



Benha University
Faculty of Science
Department of Botany



Bioremediation Diplom Program Specification



Bioremediation Diplom Program Specification

A. Basic Information

Program Title:	Bioremediation Diplom Program Specification
Program Type:	Graduate
Department:	Botany Departement
Coordinator:	Dr. Sabah AboElmaaty, Dr. Reyad El-Sharkawy

Dates of program specifications approval:

B. Professional Information

1. Program Aims

Bioremediation Diplom Program is an academic program produced by Botany Department. It is goal-oriented, focused, research experience, community service, and developing some of the personal characteristics of the postgraduated students. The following are the aimed graduate attributes:

- 1.1. Gain the required fundamental and advanced knowledge to solve the Bioremediation problems that they might face.
- 1.2. Understanding their roles in community development and keeping the environment clean and safe.
- 1.3. Recognize deeper knowledge theoretically, practically, and instrumentally to develop themselves scientifically in Bioremediation.
- 1.4. Develop knowledge and skills necessary for independent learning and participate effectively in research activities in Bioremediation.
- 1.5. Participate effectively as a member or leader in teamwork, able to make right scientific decision and behave in manner reflecting integrity and credibility.
- 1.6. Exploit the modern technology in searching and serving the professional practice.

2. Intended Learning Outcomes (ILO's)

2.1 Knowledge and Understanding

The postgraduates of the Bioremediation **Diplom Program** should be able to demonstrate the knowledge and understanding of:



- 2.1.1. State basics and theories of Bioremediation.
- 2.1.2. Define the ethical, basic, and quality principles of professional practice in Bioremediation to preserve the environment.
- 2.1.3. Describe new techniques and instruments in Bioremediation and some applied organic Botany.

2.2 Intellectual Skills

The postgraduates of the Bioremediation **DiplomProgram** should be able to:

- 2.2.1. Report an analytical Botany problem and the risks during the professional practice for the purpose of solving the problem.
- 2.2.2. Collect and organized data using different instruments.
- 2.2.3. Interpret the organized and collect data using the gained applied knowledge.
- 2.2.4. Report scientific decision on the problems and their solutions in scientifically written reports.

2.3 Skills

2.3.1 Professional and Practical Skills

On successful completion of the Postgraduates of the **Bioremediation program** should be able to:

- 2.3.1.1. Apply basic and professional skills in collecting information on the problem and its solution.
- 2.3.1.2. Investigate scientifically the collected data based on the gained knowledge.
- 2.3.1.3. Prepare scientific reports or scientific research papers based on the collected data.

2.3.2 General Skills

The graduates of the Postgraduate of the **Bioremediation program** should be able to:

- 2.3.2.1. Use computers and internet for communication, data handling and word processing.
- 2.3.2.2. Collaborate effectively with teamwork members to maintain independent and critical thinking, effective time-management and positive communication and cooperation with other members of the teamwork.
- 2.3.2.3. Use different sources for information and knowledge.
- 2.3.2.4. Manage tasks, time, and resources, effectively.
- 2.3.2.5. Search for information and engage in life-long self learning discipline.
- 2.3.2.6. Lead scientific meeting and manage time.

3- Academic standards of the program



The program outcomes are derived from the **Academic Reference Standards (ARS)** for postgraduate program published by the National Authority of Quality Assurance and Accreditation of Education in (2009).

4- Reference indices (Benchmarks)

The program outcomes are derived from the **Academic Reference Standards (ARS)** for postgraduate program published by the National Authority of Quality Assurance and Accreditation of Education in (2009).

