

COURSE : **MASTER OF SCIENCE OF BIOTECHNOLOGY 2018**

Degree : Master of Science

Training course : **Biotechnology**

Code : 8420201

Style : Full time

1. Training objectives

General objectives

* Master's degree in Biotechnology with deep, broad and advanced knowledge in Biology and Technology; providing necessary skills and appropriate attitudes to build career in the field of Biotechnology.

Detailed objectives

- Knowledge:

- Practical and deep knowledge in the field of Biology and Technology: This training program focuses on biological processes (Biochemistry, Molecular Biology of Cells and Immunology). Technology (Cell Technology, Genetic Technology, Protein - Enzyme Technology and Technology of Fermentation) and Computational Biology (Methods of Scientific Research, Biology);
- Have interdisciplinary knowledge in application of Biotechnology in Medicine, Pharmacy, Agriculture, Food and Environment;
- Have general knowledge of administration and management to implement and supervise R & D in Biotechnology.

- Skills:

- Skills in analyzing, synthesizing, evaluating data and information regarding to Biology and Technology, thereby providing solutions to scientific problems in the areas of application of Biotechnology in Medicine, Pharmacy, Agriculture, Food and Environment;
- Knowledge transfer skills based on research, discussion of professional issues in Biotechnology;
- Skills in organizing, administering and managing activities related to Biotechnology;
- Skills in the research, development and use of innovative technologies in the academic and occupational fields related to Biotechnology;

- Have a foreign language proficiency equivalent to 4/6, Vietnamese foreign language proficiency framework.

- Attitude:

- Ability to research, make important initiatives in the field of Biotechnology;
- Ability to adapt, orient and guide others;
- Ability to make expert conclusions in the field of Biotechnology;
- Ability to manage, evaluate and improve professional activities in the field of Biotechnology.

2. Output standard

Knowledge: Graduates will:

- Have practical knowledge and deep, broad, advanced theories; firmly comprehend principles both in theory and practice in the field of Biotechnology research;
- Have relevant interdisciplinary knowledge: Application of Biotechnology in Medicine - Pharmacy, Agriculture, Food and Environment;
- Have general knowledge of administration and management in Biotechnology product research and development.

Skills: Graduates will:

- Have skills in analyzing, synthesizing, evaluating data and information to provide solutions to scientific problems in the field of Biotechnology;
- Have knowledge transfer skills based on research, discussion of professional and scientific issues with counterparts (in Biotechnology) and with others;
- Have skills in organizing, administering and managing activities related to Biotechnology;
- Have skills in the research, development and use of innovative technologies in the academic and occupational fields related to Biotechnology;
- Have a foreign language proficiency equivalent to 4/6, Vietnamese foreign language proficiency framework.

Autonomy and responsibility: Graduates will know how to:

- Research, provide important initiatives in the field of Biotechnology;
- Adapt, self-direct and guide others;
- Make expert conclusions in the field of Biotechnology;
- Carry out the management, evaluation and improvement of professional activities in the field of Biotechnology.

Job placement after graduation

- Work in specialized agencies in Biotechnology and Biotechnology of ministries, sectors or localities;
- Take part in management activities at the management agencies related to Biotechnology and Biotechnology of the ministries, sectors, or localities;
- Be in charge of technical, quality management and testing at production units in the fields of agriculture, forestry, medicine and pharmacy;

- Conduct scientific research in the fields of biotechnology and experimental biology in enterprises, research institutes, research centers and agencies of ministries, universities and colleges;
- Teach and conduct experiments in Biotechnology and Biology at universities, colleges, professional secondary schools;
- Create, manage or participate in the management and operation of farms, enterprises producing and trading biotechnology products;
- Provide consultancy to commercial units, services in the field of agriculture, forestry, fishery, medicine and pharmacy;
- Continue to study for a doctorate degree.

3. Requirements for candidates of postgraduate program in Biotechnology

Candidates for biotechnology, master's degree:

- Preferred specialization: Candidates with a bachelor degree in Biotechnology and Biology including: Biotechnology, Biology, Bioengineering, and Applied Biology.

- Acceptable specialization: Medicine, pharmacy;
- Agriculture, forestry and fisheries;
 - Veterinary group;
 - Group of food processing and beverages;
 - Environmental science group;
 - Environmental technology engineering group;
 - Chemistry.

Candidates in **acceptable specialization** * must complete 3 modules (3 credits each) of:

- (1) Molecular biology;
- (2) Cytology;
- (3) General microbiology;

*Candidates in acceptable specialization may be considered exempt from these additional modules if they have taken these modules in undergraduate program.

4. Training program

4.1. Overview of the program

Master's program in Biotechnology includes 60 credits as follows:

- General knowledge: 08 credits
- Basic knowledge and specialized knowledge (compulsory): 09 credits
- Basic knowledge and specialized knowledge (optional): 18 credits
- Graduation thesis *: 25 credits

* *Thesis: total 25 credits, and must have at least one article published in domestic/foreign journals or the academic proceeding of local/foreign science conference, reflecting the main content of the thesis.*

4.2. Courses

Code	Subjects	Credits
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			Total	Theory	Labwork
PART 1: General knowledge			8	8	0
CON	501	Philosophy	3	3	0
ECO	506	Foreign languages	5	5	0
PART 2: Basic knowledge and specialized knowledge			27	20	7
<i>Compulsory (3 subjects)</i>					
BIO	601	Research methodology	3	2	1
BIO	615	Thesis topic	3	3	0
BIO	614	New product development	3	3	0
<i>Optional (6 subjects: BIO602 and BIO608 are required optional subjects)</i>					
BIO	602	Bioinformatics	3	2	1
BIO	603	Biochemistry	3	2	1
BIO	604	Molecular biology of the cell	3	2	1
BIO	605	Immunology	3	2	1
BIO	606	Cell technology	3	2	1
BIO	607	Fermentation technology	3	2	1
BIO	608	Gene technology	3	2	1
BIO	609	Protein – enzyme technology	3	2	1
BIO	610	Applied biotechnology in pharmaco- medicine	3	2	1
BIO	611	Applied biotechnology in agriculture	3	2	1
BIO	612	Applied biotechnology in food	3	2	1
BIO	613	Applied biotechnology in environment	3	2	1
BIO	701	Thesis	25		
Total			60		