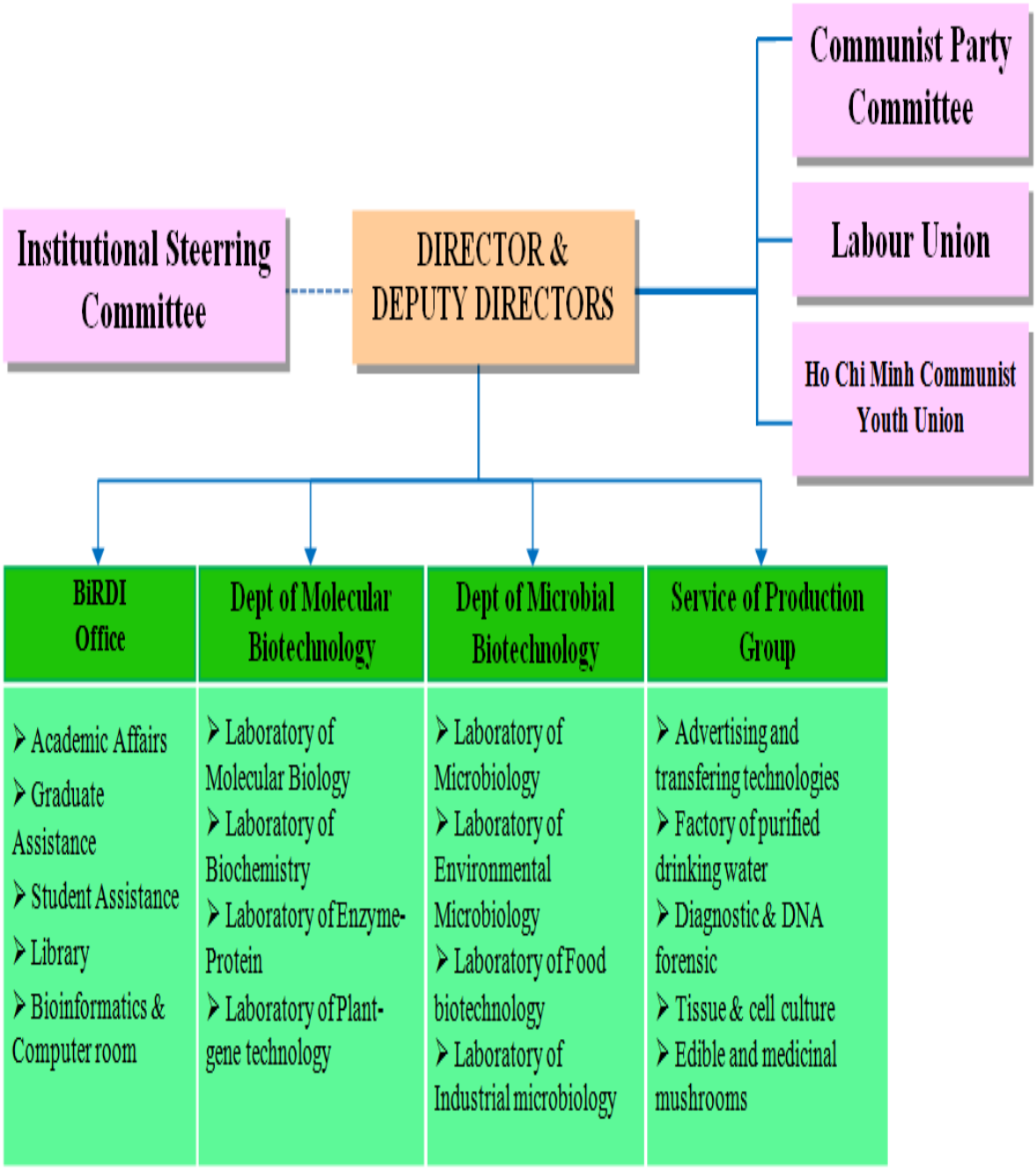


Figure 2: The structure of BiRDI and its departments

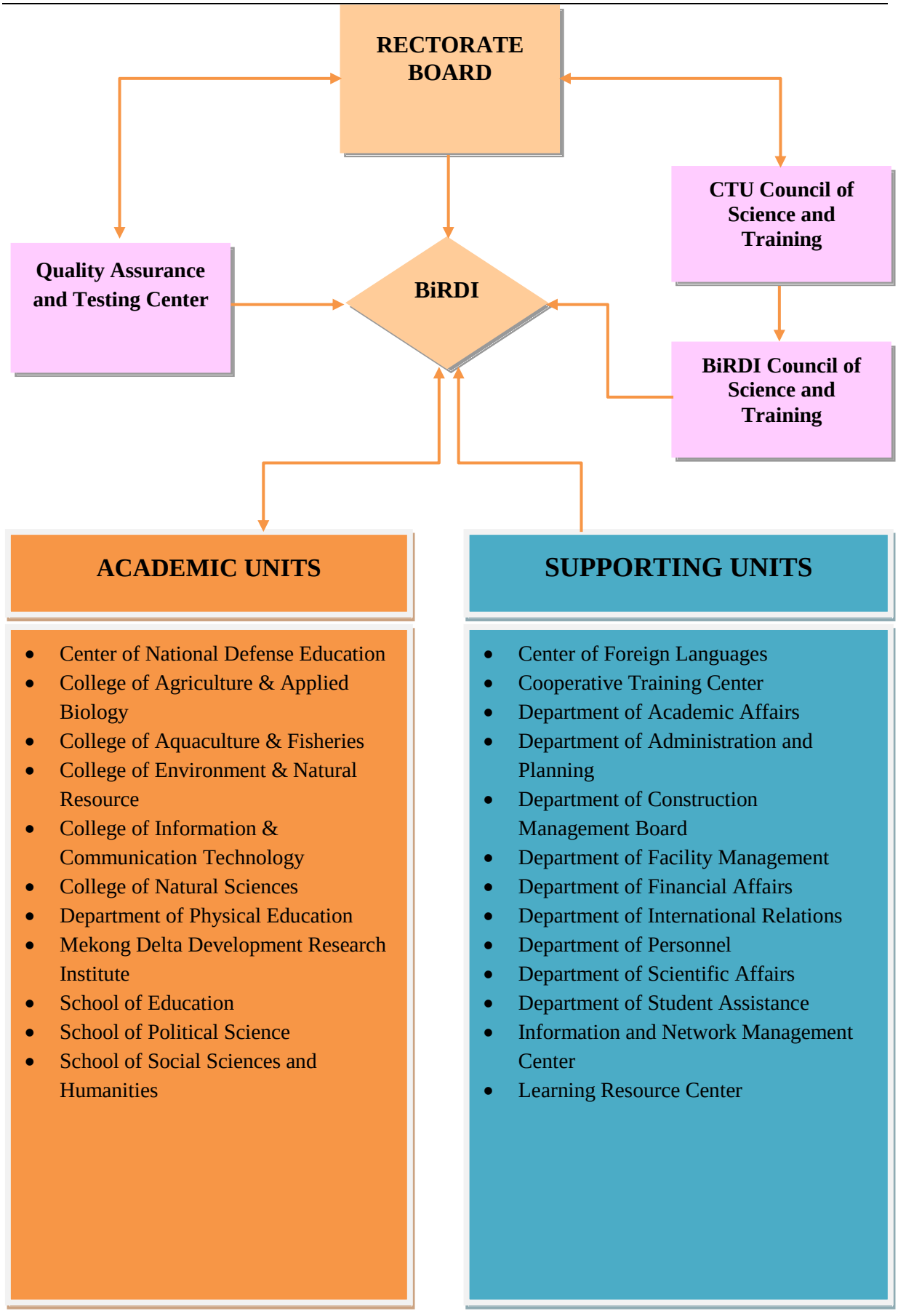


Figure 3: The relationship between BiRDI and other units in CTU in program training

3. Organization of Self-Assessment Activities in BiRDI

Under the CTU Rectors's Decision No.532/QĐ-ĐHCT, dated on April 16, 2010 about Internal Quality Assurance System from AUN Model at college/school level, BiRDI has had its QA team carry out internal self-assessment of the Biotechnology program in accordance with AUN standards since 2010.

Self- Assessment Report (SAR) of the Bachelor Program of BiRDI, CTU, is one of the endeavors and efforts of BiRDI in reflecting on the quality of its Bachelor Program in Biotechnology and having the program certified and recognized in the network of Asian Universities.

Special attentions and efforts have been made for the AUN self-assessment at the university level, especially when the Agricultural Economics Program of the School of Economics and Business Administration, CTU, has been certified by AUN. Since then, BiRDI, with advice and support from the Quality Assurance and Testing Center (QATC) of CTU, has been striving for the certification by AUN.

In order to meet the objective mentioned above, tasks have been promptly divided into different groups acting on AUN Self-Assessment at CTU level for researching and training about AUN criteria, collecting evidences, and writing the report for self-assessment activities as well.

Figure 4 show the Self-Assessment activities in BiRDI. The information and evidences for SAR were collected from the stored documents of CTU and BiRDI. In addition, BiRDI also collected evidences through interviews, discussions in seminars, workshops and conferences. The working group has been collecting facts and evidences, making everything ready for writing from the first draft of SAR to the final draft for possible external reviewers.

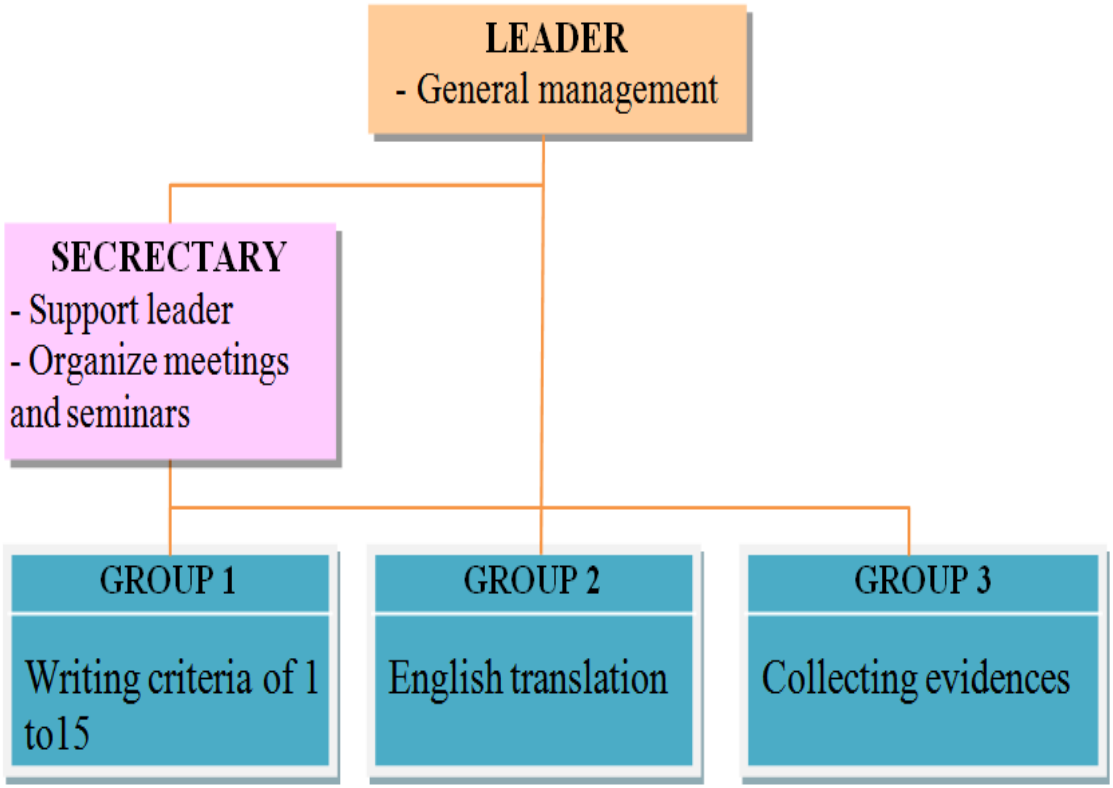


Figure 4: Self-Assessment Activities in BiRDI

II. AUN-QA CRITERIA AT PROGRAM LEVEL

1. Expected Learning Outcomes

To provide training for high-quality human resources in Biotechnology that meet the labor market requirements in the MDR and Viet Nam, the Advanced Program in Biotechnology of CTU was approved by Decision No. 300/BGD&ĐT-ĐH&SĐH by the MOET on January 12th 2006. Earlier than that, the program recruited the first cohort of students in the academic year 2006-2007 according to Decision No.6666/QĐ-BGD&ĐT on November 23rd, 2005 *[Exh.1.01 Decision No.300/BGD&ĐT-ĐH&SĐH of the MOET on January 12th 2006; Exh.1.02 Decision No.6666/QĐ-BGD&ĐT on November 23rd, 2005].*

The Advanced Program in Biotechnology offers the curriculum based on:

1. The mission and vision of CTU and those of BiRDI
2. The requirements of the MDR labor market for well-trained biotechnologists
3. Benchmarking to the curriculum of Michigan State University (MSU)
4. Benchmarking to the curriculum of well-known universities in Viet Nam (Ho Chi Minh City University of Science, Ha Noi University of Science)

The objectives of the Advanced Program in Biotechnology include:

i) helping the students construct generic and biotechnology-specialized knowledge to work effectively in state-owned and private-owned industries
ii) rooting ethical motivation among the students
iii) formulating English capacity among the students to help them work effectively in a global biotechnology context
iv) nurturing lifelong learning among the students to help them maintain and enhance their professional knowledge and skills and be able to adapt to changes
v) generating high-quality human resources for academic and research activities in the field of biotechnology in the MDR

1.1 The expected learning outcomes have been clearly formulated and translated into the program

Biotechnology graduates work in the bioscience agriculture and industry in the areas of research development and production. The expected learning outcomes (ELOs) of the Advanced Program in Biotechnology (hereafter referred to as the Program) reflect the demands and needs of all stakeholders (biotechnology and pharmaceutical companies, clinical laboratories in hospitals, universities, government, and independent settings) for generic skills and knowledge, specific skills and knowledge, as well as attitudes toward the profession and society.

The graduates from the Program will be able to:

1. apply the generic knowledge of social and humanity science and natural science to the professional activities to increase work performance;
2. analyze the specialized knowledge in biotechnology for effective applications in professional work to achieve better work performance;
3. select and enhance the use of techniques, skills, and up-to-date technological tools necessary for biotechnology practices in reality; design and conduct experiments to arrive at solutions to improve work performance;
4. conduct various activities to design, organize, manage and operate production facilities in biotechnology;
5. analyze the demands and mobile all resources available to design processes to help organize, manage and operate biotechnology activities (namely the production of new

plant and animal varieties, new microorganisms; microbiological products, techniques…);
6. identify and compare work issues to come up with solutions to problems in biotechnology and be able to create a service business;
7. apply effective skills in communication to exchange and sharing information in collaboration to develop biotechnology; develop leadership, teamwork and soft skills for employment and promotion;
8. construct life-long learning as a personal skill and consciousness and integrate study and research in daily work to be ready for national and international research collaboration; and
9. protect and improve personal health, fulfill civic responsibility, abide by the laws, be insightful on contemporary political and social issues, and contribute to sustainable development of the biotechnology area, the environment, and the society.

These ELOs are well disseminated to the lecturers, students, and other stakeholders through:

1. The orientation meeting
2. Websites of CTU and BiRDI
3. Student handbooks *[Exh.1.03 Student handbook]*

Obviously, these ELOs of the Program are in line with the mission and the vision of CTU which aim to train students with profound knowledge, high-level skills, and positive attitudes to fulfill the demand of socio-economic development of the MDR and further international collaboration. Thanks to their advanced capacities, the graduates from the Program will boost research activities and transfer technology to the production activities in the MDR as well as participate in local and international research communities.

1.2 The program promotes life-long learning

The Program motivates students for lifelong learning through the factors grouped in Figure 5, focusing on the key points below.

i) The credit-based system allows students approach learning in specialized areas by making plans for diversified learning contents to meet their individual needs; the curriculum satisfies the needs of selective and elective courses corresponding to specific areas.

ii) The content of the Program ensures the depth (Biotechnology professional knowledge and research orientations on plant biotechnology, food biotechnology, molecular biology and microbiology…) and breadth (providing the base for learners to study in related fields: biology, ecology, agronomy, microbiology, fishery,…), which helps students adapt to higher level learning in both specialized biotechnology areas and other related majors. (See Figure 5)

To be admitted into the Program, students apply for a Bachelor program through the national university entrance examination (1) or through a secondary Bachelor degree in Biotechnology from other Bachelor programs such as Biology, Biochemistry, Agronomy, and Fishery (2). After graduating from the university, students can further their education at post-graduation levels such for MSc degree (3) and PhD degree in Biotechnology (4) or MSc degree (5) and PhD degree in related fields (6). Besides, students can continue to learn a secondary Bachelor degree (7) (other related majors) and MSc degree (5) and PhD degree in related fields (6). Pathway (8) is from other BSc to MSc in Biotechnology and Pathway (9) is from MSc in Biotechnology to a related doctorate degree. In addition, students with good command of English can further their learning abroad *[Exh.1.04 Decision to promote student for international learning]*.

The Program promotes life-long learning through activities among the lecturers and students as described in Table 1.

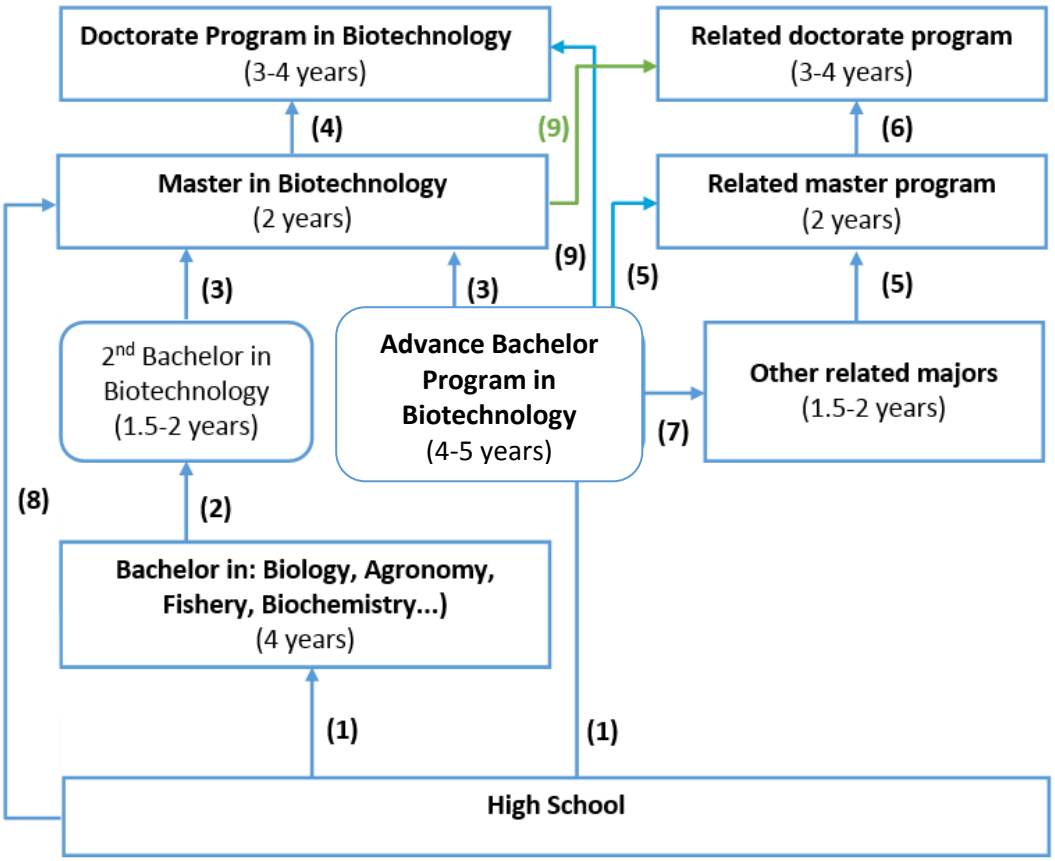


Figure 5: The life-long learning pathway in Biotechnology

Table 1. How to train in the lifelong learning context

Learning outcomes		Assessment criteria
The students are exposed to		The students are able to
1	Roles, responsibilities in relation to class activities	explain and identify roles and issues, key aspects, codes of practice…
2	Appropriate teaching and learning approaches	identify, explain or justify selection of teaching and learning approaches; capable of designing, doing experiments in lab, processing and analyzing data, operating devices…
3	Session planning skills	identify, explain or justify the planning, operating, maintaining, repairing, and protecting devices and systems…
4	Deliveries of inclusive sessions to motivate students	involve in learning to learn and develop personalities
5	Use of different assessment methods	identify and explain different assessment methods in different contexts

[Exh.1.05 National college Network, Program outcomes (p.37), content and structure program & Statute No 43 on regular undergraduate and college education under the credit system of MOET issued on August 15, 2007]

1.3 The expected learning outcomes cover both generic and specialized skills and knowledge:

The ELOs for graduates of the Program include generic knowledge and skills as well as specialized knowledge and skills as described in Table 2. In addition, the Program also focuses on improving professional ethics and social responsibility among the students.

Table 2: Expected learning outcomes grouped by knowledge, skills, attitudes and life-long learning

Knowledge, Skills, Attitudes		ELOs
Generic Knowledge	Mathematic, Scientific, and Social	1, 9
Generic Skills	Communicating, sense of chemical and biochemical analysis, synthesis approaches, Biotechnology, critical thinking, team work, self-regulating, problem solving, self-study	3, 6, 7
Specific Knowledge	Fundamental and specialized biotechnology	2, 4, 5, 6
Specific Skills	Use of common Lab instruments and equipments, experimental design and data analysis and assessment	3, 4, 5
Attitudes	Professional and social ethnical and responsibility	8, 9
Life-long learning	Scientific knowledge and skills	1, 2, 3, 4, 5, 6
	Learning and communication skills	7
	Perception of life-long learning	9, 8

1.4. The expected learning outcomes clearly reflect the requirements of the stakeholders.

The Program activities and ELOs are based on feedbacks and comments from domestic and international experts, researchers, lecturers, students and employers. All feedbacks from these stakeholders lay the basis for adjustments to be taken into consideration to improve the Program to meet the needs of the stakeholders.

In particular, International experts, lecturers and researchers require the graduates to have good subject-matter knowledge, adequate research ability and good command of English *[Exh.1.06 Related e-mails, photos and minutes of conferences and meetings]*.

- Research institutes require the graduates to have strong knowledge and professional skills, good language skills as well as research proposal development skills to support activities in implementation and reporting scientific researches.
- The employers require the graduates to have good knowledge and skills, the ability to analyze and solve problems of biotechnology; master the regulations and laws related to biotechnology; have the ability to adapt to change in the working environment and in society.
- The companies providing biotechnology services require the graduates to have qualified knowledge and skills, the ability to organize and operate production facilities and business services related to biotechnology.

All of these feedbacks are mainstreamed into the ELOs of the Program *(See Table 2)*.

2. Program Specification

2.1. The university uses program specification

2.1.1. Program description:

The Program specification is formulated and informed to stakeholders via the websites in both Vietnamese and English (http://birdi.ctu.edu.vn/birdi_cttt/ http://websrv.ctu.edu.vn/)

(1) Name of the program: Bachelor of Biotechnology (Advanced Program).

+ The program has been offered since 2006 based on Decision No. 6666/QĐ-BGD&DT of the MOET. The courses are offered in English.
+ The Program was developed thanks to contributions by MSU faculty partners, taking into consideration feedbacks from local stakeholders (students, alumni, employers, CTU lecturers and partner universities) *[Exh.2.01 Minutes of conferences and meetings and related feedbacks]*.
+ The program is benchmarked to the program frame stipulated by the MOET, referring to biotechnology programs by famous national universities such as Hanoi National University and Viet Nam National University – Ho Chi Minh City and well-known international universities such as Wageningen University (the Netherlands) and the University of RMIT (Australia).
+ The faculty: The Program is taught fully in English by the lecturers of CTU (mainly from BiRDI and some from the College of Natural Sciences). This program is also taught by visiting lecturers from MSU and famous partner universities such as Brussels University (Belgium), Wageningen University (the Netherlands), Copenhagen University (Denmark), Cornell University (the USA), New South Wales University (Australia)...
+ Mode of study: Full time, regular
+ Training time: 4.5 years *[plus 1 semester for Intensive English (20 credits)]*

***(2) Training unit*:** Biotech Research and Development Institute (BiRDI)

(3) University's name: Can Tho University (CTU)

(4) Awards: Bachelor Degree of Biotechnology (by CTU) and Certificate of Completion of Advanced Program in Biotechnology (by MSU) *[Exh.2.02 Degree and Certificate]*.

(5) Criteria to choose students for Advanced Biotechnology program: The students wishing to attend the program have to fulfill 2 criteria:

+ passing the national university entrance examination for Band A (Mathematics, Physics, Chemistry) or Band B (Mathematics, Chemistry, Biology); and
+ passing the English institutional examination organized by CTU (the students must attend intensive English courses to improve English proficiency after admission)

2.1.2. The curriculum:

The curriculum is designed based on the program specification and documents from the MOET, the credit-based training system and relevant regulations. More importantly, the curriculum is mostly based on the program offered by MSU in the USA, taking into consideration references to well-known universities such as Wageningen University, and especially making use of the support from cooperative programs with foreign countries such as the MHO7 of the Netherlands, and VLIR program of Belgium.