5- Curriculum structure and contents of program

a- Program duration: 1 year.

b- Program structure:

Program structure	Credit hours
Compulsory courses	18
Optional courses	6
Total	24

d- Program Courses:

Code No.	Course Title	No. of hours		
		Lectures	Practical	Credit hours
The graduate studies total (24 hours)				
Compulsory courses (18 hours)				
516B	Toxicology and their treatment	2	-	2
509B	Soil microbiology	3	2	4
517B	Fermentation and microbial transformation	3	3	4
512B	Physiology of fungi	2	4	4
506B	Microbial analysis	2	4	4
Optional courses (6 hours)				
518B	Genetic engineering	2	-	2
513B	Enzymes and hormones	2	-	2



514B	Microbial ecology	2	-	2
508B	Biochemistry	2	-	2
515B	Biostatistics	2	-	2

Courses specification:

See course specification forms

7- Program admission requirements

- The students registered in this program must have B.Sc. Students whom have pass grade in B.Sc. should take diplom in Botany with very good grade.

8- Regulations for progression and program completion:

- According to the law of Faculty of Benha Science, the regulations for progression and program completion, the graduate must pass:
 - * 24cr (credit hours) compulsory and optional hours.
 - * Student is considered absent, if he/she misses the final written exam with no accepted excuse.

9- Methods and rules of evaluation of students in rolled in the program:

- Optional courses evaluation:

	Method of Assessment		Percent	Total
1-	Semester work	Semester work	---	---
2-	Mid Term Exam	Mid Term Exam	---	---
3-	Practical courses	Final Oral Exam	40%	100%
		Final Practical Exam	60%	
4-	Theoretical courses	Final Oral Exam	20%	100%
		Final Practical Exam	80%	

10- Methods of program evaluation:



Samples	Tool	Evaluators
1- Senior Students	Questionnaire	100%
3- External Evaluators	Reports	

The person responsible for the program: Prof. Dr.

Date: \ \201



**Benha University
Faculty of Science
Department of Botany**



Applied Microbiology Diplom Program Specification



Applied Microbiology Diplom Program Specification

A. Basic Information

Program Title:	Applied Microbiology Diplom Program Specification
Program Type:	Postgraduate
Department:	Botany Departement
Coordinator:	Dr. Mohamed A. Nasr-Eldin
Assistant Co-ordinator:	Dr. Ahmed G. Ali

Dates of program specifications approval:

B. Professional Information

1. Program Aims

Applied Microbiology Diplom Program is an academic program produced by Botany Department. The program aims to prepare the students to carry out a full time laboratory based work in different areas of microbiology. It is goal-oriented, focused, research experience, community service, and developing some of the personal characteristics of the postgraduated students. The following are the aimed graduate attributes:

- 1.1. Gain the required fundamental and advanced knowledge to solve the Applied Microbiology problems that they might face. Study the microbial biology (viruses, rickettsia, fungi, bacteria, algae, and general information about microbial relationships, microbial enzymes, as well as introduction to microbial biodiversity)
- 1.2. Understanding their roles in community development and keeping the environment clean and safe.
- 1.3. Recognize deeper knowledge theoretically, practically, and instrumentally to develop themselves scientifically in Applied Microbiology.
- 1.4. Develop knowledge and skills necessary for independent learning and participate effectively in research activities in Applied Microbiology.
- 1.5. Participate effectively as a member or leader in teamwork, able to make right scientific decision and behave in manner reflecting integrity and credibility.
- 1.6. Exploit the modern technology in searching and serving the professional practice

2. Intended Learning Outcomes (ILO's)



2.1 Knowledge and Understanding

The postgraduates of the **Applied Microbiology Diplom Program** should be able to

- 2.1.1. Understand the bases of the traditional and molecular based techniques for identification, characterization and detection of the microbial agent (either single or in a complex) *in vitro and in vivo* (that is divergent biological systems such as plants, fungi, bacteria, viruses, mycoplasma, phytoplasma, rickettsia, algae, human and animals).
- 2.1.2. Define the ethical, basic, and quality principles of professional practice in Applied Microbiology to preserve the environment.
- 2.1.3. Describe the concepts of applied microbiology and the role of microorganisms in production of metabolic compounds which used in industrial applications.