The curriculum *(Figure 6)* is constructed with the participation of lecturers, managers, representatives from organizations and professional associations, employers, alumni and students *[Exh.2.01 Minutes of conferences and meetings and related feedbacks]*.

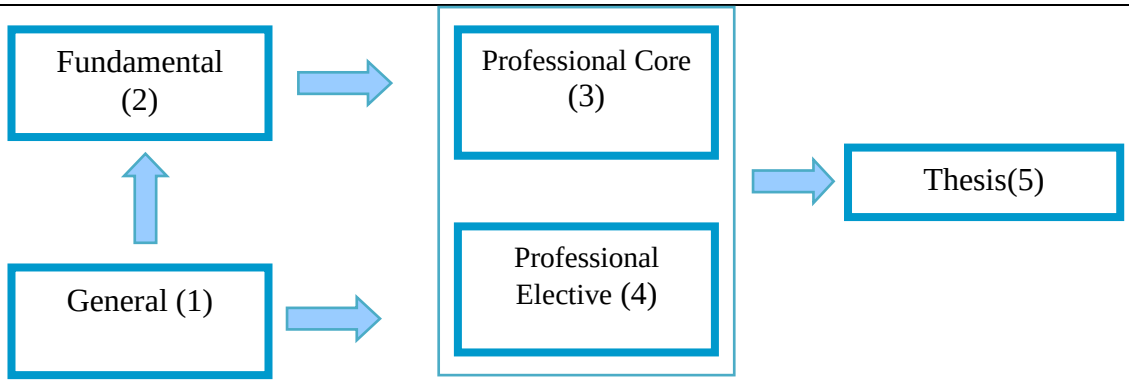


Figure 6. The mutual relationship among knowledge blocks

2.1.3. Organization of the program

The Program consists of **151** credits, including **132** compulsory credits (**10** credits for graduation thesis) and **19** elective credits. Such a flexible program helps students in self-learning and study planning activities. Besides, the students are trained with an intensive English course in the first semester that is equivalent to **20** credits. The details are illustrated in *Table 3 and 4*.

The connection between knowledge blocks, from the general knowledge to foundation knowledge and the professional knowledge with detailed information about courses is clearly performed in the program diagram *(Figure 7: Flow-chat of Studying).*

The Program diagram helps students know what knowledge they will have accumulated and what courses are offered in the next semesters. From that view, it is easy for them to make their own learning plan to achieve the best results.

The teaching, learning and assessment activities follow the guidelines and principles for credit-based training system under the regulation by MOET on university training *[Exh.2.03 Statute No 43 on regular undergraduate and college education under the credit system of MOET issued on August 15, 2007]*.

Table 3: Structure of the curriculum

Knowledge Block	Number of Courses	Credits required	Block weight (%)
General Knowledge	11	29	**37.1**
Political Education	4	10	
National Defense Education	1	6	
Physical Training	2	2	
Advanced English	3	9	
Fundamental Knowledge			**30.4**
Basic: 1. Fundamental Genetics 2. Introductory Microbiology 3. Organism and Populations 4. Organic Chemistry 5. Biochemistry	**13**	30	
Advanced: 6. Statistics for Biologists 7. Research Methods 8. Biotechnology Seminar 9. Bio-Informatics 10. Field trip	**9**	16	

Professional Knowledge			
Core: 1. Introduction Biotechnology 2. Basic Biotechnology 3. Molecular Biology 4. Genomics and Its Application 5. Microbial Genomics 6. Practical Training in Industry	9	20	**13.2**
*Elective (students have to select **19 credits**)* 1. Plant Tissue Culture 2. Proteomics 3. Food Fermentation 4. Plant Breeding and Biotechnology (2) 5. Aquaculture Biotechnology 6. Biodiversity 7. Plant Physiology 8. Animal Physiology 9. Food Biochemistry 10. Food Microbiology 11. Virology 12. Food and Animal Toxicology 13. Biotechnology in Agriculture 14. Plant Molecular Biology 15. Social and Economical Aspects of Biotechnology	24	19	**12.6**
Thesis	**1**	10	**6.7**
Total*	**77**	**151**	**100**

(*) The curriculum also consists of 20 credits for Intensive English (in the 1st Semester)

Table 4: Knowledge block weights

Knowledge Blocks	Credits required	Percents (%)
General	56	**37.1**
Fundamental	46	**30.4**
Professional Core	20	**13.2**
Professional Elective	19	**12.6**
Thesis	10	**6.7**
Total	**151**	**100**

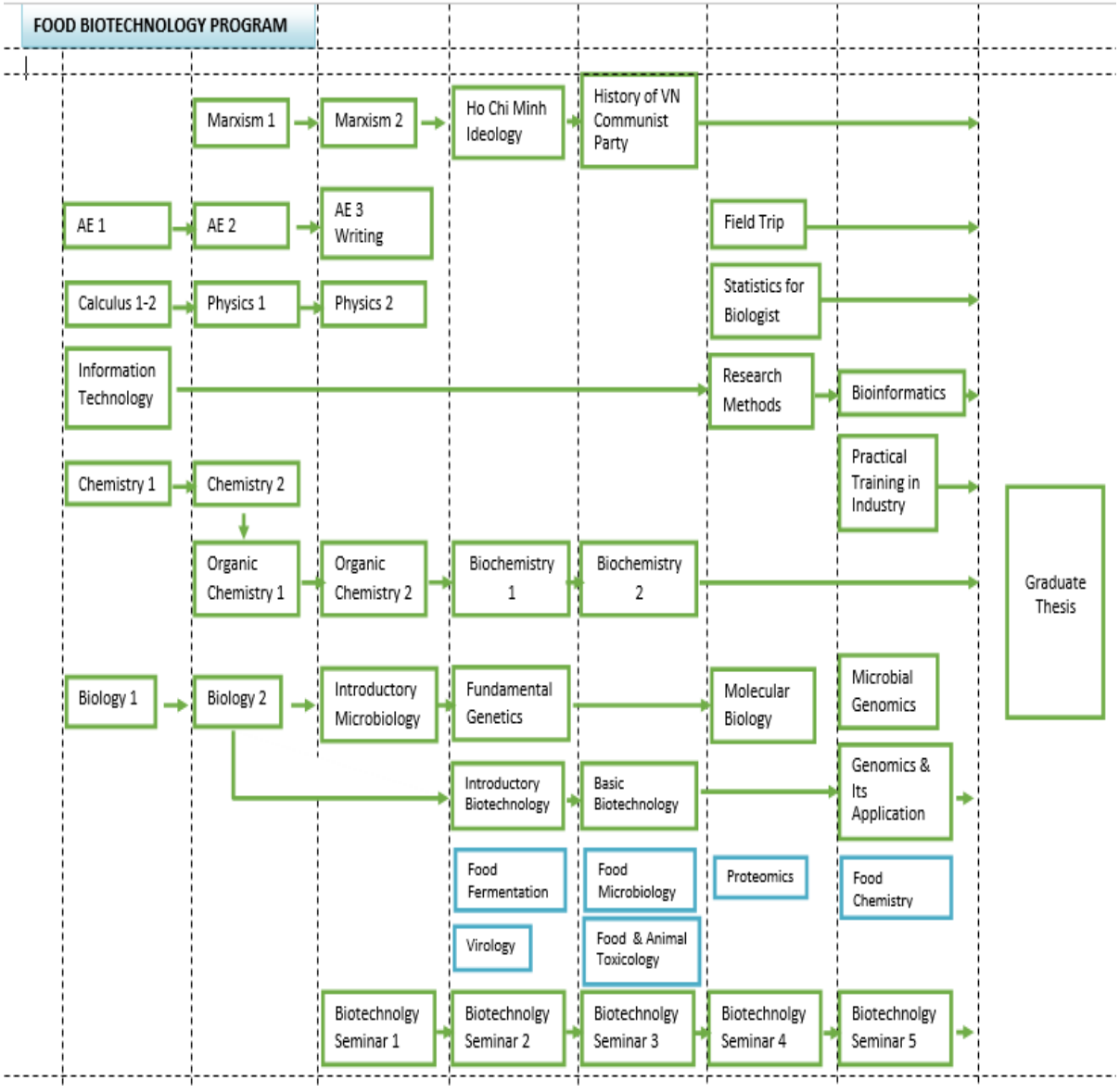
Table 5: Curriculum Distribution

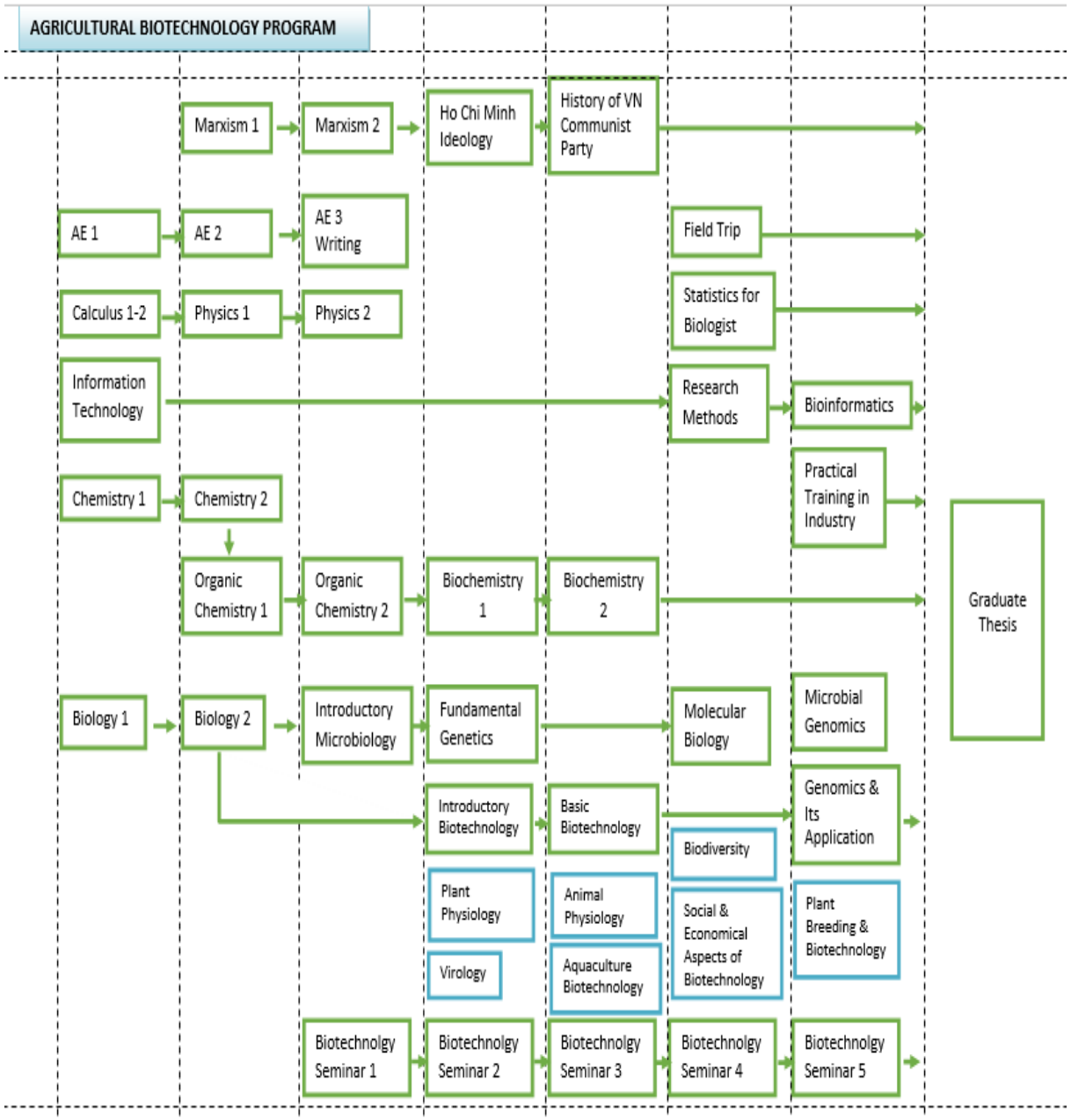
INTENSIVE ENGLISH PROGRAM: 20 credits					
FRESHMAN: 46 credits					
Semester 1			***Semester 2***		
Code	**Courses**	**Credit**	**Code**	**Courses**	**Credit**
BS110C	Cells and Molecules I	3	ML009	Principles of Marxism 1	2
BS210C	Cells and Molecules Lab.I	1	BS 111C	Organism and populations	3
CH141C	General Chemistry I	3	BS211C	Organism and Populations Lab.II	1
CH161C	Chemistry Lab.I	1	CH142C	General and Inorganic Chemistry	3
EN101C	Advanced English I	3	CH162C	Chemistry Lab. II	1
MT132C	Calculus I-II	6	EN102C	Advanced English II	3
CS001	Basic Informatics	2	PH183C	Physics for Scientists and Engineers I	4
CS002	Basic Informatics Lab	1	CH251C	Organic chemistry I	3
Total credits		**20**	*Total credits*		**20**

Summer semester					
QP001	National Defense Education	**6**			
SOPHOMORE: 42 credits					
Semester 1			***Semester 2***		
Code	**Courses**	**Credit**	**Code**	**Courses**	**Credit**
ML010	Principles of Marxism 2	3	ML006	Ho Chi Minh's Ideology	2
MI301C	Introductory Microbiology	3	ZO341C	Fundamental Genetics	3
MI302C	Introductory Microbiology Lab	1	ZO342C	Fundamental Genetics Lab	1
BT199C	Biotechnology Seminar I	1	BT198C	Biotechnology Seminar II	1
EN103C	Writing: Sciences & Technology	3	BT201C	Introductory Biotechnology	2
PH184C	Physics for Scientists and Engineers II	4	BC461C	Biochemistry I	3
CH352C	Organic chemistry II	3	BC471C	Biochemistry I Lab	2
CH355C	Organic chemistry Lab	2	Elective Courses : 6 credits		
			BT304C	Food Fermentation	2
			BT404C	Food Fermentation Lab	1
			MM413C	Virology	2
			MM414C	Virology Lab.	1
			CS465C	Plant physiology	2
			CS466C	Plant physiology Lab.	1
Total credits		**20**	*Total credits*		**20**
Summer semester					
TC100	Physical Training	**2**			
JUNIOR: 35 credits					
Semester 1			***Semester 2***		
Code	**Courses**	**Credit**	**Code**	**Courses**	**Credit**
ML011	History of Viet Namese Communist Party	3	BT298C	Biotechnology Seminar IV	2
BT197C	Biotechnology Seminar III)	1	BT300C	Research Methods	2
MM445C	Basic Biotechnology)	4	BT200C	Field trip	1
BC462C	Biochemistry II	3	BB801C	Molecular Biology	3
BC472C	Biochemistry II Lab.	2	BB802C	Molecular Biology Lab.	1
			CS464C	Statistics for Biologists	3
Elective Courses : 6 credits			Elective Courses : 4 credits		
FS440C	Food Microbiology	2	BT306C	Proteomics	2
FS441C	Food Microbiology Lab.	1	BT406C	Proteomics Lab.	2
AN407C	Food and Animal Toxicology	3	BT307C	Biodiversity	2
CS072C	Animal physiology	2	ZO892C	Social and Economical Aspects of Biotechnology	2
CS073C	Animal physiology Lab	1			
CS443C	Aquaculture Biotehnology	2			
CS444C	Aquaculture Biotehnology lab.	1			
Total credits		**19**	*Total credits*		**16**
SENIOR: 28 credits					
Semester 1			***Semester 2***		
Code	**Courses**	**Credit**	**Code**	**Courses**	**Credit**
BT299C	Biotechnology Seminar V	2	BT499C	Graduate Thesis	10
MM433C	Microbial Genomics	2			
MM434C	Microbial Genomics	1			
BT301C	Genomics and its application	3			
BT302C	Genomics and its application Lab.	1			
BT303C	Bio-Informatics	3			

BT480C	Practical training in industry	3			
Elective Courses : 3 credits					
CS344C	Food Biochemistry	2			
CS345C	Food Biochemistry Lab	1			
CS441C	Plant Breeding and Biotechnology	2			
CS442C	Plant Breeding and Biotechnology Lab.	1			
BT305C	Plant and tissue culture	2			
BT405C	Plant and tissue culture Lab.	1			
HR486C	Biotechnology in Agriculture: Applications&Ethical Issues	1			
Total credits		**18**	*Total credits*		**10**
TOTAL: 151 credits					

Table 6: Recommended Study Plan





2.2. The program specification shows the expected learning outcomes and how these can be achieved

There are 9 ELOs ***(Criterion 1)*** that students of this program are expected to obtain. The assessment of these ELOs and the role of the Program in supporting students to obtain these ELOs are presented as below:

a. ELOs 1 and 2: ***On completing the program, the students are able to apply the generic knowledge of social and humanity science and natural science to the professional activities to increase work performance; analyze the specialized knowledge in biotechnology for effective applications in professional work to achieve better work performance;***

- Roles of the program in helping students to achieve ELOs 1 and 2

+ Admission to the Program is based on ability to succeed in core courses.
+ Design and implement examinations, assignments, and projects in each course
+ Complete these course requirements.
+ Conduct periodic review of student transcripts; regularly review students' progress in their respective areas of interest thanks to students' academic advisors; and provide

timely feedback to the students so that appropriate action can be taken; copy of such review is given to the BiRDI Chair.
+ Evaluate teaching effectiveness of lecturers in relevant course(s); if effectiveness is below expectations, work with lecturers to improve.
+ Regularly review assessment tools; establish a continuous feedback mechanism, such as an exit survey, to ensure that program goals and processes in place to achieve them (i.e., those listed under each goal) are regularly reviewed and adjusted as needed.

[Exh.2.04 Course outline details].

- Assessment of student achievement of ELOs 1 and 2

+ Successful completion of core and elective courses on theory and application of general education and foundation courses as well as specialized major courses
+ Core courses impart competency in students' analytical abilities
+ Minimum acceptable grade threshold is C or 2.0 in a 4.0 scale.

b. ELOs 3 and 4: ***On completing the program, the students are able to select and enhance the use of techniques, skills, and up-to-date technological tools necessary for biotechnology practices in reality; design and conduct experiments to arrive at solutions to improve work performance; conduct various activities to design, organize, manage and operate production facilities in biotechnology;***

- Roles of the program in helping students to achieve ELOs 3 and 4

+ Offer required core and elective courses (theory and practice)
+ Regularly review students' progress in their respective areas of interest thanks to students' academic advisors; provide timely feedback to the students so that appropriate action can be taken; copy of such review is given to the BiRDI Chair.
+ Regularly interact and advise students thanks to academic advisors and research committee members in choosing and completing the thesis.
+ Regularly review assessment tools; establish a continuous feedback mechanism such as an exit survey to ensure that program goals and processes in place to achieve them are regularly reviewed and adjusted as needed.

- Assessment of student achievement of ELOs 3 and 4

+ Successful completion of core and elective courses (theory and practical)
+ These core courses impart competency in students' analytical abilities.
+ Minimum acceptable grade threshold is C or 2.0 in a 4.0 scale.

c. ELOs 5 and 6: ***On completing the program, the students are able to analyze the demands and mobile all resources available to design processes to help organize, manage and operate biotechnology activities (namely the production of new plant and animal varieties, new microorganisms; microbiological products, techniques…); identify and compare work issues to come up with solutions to problems in biotechnology and be able to create a service business;***

- Roles of the program in helping students to achieve ELOs 5 and 6

+ Timely determine appropriate elective courses in student's area of interest and provide advice accordingly.
+ Provide early introduction to research methods and opportunities for research to students enrolled in the program; for instance, provide students with opportunity to work with BiRDI staff on applied issues, including those funded by grants *[Exh.2.05 Scientific researches by students]*.
+ Partner students with BiRDI members whose areas of interest and expertise match a particular student's area of interest in scientific research for thesis guidance.
+ Provide students with opportunities to present research and receive feedback.
+ Conduct critical reading of thesis by members of the committee of BiRDI.

+ Inform assessment criteria to the students and the members of the committee of BiRDI:

  (1). Public defense of thesis by students. Such defense is assessed by the student's advisor and the thesis committee members;

  (2). Critical reading and assessment of thesis by the student's advisor and the thesis committee;

  (3). Presentations in English of research outputs in local and international conferences where English was used for comments as well as Q&A session between the committee members and the students *[Exh.2.06 Abstracts, posters, proceedings and photos of the conferences];*

  (4). Publications of research outputs in journals *[Exh.2.07 Scientific articles by students]*.

- Assessment of student achievement of ELOs 5 and 6

+ Successful completion of core courses such as field trip (1 credit), Internship-Practical training in industry (3 credits) and Biotechnology seminars (7 credits).
+ A number of applicable scientific research and academic activities of BiRDI students have been awarded in different national and regional contests *[Exh.2.08 Awards from different levels to students]*.
+ Students obtain various knowledge thanks to elective courses in their respective areas of interest (there is no minimum credit requirement, but a student may take 19+ elective credits and 10 credits for graduation thesis in his/her area of specialization).
+ Successful completion of undergraduate thesis in the student's area of interest. The quality of such original research is assessed through public defense of the thesis *[Exh.2.09 Graduate theses and evaluation forms]*.

d. ELOs 7, 8 and 9: ***On completing the program, the students are able to apply effective skills in communication to exchange and sharing information in collaboration to develop biotechnology; develop leadership, teamwork and soft skills for employment and promotion; construct life-long learning as a personal skill and consciousness and integrate study and research in daily work to be ready for national and international research collaboration; and protect and improve personal health, fulfill civic responsibility, abide by the laws, be insightful on contemporary political and social issues, and contribute to sustainable development of the biotechnology area, the environment, and the society***

- Roles of the program in helping students to achieve ELOs 7, 8 and 9

+ Instruct students to write research briefs in memorandum format as a part of written assignments in undergraduate courses.
+ Encourage and facilitate students to present their research or give training to other students (both in class and outside the classroom); lecturers provide feedback on good and weak presentation skills.
+ Encourage lecturers to use high standards of communication skills (both oral and written English).
+ Regularly review and evaluate course content to ensure courses offered and syllabi are aligned with student learning goals.
+ Organize seminars by invited lecturers from MSU and other institutions and industries so that students can update biotechnology knowledge and familiarize themselves with different communication and presentation skills, and can also improve their English *[Exh.2.10 Working schedule for visiting lecturers]*.
+ Encourage students to attend seminars hosted by BiRDI each month/semester
+ Regularly review assessment tools through a continuous feedback mechanism, such as an exit survey, to ensure that program goals and processes in place to achieve them are

regularly reviewed and adjusted as needed *[Exh.2.11 Documents of curriculum modification]*.

***- Assessment of student achievement of ELOs* 7, 8 and 9**

+ Students should know the standard structure of and be able to communicate effectively in different written and oral formats (research articles, research report for a client related to biotechnology, short internal memorandum, newsletter article designed for a wider audience), effective oral presentation of research or extension reports in both academic and non-academic settings (research seminars, executive briefings, and internal training).
+ Evaluation and timely feedback from instructors in courses where written requirements is compulsory (such written requirements help synthesize topics taught in class)
+ Evaluation and feedback by students' thesis and oral presentation skills by the student's thesis.
+ Successful completion of undergraduate's thesis in student's area of interest.
+ Evidence of successful presentations made in courses

2.3. The specification program provides information for stakeholders (authorities, lecturers, students, employers):

To help stakeholders understand more about the Program and especially to provide students with the direction of majors choices and learning process, BiRDI has introduced the necessary information such as the target of specific training, professional skills, the general information of courses, the opportunities for future career and further study at postgraduate levels etc. on the website of CTU (www.ctu.edu.vn, http://birdi.ctu.edu.vn/) *[Exh.2.12 Websites of CTU and BiRDI; Exh.1.03 Student handbook]*.

The Program specification provides information on ELOs to achieve at the end of the Program. Students will be awarded with the Bachelor's degree of Advanced Biotechnology and the Certificate if they fulfill the defined ELOs. The Program specification also provides kinds of job that students can perform after graduating. Students will be able to work in government institutions related to biotechnology policy making, the institutes of biotechnology research, biotechnology enterprises or firms, commercial services related to biotechnology sector, and especially they can further their study overseas.

The purpose of the Program specification is to enable students to self- study and to update themselves with current knowledge. Students are trained to work in group and propose new ideas. These skills are very necessary for them to succeed in the future jobs.

From the points discussed above, the Program specification for the Advanced Biotechnology contains strengths to improve the quality of the program.

3. Program Structure and Content

The background of the program:

The project known as "Advanced training programs at several universities in Viet Nam between 2008-2015" was developed based on Decision No. 1505/QD -TTg and approved by Vietnamese Prime Minister on October 15th, 2008.

The objectives of the project are as following:

+ To implement a number of undergraduate advanced programs in order to facilitate the construction and development of a number of strong majors, faculties, and universities in accordance with qualified regional and international standards;
+ To improve the quality and implement basically and comprehensively innovative programs for undergraduate education in Viet Nam;

+ By 2020, some Vietnamese universities will be ranked among the top 200 universities in the world.

Since then, the Program has been built based on Document No. 300/BGD&ĐT-ĐH&SĐH issued by the MOET on January 12, 2006 (to guide how to deploy advanced programs), and Document No. 6666/QD-BGD-DT issued by the MOET on November 23, 2005 (on allocating the mission to deploy advanced programs for CTU).

The program development process:

Based on the above-mentioned documents by the MOET, the Rector of CTU signed a decision to establish the Executive Committee of undergraduate biotechnology advanced program. The Committee reviewed biotechnology programs of some famous universities in the world such as RMIT (Australia), Michigan State University (the U.S.A.), and Wageningen University (the Netherlands). The Committee finally selected the Biochemistry & Molecular Biology/Biotechnology program of MSU for benchmarking of the new program in CTU because MSU was then a high ranking university (ranked 154 in the United States and ranked 171 in the world (http://www.topuniversities.com/qs-world-university-rankings). These strong partnerships with CTU offer quite a few opportunities for academic and faculty exchange. This Program is also modified to be appropriate in the Vietnamese education system and the relevant Vietnamese labor market.

3.1. The program content shows a good balance between generic and specialized skills and knowledge

The Program was constructed based on the program frame of the MOET and met the requirements by the credit-based training system. In fact, the total number of courses is 64; the total number of credits is **151** (133 credits for major courses, 18 credits for political, physical and defense education courses). There are **132** obligatory credits (including **10** credits of graduation thesis), and **19** elective credits.

This flexible program helps students in self-learning and planning their study time on their own. In the training program, the general knowledge is made up of **56** credits (20 courses) taking place in the first 2 semesters and accounts for 37% of the program; the foundation knowledge consists of **55** credits (23 courses) accounting for 32.5% of the program, and the professional knowledge consists of **40** credits (13 courses and the graduation thesis) accounting for 30% of the program. These blocks of foundation and professional knowledge are offered within the last 6 semesters.

The Program consists of activities to formulate practical and soft skills among the students. As biotechnology requires a great deal of laboratory skills, most of the courses are offered with essential lab work. Besides, the students are trained with an intensive English course (equivalent to **20** credits) for the whole first semester. The details of these knowledge blocks and skills are illustrated in *Table 4 (Criterion 2)*.

3.2. The content reflects the vision and missions of Can Tho University:

a. Orientation Course and Personal Effectiveness

The students are required to register for the 2-credit course named *Introduction to Biotechnology* at the beginning of the Program and *Basic Biotechnology* later. These courses provide baseline information and concepts of biotechnology, relevant sciences, its history and applications in various fields, as well as potentials for career development. In addition, continual consultation is provided to the students thanks to academic seminars and the guidelines for Biotechnology students *[Exh.1.03 Student handbook]* for the freshmen. Extra efforts are made by academic advisors or visiting lecturers in various seminars (*See Figure 7: Flow-chat of Studying).*

There is a number of courses that help improve personal effectiveness and set potentials for career development such as scientific approaches (*Research Methodology*) and practical approaches (*Field trip & Practical Training* in industries). In addition, with the aim to enhance communication skills among the students, there are 5 courses related to biotechnology-related seminars where students prepare the themes and act out the activities by themselves and lecturers play the role of supervisors to help students in improving self-study capacity and potentials for career development. Moreover, the development of effective language communication skills among students is possible thanks to *Academic English* 1, 2 and 3. These skills are also enhanced thanks to seminar activities or technical reports that students must complete during the courses and reinforce in their capstone projects or graduation theses defense.

b. English, Social Sciences and Humanities Courses

- English courses: in the 1st and 2nd semester, the students have to attend *Intensive English* course (20 credits) offered by visiting native English lecturers. Moreover, students are required to complete 3 courses namely *Academic English 1* (3 credits), *Academic English 2* (3 credits) and *Academic English 3* (3 credits). Therefore, the graduates from the Program have a good command of English in addition to very good knowledge of biotechnology, which is a key strength of the Program and allows the graduates to study overseas or work in international contexts.
- Social sciences and Humanities courses include *Research Methodology* (3 credits), *Writing in Science & Technology* (3 credits). In addition, skills related to oral presentations and/or writing reports are required in most of the courses, helping students develop and improve inclusive personal communication skills. Among 151 credits of the whole program, 10 credits are allocated for social-political courses (i.e. *Revolutionary approaches of the Vietnamese Communist Party*, *Ho Chi Minh's Thoughts* and *Principles of Marxism 1&2*) and 2 credits for *Physical Education.* These courses cover key social and humanities issues.

Besides, the students from BiRDI take part in social activities organized by CTU such as 'green summer campaign' for community development activities in remote areas, various contests, the 'social housing building' program, blood donor campaigns and teaching English for poor children. These activities attract active participation by the students. All of these extracurricular activities play an important role in developing personality, skills, spirit, morality, and active lifestyles among the students. This makes sure the graduates become good citizens in terms of talent and ethical values as well.

3.3. The contribution made by each course to achieving the learning outcomes is clear.

The Program is designed on the credit-based training system which arranges courses in regular semesters and summer semesters, surrounding 3 major blocks of knowledge. The prerequisite courses ensure students possess enough necessary knowledge for advanced courses; the diversified elective courses ensure the continuity and guide students to the knowledge and graduate thesis in biotechnology. The courses of military training, physical education and foreign language are regarded as the conditional courses which help create flexibility for the students. All of these courses have general and specific objectives, are reasonably structured and systematically designed according to the program frame of the MOET and address practical professional needs of the labor markets. Each course is evaluated in terms of the course's quality and ELOs so that achieving the goals of each course reflects the student meeting the relevant ELOs. *Table 7* shows the relationships of the courses and the program outcomes of the Program.

Table 7. Matrix of courses vs. learning outcomes (Skill matrix)

Knowledge Blocks		No	Courses		# Credit	1	2	3	4	5	6	7	8	9
General knowledge (compulsory) (56 credits)	**Political Education**	1	ML009	Principles of Marxist-Leninism 1	3	H	N	N	N	N	N	S	N	H
		2	ML010	Principles of Marxist-Leninism 2	3	H	N	N	N	N	N	S	N	H
		3	ML115	History of Vietnamese Communist Party	2	H	N	N	N	N	N	S	N	H
		4	ML144	Ho Chi Minh's Ideology	2	H	N	N	N	N	N	S	N	H
	English	5	EN101	Advanced English I	3	H	S	S	S	S	S	H	H	S
		6	EN102	Advanced English II	3	H	S	S	S	S	S	H	H	S
		7	EN103	Writing: Sciences & Technology	3	H	S	S	S	S	S	H	H	S
	Natural Sciences & Maths	8	CS101	Basic informatics	1	H	S	S	H	H	H	S	S	S
		9	CS201	Basic informatics Lab.	2	H	S	H	H	H	H	S	S	S
		10	BS110	Cells and Molecules	3	S	H	S	S	N	S	S	S	S
		11	BS161	Cells and Molecules Lab I	1	N	S	S	H	S	H	S	S	S
		12	MT132	Calculus I & II	6	H	S	N	S	N	S	N	S	N
		13	PH183	Physics for Scientists and Engineers I	4	H	S	S	S	N	S	S	S	N
		14	PH184	Physics for Scientists and Engineers II	4	H	S	S	S	N	S	S	S	N
		15	CH141	General Chemistry I	3	H	S	S	S	N	S	S	S	S
		16	CH161	General Chemistry Lab I	1	H	S	H	H	S	S	H	S	N
		17	CH142	General Chemistry II	3	H	S	S	S	S	S	S	S	S
		18	CH162	General and Inorganic Chemistry Lab II	1	H	S	H	H	S	S	H	S	N
	General Education	19	QP001	Defense Education	6	H	N	N	N	N	N	H	N	H
		20	TC100	Physical Training	2	H	N	N	N	N	S	S	S	H
Fundamental knowledge	**Basic** *(compulsory) (30 credits)*	21	ZO341	Fundamental Genetic	4	H	H	S	S	N	S	S	S	N
		22	MI301	Introductory Microbiology	3	H	H	S	S	S	S	S	S	N
		23	MI302	Introductory Microbiology Lab	1	H	H	H	H	S	S	H	S	N
		24	BS111	Organism and Populations II	3	H	H	S	S	S	S	S	S	N
		25	BS211	Organism and Population Lab II	1	H	H	H	H	S	S	H	S	N
		26	CH351	Organic Chemistry I	3	H	H	S	S	S	S	S	N	N
		27	CH352	Organic Chemistry II	3	H	H	S	S	S	S	S	S	N
		28	CH355	Organic Chemistry Laboratory	2	H	H	S	S	S	S	S	N	N
		29	BC461	Biochemistry I	3	S	H	H	S	S	S	S	S	S
		30	BC471	Biochemistry Laboratory I	2	S	H	H	S	S	S	H	S	N
		31	BC462	Biochemistry II	3	S	H	H	S	S	S	S	S	S
		32	BC472	Biochemistry Laboratory II	2	S	H	H	H	S	S	S	S	N

	Advanced (*Compulsory courses) (16credits*)	33	BT100	Guideline in Biotechnology	0	S	S	S	S	H	S	S	S	S
		34	CS464	Statistics for Biologists	3	H	N	S	H	H	S	S	S	N
		35	BT300	Research Methods	2	H	H	S	S	H	H	S	S	N
		36	BT197	Biotechnology Seminar I	1	S	H	S	S	H	S	H	S	S
		37	BT198	Biotechnology Seminar II	1	S	H	S	S	H	S	H	S	S
		38	BT199	Biotechnology Seminar III	1	S	H	S	S	H	S	H	S	S
		39	BT298	Biotechnology Seminar IV	2	S	H	S	S	H	S	H	S	S
		40	BT299	Biotechnology Seminar V	2	S	H	S	S	H	S	H	S	S
		41	BT303	Bio-informatics	3	H	H	S	S	S	S	H	S	S
		42	BT200	Field trip	1	H	H	S	S	H	H	S	S	S
Professional major knowledge	**Required major courses** *(20 credits)*	43	BT201	Introduction Biotechnology	2	H	H	N	S	H	S	S	S	S
		44	MM445	Basic Biotechnology	4	H	H	N	S	H	S	S	S	S
		45	BB801	Molecular Biology	4	S	H	S	S	H	S	S	S	S
		46	BT301	Genomics and its application	4	S	H	S	S	H	S	S	S	S
		47	MM433	Microbial Genomics	3	S	H	S	S	H	S	S	S	S
		48	BT480	Practical training in industry/ Biotech institutions	3	H	H	H	S	H	H	H	S	S
	Elective major courses *(19/44 credits)*	49	BT305	Plant tissue culture	3	S	H	S	S	H	H	S	S	S
		50	BT306	Proteomics	4	S	H	S	S	H	H	S	S	S
		51	BT304	Food Fermentation	3	S	H	S	S	H	S	S	S	S
		52	CS441	Plant Breeding and Biotechnology	3	S	H	S	S	H	H	S	S	S
		53	SH058	Aquaculture Biotechnology	3	S	H	S	S	H	H	S	S	S
		54	ZO892	Biodiversity	2	S	H	N	N	H	S	S	S	S
		55	TT465	Plant physiology	3	S	H	S	S	H	S	S	S	S
		56	SH072	Animal physiology	3	S	H	S	S	H	S	S	S	S
		57	CB344	Food Biochemistry	3	S	H	S	S	H	S	S	S	S
		58	FS440	Food Microbiology	3	S	H	S	S	H	S	S	S	S
		59	MM413	Virology	3	S	H	S	S	H	S	S	S	S
		60	AN407	Food and Animal Toxicology	3	S	H	S	S	H	S	S	S	S
		61	HR486	Biotechnology in Agriculture: Applications and Ethical Issues	3	S	H	N	S	H	S	S	S	S
		62	BB856	Plant Molecular Biology	3	S	H	S	S	H	S	S	S	S
		63	BT302	Social and Economical Aspects of Biotechnology	2	S	H	S	S	H	S	S	S	S
Graduation Thesis		64	BT499	Graduation thesis	10	S	H	H	H	H	S	H	S	S

Note: H = Highly Supportive; S = Supportive; N = None

Each course has a course outline including the course ID, course name, course structure, course prerequisite condition(s), short description, details of chapters and methods of assessment, and references as well *[Exh.2.04 Course outline details]*.

3.4. The program is coherent and all subjects and courses have been integrated.

The Program is reasonably designed in relation to compulsory and elective courses. The elective courses are designed to direct students to a profound specialization. The courses are integrated by defining the prerequisite courses required for a number of courses, especially the courses of specialized knowledge; the relevant contents are integrated to strengthen the knowledge in the previous courses of the Program.

The determination of prerequisite courses in the credit-based training system is necessary for a number of courses to regulate the order of accumulation of knowledge of students on an appropriate and strict basis. The determination of the prerequisite courses is always carefully considered, and it must not exceed 2 other previous courses for a particular course in order to avoid excessive bounds which create difficulties for students in registration courses.

3.5. The program shows breadth and depth

All the courses related to general knowledge, foundation knowledge and specialized knowledge have general and specific objectives and reasonable structures.

The Program's design and construction focuses on both breadth and depth as well as the specialization of knowledge:

- **Breadth:** More than half of the curriculum (69.5%) is general and foundation education which equips students with basic knowledge in mathematics, informatics, and sciences (biology, chemistry, biochemistry, physic, fundamental genetics) and technological, social, political, and ethical constraints of global society. Therefore, the graduates from the Program by BiRDI can apply broad knowledge of biotechnology to a diverse range of careers or pursue graduate education.
- **Depth:** The curriculum has core and elective courses in biotechnology, which provides students insight on scientific principles, analysis and design skills to achieve success in the practice or in advanced study and research of biotechnology.
- **Professionalism:** The curriculum also prepares students for professional experiences and soft skills (communicational skills, critical thinking, and ability to work on multi-disciplinary teams), professional and ethical responsibility and the commitment to life-long learning in order to succeed in any working environment.

3.6. The program clearly shows the basic courses, intermediate courses, specialized courses and the final project, thesis or dissertation

The blocks of general, foundation and professional knowledge were designed and constructed through the specific steps in developing the Program by the Committee of Science and Training of BiRDI who have expertise and experiences from their study abroad, the lecturers from MSU, and feedbacks from local stakeholders. The Program paid sufficient attention to the balance of blocks of knowledge and the ELOs are transferred into the relevant blocks.

(1). **General education (56 credits):** consisting of social science and humanity courses (Philosophy, Principle of Marxism, Ho Chi Minh's Ideology, History of Vietnamese Communist Party, and national defense training), sciences (Biology, Chemistry, Mathematics, Physics) English and cognitive skills (critical thinking course). This block of knowledge provides students with social and political knowledge that help them become good citizens.

(2). **Foundation knowledge (49 credits):** consisting of basic knowledge of biotechnology. This block of knowledge includes Fundamental genetic, Microbiology, Organism and Populations, Organic Chemistry, and Biochemistry... These courses are required before students are trained with the advanced foundation knowledge.

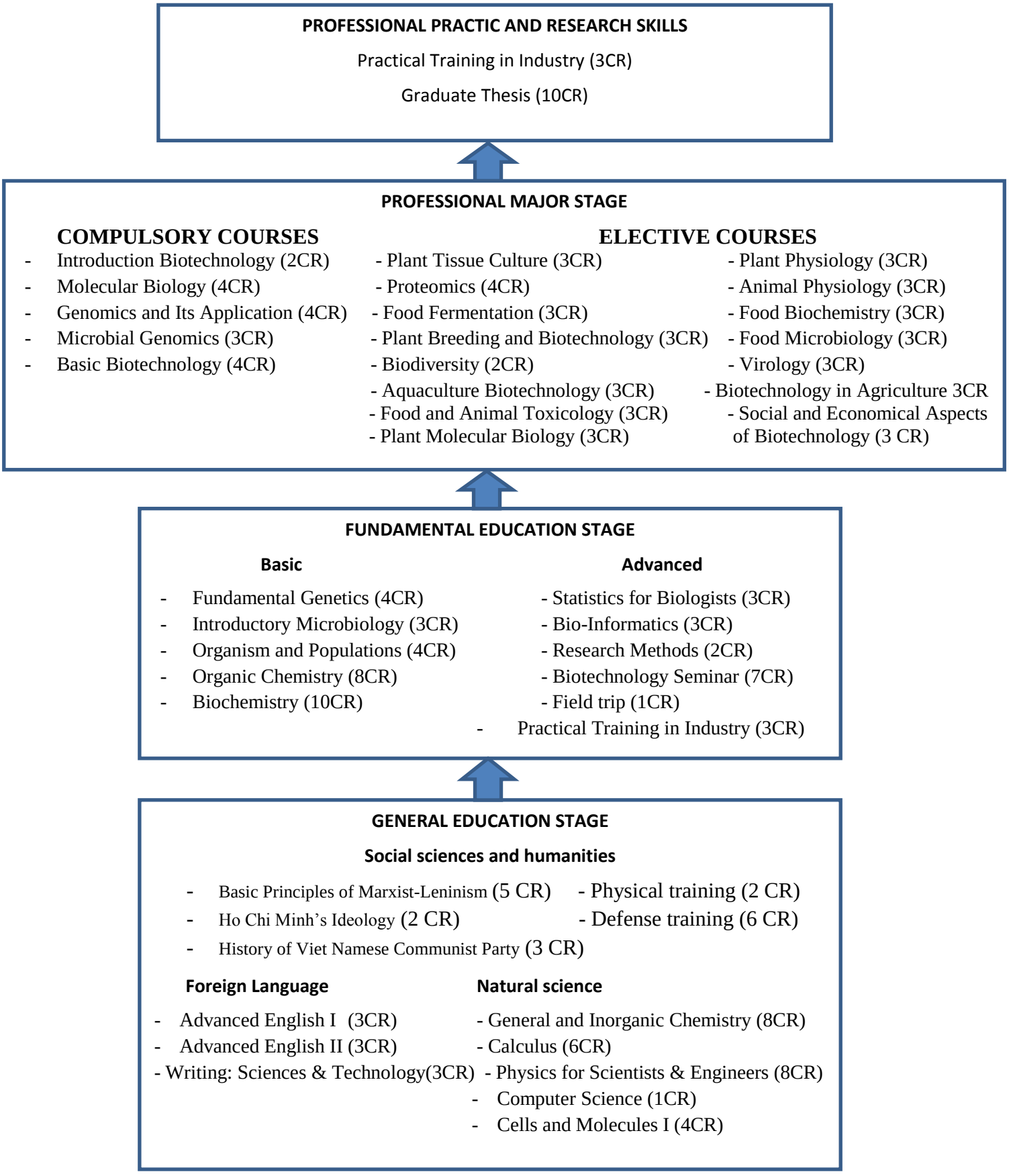
(3). **Advanced foundation knowledge (19 credits):** consisting of advanced knowledge of biotechnology program. Students are trained with professional skills for their major of study such as bioinformatics, statistics, and scientific research to conduct experiment. Especially, the biotechnology seminars (7 credits) will train students to search, process and present knowledge of biotechnology which is very important for students to target their future career and plan for the thesis e.g. solving basic biotechnology problems.

(4). **Professional major knowledge (36 credits):** including 17 credits of core biotechnology**.** In addition, students have to select 19 in 44 elective credits (for intensive biotechnology, Plant Tissue Culture, Proteomic, Food Fermentation, Plant Breeding and Biotechnology, Biotechnology in Agriculture, Biodiversity, Plant Physiology, Animal Physiology, Food Biochemistry, Food Microbiology, Virology, Food and Animal Toxicology, Biotechnology in Agriculture, Plant Molecular Biology, Social and Economical Aspects of Biotechnology).

(5). **Professional practice and research skills (13 credits):** including Internship (Practical Training in Industry) (3 credits) and the thesis (10 credits). Internship is required before the final thesis. This is an opportunity for students to learn in professional practice and their first approach to industrial biotech institutions. Students have to work (internship) at their chosen institutions for at least 08 weeks and are supervised by the institutions. Students have to present the prefer topic of internship, letter of recommendation for student internship, the final result and report. After completing the internship, students will receive comments from the institutions and they have to present the internship results in English and answer lecturers' questions. Final marks will be combination of report presentation and the institution's comments. Besides doing the internship, students have ideas for their final thesis and intention for future career. The final thesis is required for graduation *[Exh.3.01 Documents of on-the-job practice]*.

Furthermore, during the internship, students will form a research idea and review all related knowledge. Then, the idea will come up with solution by supporting theory, software simulation or hardware implementation during the thesis. For thesis defense, some documents included are list of student attending thesis defense, decision of establishment of Students' Thesis Committee, Thesis Report, Students' thesis defense, questions and answers, and comments in English; there are defined Thesis procedure. Internship and the thesis occupy an important part of the whole curriculum, emphasizing an objective of Biotechnology program in encouraging and nurturing students' interest in doing research *[Exh.2.09 Graduate theses and evaluation forms]*.

Figure 7: Flow-chat of Studying



3.7. The programme content is up-to-date.

a. The program development:

On May 2006, an official of BiRDI visited MSU in 2 weeks to meet with 20 professors in seeking support to establish the program and inviting professors to consult and lecture in the program. MSU appointed Professor Terrence Marsh as a coordinator for a partnership program to help CTU in building the program. Thus, CTU launched the first version of the BA advanced Biotechnology program which included 160 credits.

To ensure the completion of the program, CTU continued to hold meetings to complete the program at CTU (December, 2006) with the participation of all managers, teachers who would lecture in the program, and 2 MSU professors (Prof. Terence L. Marsh and Prof. David Dewitt*[Exh.3.02 Related photos and minutes of conferences and meetings]*. The main content of the meeting was to discuss and collect constructive feedbacks to complete the program; presentations and discussions focused on a number of courses in the program which might overlap. As a result, the BA advanced biotechnology program was adjusted to consist of 155 credits.

The program was up-to-date during the implementation: the Biotechnology program was operated from the academic year 2006-2007 with 155 credits. From the academic year 2008-2009, the program was adjusted to include 151 credit, for BiRDI decided to exclude 2 political credits and 2 biochemistry practice credits due to issues of time and overlap in content. The 151-credit program is shown on *Table 11. Matrix courses vs. learning outcomes.*

b. The program is evaluated by The Ministry of Education (MoET)and Training:

The Biotechnology program is a target program and is evaluated by MoET. The assessment of MoET covers all aspects of the Program. The main points are: Deployment plans of advanced program; plans to implement lecturers, faculty and building for the program; Classrooms; Faculty workroom; Library; Program structure; learning material; Enrollment and teaching; training methods; assessment methods; Lecturer organization; Plan on visiting lecturers; plant to invite lecture from partner universities; plan on student scientific researchs; The training results of student courses; Difficulties, limitation, and suggestions.

The assessment results showed that the Biotechnology program was appropriately deployed and operated as well as achieved good results *[Exh.3.03 Minutes of the evaluation on the curriculum by the MOET]*.

c. The updated program in 2014-2015

With the purpose of evaluation and completed construction for a training program that provides high-quality training as well as meets the requirements of the society, a significant workshop was held by BiRDI to evaluate the program on March 2014.

The workshop had the participation and contribution of the stakeholders from training units, employers, alumni and current students of the program. All of them participated activley in discussions on contribution and changes to the Program in order to meet the needs of the labor markets and the society *[Exh.3.04 Documents of the conferences, meetings in 2014]***.** Feedbacks on the Program can be listed as the following:

1) Students of the Program have good command of English, strong professional skills, self-study skills, and teamwork spirit.
2) Students need to have knowledge related to management, Vietnamese, documenting work (optional); to enhance practical knowledge.

3) The program curriculum needs to be deep and focus on some specialized fields such as animal biotechnology, plant biotechnology, food biotechnology, in order to adapt to requirements by the employers.

4) The Program should invite employers to present seminars to improve student's soft skills (employee skills), and orietn their profession pathway.

5) The Program needs to cooperate with companies to select appropriate research projects and thesis which contribute greatly to the future working companies of the graduates of the Program.

Based mainly on the present biotechnology program the revised one has some changes such as 5 additional courses (10 Credits), namely General logictics, General document & archive, Medical biotechnology; Animal biotechnology; Food biotechnology; and 06 practical courses (6 credits) are added - Physics for Scientists and Engineers Lab; Fundamental Genetic Lab; Statistics for Biologists Lab; Bio-informatic Lab; Plant tissue culture; and Proteomics Lab.

Implementation of the program

The Program is implemented by BiRDI and monitored by the Department of Academic Affair (DAA) of CTU. Guidelines for the implementation of Biotechnology program are detailed in the Academic Regulations of CTU *[Exh.3.05 Academic Regulations*]. All changes/revisions related to the program require official approvals by DAA, CTU's Committee for Education and Research and finally the Rector Board.

Basically, BiRDI is responsible for (i) making teaching plan for each academic year, (ii) assigning teaching workload for full-time lecturers or visiting lecturers *[Exh.3.06 Class schedule]* (iii) organizing schedule for lab-work, (iv) operating the laboratory system including the purchase of necessary chemicals/materials, (v) organizing exams, (vi) providing relevant academic services to students, and together with DAA ensure the quality control.

The lecturers are responsible for the quality of their lectures which should follow the approved syllabi filed at both BiRDI and the DAA and should be made available online by the responsible lecturers before the course commencement. Based on the approved ELOs, the lecturers can modify the syllabus *[Exh.2.04 Course outline details]*, but they can only apply the new one with official approval by BiRDI and DAA.

4. Teaching and Learning Strategy

BiRDI has applied an appropriate teaching and learning strategy in order that the students can absorb and apply the knowledge gained during their academic years. Besides, the students can have their own directions in studying for better results based on the vision of CTU and *[Exh.2.03 Statute No 43 on regular undergraduate and college education under the credit system of MOET issued on August 15, 2007, Exh.3.05 Academic Regulations, Exh.3.06 Class schedule, Exh.4.01 Lecturers' handbook]*.

4.1. The faculty or department has a clear teaching and learning strategy

The lecturers involved in the Program were well-trained with teaching methodology, lecture notes and teaching plans before becoming staff members and lecturing in the Program.

BiRDI has diffused online the teaching and learning strategy thanks to well-prepared course syllabi. All the courses are offered to students based on the principle for learner-centered training activities.

Every course is described in detail in the course syllabus, including theory and practical work. To evaluate the achievement of the ELOs among the students, there are mid-term exam (20-30% of the total final score), seminars (10-20% of the total final score) and final exam (60% of the total final score).

The lecturers have intensively applied the active teaching methodologies. At the end of every semester, the students receive a questionnaire form for each course and provide their comments on the course-related questions; and then QATC analyses the replies and sends the results to the lecturers. The teaching and learning strategy applied in the Program meets the requirements of the society. This is confirmed by employers' feedbacks and the high ratio of students who have had jobs after graduating from the Program.

Lecturers involved in the Program have to meet the requirements by MOET and CTU's criteria for teaching *[Exh.4.02 Requirements to be a lecturer]*. Besides, the lecturers also have to attend short training sessions on teaching methodology organized by the School of Education of CTU and experts from MSU *[Exh.4.03 Documents on attending the workshop "Developing curriculum and teaching for active and engaged learning]*.

In addition, BiRDI provides students with good learning conditions through lecturing by professors as well as specialists from international universities *[Exh.4.04 Invitation letters for international professors and specialists]*.

The efficiency of teaching and learning strategy is evaluated through the results of students while studying and working after graduation *[Exh.4.05 Reports of Advanced Program in Biotechnology]*.

4.2. The teaching and learning strategy enables students to acquire and use knowledge academically

Numerous seminars and case studies introduced in the courses in the Program help students in conceptualizing knowledge and making applications later in practical work *[Exh.4.06 Course outline details with seminars and case studies]*.

Information technology is applied in teaching. Lectures are prepared and given by power-point slides and video clips. These techniques help students understand concepts and principles in an effective way *[Exh.4.07 Power-point slides, video clips]*.

The courses consist of theory and practical work. The practical work helps students understand the lessons more precisely than just following theoretical classes *[Exh.4.08 Course outline details with theory and practical work]*.

4.3. The teaching and learning strategy is student-oriented and stimulates quality learning

The teaching is carried out through simulations for solving problems in case studies and field trips to biotechnology factories, companies, institutes and the like, which enhances open-mindedness among the students in order to achieve quality study. After these visits, the students have to report their activities and gain of knowledge in groups and the report is graded as a theory subject *[Exh.4.09 Student reports for field trips]*.

The content of the practical work provides practical knowledge to students that will be useful for them to manage problems that might happen in future working conditions *[Exh.4.10 Student reports of the course Practical Training in Industry and feedbacks of companies]*.

4.4. The teaching and learning strategy stimulates action learning and facilitates learning to learn

The teaching and learning strategy applied in the Program enhances active learning through questions given at the end of every chapter of a subject. Beside the learning program, various seminars and introduction of research methodology help students increase their self-confidence, presentation skills, interpersonal skills, group discussion and negotiation skills, Internet skills, and library-based skills. The students have time for studying, discussing inside and outside classes with lecturers and partners or during laboratory sessions.

Moreover, regularly-organized workshops and seminars upgrade knowledge of the students in the Program. Therefore, the students are very active, creative and good in English.

Many papers were presented by the students in English in international workshops *[Exh.4.11 Students' presentations in international workshops]*.

In the Program, scientific research activities are also emphasized. Final dissertations of students are supported by the Program in order to ensure that their quality meets standards by the research fund for CTU staff. The juniors and seniors of the Program are encouraged to carry out research *[Exh.2.5 Scientific researches by students]*. The knowledge gained from these researches trains the students with skills and experiences for their job after graduation. Through these scientific research activities, the students could approach the research methodology and apply theoretical work into practical work. The students are not only supported in doing research annually but also in contests organized in CTU or in local areas *[Exh.4.12 Announcement on contests]*. It is good to know that the students from BiRDI always got top prizes and awards. Conducting scientific research also helps students participate confidently in contests; and many of them got valuable national awards *[Exh.4.13 KOVA prizes, Young biologist contest organized in Ho Chi Minh City 2010, High quality of Rice in An Giang 2007 and in Soc Trang 2011]*. Besides, the students also had the scholarships for student exchanges *[Exh.4.14 Documents for students' exchange]*.

5. Students Assessment

5.1. Student assessment covers student entrance, student progress and exit tests

Student assessment is a permanent activity in CTU and BiRDI, including entrance assessment, learning progress and exit assessment. All assessment activities help lecturers to keep track of the quality of student learning progress. From that, under the lecturers' guidance and timely help, the students will take corrective actions for appropriate modification of their learning activities. The assessment process is conducted based on the Regulation No. 43/2007 issued by MOET *[Exh.2.03 Regulation No 43 on regular undergraduate and college education under the credit system of MOET issued on August 15, 2007]* and the Academic Regulations by CTU *[Exh.3.05 Academic regulations]*. Tests and examinations are clearly assigned, and criteria are applied in plans of distinct tests and are consistent in the whole program. All regulations are based on credit-based training regulations issued together with *Regulation No 43 of* MOET dated on August 15, 2007 *[Exh.5.01 Academic curricula are shown on website:http://birdi.ctu.edu.vn/birdi_cttt/]*.

- ***Students entrance assessment***: Student entrance assessment is carried out through the National University Entrance Examination with the admission regulations by the MOET (www.ctu.edu.vn) in regard to the regular training mode. There is the regulation on the *floor-grade* by the MOET and the *admission grade* by CTU in parallel with suitable policies regarding various candidates. All candidates must pass block B entrance exam (Mathematics, Chemistry, and Biology) or block A (Mathematics, Physics, and Chemistry) and then pass the assessment for English. The selection will be carried out according to the rules: students must meet admissions test scores and are ranked within the English scores (Pre-Intermediate level) that accords with the predefined quota number of students for the Program *[Exh.5.02 Announcement on admission scores, Exh.5.03. Results of English test]*.
- ***Student progress assessment***: The progress of the students in knowledge, skills and attitudes through the learning process is evaluated regularly in many different forms such as classroom activities, group exercises, seminars, practice, mid-term and final-term assessment and finally the graduation thesis *[Exh.2.04 Course outline details; Exh.5.04 Examination papers]*.
- ***Exit assessment***: Once the students have completed all the courses offered by the Program, they will carry out the graduation theses and must defend their theses in English *[Exh.05.05 Theses and Detailed summary]*.

5.2. The assessment is criterion-referenced.

1) Affirmation and dissemination of the criteria: lecturers have appropriate assessments for their relevant courses based on the academic regulations and general evaluation criteria by CTU. The course syllabus clearly states ELOs and assessment criteria, as well as the weights of assessment. These factors are uniformly discussed in BiRDI and lecturers will inform their students right at the beginning of the courses *[Exh.2.04 Course outline details]*.

2) Grading scales: In order to ensure the fidelity and evenness for students, a grading scale is designed for 8 levels so that it correctly reflects the amount and completed perceptional standard of knowledge vicinity levels and skills of each student in each semester. The assessment results are expressed by a 4-point scale corresponding to the letter scale of A, B^+, B, C^+, C , D^+, D and F as shown in *Table 8 [Exh.3.05 Academic regulations]*

Table 8: The classification of learning results based on grading scales.

Category	10-point scale grade references	Letter-scale grade references	
		Description	Grade
Excellent	From 9.0 to 10.0	Demonstrates complete understanding of course. All requirements of task are included in response.	A
Very Good	From 8.0 to 8.9	Demonstrates considerable understanding of course. All requirements of task are included.	B+
Good	From 7.0 to 7.9	Demonstrates considerable understanding of course. All requirements of task are included.	B
Average	From 6.5 to 6.9	Demonstrates partial understanding of course. Most requirements of task are included.	C+
Fair	From 5.5 to 6.4	Demonstrates partial understanding of course. Most requirements of task are included.	C
Poor	From 5.0 to 5.4	Demonstrates little understanding of course. Many requirements of task are missing.	D+
Very poor	From 4.0 to 4.9	Demonstrates little understanding of course. Many requirements of task are missing.	D
Fail	Below 4.0	Demonstrates no understanding of course.	F

[Exh.5.06 Document of grading scale]

5.3. Student assessment uses a variety of methods

The assessment of diligence and levels of knowledge and skills among the students is done covering discussions, reports related to practical work, homework, reports after course ending, thematic reports, project reports or group project reports (seminars). Finally, there are mid-term and end-term assessments *[Exh.05.04 Examination papers]*.

The assessment for soft skills and behavioral attitudes among the students is done when students participate in extracurricular activities, social work ... and the result is a final score combined with the learning outcomes as a basis to review and provide scholarships to students *[Exh.5.07 Decision on promulgating about extracurricular activities assessment form]*.

Students' progress is expressed through the results for each semester and each academic year as well as for the whole program. This result is presented in the academic transcript *[Exh.5.08 Academic transcript]*. The awards for academic achievement by students are based on their results to ensure fairness and conform to the MOET's and CTU's regulations *[Exh.3.05 Academic regulations]*.

The final assessment of students is done through activities and work to complete the courses including their graduation thesis. Each student carries out one experiment for his/her thesis (equal to 10 credits) that is within the themes for the discipline that he/she follows. The graduation thesis involves two steps:

(1). The student defends the thesis proposal, and he/she then corrects the proposal according to the committee's feedbacks to get it approved by BiRDI *[Exh.5.09 Documents of thesis proposal]*;

(2). The student defends the thesis before the Graduation Thesis Council. The Council consists of 3 members, one of whom is the student's thesis supervisor. The result of the thesis defense is the agreement in the scores by all 3 members. The students have to submit their complete thesis in Vietnamese after taking the comments by the Council members into consideration and a detailed summary of the thesis in English to BiRDI *[Exh.05.10 Documents of thesis defense]*.

General information on assessment is announced at the beginning of semesters so that students know the layouts, time frames and grading manners for mid-term and end-term exams.

The students are informed of the exam results via two ways: (i) direct information from the lecturer and (ii) information sent to their online account *[Exh.5.11 Website of academic administration system: https://htql.ctu.edu.vn/htql/login.php]*.

Any complaints from the students would be seriously considered following the regulations of CTU. At the end of each course, the lecturer is responsible for announcing the time and venue for delivery of the exam papers and replies to questions by students. This task is done in the week reserved for dealing with exam results in the BiRDI's schedule *[Exh.5.12 Complaint procedure of the exam results; Exh.3.05 Academic regulations]*. The students have the right to complain about the results directly with the lecturer. The lecturer explains in detail any point raised by the students. Most students are satisfied with this regulation and practice *[Exh.3.05 Academic regulations]*.

5.4. Student assessment reflects the expected learning outcomes and the content of the program

The assessment is done to ensure that students achieve the minimum knowledge of the Program relating to general knowledge, fundamental knowledge and specialized knowledge which then can support them in their future work after graduation. For each course of the Program, there are appropriate assessment methods. For example, mid-term and end-term exam questions for each and every course are compiled in order to cover basic principles of the courses, and case-study questions help students in solving practical problems during theoretical class hours *[Exh.5.04 Examination papers]*.

5.5. The criteria for assessment are explicit and well-known

The lecturers who co-teach a course have to discuss to agree on the objectives of their courses in accordance with the ELOs of the Program. The objectives of each course are transferred into criteria in assessing students' achievement in the courses *[Exh.2.04 Course outline details]*. In general, these assessment criteria are used to measure students' level of cognitive development applying the 6 major categories of cognitive domains by Bloom, namely remembering, understanding, applying, analyzing, evaluating and creating (Benjamin Bloom, 1981; Anderson & Krathwohl, 2001) *[Exh.5.04 Examination papers]*.

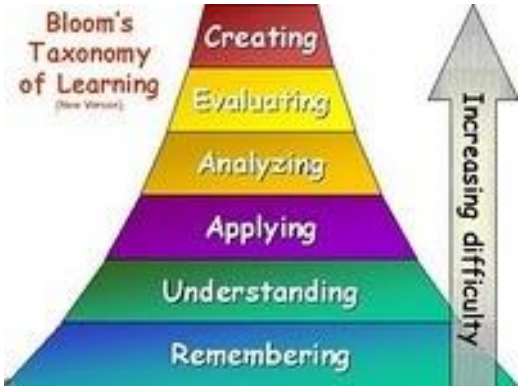


Figure 8: Categories in the cognitive domain of Bloom's Taxonomy

Students' assessment is made through classroom communication, seminars, team work, assignments, lab activities, mid-term and end-term exams, students' project and graduation theses.

The aims of the assessment are as following:

(i) Seminar presentation (in group or by individual) helps assess relevant knowledge, presentation skills, communication skills and discussion skills of the students;

(ii) Situational questions help assess how much students learn and can apply theory to solving practical problems;

(iii) Mid-term and end-term exams help assess the specialized knowledge of students after completing a course *[Exh.2.04 Course outline details]*. The final scores are informed to all students so that they can appeal (if any) before the results are uploaded to the academic management system at the end of the semester.

In the first class meeting of a course, the lecturer informs the requirements, methods, and criteria of assessment to the students. These elements are also described in the course syllabus *[Exh.2.04 Course outline details]*.

5.6 The assessment methods cover the objectives of the curriculum

The questions designed for the mid-term and end-term assessment cover the content and objectives of each course. The coverage ranges between 80-95%, stipulated by BiRDI. All the lecturers must follow this regulation when designing assessment items *[Exh.5.04 Examination papers]*.

5.7. The standards applied in the assessment are explicit and consistent

All the courses in the Program have obvious assessment criteria and assessment scales which are described in the Students Handbook and informed to the students by lecturers in the first class meeting of each course *[Exh.1.03 Student handbook; Exh.3.05 Academic regulations]*.

According to CTU's Academic Regulations, after the final test of each course, the lecturers publicly inform the results. The students have the right to complain with the lecturers about the results (if any), or they can complain to CTU if necessary *[Exh.3.05 Academic regulations]*.

6. Staff Quality

6.1. The staff are competent for their tasks

The staff members (including visiting lecturers) have been appointed based on the following criteria:

- Holding an M.S. or a higher degree in a field closely related to the course(s)
- Having adequate command of English
- Priority given to those who obtained M.S. or higher degree in courses intensively offered in English *[Exh.6.01 Curriculum vitae of the staff members]*
- Having experiences in teaching and research
- Being able to apply high technologies in teaching and research
- Having basic Informatics competence (at level A as required by the MOET).

Having been invited to involve in the Program courses, the staff members are informed of the ELOs and relevant regulations for the Program.

6.2. The staff are sufficient to deliver the curriculum adequately

Most of the lecturers in the Program have been teaching courses relevant to Biotechnology for several years so they have valuable teaching experiences. The total number of the staff members is 53. Of them, 31 are lecturers of CTU (9 Assoc. Professors, 12 Ph.D, and 10 MS) and 20 are visiting lecturers (16 Professors, 1 Assoc. Professor, and 3 Ph.D) *(Tables 9&10), [Exh.6.02 Teaching plan of the advanced program in Biotechnology; Exh.6.03 Plan of visiting lecturers invitation]*.

Table 9: List of the CTU lecturers in Advanced Program in Biotechnology

No	Full Name	Title/Degree	Degree confered by	Age	Years of teaching	Number of publications	Position
1.	Tran Nhan Dung	Assoc. Professor	Belgium	58	20	37	Director
2.	Ngo Thi Phuong Dung	Assoc. Professor	The Netherlands	55	31	52 1 book	Deputy Director
3.	Nguyen Van Thanh	Assoc. Professor	The Netherlands	49	17	10 4 books	Deputy Director
4.	Truong Trong Ngon	Assoc. Professor	Korea	57	32	15	Head of Department
5.	Nguyen Huu Hiep	Assoc. Professor	Viet Nam	59	36	77 2 books	Deputy Head of Department
6.	Le Van Be	Assoc. Professor	Belgium	52	30	7 1 book	Lecturer
7.	Duong Ngoc Thanh	Assoc. Professor	Philippines	58	33	55 7 books, 5 textbooks	Senior Lecturer

8.	Duong Hieu Dau	Assoc. Professor	Viet Nam	50	24	19 8 books	Lecturer
9.	Bui Thi Buu Hue	Assoc. Professor	Netherlands	48	25	22 2 books	Lecturer
10.	Nguyen Dac Khoa	PhD	Denmark	36	4	14	Deputy Head of Departmen t
11.	Nguyen Huu Khanh	PhD	Netherlands	52	30	12 7 books	Lecturer
12.	Le Thanh Phuoc	PhD	Australia	51	29	2	Lecturer
13.	Ngo Thanh Phong	PhD	Viet Nam	44	20	9 2 books	Lecturer
14.	Chau Thien Hiep	PhD	USA	46	24		Lecturer
15.	Bui Thi Minh Dieu	PhD	Belgium	53	31	11	Lecturer
16.	Duong Thi Huong Giang	PhD	Belgium	56	17	16	Lecturer
17.	Ly Thi Lien Khai	PhD	Japan	53	28	20	Lecturer
18.	Pham Vu Nhat	PhD	Belgium	36	13	11 1 book	Lecturer
19.	Nguyen Cong Ha	PhD	Japan	40	16	12	Lecturer
20.	Huynh Ngoc Thanh Tam	PhD	France	35	4	2	Lecturer
21.	Le Vinh Thuc	PhD	Malaysia	38	4	12 2 books	Lecturer
22.	Pham Van Hau	MSc	France	34	4	3	Lecturer
23.	Nguyen Thi Pha	MSc	Viet Nam	40	17	7 1 book	Lecturer
24.	Vo Van Song Toan	MSc	Viet Nam	41	6	10	Lecturer
25.	Huynh Xuan Phong	MSc	Viet Nam	33	7	24 3 books	Lecturer
26.	Bui Tan Anh	MSc	The Netherlands	56	32	6 2 books	Lecturer
27.	Ho Phuong Thuy	MSc	Australia	42	21	3 books	Lecturer
28.	Nguyen Van Dat	MSc	Viet Nam	43	19	6	Lecturer
29.	Tran Thi Xuan Mai	MSc	Belgium	51	24	9	Lecturer
30.	Nguyen Hai Quan	MSc	Belgium	35	12	4	Lecturer
31.	Do Tan Khang	MSc	Australia	31	2	10 2 books	Lecturer

Table 10: List of the visiting lecturers

No.	Full name	Title	Institution	Country	E-mail address
1.	Barbara Sears	Professor	Michigan State University (MSU)	USA	sears@msu.edu
2.	Jon R. Stoltzfus	Professor	Michigan State University (MSU)	USA	stoltzfu@msu.edu

3.	Helmut Bertrand	Professor	Michigan State University (MSU)	USA	mhelmut@msu.edu
4.	John Merrill	Professor	Michigan State University (MSU)	USA	merrill3@msu.edu
5.	Terrence L. Marsh	Professor	Department of Microbiology and Molecular Genetics Michigan State University (MSU)	USA	marsht@msu.edu
6.	Yong D. Hang	Professor	Cornell University	USA	ydh1@cornell.edu
7.	Graham H. Fleet	Professor	The University of New South Wales (UNSW)	Australia	g.fleet@unsw.edu.au
8.	Eddy Van Driessche	Professor	Universiteit Brussel	Belgium	edvandri@vub.ac.be
9.	Sonia Beeckmans	Professor	Vrije Universiteit Brussel (VUB)	Belgium	sbeckma@vub.ac.be
10.	Geert Dirk Joris Angenon	Professor	Vrije Universiteit Brussel (VUB)	Belgium	geert.Angenon@vub.ac.be
11.	Godelieve Gheysen	Professor	Ghent University	Belgium	godelieve.Gheysen@ugent.be
12.	Just M. Vlak	Professor	Wageningen University	The Netherlands	just.vlak@wur.nl
13.	Wolfgang Schumann	Professor	University of Bayreuth	Germany	wschumann@uni-bayreuth.de
14.	Mogens Jakobsen	Professor	University of Copenhagen	Denmark	moj@life.ku.dk
15.	Chin Ho Lin	Professor	National Chung Hsing University	Taiwan	chinho@dragon.nchu.edu.tw
16.	Kaeko Kamei	Professor	Kyoto Institute of Technology	Japan	kame@kit.ac.jp
17.	M. J. Robert Nout	Assoc. Professor	Wageningen University	The Netherlands	rob.Nout@wur.nl
18.	Suk-Ha Lee	PhD	Seoul National University	Korea	sukhalee@snu.ac.kr
19.	Michele Fluck	PhD	Michigan State University (MSU)	USA	fluck@msu.edu
20.	Kathleen M. Foley	PhD	Michigan State University (MSU)	USA	kathleenfoleygeiger@yahoo.com

Table 11: Number of the staff members *(Updated on 30 Mar. 2014)*

Classification	Male	Female	Total		PhD holders
			People	(FTEs)	
CTU Assoc. Professor	7	2	9	9	(9/9) 100 %
CTU lecturers	15	7	22	22	(12/22) 55 %
Visiting lecturers	16	4	20	4	(20/20) 100 %
Total	38	13	51	35	(41/51) 80%

In addition to subject-matter courses offered by the lecturers as described above, the students in the Program take non-major courses taught by the lecturers from the respective departments within CTU, i.e., the Department of Physical Education, the Center of National Defense Education, and the School of Political Science.

Table 12: The ratio between students and lecturers from 2009-2013

Year / Number of	2009	2010	2011	2012	2013
Permanent lecturers	18	20	24	22	22
Visiting lecturers	11	8	5	6	2
Number of students	129	156	155	163	195
Students/permanent lecturers	7.2	7.8	6.5	7.4	8.7
Students/permanent and visiting lecturers	4.5	5.6	5.3	5.8	8.1

6.3. Recruitment and promotion are based on academic merit system

The recruitment of lecturers to involve in the Program is based on the lecturers' competence in teaching and research. In addition, research assistants and highly-distinctive students are also considered to be appointed if their qualification meets the criteria for staff recruitments by CTU and BiRDI. The promotion of lecturers is based on their seniority, good performance in teaching and research, as well as the support and the relationship offered toward their students and colleagues *[Exh.6.04 Regulation of organization and administration on academic affairs, improvement of staff standard in CTU; Exh.6.05 Process for salary increase]*.

6.4. The roles and relationship of staff members are well defined and understood

Teaching and research experiences are conveyed from senior to junior staffs. Duties/responsibilities of staff members are clearly assigned by the Board of Directors of BiRDI to ensure that all tasks within the Institute are covered and smoothly operated. The assignment of tasks is informed to all staff through the weekly meetings, the annual staff congress, and/or official documents delivered from the BiRDI leaders *[Exh.6.06 Regulation on management of professional work for lecturers of CTU]*; as a result, the staff members can fulfill their duties with appropriate and timely guidance. An annual report is made by each staff member and submitted to the BiRDI leaders for staff evaluation and promotion *[Exh.6.07 Emulative registration forms]*.

Depending on the specialization and ability of each staff member, the Board of Directors assigns duties among the members appropriately, making sure that every assignment is transparent - everyone is equally treated so that high consensus and cooperation can be established within BiRDI *[Exh.6.08 Documents of Staff Evaluation]*.

Table 13: The responsibilities of each position within BiRDI

No.	Position	Responsibilities
1	Director and Deputy Director	Assign tasks and monitor all activities within BiRDI Plan and develop missions and visions Teach and do research Apply for grants
2	Lecturer	Teach and do research Supervise students' theses
3	Researcher	Do research Guide practical courses Supervise students' theses
4	Laboratory manager	Manage the lab and its devices Assist teaching and research activities
5	Administrative staff	Assist the BiRDI Leaders, all staffs, and students in administrative works

6.5. Duties allocated are appropriate to qualifications, experience and skill

Each lecturer has to complete a certain number of obligatory working hours regulated in the "Regulations on management of professional work for lecturers of Can Tho University" *[Exh.6.06 Regulations on management of professional work for lecturers of CTU]*. The obligatory working hours are set upon the classification in terms of scientific title/degree, and specification of each lecturer *(See Table 14).*

Every lecturer has to allocate time for both teaching and research activities. The higher scientific title/degree a lecturer holds, the more obligatory working hours he or she has to fulfill.

Table 14: Obligatory working hours of lecturers at Can Tho University

Classification of lecturer	**Obligatory working hours in teaching**	**Obligatory working hours in doing research**	**Total obligatory working hours**
Professor	340	170	510
Associate Professor	320	140	460
Senior lecturer with salary index ≥ 5.76	310	130	440
Senior lecturer with salary index from 4.40 to 5.42 or lecturer holding a PhD degree	300	120	420
Lecturer with salary index ≥ 4.32	280	100	380
Lecturer with salary index from 3.33 to 3.99 or lecturer holding an MS degree	250	80	330

Lecturer with salary index from 2.34 to 3.00	220	60	280
Probationary lecturer (85% salary)	50	10	60

Source: Regulations on the management of professional activities of lecturers at CTU

6.6. Staff workload and incentive systems are designed to support the quality of teaching and learning.

The management of lecturers' activities is done through the teaching schedules, the number of research projects and publications with the support of the software for academic administration system. The workload is estimated based on the number of students enrolling at the beginning of each semester and the workload assignment of respective staff members, ensuring that every member has reasonable workload to fulfill according to the Academic Regulations *[Exh.6.09 CTU administration website; Exh.6.10 Annual plan for professional activities of CTU staff and Departments]*.

6.7. Accountability of the staff members is well regulated

As described, tasks/responsibilities are assigned based on staff member competence, the obligatory working hours of each staff member, particularly for teaching and thesis supervision. Thanks to this, unequally treated and/or overloaded work can be avoided *[Exh.6.06 Regulations on management of professional work for lecturers of CTU]*.

6.8. There are provisions for review, consultation and redeployment

All CTU staff members are required to fulfill their obligatory working hours, and so the management through their teaching schedules, number of research projects and publications is necessary. Job promotion, particularly the shift up in employment status resulting in an increase of salary, is based on the working seniority of each staff member. Normally, after every 3 years of working, the pay ranges increase one time; however, if lecturers have excellent achievement in teaching, the pay ranges may increase earlier than 3 years *[Exh.6.11 Plan for staff promotion; Exh.6.12 Criteria for special case of staff promotion]*. Furthermore, lecturers who finish the Master degree or higher degrees or get higher scientific titles are also quickly promoted.

The plan for human resources development of the Institute for the period of 2008–2015 was approved by the Rector of CTU in 2008. This plan consists of training younger staffs for their higher degrees and offering new employment to ensure that a young generation of staff would be ready to take over tasks/responsibilities of retirees *[Exh.6.13 Staff development plan for 2008-2015, 2013-2022]*.

6.9. Termination and retirement are planned and well implemented

The plans for retirement, pension, and dismissal (if any) have been well-made and implemented, making sure that every staff is well and fairly treated in accordance to their contribution to the development of BiRDI and CTU *[Exh.6.14 Notice and Decision for retirement]*.

6.10. There is an efficient appraisal system

Self-discipline of CTU staff members has been shown through the annual plan for professional activities of each staff member at the beginning of the academic year *[Exh.6.10 Annual plan for professional activities of CTU staff and Departments]*, and annual staff evaluation activities *[Exh.6.15 Self-evaluation form]*. These practices ensure that the staff members fulfill their duties including completing obligatory working hours, doing research, publishing papers, writing books, and enhancing teaching approaches, etc.

The staff evaluation is carried out annually. To carry out this practice, self-evaluation

is done in addition to the evaluation by BiRDI's leaders *[Exh.6.16 Minutes of the staff evaluation and reward meeting]*.

7. Support Staff Quality

7.1. The library staff is competent and adequate in providing a satisfactory level of service

The Learning Resource Center (LRC) of CTU is one of the 4 most modern centers of the kind in Viet Nam. It reaches the international standards for a learning resource center. The LRC has 4 floors, with an operating area of about 7,200 square meters and 500 computers connected to Internet, serving more than 1,000 people at a time. The total budget to build up this center is 9 million US dollars, funded by the Atlantic Philanthropies within a program coordinated by RMIT University. The center has 60 staffs *[Exh.7.01 List of the Learning Resource Center staffs and their degrees]* and provides to readers more than 100,000 books and journals of various kinds. These resources enable the LRC to meet the needs for information as well as other teaching and learning activities of not only CTU students and staffs but also visitors from the MDR *[Exh.7.02 Website of the LRC http://www.lrc.ctu.edu.vn/eng/]*.

Besides the LRC, BiRDI has its own library where textbooks, course syllabi, journals, theses, etc. in Biotechnology and its related fields are located. There is 1 librarian who is responsible for all activities and serives in the library. This library is capable of serving around 200 students at a time.

Most of the Colleges, Departments, and other units of CTU have their own libraries. A number of them have resources relevant to Biotechnology (e.g., the College of Agriculture and Applied Biology and the College of Aquaculture and Fisheries), which can be of great help to students of the Program in searching for further references *[Exh.7.03 Website of the library of College of Agriculture and Applied Biology http://caab.ctu.edu.vn/thuvien/)*.

The librarians at CTU are evaluated to be enthusiastic and supportive.

7.2. The laboratory staff are competent and adequate in providing a satisfactory level of service

There are 4 technicians at BiRDI who are responsible for different fields and/or tasks.

Table 15: List of laboratory staff

No.	Lab	Full name	Title	Degree	Responsibility
1	Molecular Biology Lab	Tran Van Be Nam	Technician	BSc	Manage the lab and its devices Assist teaching and research activities
		Nguyen Dac Khoa	Lecturer	PhD	Do research Supervise students' theses
		Do Tan Khang	Lecturer	MSc	Run practical courses Do research Supervise students' theses
2	Plant Tissue Culture Lab	Nguyen Thi Lien	Lecturer	BSc	Manage the lab and its devices Assist teaching and research activities Run practical courses Do research Supervise students' theses

		Tran Thi Xuan Mai	Lecturer	MSc	Run practical courses Do research Supervise students' theses
		Nguyen Thi Pha	Lecturer	MSc	Run practical courses Do research Supervise students' theses
3	Protein-Enzyme Lab	Vo Van Song Toan	Lecturer	MSc	Manage the lab and its devices Assist teaching and research activities Run practical courses Do research Supervise students' theses
		Nguyen Duc Do	Lecturer	PhD	Run practical courses Do research Supervise students' theses
4	Molecular Genetics Lab	Bui Thi Minh Dieu	Lecturer	PhD	Run practical courses Do research Supervise students' theses
		Truong Trong Ngon	Assoc. Prof.	PhD	Run practical courses Do research Supervise students' theses
5	Food Microbiology Lab	Nguyen Ngoc Thanh	Technician	BSc	Manage the lab and its devices Assist teaching and research activities
		Huynh Xuan Phong	Lecturer	MSc	Run practical courses Do research Supervise students' theses
		Tran Vu Phuong	Lecturer	MSc	Run practical courses Do research Supervise students' theses
		Huynh Ngoc Thanh Tam	Lecturer	PhD	Run practical courses Do research Supervise students' theses
		Pham Hong Quang	Lecturer	BSc	Run practical courses Do research Supervise students' theses
6	Food Biochemistry Lab	Vo Van Song Toan	Lecturer	MSc	Manage the lab and its devices Assist teaching and research activities Run practical courses Do research Supervise students' theses
		Nguyen Minh Chon	Assoc. Prof.	PhD	Run practical courses Do research Supervise students' theses
7	Microbiology Lab	Nguyen Thi Thuy Duy	Technician	College	Manage the lab and its devices Assist teaching and

					research activities
		Nguyen Huu Hiep	Assoc. Prof.	PhD	Run practical courses Do research Supervise students' theses
		Tran Tra My	Researcher	MSc	Run practical courses Do research Supervise students' theses
8	Environmental Microbiology Lab	Tran Thi Giang	Researcher	MSc	Run practical courses Do research Supervise students' theses
		Cao Ngọc Diep	Prof.	PhD	Run practical courses Do research Supervise students' theses

The labs and their devices are maintained carefully. CTU has its professional team to manage the conditions of the labs and devices. There are 10 staff members working in this Department of Facility Management. 5 of them are responsible for direct mantenance and operation of the devices and equipments in CTU. The rest of them are responsbile for maintenace and operation of infrastructures, electricity and telephone services as well as water supply. These support staff members also take care of the fire-fight regulations and tasks in CTU *[Exh.7.04 Website of Department of Facility Management: http://websrv2.ctu.edu.vn/dept/dfm/, Exh.7.05 Certificates of lab sercurity]*.

BiRDI assigns 2 staff members to be fully responsible for the above tasks in collaboartion with CTU's team *[Exh.7.06 Decision for facility management staff]*.

7.3. The computer facility staff is competent and adequate in providing a satisfactory level of service

There are 2 staff members who are responsible for IT at BiRDI. One of them has a BSc degree in Computer Science and the other holds his college degree of the same field. The BiRDI website and the 2 computer rooms, each of which features 30 computers, are taken care of by these staff members. All of the computers are connected to Internet to serve the students of the Program *[Exh.7.07 Degree of computer facility staff]*.

CTU has its own IT teams to operate all IT activities and to take care of 1,000 computers on the campus. The IT team of the LRC manages 500 computers which can be used by all students of CTU *[Exh.7.02 Website of the Learning Resource Center: http://www.lrc.ctu.edu.vn/eng/]*.

7.4. The student services staff is competent and adequate in providing a satisfactory level of service

There are 12 administrative staffs at BiRDI. The Head of the Administrative Office is responsible for all the activities of this office while the Deputy Head is responsible for academic affairs. One staff is in charge of students' affairs, 2 work in IT services, 1 work as secretary and librarian, and 6 work on odd tasks *(See Table 16)*.

Table 16 : List of administrative staff members

No.	Full name	Title	Degree	Responsibility
1.	Tran Vu Phuong	Leturer	MSc	Head of Administrative Office
2.	Ly Thi Bich Thuy	Specialist	BSc	Deputy Head of Administrative Office Academic affairs
3.	Tran Nguyen Tuan	Specialist	BSc	Students' affairs
4.	Do Phuc Thai	Specialist	BSc	IT

5.	Nguyen Toan Thang	Specialist	College	IT
6.	Nguyen Thi Thao	Specialist	BSc	Treasurer Social insurance
7.	Tra Phan Hoa Lan	Specialist	BSc	Accounting
8.	Nguyen Thi Kim Loan			Secretary Librarian
9.	Phan Thi Minh			Classroom management Odd jobs
10.	Nguyen Ngoc Tho			Odd jobs
11.	Huynh Cong ly			Security guard
12.	Le Chien Thang			Security guard

BiRDI assigns 1 experienced staff to be in charge of students' affairs *[Exh.7.08 Decision on task appointment of student's affairs]*. All the staff members have performed well and fulfilled their duties *[Exh.7.09 Annual staff evaluation forms]*.

8. Student Quality

The Advanced Program in Biotechnology at CTU was approved according to the Decision No. 7738/QĐ-BGDĐT by the MOET on December 28th 2006 and started to operate in the academic year 2006-2007. The Program is operated on the principle of setting priority for quality of the students.

8.1. There is a clear student intake policy

There are 30-40 students selected annually upon their scores following the top-down basis. The candidates are among students who have passed the national entrance examination for block B (whose exam subjects are Mathematics, Chemistry, and Biology) and block A (Mathematics, Physics, and Chemistry) that is organized and managed by the MOET in early July every year and then an English proficiency examination organized by CTU *[Exh.8.01 Announcement for recruitment from Department of Academic Affairs; Exh.8.02 List of candidates for Biotechnology Program; Exh.8.03 Selecting result for Biotechnology Program]*. Thanks to this recruitment policy, the Program can have qualified students who can later acquire necessary skills for their major, good communication in English, and research skills.

The form of training of this Program is full-time and regular, lasting for 4.5 years with the first semester fully reserved for the Intensive English Program (20 credits) in order to ensure the strong foundation of English to complete the Program *[Exh.8.04 Schedule for Intensive English Course]*. The study plan is delivered to entering students at the beginning of the semester. Students receive careful advice on the study program, the aims and the requirements of the Program *[Exh.8.05 Announcement on the studying plan]*.

Aiming at improving the students' quality and ensuring the number of new intake as well as attracting new students, BiRDI has been carrying out a variety of broadcasting methods, including the use of posters, leaflets *[Exh.8.06 Posters, leaflet about Advanced Program in Biotechnology]*, announcements on BiRDI's and CTU's websites *[Exh.8.07 Website of Advanced Biotechnology Program: http://birdi.ctu.edu.vn/birdi_cttt/]*, recruitment and admissions counseling in order to disseminate more information about the Program. Besides, the extracurricular activities of current undergraduate students attract the interest of candidates. The free intensive English program in the first semester for entering students is also a good policy to increase the intake of the students.

Overall, this recruitment policy will be sustained so that the student quality can be guaranteed.

8.2. The student admission process is adequate

To be a student of the Program, all candidates must pass the national entrance examination in which the passing score must be equal to the floor score set up by the MOET and then an English entrance examination administered by QATC which equals to the low-Intermediate or A2 level (as specified in the Common European Framework of Reference for Languages **(**CEFR**)** *(See Table 1) [Exh.8.08 Documents of English Examination]*.

Based on the admission score, the number of students enrolling the Program is presented in *Figure 8*. The annual intake of students is stabilized in general. However, since students had a tendency to choose Economics or Business Administration in the years 2009 and 2010, the annual intakes of Biotechnology students were partly affected in those years. From the year 2010, with the good results from the first cohort of graduates who had been successfully transferred overseas for Master courses or found good jobs, the number of candidates has increased, showing the strong attraction of this program and the need for biotechnology expertise in society *(Table 27: Survey data from students graduating from the Program (Criteria 13).*

8.3. The actual study load is in line with the prescribed load

CTU applies a credit-based system and all details about teaching and studying are published by CTU in the document known as "Academic Regulations under the Credit-based Training System" on August 2010 *[Exh.3.05 Academic Regulations]*. The Program consisting of 151 credits is offered in 4 years (apart from the intensive English program in the first semester). There are 2 major semesters (I, II) and 1 summer semester each year. Study load is divided equally over and within academic years with about 15–20 credits per semester. There are elective courses in each semester that students can choose to study under guidance by the academic advisor. Moreover, depending on their ability, good students can finish their studying earlier than 4 years *[Exh.8.09 Studying plan of Biotechnology class]*.

The intensive English program is free and is designed for the first semester of the Program. It is offered within 300 hours which include Listening/Speaking (75 hours), Grammar (45 hours), Reading (45 hours), Writing (60 hours), Pronunciation (45 hours) and Presentation Skills (30 hours). Students are trained with many necessary and basic skills, which help systemize their English capacity. At the end of this semester, students can reach the English Intermediate level and be ready for comprehending professional knowledge of the Program in English *[Exh.8.10 Final result of Intensive English Foundation Course]*. English is further trained by students and the competence is shown in the English version for the graduation thesis at the end of the Program.

Table 20 shows the time intake to graduate in the cohorts of 2006, 2007, 2008 and 2009. It is obvious that these 4 cohorts had 124 out of 127 students (97.6%) graduating on time, indicating that the Program operates well for the students' competence, the Institute's resources, facilities and services.

In addition, the number of students who received scholarships for Master and Doctoral training programs after graduating (16 students transferred to the United States of America, Australia, Austria, Poland, Japan, Korea...) also shows the students' competence to transfer to overseas training *[Exh.8.11 Letters for approving the scholarships]*.

Figure 9: The number of applicants and students passing the exam for Biotechnology Program vs. years

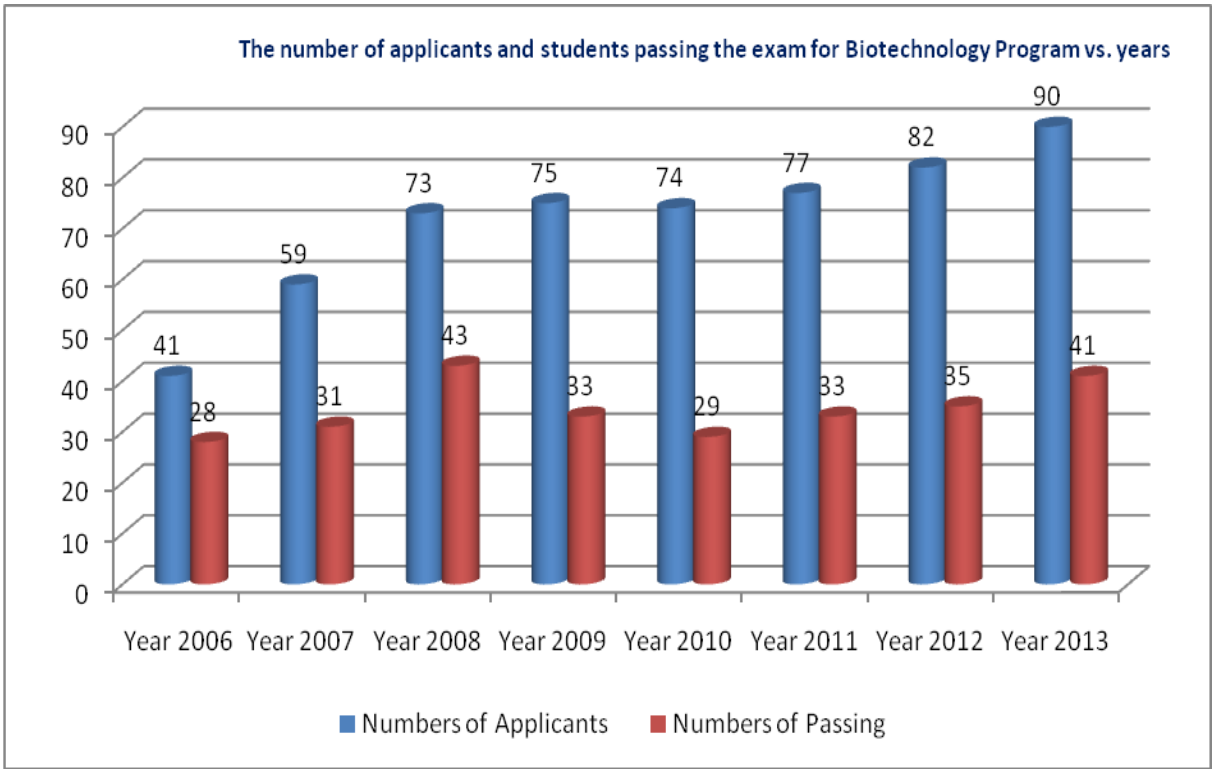


Table 17: Passing grade and base grade for entry of Biotechnology Program

Grade \ Year	2006	2007	2008	2009	2010	2011	2012	2013
Pass grade in National Entrance University Examination (for Advanced Biotechnology Program)	14	17	17	17	16	16	17	18
Pass Base grade for National Entrance University Examination (set by MOET)	Group A: 13 Group B: 14	Group A: 15 Group B: 15	Group A: 10 Group B: 15	Group A: 13 Group B: 14	Group A: 13 Group B: 14	Group A: 13 Group B: 14	Group A: 13 Group B: 14	Group A: 13 Group B: 14

Table 18: Intake of first- year students

	Full-time			**Part-time**		
Academic year	Male	Female	Total	Male	Female	Total
2012-2013	18	17	35	0	0	0
2013-2014	13	26	39	0	0	0

(Data updated up to Semester II - 2013 – 2014)

Table 19: Total number of students (last 5 academic years)

	Full-time			Part-time		
Academic year	Male	Female	Total	Male	Female	Total
2008-2009	45	52	97	0	0	0
2009-2010	59	68	127	0	0	0
2010-2011	71	81	152	0	0	0
2011-2012	84	99	183	0	0	0
2012-2013	100	115	215	0	0	0
2013-2014	113	141	254	0	0	0

(Data updated up to Semester II - 2013 – 2014)

Table 20: Number of graduated students in time

Intake year/ Number of intake students	Number of student	Drop out		On-time graduation		Delayed graduation	
		Number	Rate (%)	Number	Rate (%)	Number	Rate (%)
2006 (27 students)	27	00	0%	27	100%	00	0%
2007 (27 students)	27	00	0%	25	92.6%	02	7.4%
2008 (43 students)	43	00	0%	43	100%	00	0%
2009 (30 students)	30	00	0%	29	96.7%	01	3.3%

9. Student Advice and Support

9.1. There is an adequate student progress monitoring system

The learning progress of students is systematically monitored, counseled and supported.

1. The academic advisors:

Each academic advisor has responsibility to monitor, counsel and correct the learning progress of 40 students *[Exh.9.01 Decision No.2067/QĐ-ĐHCT in 2007_Decision on appointment of academic advisors]*. An academic advisor has at least 3 meetings with the assigned class in the beginning, the middle and the end of every semester, in order to guide students in planning their individual study schedule, to counsel and give timely support to improve study results, especially for students who face problems in the learning progress *[Exh.9.02 Minutes of class meeting]*. Besides, the academic advisor also keeps frequent contact with students via the e-mail system, mobile phone as well as direct appointments at the office for further advice and information.

2. Software and facilities for academic administration:

CTU has an administrative software and modern facilities available to provide adequate information on learning schedule for students and to record the complete learning outcomes of students for each semester (including academic results, social work, reward, penalization, number of credits accumulated…) *[Exh.5.11 Website of academic administration system: https://htql.ctu.edu.vn/htql/login.php; Exh.9.03 Document on wifi system of CTU; Exh.9.04 Document on computer room of the CTU]*. Thanks to this system, the students can easily and quickly access their online account and relevant websites to get necessary information for their own learning progress, to actively plan their study schedule

for each semester and the whole Program, as well as to timely adjust their study plan to be appropriate to their learning capacity.

In addition, thanks to this administrative system, the leaders of CTU and BiRDI as well as academic advisors can monitor and review the training process of students in order to provide appropriate intervention in supporting the students. Moreover, it helps to timely detect and warn students about their problematic circumstances such as poor marks, insufficient enrollment credits, excess of study time, so that there will be appropriate actions and treatments such as academic warning, notifications of student learning outcomes to parents, dismissal, etc... A list of students in trouble in learning process is collected after each semester. Then BiRDI organizes meetings among the leaders, academic advisors and students' families to discuss solutions or to give notices of dismissal. The activities to monitor, warn and prevent issues are frequently carried out in parallel with the training activities, in which academic advisors and academic assistants play a key role *[Exh.3.05 Academic Regulations; Exh.9.06 Announcement for students who had poor results on academic administration system]*.

9.2. Students get adequate academic advice, support and feedback on their performance

The students in the Program get direct adequate academic advice, support and feedback on their learning performance from academic advisors, staff members working in terms of students' affairs, and other supporting systems such as the department of student assistance, the department of dormitory management, the department of health-care services, and the center for students support… *[Exh.9.07 Decision on the establishment of Department of Student Assistance; Exh.9.08 Decision on the establishment of Dormitory Management Board; Exh.9.09 Decision on the establishment of Health Department; Exh.9.10 Decision on the establishment of Student Service Center]*. All of these activities and relevant systems aim at providing students with the best conditions to follow the Programs at CTU, helping students achieve ELOs and objectives of the Program.

In particular, the students of the Program can receive the following support:

1) Academic support: At the beginning of the course, each student is provided with all necessary information for the learning process. They receive documents related to academic regulations, program specification, the curriculum framework, course syllabi, the policies, rights and duties of students in CTU. All new enrolled students take a short training to use services provided by the LRC. CTU organizes a week of meetings between the university leaders and the first-year to fourth-year students. The information about activities and regulations of the university is also disseminated to students through academic advisors, the university websites and the electronic mailbox of each student. In addition, the students who are recruited in the Program are also provided with information of this specific program and the concrete learning schedule *[Exh.9.11 Announcement for student meetings]*. Librarians guide students to look up materials from the list of references. Academic advisors and the officers assigned to follow up the learning progress of students are responsible for counseling students on academic issues (such as: making learning schedule, selecting appropriate subjects for each semester, using facilities), and provide information on student regulations. Lecturers inform students of the contents and the requirements of their subjects, and notify the ELOs as well as upload those data on the academic administration system. Students can look up their results of all subjects through the online system. Besides, students can also ask for individual academic transcript of their learning progress at any time. At the end of the Program, the Department of Academic Affairs provides the full academic transcript for graduated students *[Exh.9.05 Decision on Regulations of academic affairs for regular undergraduate students; Exh.9.12 Lab Regulations; Exh.9.13 Instruction on course registration_ http://helpdesk.ctu.edu.vn/]*. For the graduation thesis, each student is directly conducted by one supervisor. The academic advisor can also help with recommendation on an

appropriate supervisor for students *[Exh.09.14 Document about Recommendation of Scientific advisor for students]*. The staff at each laboratory guides students how to use the equipment and facilities for their experimental work. The thesis proposal of a student is evaluated by the Scientific Committee, and then it is revised based on the Committee's comments before actual implementation. The complete thesis is evaluated and marked by the Graduation Thesis Council members *[Exh.9.15 Documents of proposals, theses]*. During the implementation of graduation thesis, if difficulties arise, the students can discuss the issue directly with the supervisor for solutions.

2) Financial and Scholarship support: CTU offers grants to the top 15% of excellent students based on the learning results and extracurricular activities in the semesters *[Exh.9.16 List of students receiving CTU scholarships]*. The proposals for scientific research made by students are qualified and approved by the Scientific Committee of BiRDI and CTU based on concrete scientific research criteria *[Exh.9.15 Documents of proposals, theses; Exh.9.17 List of scientific research conducted by students]*. The approved scientific research is funded by CTU for the implementation *[Exh.9.18 Contract of students' implementation for scientific research]*. For researches belonging to the graduation thesis in this Program, CTU also supports a part of fund (10,000,000 VND, equal to approx. 500 USD) *[Exh.9.19 Document of grants from the university for Bachelor theses]*. In addition, BiRDI has some financial support to encourage the financially poor and academically excellent students in the Program *[Exh.9.20 List of students receiving scholarships of BiRDI]*.

3) Career & Employment support: The counseling activities on career and employment for students are provided thanks to career festivals and meetings with businesses, companies and alumni *[Exh.9.21 Announcement about the contest and festival]*. In the last year of the Program, the students take the course known as *Practical training in industry* which provides them with practical knowledge about careers related to the curriculum *[Exh.3.01 Documents of on-the-job practice]*.

4) Student voice: Besides the support from CTU, BiRDI and academic advisors, the students in the Program can receive support from the Department of Student Assistance in regard to issues during their learning period and on-campus as well as off-campus life. The Department of Student Assistance gives recommendations to CTU's Board of Rector to implement student policies on social issues, scholarships and tuition fee, rewards and disciplines, consultation on studying, life, accommodation, employment, health-care service, and management of on- and off-campus students *[Exh.9.22 Website of Department of Student Assistance: http://websrv2.ctu.edu.vn/dept/dsa/]*.

The Youth Union helps organize extracurricular activities to improve the competence of students in life, as well as their morality, and their social responsibility. These activities include art performance, sports events, outdoor trips, humanitarian blood donation, green summer events, and charitable work… CTU supports 50% of the funding for these activities. The Youth Union also collects students' opinions and suggestions presented during the meetings between students and the leaders of BiRDI, the Youth Union, student associations, academic advisors, and then reports them to CTU's Board of Rector. The concrete responses will be given in the meetings between CTU's Board of Rector and BiRDI *[Exh.9.23 Meetings with BiRDI leaders]*.

5) Dormitory: The dormitory system by CTU can accommodate about 5,000 students *[Exh.9.24 Regulations of the Dormitory; Exh.9.25 Announcement No.39/TB-CTSV: Announcement on Dormitory reservation enrollment]*. In addition, the Department of Student Assistance can help students find or recommend off-campus dwellings that can offer similar accommodations of standard prices to students unable to book a place in the dormitory due to its limited capacity.

6) Medical and psychological care: CTU recently established a Student Service Center, providing counseling on psychology, health services and vocation-related issues for students *[Exh.9.10 Decision on the establishment of Student Service Center]*. There is also a medical clinic in the campus to take care of students' health when required. All the first-year students are offered a general medical check-up at the beginning of the school year. The check-up is to provide information on the health status of the students and then give consultation to students to take care of themselves so that they are in good conditions to follow the Program and other activities in CTU. All students are requested to purchase health-care insurance to guarantee treatments in cases of illness. In addition, the Department of Student Assistance frequently provides information on epidemic diseases (if any) and consults significant protection methods *[Exh.9.26 Documents of health care]*.

9.3. Mentoring for students is adequate

The students in the Program can get adequate mental support from the Board of Rector, the leaders of BiRDI, lecturers, health-care service staff…, but the most important one is the support by academic advisors and academic assistants. These staff are in charge of advising students on learning, helping them set up learning plans for the whole training program, selecting appropriate learning subjects for each semester, using the facilities, and getting to know the academic regulations so that they will adapt well to the new learning environment in CTU *[Exh.09.01 Decision no.2067/QĐ-ĐHCT in 2007_Decision on appointment of academic advisors; Exh.09.27 List of academic advisors]*.

At the beginning of the school year, the academic advisor organizes a meeting with the class and manages students to vote for the monitoring board of the class. Members of the monitoring board then keep frequent contact with the academic advisor to seek advice and to report all problems in order to have adequate and timely solutions. The Board of Rector of CTU and leaders of BiRDI also organize regular annual meetings with academic advisors and students to reply to inquiries from students and adjust the policies appropriately *[Exh.9.23 Minutes of meeting with BiRDI leaders]*. In addition, CTU has a mailbox and postbox supporting students to contact the staff members of BiRDI and CTU.

The students receive specific advice from the academic advisor on selecting appropriate subjects and adjusting their study schedule.

The Youth Union also plays a key role in mentoring and counseling students. Most of the students are members of the Youth Union and so benefit from activities by the Youth Union *[Exh.9.21 Announcement about the contest and festival]*.

9.4. The physical, social and psychological environment for the student is satisfactory

CTU has invested in building more dormitory space to accommodate about 10,000 students. This meets the demand of 25% of the students. There is also a modern and standard cafeteria and canteens to serve students during breaks *[Exh.9.24 Regulations of the Dormitory; Exh.9.28 Regulations of the canteen]*.

In terms of recreation and sports, besides the gymnasium, soccer fields, volleyball courts and badminton courts of CTU, BiRDI builds a volleyball court, a badminton court and table-tennis tables for the students in the Program.

Many activities about career and scientific research are organized by the Youth Union to enhance students' skills and knowledge in finding a job or doing research *[Exh.9.29 Seminar on Instruction for doing scientific research; Exh.9.21 Announcement about the contest and festival]*. Students can also participate in many competitions about preventing social evils, creating solutions for a better society, making good rice for Vietnamese rice brand-name, becoming young biotechnologists, etc… organized by CTU and other organizations. These events are highly evaluated *[Exh.9.30 Award of contests]*.

10. Facilities and Infrastructure

This Biotechnology program is an advanced program, so it is fully invested by the MOET. Besides, BiRDI makes good use of robust scientific researches and international cooperation, so the learning resources and facilities are updated and replenished to catch up with rapid development of science and technology and to adequately meet the demand of scientific research and training activities for lecturers and students in the Program.

10.1. The lecture facilities (lecture halls, small course rooms) are adequate

CTU and BiRDI have 217 classrooms in an area of 43,389.70 m^2 which are fully equipped with good equipment to serve learning activities for around 39,338 students. Currently, BiRDI has 7 classrooms in an area of 496 m^2. In particular, 4 air-con classrooms are permanently arranged for the courses in the Program. The classrooms are prepared with facilities for teaching and learning, and each classroom has been installed with 1 computer and 1 projector. The entire area of BiRDI has been covered with wireless network to support the teaching and learning activities *[Exh.10.01 Document on wifi system of CTU]*. In addition to the school schedule, the classrooms are also used to organize class activities and academic activities for students. Moreover, CTU has arranged 30 classrooms in the self-study building, especially in the self-study hall in the dormitory premises so that the students can learn at their convenience.

As this is an advanced program, modern and effective learning facilities such as e-learning and i-clicker are equipped to create effective interactions. In addition, the lecturers can easily evaluate and access the progress to support the students during the courses *[Exh.10.02 Website on e-learning system https://lms.ctu.edu.vn/dokeos/index.php; Exh.10.03 Pictures of i-clicker system]*.

There are two 160-seat lecture halls fully equipped with necessary facilities for seminars as well as academic activities. Furthermore, the LRC has the halls set up with modern equipment so that students can register for academic activities *[Exh.10.04. Regulations on using meeting rooms in Learning Resource Center; Exh.10.05 Documents on students' activities in BiRDI's Hall]*.

Figure 10: Lecture hall and laboratory area at BiRDI

Annually, the learning facilities are newly purchased and maintained using a portion of the fund from CTU and the MOET *[Exh.10.06 Allocation of CTU fund for BiRDI and Advanced Program in Biotechnology]*.

10.2. The library is adequate and up-to-date

The modern Learning Resource Center meets Asian standards. This 9-million-US-dollar center was funded by the Atlantic Philanthropies via a project with RMIT University

in Viet Nam. CTU has really been interested in establishing an electronic library for teaching activities for many years at the LRC. More than 500 computers have been set up for student support services in the LRC *[Exh.10.07 Regulations of computer rooms]*, to provide effective support in registration and study plan management activities *[Exh.10.08 Announcement on course registration]*. The LRC is also linked to other falculty libraries for the users' convenient purpose *[Exh.7.02 Website of the LRC http://www.lrc.ctu.edu.vn/eng/]*. The electronic materials and lectures have been uploaded and managed through the online system *[Exh.10.09 Website of digital collections http://digital.lrc.ctu.edu.vn/]*. The electronic resources are abundant and diverse, including undergraduate theses, research reports, national and international journals, databases from Wiley, Spingerlink, ScienceDirect, WHO, FAO, HINARI, and AGRORA,... *[Exh.10.10 List of documents of national and international journals on LRC website]*.

Figure 11: Learning Resource Center and a typical computer room

BiRDI's library is located in an area of 60m^2 with 70 seats, providing over 1,000 books, journals, and electronic resources. The library is regularly upgraded with new learning materials recorded in CDs which highly support students and lecturers in the Program *[Exh.10.11 List of ducuments in BiRDI library]*. The reading area has sufficient light and computers with internet; it is spacious, airy and neatly-displayed. This is a nice space for self- and group study activities. Students and lecturers can either read or borrow learning materials for a week, so it is really convenient for studying, referencing, composing and upgrading knowledge from the lectures. All the learning materials including books, journals, articles, and CDs are sorted in catalogue for convenience in searching *[Exh.10.12 Regulations of BiRDI Library]*. The librarian is very supportive and provides effective assistance in database searching. In addition, each laboratory possesses a book shelf with more scientific materials to serve students and staff *[Exh.10.13 List of documents in Laboratory]*. Moreover, the students can also access learning resources in other faculty libraries.

In addition, scientific research papers reported by lecturers are often published in the Scientific Journal of CTU (1 issue every 2 months) which was authorized for publishing by Decision No.1090/GP.BTTT by the Minister of Information and Communication on July 22, 2008 *[Exh.10.14 Decision No. 1090/GP.BTTT from Minister of Information and Communication on 22/7/2008 about publishing license for Scientific Journal of CTU]*. It is easy to find and use these scientific articles as well as electronic materials from BiRDI's website and CTU's website. Both the CTU Publishing House and the House of Newspaper of CTU were established in 2009 based on Decision No.1508/QĐ-ĐHCT and Decision No.4061/QĐ-ĐHCT *[Exh.10.15 Decision No.1508/QĐ-ĐHCT about establishment of CTU Publishing House; Exh.10.16 Decision No.4061/QĐ-ĐHCT about establishment of House of Newspaper of CTU]*. The Publishing House has highly contributed to the printing and delivery of course books to students.

10.3. The computer facilities are adequate and up-to-date

All infrastructures, including laboratories, classrooms, seminar rooms, lecture halls and offices, are located in an area of 4,543.2 m^2. One third of the area (about 1,326.8 m^2) has

been used for 7 laboratories equipped with modern instruments and machines to fulfil the missions of researching, training and practice in biotechnology, including:

(1). Molecular Biology Lab: teaching and implementing research on molecular biology, genome and genomic applications, microbial genomes, plant molecular biology, biotechnology and aquatic breeding, and pathology of aquaculture and animals...;

(2). Plant genetic engineering Lab: teaching and implementing research on tissue culture, transgenic plants, biotechnology and plant breeding, plant pathology...;

(3). Food biochemical technology Lab: teaching and implementing research on biochemical and food biochemistry...;

(4). Protein - Enzyme Technology Lab: teaching and implementing research on protein, enzyme isolation from bacteria, mould...;

(5). Microbial Biotechnology Lab: teaching and implementing research on soil microorganisms, nitrogen-fixing bacteria, microbial metabolism of organic compounds...;

(6). Food Biotechnology Lab: teaching and implementing research on food microbiology, food fermentation technology...; and

(7). Environmental Microbiology Lab: teaching and implementing research on microorganisms in environmental remediation, microbial processing environment in aquaculture and livestock.

All the laboratories (Figure 12) are equipped with modern facilities to sufficiently adapt to educational requirements, scientific research and undergraduate theses *[Exh.10.17 List of primary devices and equipment in BiRDI labs]*. A majority of laboratories and instruments were established and supported by international cooperation projects from European universities (the Netherlands and Belgium) *[Exh.10.18 MHO and VLIR Projects]*. Biotechnology plays a crucial role in the plans in regard to national development strategy *[Exh.10.19 Project on improving research competence of BiRDI by the Government]*. Therefore, a number of national projects have invested in facilities for research and training services in BiRDI, especially the fund from MOET for the Program *[Exh.10.20 Document on checking for Advanced Program by MOET]*. The strengths in research and international cooperation create many opportunities for BiRDI to receive investment in research projects. An example of this is the CARD project from Australia *[Exh.10.21 Documents on CARD project]*. Annually, the learning facilities are newly purchased and maintained using a portion of the fund from CTU and MOET *[Exh.10.06 Allocation of CTU fund for BiRDI and Advanced Program in Biotechnology]*.

Figure 12: Laboratory and practical class

Actually, the students in the Program can also use other laboratories such as the library of the College of Agriculture & Applied Biology and the library of the College of Natural

Sciences for their after-class activities and graduation theses [*Exh.10.22 List of laboratories at Colleges in CTU]*.

10.4. The computer facilities are adequate and up-to date

The Information Technology system has been implemented and introduced to users. This IT system was tested for convenience and effectiveness, and it was highly evaluated in both the CTU and BiRDI area. Each student is provided with a free account to use computer systems and wireless network in CTU campuses. The LRC is equipped with 500 computers and many other modern facilities such as LCD, projectors, live stream TVs, broadcasting systems, etc.) *[Exh.10.23 Documents on regulations and quantity of computer in Learning Resource Center]*. There are 1,000 public computers set up in other locations in CTU for different student services *[Exh.10.24 Document on 1,000 public computers]*. CTU also provided about 3,500 USD to the LRC for purchase of new learning materials annually.

BiRDI has 2 computer rooms with 50 computers for students to use in learning activities, course registration, information searching, and so on. In the laboratories there are 70 computers for students and staff to look for reference materials, store data, and print experimental results. In addition, most students of the Program have laptops, so they are more active in learning and reporting assignments.

CTU has implemented wireless network in all areas, through which online educational management and training services have worked very well in recent years thanks to support from the Information and Network Management Center *[Exh.10.01 Document on wifi system of CTU]*. Each staff and student have been provided with an e-mail account through the LAN of CTU to effectively facilitate the communication and exchange of learning materials, especially the files sent with attachments. As a result, the information is quickly and widely disseminated to students so that they are very active in self-study, group work and submits of reports to lecturers *[Exh.10.25 Announcement on providing email account for students]*.

10.5. Environmental health and safety standards meet the local requirements in all aspects

All the labs are installed with the water and waste treatment system to meet the environmental protection standards by the local authorities. The labs have regulations and documents to ensure safe operation *[Exh.10.26 Regulations of BiRDI Labs]*. Each lab is provided with a first-aid kit and medicines to respond to accidents. Students always keep good conditions of hygiene in the lab thanks to weekend cleaning work; BiRDI and CTU have regular work to keep the surroundings clean, green and safe *[Exh.10.27 Announcement on environment cleaning by the Youth Union]*. Many public recycle bins have been arranged inside BiRDI's building. The plants and the grass area in front of BiRDI premises are often taken care of to create clean and beautiful scenery. Labour hygiene and safety and fire-explosion preventive measures have been performed regularly. There are also well-trained and highly-qualified teams of fire-explosion prevention *[Exh.10.28 Decision on establishment of teams of fire-explosion prevention]*. Signs on fire safety rules have been placed in common areas of the campus and laboratories.

In addition, security is assured by both campus security team and youth volunteer team formed by the Youth Union of BiRDI and CTU *[Exh.10.29 Decision on establishment of youth volunteer team]*. To create a healthy environment for students after class, a volleyball court was built, and students have to strictly follow the regulations when playing there *[Exh.10.30 Regulations of using BiRDI volleyball court]*. Fire prevention has continual attention. Fire extinguishers are sufficiently equipped in the area of BiRDI, and they are checked and replenished on a periodic basis *[Exh.10.31 Fire safety Regulations; Exh.10.32 Map of fire extinguisher location in BiRDI]*.

11. Quality Assurance of Teaching and Learning Process

The Bachelor Program of Advanced Biotechnology has been developed based on the original program known as ***Biochemistry & Molecular Biology/Biotechnology Major*** offered by Michigan State University from the United States and modified in accordance with the conditions of the Vietnamese educational system and the contextual demand from the MDR. The curriculum is developed by all teaching staff members in the meetings, and so are the course syllabi *[Exh.11.01 Contracts of syllabus design]*. The core contents of the Program were also developed through the workshop on December 12 in 2006 at the LRC with the attendance by 2 experts from MSU, representatives from other supporting units, and professors as well as lecturers who were involved in the Program all through the curriculum design *[Exh.11.02 Minutes of the Conference on Assessment of Advanced Program in Biotechnology]*. The curriculum follows regulations by the MOET and meets requirements of the labor markets and employers *[Exh.11.03 Minutes of the Conference on Assessment of Advanced Program in Biotechnology]*.

The curriculum was designed by the Scientific Committee, Faculty Quality Committee including experienced staff members with professional knowledge of the university. The curriculum was approved by the MOET by Decision No.7738/QĐ-BGDĐT on 28th March, 2006 *[Exh.11.04 Decision No.7738/QĐ-BGDĐT on 28th March, 2006, Exh.11.05 Decision No.495/QĐ-ĐHCT on May 18, 2006]*.

11.2 The curriculum development involves graduates and students

The students of the Program join the curriculum development through the Course Evaluation forms and Curriculum Evaluation forms delivered to them during their study in CTU and before their graduation ceremony. The results are processed and sent to colleges/institutes and lecturers by QATC in order to review for the continuous improvement of the content and quality of the courses; and appropriate adjustments for the entire curriculum will be made after reasonable time periods [*Exh.11.06 Course Evaluation Form; Exh.11.07 Curriculum Evaluation Form]*

11.3 The curriculum development involves the labor market

The labor market and employers involve in the curriculum development by giving their opinions through Program Evaluation forms for Employers *[Exh.11.08 Results of surveying employers about graduates from Advanced Program in Biotechnology]*. In addition, the employer's points of view and suggestions about the curriculum have been received through the scientific workshops hosted by BiRDI.

11.4. The curriculum is regularly evaluated at reasonable time periods

The curriculum of the Program has been annually evaluated by the expert team from the MOET. The team examines the teaching and learning quality, and interview lecturers and students about study-load, teaching methods, advantages of the curriculum, and other plans for its performance *[Exh.11.09 Working schedules for Advanced Program in Biotechnology]*.

Since the establishment of QATC in 2006, quality assurance activities in CTU have become more coherent. CTU has progressed the curriculum evaluation in the following levels:

- Undergraduate students evaluate their courses at the end of each semester *[Exh.11.06 Course Evaluation Form];*
- Graduated students evaluate the curriculum at the end of each cohort *[Exh.11.07 Curriculum Evaluation Form];*
- Employers evaluate the Program *[Exh.11.08 Results of surveying employers about graduates from Advanced Program in Biotechnology]*.

11.5 Courses and curriculum are subjects to structured student evaluation

The student-centered teaching and learning is considered as an approach to education which focuses on interests of students; therefore, student evaluation about course content, teaching and learning process, assessment methods and curriculum is carried out regularly by BiRDI and QATC at the end of each semester *[Exh.11.06 Course Evaluation Form]*. In addition, the leaders collect student feedbacks from meetings with students which are organized yearly and use these feedbacks for program improvements.

11.6 Feedback from various stakeholders is used for improvement

Evaluation results after every semester have been collected and processed by QATC and then sent to lecturers. Lecturers are the first to use the results for the adjustment and improvement in the teaching process of different courses. The feedback from students and employers is also useful for updating the content of the courses and regular reviews on the curriculum *[Exh.11.10 Documents of adjustments of courses]*.

11.7 The teaching and learning process, assessment schemes, the assessment methods and the assessment itself are always subject to quality assurance and continuous improvement.

BiRDI, along with QATC and other supporting units in CTU, always concentrates on the teaching quality improvement of the Program. The improvements of teaching methods, assessment scheme, and assessment methods are strongly implemented by the teaching staff through their teaching activities. In the Program, the quality assessment activities have started from the first cohort in 2006 under the BiRDI Quality Assurance Group through the course and curriculum evaluation of undergraduates and graduates; teaching agenda, seminars, workshops on sharing and improving teaching and assessment. They are step by step accepted by students and academic staff as a major duty in teaching and learning process *[Exh.11.07 Curriculum Evaluation Form]*. Until now, the internal and external evaluations are continuously and regularly carried out all through the assurance system of CTU http://qat.ctu.edu.vn/qace/.

12. Staff Development Activities

Staff development is one of the major focuses of BiRDI. This helps to improve the quality of teaching and services of the Institute. There is an annual plan for staff recruitment as well as promotion and training activities for both lecturers and administrative staff so that they have more opportunities to contribute to the development of the Institute.

12.1 There is a clear plan on the needs for training and development of both academic and support staff

In the plan to operate the Program, CTU prepared and sent staff members to MSU for training during the period of 2006-2010. BiRDI also has the plan for staff recruitment as well as promotion and training for the administrative staffs for the period of 2008-2015 *[Exh.12.01 Staff development plan for 2008-2015]*. In 2013, BiRDI evaluated the implementation of this plan and updated it for the period of 2013-2022 *[Exh.12.02 Staff development plan for 2013-2022]*. BiRDI offers favourable conditions for the improvement of young lecturers in specialized knowlegde and English to prepare human resources for substituting the tasks of retired lecturers in the near future.

Staff recruitment is very competitive due to its high criteria. The priority is normally given to the research assistants/researchers of the Institute, who have had experiences and positive attitudes in their work as well as good background and practical skills in the field that they will be assigned to handle. BiRDI offers great opportunities to staff members so that they could improve specialized knowledge to qualify for all the requirements by the Institute and CTU.

Thanks to a good plan for the development of staff, BiRDI now possesses a high quality staff resource. *[see Table 09 List of lecturers, criteria 6; Exh.12.03 Curriculum Vitae of the staff members; Exh.12.04 Degrees/certificates of the staff members; Exh.12.05 Projects of the staff members; Exh.12.06 Publication of the staff members]*.

BiRD evaluates and updates the plan annually, focusing on degreed and short training courses for all staff to ensure that they are able to work smoothly in the Program *[Exh.12.07 Annual plan for staff trainings 2008, 2009, ...2014]*.

12.2 The training and development activities for both academic and support staff are adequate to the identified needs

The lecturers are knowledgeable and skillful to handle courses in the Program, being able to use their teaching experiences effectively to convey knowledge and active learning process to students.

There are 9 lecturers and 1 administrative staff granted to take short training courses on "Teaching Methodology" and "Management of Curriculum and Students" at MSU from 2007-2010 *[Exh.12.08 Annual Report of the Program; Exh.12.09 Decision on nomination of lecturers to go to MSU]*.

BiRDI has organized training course on "Teaching and developing curriculum for active and engaged learning" and "Teaching through consultation method" for 56 lecturers of CTU, including those teaching in the Program. The course is delivered by Prof. John M. Dirkx and Julie L. Brockman from MSU *[Exh.12.10 Reports of "Teaching Skills and Curriculum Development for Active Learning" course]*.

BiRD offers good opportunities and facilitates to staff members to support their higher education, particularly their study in developed countries. Indeed, 18 staff members attended their higher study within 2007-2015, and a number of them have graduated with high distinction *(Table 21)*.

Table 21: List of staff taking higher educational degrees within 2007-2015

No.	Full name	Title	Field of study	Institution Country	Degree	Year obtained
1.	Tran Nhan Dung	Senior Lecturer	Biotechnology	Belgium	PhD	2007
2.	Bui Thi Minh Dieu	Lecturer	Biotechnology	Wageningen University – Netherlands	PhD	2010
3.	Nguyen Dac Khoa	Lecturer	Plant Pathology	University of Copenhagen, Denmark	PhD	2011
4.	Tran Vu Phuong	Lecturer	Biotechnology	CTU	MS	2011
5.	Huynh Xuan Phong	Lecturer	Biotechnology	CTU	MS	2011
6.	Duong Thi Huong Giang	Lecturer	Bio-engineering	Belgium	PhD	2012
7.	Nguyen Duc Do	Lecturer	Agriculture	Tokyo University of Agriculture and Technology, Japan	PhD	2012

8.	Do Tan Khang	Lecturer	Food Technology	Victoria University, Australia	MS	2012
9.	Huynh Ngoc Thanh Tam	Lecturer	Biotechnology	Nantes University, France	PhD	2014
10.	Pham Van Hau	Lecturer	Biotechnology	Canada	PhD	2015
11.	Truong Thi Bich Van	Lecturer	Biotechnology	Japan	PhD	2015
12.	Nguyen Thi Pha	Lecturer	Microbiology	CTU	PhD	2015
13.	Vo Van Song Toan	Lecturer	Microbiology	CTU	PhD	2015
14.	Tran Thi Xuan Mai	Lecturer	Biotechnology	CTU	PhD	2015
15.	Nguyen Thi Lien	Lecturer	Biotechnology	CTU	MS	2015
16.	Nguyen Ngoc Thanh	Technician	Information Technology	University of Information Technology Ho Chi Minh City	BS	2011
17.	Tran Van Be Nam	Technician	Veterinary Medicine	Trà Vinh University	BS	2014

** (Updated on 28 Mar. 2014)*

Based on the demands of the Program, BiRDI has annually offered different opportunities for staff members to take short training courses on their specialized fields *[Exh.12.11 List of staffs taking short training courses during 2007-2014]*.

Table 22: Number of staff members taking short training courses during 2007-2014

Year	2007	2008	2009	2010	2011	2012	2013	2014
Number of staff	10	8	2	12	3	10	2	1

13. Stakeholders Feedback

13.1 There is adequate structured feedback from the labor market

The Program has started since 2006. Up to the academic year 2011-2012, there had been 2 cohorts of students graduating from the Program. BiRDI frequently keeps contact with these graduates and the institutions where the students in the Program carry out their practical training, and employers, in order to collect feedbacks through:

- Well-designed survey questionnaires for institutions accepting practical training students (performed annually since 2010) and for employers *[Exh.13.01 Evaluation form of on-the-job practice of institutes; Exh.13.02 Evaluation form of employers]*.
- Well-structured discussions with institutions, employers through many conferences, seminars organized in the field of biotechnology *[Exh.13.03 Minutes of conferences and meetings and related feedbacks]*.

13.2 There is adequate structured feedback from the students and alumni

Feedbacks from current students on the curriculum are shown through course evaluation at the end of each semester *[Exh.11.06 Course Evaluation Form]*. Online survey to get feedbacks is applied since January 2014 *[Exh.13.04 Documents of online survey]*. In addition, feedbacks on facilities and learning services from students were collected in the

workshop on March 2014 *[Exh.13.05 Student evaluation form of facilities and learning services]*.

At the beginning of each academic year, BiRDI organizes a meeting to support all freshmen as well as to receive comments and suggestions from current students and give feedbacks on their study *[Exh.13.06 Minutes of the meeting between BiRDI leaders and students]*.

Feedbacks from alumni on the curriculum are collected annually by questionnaires on the "Alumni Reunion Day" (on November 19) *[Exh.13.07 Curriculum evaluation form of the alumni]*. This helps BiRDI keeps frequent contact with alumni. Progress of job seeking or studying at postgraduate levels of students is recorded and updated regularly (Table 23).

Table 23: Survey on alumni about continuing learning and careers

(Data collected from students graduated in 2011, 2012, 2013)

No.	Level of postgraduate persuading / Working institution	Graduated in 2011 27 students	Graduated in 2012 25 students	Graduated in 2013 43 students
1	Master degree in Viet Nam	8	1	3
2	Master degree abroad (*)	8	3	7
3	Doctorate degree in Viet Nam			
4	Doctorate degree abroad	3		1
5	Lecturer at Universities/Colleges			
	- Public:	2		1
	- Private:			1
6	Research Institutes	1	1	5
7	Others			
	- Public	2	3	1
	- Cooperated with international institution	4	6	6
	- Private	6	10	5
8	Seeking jobs		1	16

13.3 There is adequate structured feedback from the staff

Feedbacks from the national lecturers are collected once a year *[Exh.13.08 Lecturer Evaluation form]*. The international experts send their feedbacks at the end of each course *[Exh.13.09 Survey questionnaire for lecturers]*. Feedback from teaching staff and support staff is helpful in the process of the courses and curriculum development and improvement. The feedbacks from staff members are collected regularly through BiRDI meetings. *[Exh.13.10. Minutes of meetings in BiRDI]*.

14. Output

14.1 The pass rate is satisfactory and dropout rate is of acceptable level

With 2 cohorts graduating in 2011 and 2012, the overall quality of graduated students meets the requirements of BiRDI with high proportion in good grade. There were no students at average grade.

Table 24: Academic results of students in cohorts in 2006 and 2007

No	Cohort	Total students	Excellent (3.60-4.00)		Good (3.20-3.59)		Fair (2.50-3.19)		Average (2.00-2.49)	
			Number of students	Rate	Number of students	Rate	Number of students	Rate	Number of students	Rate
1	2006	27	3	11.0%	19	70.5%	5	18.5%	0	0.0
2	2007	26	11	42.3%	11	42.3%	4	15.4%	0	0

14.2 Average time to graduate is satisfactory

The expected time to complete the Program is 4.5 years (including 1 semester for the Intensive English Program). Students can shorten this time to 4 years if they have orientation for their graduation thesis soon enough (from the third year). Being able to do so, they need to complete the Bachelor thesis simultaneously with other courses of the Program.

14.3 Employability of graduates is satisfactory

The results from the survey of studying and employment of graduated students from the Program show that employability of these graduates is satisfactory. Of the total 52 graduates from these 2 cohorts in 2006 and 2007, only 4 graduates (7.6%) have not found a job yet; however, these jobless graduates are in the process of applying for scholarships to study abroad. The number of students who pursuit higher education is quite considerable; there are 13 students, accounting for 25% *[Exh.14.01 Survey results of graduates]*.

14.4 The level of research activities by academic staff and students is satisfactory

1. **Scientific research of lecturers**: With the strength in scientific research and technology transfer, all academic staff in BiRDI pay much attention to doing scientific research. From 2010, these lecturers have carried out 58 researches, including 2 national-level projects, 2 researches at protocol level, 13 researches at Ministerial level, 24 researches at university-level, 10 researches at provincial level, and 10 international projects *[Exh.14.02. List of scientific researches carried out by BiRDI staff]*.

Table 25: Number of researches done by BiRDI staff in 2010-2014

Sources of fund	Number of researches					Total
	2010	2011	2012	2013	2014	
CTU	3	4	6	6	5	**24**
DoST and DARD (Provincial)	4	3	1	2	-	**10**
MoET and Ministry of Science and Technology (Central)	6	2	2	3	0	**13**
National project	0	2	1	0	1	**4**
International project (VLIR, MACBETH, ACP, CCP,…)	2	2	2	0	1	**7**
Total	**15**	**13**	**12**	**11**	**7**	**58**

(See details in Exh 14.01)

Through these researches, the academic staff can both enhance their research competence and create opportunities for students to take part in research activities. The lecturers can also access and share their research results through national and international seminars or workshops organized in CTU and other universities *[Exh.14.03 Documents on seminars and workshops that BiRDI staff have participated in]*. These activities create an

opportunity for lecturers to exchange teaching and research experiences, and establish collaboration with other specialists and organizations. One of the important activities of doing research is to regularly publish research results in both national and international scientific journals *[Exh.14.04 List of BiRDI staff 's publications]*. Since 2009, the academic staff from BiRDI have achieved 178 scientific publications, including books, textbooks, scientific articles, proceedings, etc…

Table 26: Number of BiRDI staff's publications in 2009-2013

Publisher	Number of publications					Total
	2009	2010	2011	2012	2013	
National publishers	31	39	23	24	29	**146**
International publisher	6	9	5	7	5	**32**
Total	**37**	**48**	**28**	**31**	**34**	**178**

(See details in Exh.14.03 List of BiRDI staff 's publications)

All researches are funded by national and international organizations in fields of technology improvement in fermented food production, diagnostic development for diseases caused by microorganisms on aquatic animals and plants, bio-fertilizers production as alternatives to chemical fertilizers, gene conservation for crop resource, plant disease control by biological methods.

Quite a few researches have been carried out following the orders from localities in the MDR. Scientific activities of BiRDI have increasingly developed in both quantity and quality, expanding partnerships with national and international organizations. Thanks to scientific researches, BiRDI could achieve more technology transfer contracts to serve the community, especially the production in the MDR *[Exh.14.05 Contracts on technology transfer]*.

2. Scientific research of students: Students are encouraged by CTU as well as BiRDI staff to propose themes and ideas for scientific research. A high proportion of those researches from BiRDI students are usually approved to perform in almost every call of CTU's funding. In particular, CTU and BiRDI have always paid much attention to scientific research activities among students. This can be seen through the annual increase in research funding and many supports from the Youth Union and other supporting units *[Exh.14.06 Announcement on Workshop about Scientifc Research for Students]*. All students in the third and fourth years start to work in laboratory and take part in scientific research by BiRDI staff. Moreover, students also take initiatives in proposing their own scientific research and compete to win the fund from CTU to do research *(Table 27).*

Table 27: Number of researches done by Advanced Biotechnology students

Cohort	**2006**	**2007**	**2008**	**2009**	**2010**
Number of research	11	5	4	6	5
Number of student participating	21/27	17/27	18/43	22/30	9/24
Percentage (%)	77.8	63.0	41.9	73.3	37.5

(See details in Exh.14.07. List of scientific researches carried out by students from Advanced Program in Biotechnology)

Through the training program and scientific research at BiRDI, the students improve the competence of specialized research, as well as the ability to work independently and in team. The students also have an opportunity to submit their scientific writing paper to national

and international scientific conferences *[Exh.14.08 List of writing papers of students from Advanced Program in Biotechnology submitted to scientific conferences]*. They can also participate confidentially in reports in workshops *[Exh.14.09 List of workshops that students from Advanced Program in Biotechnology have participated in]*. Thanks to the guidance of the supervisor, the students can also publish research results in domestic and foreign magazines *[Exh.14.10 Publications of students from Advanced Program in Biotechnology]*. It is such an importance premise for students to access practical research and publish the research results under the guidance of their academic staff. Thanks to the strength of scientific research activities, students in the Program have many advantages to achieve big prizes, scholarships, and prestigious awards related to scientific research *[Exh.14.11 Scholarships and awards for students from Advanced Program in Biotechnology]*.

Through the skills obtained from problem-solving activities during their thesis research, students will get mature, be confident and well-prepared after graduating from the Program. This also leads to the establishment of the working style of graduated students in arranging work more scientifically, solving problems more quickly and communicating with others more effectively and confidentially. Good scientific research and thesis are strengths that help students to apply for job as well as be appointed to a suitable position or get scholarships for higher education both in the country and overseas.

15. Stakeholders Satisfaction

The surveys are taken on the following subjects to collect the level of satisfaction:

- Current students, newly-graduated students and alumni.
- Employers: state-owned institutions, joint-stock companies, private-owned enterprises, foreign-owned companies.
- National lecturers and international experts.

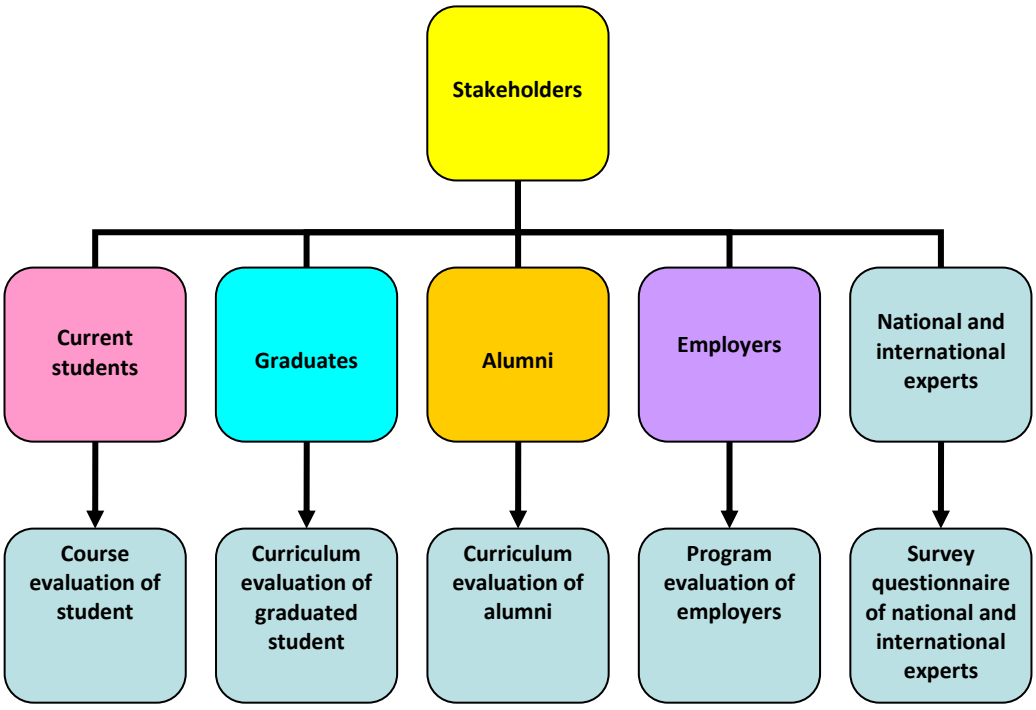


Figure 13: Survey System of Stakeholders

15.1. Students Satisfaction

Students highly appreciate the Bachelor Program of Advanced Biotechnology. The responses showed that the courses in the Program provide sufficient fundamental as well as specialized knowledge, giving an overview and details about biotechnology and related fields. With this program, students can broaden knowledge about science and technologies in real life. The students are satisfied with the teaching methods in which lecturers instruct and orientate students in self-study and document searching. The Program helps students to develop their active and independent attitudes toward learning as well as to improve their time management skills *[Exh.15.01 Survey results of course evaluation of students]*.

The students also have opportunities to carry out researches to apply their knowledge into practice *[Exh.14.06. List of scientific researches carried out by students]*. Their ELOs are highly compatible with their capacity due to strict assessment with qualified questions.

In the beginning of each academic year, a meeting between BiRDI leaders and students is organized so that the students can give their comments and suggestions to the leaders and receive feedbacks from them *[Exh.13.06 Minutes of the meeting between BiRDI leaders and students]*. In addition, the students in the Program are satisfied with support from BiRDI's Students Service, BiRDI's Academic Assistance and other supporting units in CTU to solve difficulties in their learning progress.

15.2. Alumni Satisfaction

The satisfaction level of alumni is presented in the survey about the curriculum. It shows that 86.6% alumni are satisfied with the program quality. The percentages of alumni who could be employed for a job within 6 months and 12 months after graduation are 50% and 16.6%, respectively. The satisfaction level for learning materials and laboratory equipments makes up 95%. Most feedbacks from the alumni show satisfaction with the quality of the training program. They agree that the Program highly supports their competence in working and solving problems relating to their professional, improve their adaptation for different actual working environments and enhance their responsibilities in work. A small number of students work in closely-related fields of Biotechnology also reveal their satisfaction with the knowledge and skills they have learned *[Exh.15.02. Survey results of curriculum evaluation of the alumni]*.

The results showed that they felt satisfied with the knowledge they had been provided with and felt confident to apply for a job or participate in research work. There are also positive comments and suggestions for the curriculum from alumni, and all of these ideas are carefully considered by BiRDI to adjust and improve the content of the curriculum for a better education qualification, facilitating students to well adapt to the real working environment after they graduate.

In addition, the level of satisfaction of alumni about the curriculum was surveyed on 2 main evaluation criteria including ELOs and Structure of the Program (see Table 28)

Table 28: Satisfaction of alumni about the curriculum

Evaluation criteria	Number of students		Proportion	
	Agree	Disagree	Agree	Disagree
I. EXPECTED LEARNING OUTCOMES				
1. Students are satisfied with their learning outcomes.	40/40	0/40	100	0
2. The program meets the labor market.	37/40	3/40	92.5	7.5

II. STRUCTURE OF THE PROGRAM				
5 blocks: General knowledge (56 credits), Fundamental knowledge (46 credits), Professional core knowledge (20 credits), Professional elective knowledge (19 credits), and Thesis (10 credits).	36/40	4/40	90	10

15.3. Employers Satisfaction

Table 29 shows the satisfaction level of employers about quality of BiRDI's graduates working at their organizations. Employers are satisfied with graduated students (scale 4: good) for their general and specialized knowledge, communication skills, problem solving skill, teamwork, professional ethical manner, cooperative attitude in work, professional responsibility, and progressive attitude. In addition, the employers felt satisfied with the working quality, manners and morality of students through the three months period of practical training in industry at their organizations. The results were illustrated by score A in the final report *[Exh.3.03 Documents of on-the-job practice]*.

Table 29: Satisfaction of employers about graduate students

Please circle a number under the scale from 1 to 5			1	2	3	4	5
		N	Very poor	Poor	Average	Good	Very Good
1	General knowledge	15				80,0	20,0
2	Specialized knowledge	15			6,7	73,3	20,0
3	Communication skills	15			20,0	80,0	
4	Problem solving skill	15			33,3	66,7	
5	Teamwork skill	15			6,7	80,0	13,3
6	Professional ethical manner	15				80,0	20,0
7	Cooperative attitude in work	15				93,3	6,7
8	Professional responsibility	15				66,7	33,3
9	Progressive attitude	15				6,7	93,3
10	Your overall evaluation about the employee	15				93,3	6,7

Figure 14 and Table 30 shows the satisfaction level of employers about the curriculum. Over 90% of the employers surveyed are satisfied (level 3) with the curriculum. *[Exh.15.03 Survey results of program evaluation of the employers; Exh.15.04 Survey results of graduate evaluation of the employers]*.

Figure 14: Satisfaction of labour market about the program

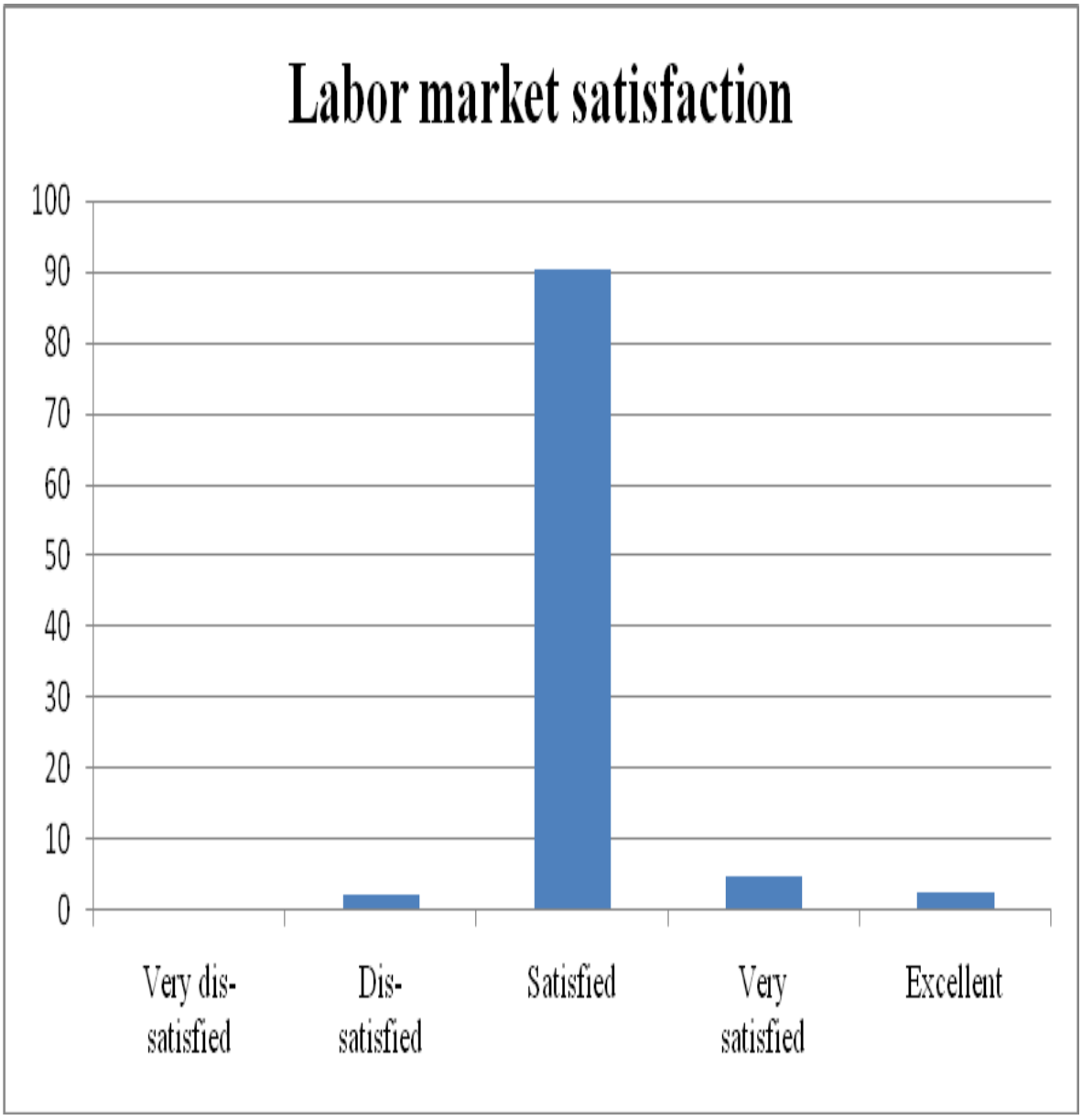


Table 30: Satisfaction of employers about the curriculum

Content	n	Percentage employer satisfaction (%)					Average grade of satisfaction
		Very dis-satisfied [1]	Dis-satisfied [2]	Satisfied [3]	Very satisfied [4]	Excellent [5]	[6]
1. Ability to apply general knowledge in work.	15	0	6.7	86.7	6.7	0	3.00
2. Ability to work independently.	15	0	0	86.7	6.7	6.7	3.20
3. Ability to work in teams.	15	0	0	100	0	0	3.00
4. Ability to plan schedule for specialized activities.	15	0	0	86.7	6.7	6.7	3.20
5. Ability to communicate (negotiate).	15	0	6.7	93.3	0	0	2.93
6. Sensitive to work environment changes.	15	0	6.7	86.7	6.7	0	3.00
7. Fundamental knowledge and major knowledge are balanced.	15	0	0	86.7	6.7	6.7	3.20
8. Capacity of computer knowledge.	15	0	0	100	0	0	3.00
9. Capacity of foreign languages.	15	0	0	80	13.3	6.7	3.27
10. Capacity of doing research (improvement – initiative).	15	0	6.7	86.7	6.7	0	3.00
11. Ability to study at higher level.	15	0	0	100	0	0	3.00
12. Employee's conduct.	15	0	0	86.7	6.7	6.7	3.20
13. Responsibilities in professional field.	15	0	0	93.3	6.7	0	3.07
14. Progressive spirit in professional field.	15	0	0	93.3	0	6.7	3.13
15. Working style.	15	0	0	86.7	6.7	6.7	3.20
16. Responsibilities for colleagues.	15	0	0	86.7	6.7	6.7	3.20
17. Compliance with policies and laws of the State.	15	0	0	93.3	6.7	0	3.07
18. Number of CTU graduates working at your organization:	15	0	0	100	0	0	3.00
19. Employees are oriented in career.	15	0	6.7	86.7	6.7	0	3.00
20. The quality of training program meets the requirements of your organization.	15	0	0	100	0	0	3.00
21. Employees have deep and wide knowledge.	15	0	0	100	0	0	3.00
22. Employees have a thorough understanding of theory.	15	0	6.7	80.0	13.3	0	3.07
23. Employees are good at practice.	15	0	6.7	86.7	6.7	0	3.00
24. Employees have good working solving skills.	15	0	6.7	86.7	6.7	0	3.00
25. Employees build prestige for CTU students.	15	0	0	80.0	6.7	13.3	3.33
26. You are satisfied when CTU students do internship at your organization.	15	0	0	86.7	6.7	6.7	3.20
27. You are satisfied when invited to design the training program.	15	0	0	93.3	0	6.7	3.13
28. You are satisfied when participating in vocational guidance for students.	15	0	0	93.3	0	6.7	3.13
29. You become experts in the training fields.	15	0	6.7	80.0	13.3	0	3.07
30. You are members of Employers' Union.	15	0	6.7	86.7	6.7	0	3.00
31. CTU links with your organization.	15	0	0	100	0	0	3.00
32. Your overall comment of all above contents.	15	0	6.7	93.3	0	0	2.93
Average							3.00

15.4. Experts Satisfaction

Experts who are invited to give lectures for students in the Program also give their evaluation on their course and support services they receive They agree that the curriculum has the balance between the theory and practice, providing students with adequate general and specific knowledge as well as other skills to qualify for the ELOs *[Exh. 15.05 Survey results of curiculum evaluation from lecturers/experts]*.

III. STRENGTHS AND WEAKNESS ANALYSIS

The analysis in this chapter covers the whole range of strategic issues in the report. It allows the items appearing in all of the previous parts.

1. Strengths and weaknesses

1.1. Expected Learning Outcomes (ELOs)

◆ **Strengths**
- \+ The ELOs of the program are clearly formulated and reflect the needs of stakeholders.
- \+ The ELOs of the program are disseminated to all stakeholders.
- \+ The ELOs are translated into the program courses and are transmitted to the students thanks to active learning methods, scientific research activities, and the nurture for life-long learning.
- \+ The program is benchmarked against the qualified national and international programs

◆ **Weakness**
- – The number of graduates is small, and the amount of feedbacks from stakeholders on program ELOs is limited.

◆ **Area for Improvement**
- ✓ The program will continue to be assessed every year and to be improved periodically.
- ✓ It is required CTU and BiRDI strengthen the relationship with stakeholders and apply a set of online tools to get more feedbacks from alumni and employers about the output standards and the training program-related activities.

1.2. Program Specification

◆ **Strengths**
- \+ The program specification shows the ELOs & useful information about the program.
- \+ The program specification is communicated to stakeholders.

◆ **Weaknesses**
- – The communication of program specification to employers is limited

◆ **Area for Improvement**
- ✓ BiRDI evaluates the relation between the ELOs and program specification Since 2014, the communication of program specification will be applied to all stakeholders

1.3. Program structure and content

◆ **Strengths**
- \+ The program is well-balanced.
- \+ The relation between and among the program courses is coherent
- \+ The content of the courses of the program are broad and deep

◆ **Weakness**
- – There is inadequate delivery of soft skills such as managerial skills, and archive of documents.

◆ **Areas for Improvement**
- ✓ BiRDI has offered some more elective courses that meet the requirements of employers, and BiRDI is to monitor the results in reality.

1.4. Teaching and Learning Strategy

◆ **Strengths**
- \+ Students could approach active teaching methodology. Learning with foreign professors help them to improve their English.
- \+ BIRDI always encourage lecturers and providing modern equipments for both theory and practical work. The program was checked annually by Ministry of Education and Training. By interviewing students, lecturers gained more experiences in teaching.

+ The number of scientific research of Program is higher than those of other faculties in CTU. These researches received many national awards and from CTU. This result proves that students from Program were very creative.

◆ **Weakness**

− English proficiency of some students is not good enough when they first enter the program and they needed to upgrade continuously during their program.

◆ **Area for Improvement**

✓ Lecturers pay more attention to students and help them to study English and introduced them to followed English courses in Center for foreign language of CTU. Students were required to write and defend their final dissertation successfully in English.

1.5. Student Assessment

◆ **Strengths**

+ The system of assessment regulations are completely established, consistently applied, constantly updated and adjusted to suit the current situation.
+ Lecturers implement the assessment by using the variety of assessment methods, leading to the high efficiency in assessment, reflecting the true quality of students, assuring the impartiality, fair and consistence of training methods.

◆ **Weakness**

− Although the bank of exam questionnaire has been set up since 2014, it is presently still not complete and not widespread yet.

◆ **Area for Improvement**

✓ Keep going on to set up the bank of exam questionnaire for all courses, estimated to complete by August 2015.

1.6. Academic Staff Quality

◆ **Strengths**

+ Enthusiastic staff members with high competence in teaching and doing research
+ Appropriate task assignment based on the background, working experiences, and personal skills of each staff. This help ensure teaching quality.
+ Staff members are encouraged to take training courses or get higher degrees, especially studying abroad in developed countries and obtaining great advantages and techniques from collaborative projects/programs with advanced countries.
+ The current staff management policies encourage the staff members work actively with high responsibility and discipline.

◆ **Weakness**

− Insufficient number of professors

◆ **Area for Improvement**

✓ Encourage and facilitate staff member to quanlify to apply for the professorship. Our goal is to have 5 professors within the next 5 years.
✓ Invite professors from other institutions of Viet Nam or other countries to teach our students.

1.7. Support Staff Quality

◆ **Strengths**

+ The Administrative Office does its consultancy task to the BiRDI leaders regarding management and governance of the Institute. Most of the staffs are highly experienced and competent, in addition to the professional training courses (on management, governance, English laguague, IT, etc.) that they have been encouraged to take; these help them fulfilling their tasks smoothly. Indeed, tasks regarding administration, academic affairs, students' affairs, budget proposal and liquidation for teaching theoretical and practical courses have normally been completed on time.

+ The staffs are highly experienced and enthusiastic. Their working environment is friendly.

◆ **Weakness**

− The staffs have sometimes been overloaded with different tasks. Only one of the 3 specialists is paid by CTU while the other 2 are paid BiRDI own budget which leads to financial problem.

◆ **Area for improvement**

✓ BiRD has proposed the appointment of 2 lab technicians in 2014 from CTU budget.

1.8. Student Quality

◆ **Strengths**

+ The recruitment process is carried out strictly and scientifically.
+ Studying load is suitably designed and carried out scientifically.
+ Academic advisors and administrative staff receive, process, and advise new students efficiently.
+ Recruiting announcement is highly efficient.

◆ **Weakness**

− The English competence in students is not balanced.

◆ **Area for Improvement**

✓ Help students improve English skills through teaching and studying activities. Students who cannot meet the requirement of English are helped by lecturers in class and advised to attend some special courses at the Foreign Language Center of CTU.

1.9. Student Advice and Support

◆ **Strength:**

+ Through the online academic administration system, the study plan and the progression of the students is fully and closely monitored so the academic advisor and the student assistance can give the timely consultancy and guidance if necessary.
+ The academic warning helps the students' families and the staffs of University pay attention betimes to students who have bad results in study, then providing timely actions to help them study better in the next semesters.
+ The learning materials are diversified and plentifully served by the Learning Resource Center (six days/week) and the institute library, the online syllabus and references as well as the internet access system are available in good service condition.
+ A number of scholarships from the university and the institute offered to the poor and outstanding students to partly solve the financial difficulties during the study progress of students.
+ Beside of scholarships configured by the government and university, the institute has established the Biotechnology grant to help the poor and outstanding students.

◆ **Weakness**

− The survey work recording the opinion of lecturers and students on the supporting activities for the timely adjustment and improvement of the training serving quality has not been carried out regularly and systematically.

◆ **Area for Improvement**

✓ The Institute will make a concrete plan and conduct the periodic survey to record the opinions and comments of lecturers and students on the supporting activities.

1.10. Facilities and Infrastructure

◆ **Strengths**

+ The program has received diverse investments from national and international organizations. The facilities and infrastructures of BiRDI as well as CTU are sufficient and modern in comparison with South-eastern Asian countries, meeting the teaching, studying and researching demands of lecturers and students.

+ CTU has a modern LRC with Asian standard. Libraries of BiRDI and other faculties are frequently upgraded learning resources from Viet Nam and other countries.

◆ **Weakness**

− Some laboratories located in the old building have to move to the new building which is going to build in 2015.

◆ **Area for Improvement**

✓ Continue to use funds from CTU and research projects for maintaining and repairing instruments in laboratories.

✓ Prepare for the establishment of the new building in 2015.

1.11. Quality Assurance of Teaching and Learning Process

◆ **Strengths**

+ The program has been based on the original program of *Biochemistry & Molecular Biology/Biotechnology Major* of MSU with the approval of MOET, and assessed annually by MOET.

+ The content of the curriculum is updated and periodic improved to be suitable for the requirement of society as well as the activeness and creativity of students. Lecturers get feedbacks from students to improve the course specification and teaching method if necessary.

+ CTU has the quality assurance system and effective software for academic administration system, organizes meetings between students and leaders of BiRDI and CTU Board of Rector to solve all problems in learning process. The course evaluation of undergraduates is step by step improved by online performance instead.

◆ **Weakness:**

− The evaluation is not carried out enthusiastically by the students and lecturers. Reporting about teaching agenda and giving opinions about teaching and learning process are not still considered one of the prime condition for constantly improving teaching and learning.

◆ **Area for Improvement**

✓ Establish the quality culture in BiRDI staff.

1.12. Staff Development Activities

◆ **Strengths**

+ BiRDI submitted a staff development plan to CTU which has already been approved. The plan has regularly been evaluated and revised hang on current demands. The staff members have good opportunities to persue higher education or participate in short training courses related to their specialized fields.

+ Beside BiRDI lectures, those from other Colleges, Falcuty of CTU having degrees on Biotech-related fields also participate in teaching at the Institute. Young generations of lecturers have been well-prepared to substitute the tasks of retired lecturers in future.

◆ **Weakness**

− Limited numbers of technicians and other supporting staffs

◆ **Area for Improvement**

✓ Continue evaluating, revising and improving the staff development plan

✓ Offer good working conditions and reasonable incomes to the staff members. Suggestions: Increase the number of technicians and other supporting staffs

1.13. Stakeholders Feedback

◆ **Strengths**

+ Collaborating with companies to organize workshops related to Biotechnology field is an effective manner which can help to collect the feedback and the demand of labor market as well as introduce jobs to students.

+ Staying in touch with alumni help BiRDI update useful information, improve the curriculum, develop innovative teaching and studying methods in order to enhance the education quality, adjust the need of society as well as upgrade facilities and teaching conditions timely, adapt to new requirements for biotechnology professionals.
+ An online surveying system is necessary and convenient for collecting feedback from stakeholders.

◆ **Weaknesses**

− Many students lack confidence to share their own thought or even do not care about the learning process. They just try to finish the program instead.
− The process of collecting feedback from stakeholders is facing many difficulties as they do not pay much attention on the feedback due to lack of time
− The feedback is still limited in quantity due to small number of graduates.

◆ **Area for Improvement**

✓ Through the Youth Union and the Department of Student Association, graduates are kept in touch to record the satisfaction level with all activities in class, institute and university.
✓ The relationship between BiRDI and companies is continuously consolidated through regular contact.

1.14. Output

◆**Strengths**

+ Lecturers work strongly in scientific research and have a lot of scientific articles.
+ Transmission technology serving the community effectively contributes to the development of the MDR in particular.
+ CTU has a high proportion of excellent graduated students who have high level on foreign language so it is easy for them to get scholarship for higher education.
+ Students have opportunities to do scientific research for students during study time and get soft skills based on the scientific conferences, working in team,… these chances lead to the great success of graduated students and the output results are equivalent to the objectives of the training program.
+ Employers appreciate students based on specialized knowledge, technical skills, foreign language level and informatics, team work and capacity of negotiation.

◆**Weakness**

− As employers evaluated, the formal writing skills of students is quite limited.

◆ **Area for Improvement**

✓ Enhance courses about practical Vietnamese usage and formal writing skill for students.

1.15. Stakeholders Satisfaction

◆ **Strengths**

+ A majority of students and alumni are satisfied with the training program, teaching methods, supporting services and facilities of CTU and BiRDI
+ Employers are satisfied with the quality of students studying the Advanced Program in Biotechnology and express their recruitment demand in the future.

◆ **Weakness**

− A few employers suggest improving the linkage between the training program and the practical work.

◆ **Area for Improvement**

✓ Maintain and develop the survey system to receive feedbacks from the stakeholders about the training program and the educational quality for persistent improvement.

2. Self-assessment at Program level

1	Expected Learning Outcomes	1	2	3	4	5	6	7
1.1	The expected learning outcomes have been clearly formulated and translated into the program					X		
1.2	The program promotes life-long learning					X		
1.3	The expected learning outcomes cover both generic and specialized skills and knowledge					X		
1.4	The expected learning outcomes clearly reflect the requirements of the stakeholders					X		
	Overall opinion	5.0						
2	**Program Specification**							
2.1	The university uses program specification						X	
2.2	The program specification shows the expected learning outcomes and how these can be achieved					X		
2.3	The program specification is informative, communicated, and made available to the stakeholders					X		
	Overall opinion	5.3						
3	**Program Structure and Content**							
3.1	The program content shows a good balance between generic and specialised skills and knowledge						X	
3.2	The program reflects the vision and mission of the university						X	
3.3	The contribution made by each course to achieving the learning outcomes is clear					X		
3.4	The program is coherent and all subjects and courses have been integrated					X		
3.5	The program shows breadth and depth					X		
3.6	The program clearly shows the basic courses, intermediate courses, specialised courses and the final project, thesis or dissertation					X		
3.7	The program content is up-to-date					X		
	Overall opinion	5.3						
4	**Teaching and Learning Strategy**							
4.1	The faculty or department has a clear teaching and learning strategy						X	
4.2	The teaching and learning strategy enables students to acquire and use knowledge academically						X	
4.3	The teaching and learning strategy is student oriented and stimulates quality learning						X	
4.4	The teaching and learning strategy stimulates action learning and facilitates learning to learn						X	
	Overall opinion	6.0						
5	**Student Assessment**							
5.1	Student assessment covers student entrance, student progress and					X		

	exit tests							
5.2	The assessment is criterion-referenced						X	
5.3	Student assessment uses a variety of methods						X	
5.4	Student assessment reflects the expected learning outcomes and the content of the program					X		
5.5	The criteria for assessment are explicit and well-known					X		
5.6	The assessment methods cover the objectives of the curriculum						X	
5.7	The standards applied in the assessment are explicit and consistent					X		
	Overall opinion	5.4						
6	**Academic Staff Quality**							
6.1	The staff are competent for their tasks						X	
6.2	The staff are sufficient to deliver the curriculum adequately						X	
6.3	Recruitment and promotion are based on academic merits					X		
6.4	The roles and relationship of staff members are well defined and understood					X		
6.5	Duties allocated are appropriate to qualifications, experience and skills						X	
6.6	Staff workload and incentive systems are designed to support the quality of teaching and learning					X		
6.7	Accountability of the staff members is well regulated						X	
6.8	There are provisions for review, consultation and redeployment						X	
6.9	Termination and retirement are planned and well implemented						X	
6.10	There is an efficient appraisal system					X		
	Overall opinion	5.6						
7	**Support Staff Quality**							
7.1	The library staff are competent and adequate in providing a satisfactory level of service					X		
7.2	The laboratory staff are competent and adequate in providing a satisfactory level of service					X		
7.3	The computer facility staff are competent and adequate in providing a satisfactory level of service					X		
7.4	The student services staff are competent and adequate in providing a satisfactory level of service					X		
	Overall opinion	5.0						
8	**Student Quality**							
8.1	There is a clear student intake policy						X	
8.2	The student admission process is adequate						X	
8.3	The actual study load is in line with the prescribed load					X		
	Overall opinion	5.6						
9	**Student Advice and Support**							
9.1	There is an adequate student progress monitoring system						X	

9.2	Students get adequate academic advice, support and feedback on their performance						X	
9.3	Mentoring for students is adequate						X	
9.4	The physical, social and psychological environment for the student is satisfactory						X	
	Overall opinion	6.0						
10	**Facilities and Infrastructure**							
10.1	The lecture facilities (lecture halls, small course rooms) are adequate						X	
10.2	The library is adequate and up-to-date						X	
10.3	The laboratories are adequate and up-to-date						X	
10.4	The computer facilities are adequate and up-to-date						X	
10.5	Environmental health and safety standards meet requirements in all aspects					X		
	Overall opinion	5.8						
11	**Quality Assurance of Teaching and Learning Process**							
11.1	The curriculum is developed by all teaching staff members					X		
11.2	The curriculum development involves students					X		
11.3	The curriculum development involves the labor market					X		
11.4	The curriculum is regularly evaluated at reasonable time periods					X		
11.5	Courses and curriculum are subject to structured student evaluation						X	
11.6	Feedback from various stakeholders is used for improvement					X		
11.7	The teaching and learning process, assessment schemes, the assessment methods and the assessment itself are always subject to quality assurance and continuous improvement						X	
	Overall opinion	5.3						
12	**Staff Development Activities**							
12.1	There is a clear plan on the needs for training and development of both academic and support staff					X		
12.2	The training and development activities for both academic and support staff are adequate to the identified needs					X		
	Overall opinion	5.0						
13	**Stakeholders Feedback**							
13.1	There is adequate structured feedback from the labor market					X		
13.2	There is adequate structured feedback from the students and alumni					X		
13.3	There is adequate structured feedback from the staff					X		
	Overall opinion	5.0						
14	**Output**							
14.1	The pass rate is satisfactory and dropout rate is of acceptable level						X	

14.2	Average time to graduate is satisfactory						X	
14.3	Employability of graduates is satisfactory						X	
14.4	The level of research activities by academic staff and students is satisfactory						X	
	Overall opinion	6.0						
15	**Stakeholders Satisfaction**							
15.1	The feedback from stakeholders is satisfactory					X		
	Overall opinion	5.0						
Overall verdict		**5.5**						

IV. APPENDICES

1. Lists of Figures and Tables

Item	Table and Figure name	Remarks
Figure 1	The structure of CTU and units	Introduction
Figure 2	The structure of BiRDI and its departments	Introduction
Figure 3	The relationship between BiRDI and other units in CTU in program training	Introduction
Figure 4	Self-Assessment Activities in BiRDI	Introduction
Figure 5	The life-long learning pathway in Biotechnology	Criterion 1
Figure 6.	The mutual relationship among knowledge blocks	Criterion 2
Figure 7	Flow-chat of Studying	Criterion 3
Figure 8	Categories in the cognitive domain of Bloom's Taxonomy	Criterion 5
Figure 9	The number of applicants and students passing the exam for Biotechnology Program vs. years	Criterion 8
Figure 10	Lecture hall and laboratory area at BiRDI	Criterion 10
Figure 11	Learning Resource Center and a typical computer room	Criterion 10
Figure 12	Laboratory and practical class	Criterion 10
Figure 13	Survey System of Stakeholder	Criterion 15
Figure 14	Satisfaction of Labour market about the program	Criterion 15
Table 1	How to train in the lifelong learning context	Criterion 1
Table 2	Expected learning outcomes grouped by knowledge, skills, attitudes and life-long learning	Criterion 1
Table 3	Structure of the curriculum	Criterion 2
Table 4	Knowledge block weights	Criterion 2
Table 5	Curriculum Distribution	Criterion 2
Table 6	Recommended Study Plan	Criterion 2
Table 7	Matrix courses vs. learning outcomes (Skill matrix)	Criterion 3
Table 8	The classification of learning results based on grading scales.	Criterion 5
Table 9	List of the CTU lecturers in Advanced Program in Biotechnology	Criterion 6
Table 10	List of the visiting lecturers	Criterion 6
Table 11	Number of the staff members	Criterion 6

Table 12	The ratio between students and lecturers from 2009-2013	Criterion 6
Table 13	The responsibilities of each position within BiRDI	Criterion 6
Table 14	Obligatory working hours of lecturers at Can Tho University	Criterion 6
Table 15	List of laboratory staff	Criterion 7
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Table 17	Passing grade and base grade for entry of Biotechnology Program	Criterion 8
Table 18	Intake of first- year students	Criterion 8
Table 19	Total number of students (last 5 academic years)	Criterion 8
Table 20	Number of graduated students in time	Criterion 8
Table 21	List of staff taking higher educational degrees within 2007-2015	Criterion 12
Table 22	Number of staff members taking short training courses during 2007-2014	Criterion 12
Table 23	Survey on alumni about continuing learning and careers	Criterion 13
Table 24	Academic results of students in cohorts 2006 and 2007	Criterion 13
Table 25	Number of researches done by BiRDI staff in 2010-2014	Criterion 14
Table 26	Number of BiRDI staff's publications in 2009-2013	Criterion 14
Table 27	Number of researches done by Advanced Biotechnology students	Criterion 14
Table 28	Satisfaction of alumni about the curriculum	Criterion 15
Table 29	Satisfaction of employers about graduate students	Criterion 15
Table 30	Satisfaction of employers about the curriculum	Criterion 15

2. Lists of Evidences

No.	Name of evidences	Code	Remarks
INTRODUCTION			
1.	Annual Report 2013	Exh.0.01	
2.	Project "Plans for the overall key developments of CTU up to 2020"	Exh.0.02	
3.	Development strategic plan of BiRDI from 2013-2017 towards 2020	Exh.0.03	
CRITERION 1. EXPECTED LEARNING OUTCOMES			
4.	Decision No. 300/BGD&ĐT-ĐH&SĐH of the MOET on January 12th 2006	Exh.1.01	
5.	Decision No.6666/QĐ-BGD&ĐT on November 23rd, 2005	Exh.1.02	

6.	Student handbook	Exh.1.03	
7.	Decision to promote student for international learning	Exh.1.04	
8.	National college Network, Program outcomes (p.37), content and structure program & Statute No 43 of MOET issued on August 15, 2007)	Exh.1.05	
9.	Related e-mails, photos and minutes of conferences and meetings	Exh.1.06	
CRITERION 2. PROGRAM SPECIFICATION			
10.	Minutes of conferences and meetings and related feedbacks	Exh.2.01	
11.	Degree and Certificate	Exh.2.02	
12.	Statute No 43 on regular undergraduate and college education under the credit system of MOET issued on August 15, 2007	Exh.2.03	
13.	Course outline details	Exh.2.04	
14.	Scientific researches by students	Exh.2.05	
15.	Abstracts, posters, proceedings and photos of the conferences	Exh.2.06	
16.	Scientific articles by students	Exh.2.07	
17.	Awards from different levels to students	Exh.2.08	
18.	Graduate theses and evaluation forms	Exh.2.09	
19.	Working schedule for visiting lecturers	Exh.2.10	
20.	Documents of curriculum modification	Exh.2.11	
21.	Websites CTU & BiRDI	Exh.2.12	
CRITERION 3. PROGRAM STRUCTURE AND CONTENT			
22.	Documents of on-the-job practice	Exh.3.01	
23.	Related photos and minutes of conferences and meetings	Exh.3.02	
24.	Minutes of the evaluation on the curriculum by the MOET	Exh.3.03	
25.	Documents of the conferences/meetings in 2014	Exh.3.04	
26.	Academic Regulations	Exh.3.05	
27.	Class schedule	Exh.3.06	
CRITERION 4. TEACHING AND LEARNING STRATEGY			
28.	Lecturers' handbooks	Exh.4.01	
29.	Requirements to be a lecturer	Exh.4.02	
30.	Documents on attending the workshop "Developing curriculum and teaching for active and engaged learning	Exh.4.03	
31.	Invitation letters for international professors and specialists	Exh.4.04	
32.	Reports of Advanced Program in Biotechnology	Exh.4.05	
33.	Course outline details with seminars and case studies	Exh.4.06	

34.	Power-point slides, video clips	Exh.4.07	
35.	Course outline details with theory and practical work	Exh.4.08	
36.	Student reports for field trips	Exh.4.09	
37.	Student reports of the course Practical Training in Industry and feedbacks of companies	Exh.4.10	
38.	Students' presentations in international workshops	Exh.4.11	
39.	Announcement on contests	Exh.4.12	
40.	KOVA prizes, Young biologist contest organized in Ho Chi Minh City 2010, High quality of Rice in An Giang 2007 and in Soc Trang 2011	Exh.4.13	
41.	Documents for students exchange	Exh.4.14	
CRITERION 5. STUDENT ASSESSMENT			
42.	Academic curriculums are shown on website:http://birdi.ctu.edu.vn/birdi_cttt/	Exh.5.01	
43.	Announcement on admission scores	Exh.5.02	
44.	Results of English test	Exh.5.03	
45.	Examination papers	Exh.5.04	
46.	Theses and Detailed summary	Exh.5.05	
47.	Document of grading scale	Exh.5.06	
48.	Decision on promulgating about extracurricular activities assessment form	Exh.5.07	
49.	Academic transcript	Exh.5.08	
50.	Documents of thesis proposal	Exh.5.09	
51.	Documents of thesis defense	Exh.5.10	
52.	Website of academic administration system: https://htql.ctu.edu.vn/htql/login.php	Exh.5.11	
53.	Complaint procedure of the exam results	Exh.5.12	
CRITERION 6. ACADEMIC STAFF QUALITY			
54.	Curriculum vitae of the staff members	Exh.6.01	
55.	Teaching plan of the advanced program in Biotechnology	Exh.6.02	
56.	Plan of visiting lecturers invitation	Exh.6.03	
57.	Regulation of organization and administration on academic affairs, improvement of staff standard in CTU	Exh.6.04	
58.	Judging salary increase	Exh.6.05	
59.	Regulation on management of professional work for lecturers of CTU	Exh.6.06	
60.	Emulative registration forms	Exh.6.07	
61.	Documents of Staff Evaluation	Exh.6.08	

62.	CTU administration website	Exh.6.09	
63.	Annual plan for professional activities of CTU staff and Departments	Exh.6.10	
64.	Plan for staff promotion	Exh.6.11	
65.	Criteria for special case of staff promotion	Exh.6.12	
66.	Staff development plan for 2008-2015, 2013-2022	Exh.6.13	
67.	Notice and Decision for retirement	Exh.6.14	
68.	Self-evaluation form	Exh.6.15	
69.	Minutes of the staff evaluation and reward meeting	Exh.6.16	
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71.	Website of the Learning Resource Center http://www.lrc.ctu.edu.vn/eng/	Exh.7.02	
72.	Website of the library of College of Agriculture and Applied Biology http://caab.ctu.edu.vn/thuvien/	Exh.7.03	
73.	Website of Department of Facility Management http://websrv2.ctu.edu.vn/dept/dfm/	Exh.7.04	
74.	Certificates of lab sercurity	Exh.7.05	
75.	Decision for facility management staff	Exh.7.06	
76.	Degree of computer facility staff	Exh.7.07	
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78.	Annual staff evaluation form	Exh.7.09	
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80.	List of candidates for Biotechnology Program	Exh.8.02	
81.	Selecting result for Biotechnology Program	Exh.8.03	
82.	Schedule for Intensive English Course	Exh.8.04	
83.	Announcement on the studying plan	Exh.8.05	
84.	Posters, leaflet about Advanced Program in Biotechnology	Exh.8.06	
85.	Website of Advanced Biotechnology Program http://birdi.ctu.edu.vn/birdi_cttt/)	Exh.8.07	
86.	Documents of English Examination	Exh.8.08	
87.	Studying plan of Biotechnology class	Exh.8.09	
88.	Final result of Intensive English Foundation Course	Exh.8.10	
89.	Letters for approving the scholarships	Exh.8.11	

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90.	Decision no. 2067/QĐ-ĐHCT in 2007_Decision on appointment of academic advisors	Exh.9.01	
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94.	Decision on Regulations of educational affairs for regular undergraduate students	Exh.9.05	
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102.	Instruction on course registration_ http://helpdesk.ctu.edu.vn/]	Exh.9.13	
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109.	List of students receiving scholarships of BiRDI	Exh.9.20	
110.	Announcement about the contest and festival	Exh.9.21	
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154.	Minutes of the Conference on Assessment of Advanced Program in Biotechnology	Exh.11.03	
155.	Decision No. 7738/QĐ-BGDĐT on 28th March, 2006	Exh.11.04	
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179.	Curriculum evaluation form of the alumni	Exh.13.07	
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