2.2 Intellectual Skills

The postgraduates of the **Applied Microbiology Diplom Program** should be able to:

- 2.2.1. Report microbiological problem and the risks during the professional practice for the purpose of solving the problem.
- 2.2.2. Organize model for precise diagnosis, detection of the microbial agents of choice.
- 2.2.3. Interpret the behavior of beneficial or threatening microbes.
- 2.2.4. Report scientific decision on the problems and their solutions in scientifically written reports.

2.3 Skills

2.3.1 Professional and Practical Skills

On successful completion of the Postgraduates of the **Applied Microbiology Diplom Programs** should be able to:

- 2.3.1.1. Apply basic and professional skills in collecting information on the problem and its solution.
- 2.3.1.2. Utilize the conventional and molecular based tools for diagnosis, identification and characterization of microorganisms
- 2.3.1.3. Prepare scientific reports based on the collected data.

2.3.2 General Skills

The graduates of the Postgraduate of the **Applied Microbiology Diplom Program** should be able to:

- 2.3.2.1. Use computers and internet for communication, data handling and word processing.
- 2.3.2.2. Collaborate effectively with teamwork members to maintain independent and crit-



ical thinking, effective time-management and positive communication and cooperation with other members of the teamwork.

- 2.3.2.3. Use different sources for information and knowledge.
- 2.3.2.4. Manage tasks, time, and resources, effectively.
- 2.3.2.5. Search for information and engage in life-long self learning discipline.
- 2.3.2.6. Lead scientific meeting and manage time.

3- Academic standards of the program

The program outcomes are derived from the **Academic Reference Standards (ARS)** for postgraduate program published by the National Authority of Quality Assurance and Accreditation of Education in (2009).

4- Reference indices (Benchmarks)

The program outcomes are derived from the **Academic Reference Standards (ARS)** for postgraduate program published by the National Authority of Quality Assurance and Accreditation of Education in (2009).

5- Curriculum structure and contents of program

a- **Program duration:** 1 year.

b- **Program structure:**

Program structure	Credit hours
Compulsory courses	18
Optional courses	6
Total	24

d- **Program Courses:**



Code No.	Course Title	No. of hours		
		Lectures	Practical	Credit hours
The graduate studies total (24 hours)				
Compulsory courses (18 hours)				
501 B	Biotransformations	1	2	2
502 B	Fermentation	1	2	2
503 B	Medical microbiology	2	4	4
504 B	Water and food Microbiology	2	-	2
505 B	Immunology	1	2	2
506 B	Microbial analysis	1	2	2
507 B	Antibiotics	1	2	2
508 B	Biochemistry	1	2	2
Optional courses (6 hours)				
509 B	Soil Microbiology	2	-	2
510 B	Virology	2	-	2
511 B	Bacteriology	2	-	2
512 B	Physiology of Fungi	2	-	2
513 B	Enzymology and Hormones	2	-	2
514 B	Microbial Ecology	2	-	2
515 B	Biostatistics	2	-	2

Courses specification:

See course specification forms

7- Program admission requirements

- The students registered in this program must have B.Sc. Students in Botany division, with good general and good in subject grads.

8- Regulations for progression and program completion:

- According to the law of Faculty of Benha Science, the regulations for progression and program completion, the graduate must pass:
 - * 24cr (credit hours) compulsory and optional hours.



* Student is considered absent, if he/she misses the final written exam with no accepted excuse.

9- Methods and rules of evaluation of students in rolled in the program:

▪ Optional courses evaluation:

Method	Percent	What is measured of the indented learning outcomes
1- Final Exam	40%	all of ILOs
2- Mid-term Exam	5%	the knowledge and understanding
3- Oral Exam	5%	the knowledge and intellectual capabilities
4- Practical Exam	30%	the practical and professional skills gained during the term
5- Semester Work	10%	knowledge and intellectual capabilities
6- Oral Practical Exam	10%	knowledge and intellectual capabilities
Total	100%	

10- Methods of program evaluation:

Samples	Tool	Evaluators
1- Senior Students	Questionnaire	100%
3- External Evaluators	Reports	

The person responsible for the program: Prof. Dr.

Date: