

Ministry of Higher Education and Scientific Research
Supervisory and Scientific Evaluation
Department of Quality Assurance and Academic Accreditation

Academic program description form for colleges and institutes

University: Al-Muthanna University
College / Institute: College of Agriculture
Scientific Section: Department of Plant Protection
File filing date: 1/9/2020

Signature:

Head of Department Dr. Ali F. Jubair

Date :

Signature:

Name of Scientific Associate: Dr. Ali A. AlSadoon

Date :

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Quality Assurance and University Performance Division

Name of the Director of Quality Assurance and University

Performance:

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Signature

Dr. Jassim Kassim Menati

Dean's approval

Dr. Haider H. Belaw



Description of the academic program

This academic program description provides a brief outline of the most important characteristics of the program and the learning outcomes expected of the student to achieve, demonstrating whether he or she has made the most of the opportunities available. It is accompanied by a description of each course within the program

Description of the academic program

Educational institution	Al-Muthanna University
Scientific Department / Center	Plant Protection / Faculty of Agriculture
Name of the final certificate	B.Sc
Study System	Courses
Program Accreditation	ABET
Other external educational effects	Field visits / training courses for students to develop professional skills

- Program Objectives

The Department of Plant Protection was established with the establishment of agriculture college at Al-Muthanna University in 2005. The department of plant protection aims to train scientific and professional staff in plant protection field. The department contains laboratories in which students are trained to identify the pathogens that causes plant diseases and discover the best ways to control plant diseases using advance methods in agriculture field for four years.

- The outputs of required program teaching, learning and evaluation methods

A- Objectives of knowledge (knowledge and understanding)

- 1- The students will learn the scientific terms that used in plant protection field.
- 2- The students will learn the different types of materials and equipment used in the field of plant protection and pest control.

- 3- Increasing the student ability to detect plant pathogens and the best ways to control plant pathogens.
- 4- Encourage the students to work as groups to discuss any problem in plant protection field.
- 5- Increase the student knowledge to plan The Integrated Pest Management (I.P.M) for any plant disease s problem.

B- Program specific skills

- 1- Learning the job ethics and dealing with work leader
- 2- The skills that required to control different plant diseases agents such as fungi, viruses, bacteria, and insects etc.
- 3- Promote the students to learn after graduation in order to continue to develop his profession career.

C- Teaching and learning methods

- 1- Giving lecture
- 2- Provide the students the lectures from the college website
- 3- Educational films
- 4- Using Projectors and digital cameras.
- 5- Use educational samples.
- 6- Training courses and workshops.
- 7- Participating in the control plant diseases campaigns in field carried out by the Director of Agriculture and Agricultural Extension.
- 8- Students groups

D- Evaluation methods

- 1- Theoretical tests
- 2- Oral tests
- 3- Laboratory scientific tests.

4- Reports and research

E- Emotional and value objectives

- 1- Thinking skill according to the ability of the student (let think about thinking ability) The goal of this skill to believe the student what is resalable (the ability of the student) and understand when, what and how should think and work to improve the ability to think reasonably.
- 2- Critical thinking skill, which aims to put forward a problem, analyze it logically and reach the required solution.
- 3- Recognize the need for balance between freedom and responsibility.
- 4- Decision-making skills to choose the best way to control any plant diseases and based on logical thinking.

Curriculum Skills Diagram

Please tick the boxes corresponding to the individual learning outcomes of the program being evaluated

Required learning outcomes of the program

Transferred general and qualifying skills (other skills related to employability and personal development)				Emotional and value objectives				Skills objectives of the program				Cognitive goals				Basic Or optional	Course Name	Course Code	Year / Level
D4	D3	D2	D1	C4	C3	C2	C1	B4	B3	B2	B1	A4	A3	A2	A1				
/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	Basic	Autumn season	Horticulture Science	The first -stage 2018 2019
/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/			Entomology1	
/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/			Zoology	
/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/			Agricultural economy	
/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/			Computer	
/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/			English 1 language	

/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/			Human rights	
/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	Basic	Spring semester	Soil science	
/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	Oragnaic chemistry				
/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	Botany				
/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	Entomology2				
/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	Mathematics				
/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	Arabic language				
/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	English 2 language				
/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	Basic	Autumn season	Statistics	The second stage	
/	/	/	/	/	/	/	/	/	/	/	/	/	/	Plant Physiology					
/	/	/	/	/	/	/	/	/	/	/	/	/	/	veterinary and Medical insects					
/	/	/	/	/	/	/	/	/	/	/	/	/	/	Machine and Industries					
																	Agriculture		

/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/			Plant Pathology	
/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	Basic	Spring semester	Nematology	The fourth stage
/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	Biotechnology				
/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	Mycology				
/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	Apiculture				
/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	Weed Control				
/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	Field Crops Insects				
/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	Basic	Autumn season	Field Crops diseases	The fourth stage	
/	/	/	/	/	/	/	/	/	/	/	/	/	/	/			Pesticides		
/	/	/	/	/	/	/	/	/	/	/	/	/	/	/			Insects Ecology		
/	/	/	/	/	/	/	/	/	/	/	/	/	/	/			Plant Virology		
/	/	/	/	/	/	/	/	/	/	/	/	/	/	/			Integrated Pest Management		
/	/	/	/	/	/	/	/	/	/	/	/	/	/	/					

/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/			Storage Pests		
/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/			Agricultural Projects		
/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/			Agricultural Mites		
/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	Basic	Spring semester	Fruit trees Diseases		
/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	Biological control					
/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	Vegetables Crops diseases					
/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	Insects orchards					
/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	Agricultural Projects					
/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	Seminars					
/	/	/	/	/	/	/	/	/	/	/	/	/	/	/						
/	/	/	/	/	/	/	/	/	/	/	/	/	/	/						

Description of the academic program

This academic program description provides a brief outline of the most important characteristics of the program and the learning outcomes expected of the student to achieve, demonstrating whether he or she has made the most of the opportunities available. It is accompanied by a description of each course within the program

1. Educational institution	Al-Muthanna University
2. Scientific Department / Center	Plant Protection / Faculty of Agriculture
3. Name of the academic or vocational program	General Botany
4. Name of the final certificate	B.Sc.
5. Study System: Yearly / Courses / Other	Courses
6. Accredited accreditation program	ABET
7. Other external influences	Field visits / training courses for students to develop professional skills
8. Date of preparation of the description	1 - 9 - 2020
9 .Objectives of the academic program	
<ul style="list-style-type: none"> •The student acquires cognitive skills about botany, plant morphology, anatomically, and physiological features of different plant parts. •Knowledge of gardening sections •Knowledge of the plant cell and its parts and its difference from the animal cell. •Knowledge of cell division and how it occurs • Study of water relations in plants • Photosynthesis and its role in sustaining life. . Identify the metabolism 	
10 .Required program outputs and teaching, learning and assessment methods	

A-Cognitive objectives

A-1. History of botany and its relationship to other sciences.

A-2: Plant cell and plant reproduction methods.

A-3 Seed and germination.

A-4 - Phenotype of a syphilis plant.

A-5- Study of the main organs of plants.

A-6- Study the anatomical structure of plant parts and their suitability for function.

B- the skills objectives of the program

B - 1 - Identify the plant and the importance of its parts.

B-2 - Acquainting the student with how to examine the plant part in vitro

B - 3 - Introducing the role of plants and green areas in improving the environment

Teaching and learning methods

Method of lecturing

1-Lecture method.

2- The method of the lecture accompanied by discussion.

3- Slideshows with course templates.

4-Displaying explanatory films to plants.

Assessment methods

1- Theoretical tests

2-Practical tests

3- Short weekly tests

4- Reports and studies

C - Emotional and value objectives.

C1 - Ability to know how to deal with the plant

C2 - Learn how to maintain vegetation

C3 - Consolidate the idea of the importance of the plant in the survival of life.

C4 - Reduce pollution and the role of the plant in it.

Teaching and learning methods

1. Presentation of models for stock pests and scientific films related to the material
2. Explanation and clarification
3. Brainstorming
4. The strategy of thinking skill and making the appropriate decision, ie, the student makes a good decision when thinking about the diagnosis of a pest and the process of control and to think about the consequences of this decision and its environmental effects.

Assessment methods

1. Theoretical tests
2. Practical tests
3. Short weekly tests
4. Reports and studies

D. General and qualifying skills transferred (other skills related to employability and personal development).

D- 1 Verbal communication includes:

1-The ability to express ideas clearly and confidently in speech

2-Teamwork

3- Work with confidence within the group

4-Collecting information systematically and scientifically to establish principles for solving the problem

5-Initiative: motivation for action and ability to initiative

Written Communication:

The ability to express himself clearly in writing

6- Planning and organization / planning and organizing activities and their implementation

7-Flexibility and adaptation to changing situations and different environments

8- Effectively manage time, prioritize tasks and be able to work on schedule

9. Teaching and learning methods

Explanation and clarification

self education

Lecturing

10. Assessment methods

Theoretical tests

Practical tests

Reports and studies

Short and quick tests

11. Program structure

Educational level	Course or course code	Name of course or course	Credit Hours	
			theoretical	Practical
The second		General Botany	28	39

12.Planning for personal development

- 1- 1. Teamwork: Working within the group effectively
- 2- Time management: Effective time management and prioritization with the ability to work in a timely manner
- 3 - Leadership: the ability to direct and motivate others
- 4- Work independence
- 5- negotiation and persuasion any ability of the student to convince others and discussion to reach an agreement.

13.Admission Criteria (Regulations for Admission to the College or Institute)

General / central acceptance

14. The most important sources of information about the program

Website of the college or university
University Directory
The most important books and sources of the department

10.-Course structure					
the week	hours	Learning Outcomes Required	The name of the unit / or subject	Method of education	Evaluation Method
1	5	Save, understand, practical application	History of the development of botany	Lecture and discussion	Oral tests
2	5	Save, understand, practical application	Cell, types and components	Lecture and discussion	Quick exam
3	5	Save, understand, practical application	Living and non-living components of the cell	Lecture and discussion	Oral tests
4	5	Save, understand, practical application	Cell division and its types	Lecture and discussion	Quick exam
5	5	Save, understand, practical application	Supplementation of cell division	Lecture and discussion	Oral tests
6	5	Save, understand, practical application	Plant tissues	Lecture and discussion	Quick exam
7	5	Save, understand, practical application	Plant tissue supplement	Lecture and discussion	Written exam
8	5	Save, understand, practical application	Water relations in the plant	Lecture and discussion	Oral tests
9	5	Save, understand, practical application	Seed germination	Lecture and discussion	Quick exam
10	5	Save, understand, practical application	Morphology and Anatomy of the Root	Lecture and discussion	Oral tests
11	5	Save, understand, practical application	Morphology and anatomy of the stem	Lecture and discussion	Quick exam
12	5	Save, understand, practical application	Morphology and Anatomy of the Leaf	Lecture and discussion	Oral tests
13	5	Save, understand, practical application	Construction and demolition of the plant	Lecture and discussion	Quick exam
14	5	Save, understand, practical application	Morphology and Anatomy of the Flower	Lecture and discussion	Oral tests
15	5	Save, understand, practical application	Fruit morphology and anatomy	Lecture and discussion	Quick exam

12- Infrastructure	
1-Required books	1. book of General Botany 2. book of Practical General Botany
B - electronic references, Internet sites	Free Scientific Encyclopedia www.noor-book.com/? www.researchgate.net/publication/233916256_a_sasyat_fsywlvjya_alnbat
13 - Course development plan	
Studying the levels of pollution in our environment and the relationship of plants in particular to achieve appropriate levels of sound environment suitable for human life to ensure the safety of health	

Description of the academic program

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1. Educational institution	Muthanna University
2. Scientific Department / Center	Plant Protection / Faculty of Agriculture
3. Name of the academic or vocational program	Principles of Horticulture
4. Name of the final certificate	B.Sc.
5. Study System: Yearly / Courses / Other	Courses
6. Accredited accreditation program	ABET
7. Other external influences	Field visits / training courses for students to develop professional skills
8. Date of preparation of the description	1 - 9 - 2020

9 .Objectives of the academic program

- Acquainting the student with various horticultural crops and their economic, food, medical and aesthetic importance, methods of cultivation and production, and identification of different horticultural facilities and methods of establishing orchards.
- Knowledge of gardening sections
- Know the difference between horticultural crops and field crops
- Identify the factors affecting the success of horticultural crops
- Identify the determinants of gardening
- Learn how to establish public and private parks and afforestation of cities and central islands

10 .Required program outputs and teaching, learning and assessment methods

A-Cognitive objectives

A-1. Definition of horticulture.

A-2: Identify the methods of propagation of horticultural plants.

A-3 Identify the methods of breeding and pruning of horticultural crops.

A-4 - Identify the steps of preparing the soil for the cultivation of horticultural plants

A-5- Identify the nutritional and medical benefit of horticultural crops

A-6- Identify nurseries and how to create them

B- the skills objectives of the program‘

B - 1 - Find out how to distinguish the horticultural plant.

B-2 - Find out how to deal with the horticultural plant

B - 3 - Learn how to add different fertilizers

Teaching and learning methods

Method of lecturing

1-Lecture method.

2- The method of the lecture accompanied by discussion.

3- Slideshows with course templates.

4-Displaying explanatory films to combat.

Assessment methods

1- Theoretical tests

2-Practical tests

3- Short weekly tests

4- Reports and studies

C - Emotional and value objectives.

C1 - Enhance the artistic side and imagination in the selection of horticultural plants

C2 - Gain skills on how to create gardens in various sections

C3 - Utilization of areas for planting.

C4 - Enhance the student's ability to choose suitable plants to suit the available space

Teaching and learning methods

5. Presentation of models for stock pests and scientific films related to the material
6. Explanation and clarification
7. Brainstorming
8. The strategy of thinking skill and making the appropriate decision, ie, the student makes a good decision when thinking about the diagnosis of a pest and the process of control and to think about the consequences of this decision and its environmental effects.

Assessment methods

5. Theoretical tests
6. Practical tests
7. Short weekly tests
8. Reports and studies

D. General and qualifying skills transferred (other skills related to employability and personal development.)

D- 1 Verbal communication includes:

1-The ability to express ideas clearly and confidently in speech

2-Teamwork

3- Work with confidence within the group

4-Collecting information systematically and scientifically to establish principles for solving the problem

5-Initiative: motivation for action and ability to initiative

Written Communication:

The ability to express himself clearly in writing

6- Planning and organization / planning and organizing activities and their implementation

7-Flexibility and adaptation to changing situations and different environments

8- Effectively manage time, prioritize tasks and be able to work on schedule

9. Teaching and learning methods

Explanation and clarification

self education

Lecturing

10. Assessment methods

Theoretical tests

Practical tests

Reports and studies

Short and quick tests

11.Program structure

Educational level	Course or course code	Name of course or course	Credit Hours	
			theoretical	Practical
the first		Principles of Horticulture	28	39

12.Planning for personal development

1- 1. Teamwork: Working within the group effectively

2- Time management: Effective time management and prioritization with the ability to work in a timely manner

3 - Leadership: the ability to direct and motivate others

4- Work independence

5- negotiation and persuasion any ability of the student to convince others and discussion to reach an agreement.

13. Admission Criteria (Regulations for Admission to the College or Institute)

General / central acceptance

14. The most important sources of information about the program

Website of the college or university

University Directory

The most important books and sources of the departmen

10.-Course structure

the week	hours	Learning Outcomes Required	The name of the unit / or subject	Method of education	Evaluation Method
1	5	Save, understand, practical application	Introduction and definition of horticultural plants	Lecture and discussion	Oral tests
2	5	Save, understand, practical application	Nutritional value of horticultural crops	Lecture and discussion	Quick exam
3	5	Save, understand, practical application	Classification of horticultural plants	Lecture and discussion	Oral tests
4	5	Save, understand, practical application	Environmental conditions and its relationship to the success of horticultural cultivation	Lecture and discussion	Quick exam
5	5	Save, understand, practical application	temperature	Lecture and discussion	Oral tests
6	5	Save, understand, practical application	the light	Lecture and discussion	Quick exam
7	5	Save, understand, practical application	Sexual reproduction	Lecture and discussion	Written exam
8	5	Save, understand, practical application	Asexual reproduction	Lecture and discussion	Oral tests
9	5	Save, understand, practical application	Seed germination	Lecture and discussion	Quick exam
10	5	Save, understand, practical application	Factors determining the success of horticultural crops	Lecture and discussion	Oral tests
11	5	Save, understand, practical application	Nurseries and conditions of establishment	Lecture and discussion	Quick exam
12	5	Save, understand, practical application	decoration plants	Lecture and discussion	Oral tests
13	5	Save, understand, practical application	Vegetable crops	Lecture and discussion	Quick exam
14	5	Save, understand, practical application	The amount of seeds and improved vegetables	Lecture and discussion	Oral tests
15	5	Save, understand, practical application	Orchards fruit trees	Lecture and discussion	Quick exam

12- Infrastructure

1-Required books

1. book of Principles of Horticulture and Landscape
2. Science of Horticulture

B - electronic references, Internet sites

Free Scientific Encyclopedia
www.neelwafurat.com/locatemobile.aspx?

13 - Course development plan

- 1.The use of modern methods in afforestation of cities and increase green areas and make use of the roofs of houses and various buildings to achieve that .
2. Identify modern machinery used in various horticultural works .

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1	Educational Institution	Al Muthanna University
2	Scientific Department	Plant Protection Center / Faculty of Agriculture
3	The name of the academic or professional program	Insect
4	.Name of the final certificate of	B.Sc
5	Study System Yearly / Courses / Other	Courses
6	accredited program	ABET
7	Other external influences	Field visits / training courses for students to develop professional skills
8	Date of preparation of the description	2020/09/1
9	Objectives of the academic program	

The student acquires cognitive skills on the concepts of entomology and specifically the economic importance of insects and their general characteristics and then study the external form of insects and distinguish insect ranks from each other

And know the Arabic name of the insect pest and scientific name, family and order

1 .Required program outputs and teaching, learning and assessment methods

A Cognitive objectives

B-recognize the concept of field insects and methods of diagnosis

C-Recognize the external shape of these insects

D-Recognize the nature of the damages and losses in agricultural production caused by these insects

E-Recognize the qualities that helped insects spread in the universe

(B) the skills objectives of the program:

B 1 - knowledge of the concept of insects

B 2 - enable students to diagnose insects at all levels

Teaching and learning methods

Method of lecturing

Explanation and clarification

The method of displaying insect models of insects and their various parts of the body

The method of displaying scientific films about insects according to their rank

Self - learning method

Method of collection and diagnosis of samples

Assessment methods

Theoretical tests

Practical tests

Reports and studies

Emotional and value objectives.

1-Ability to analyze results and diagnose field insects

2-Gain skills in collecting insects and arranging them in insect orders

Teaching and learning methods

-1The method of displaying insect models and scientific films related to the subject

.2Explanation and clarification

- 3brainstorming

- 4.The strategy of thinking skill in the diagnosis of insect based on the external form of the insect

1- Assessment methods

Theoretical tests

Practical tests

Weekly short tests

Reports and studies

D. General and qualifying skills transferred (other skills related to employability and personal development.)

D-Verbal communication includes:

The ability to express ideas clearly and confidently in speech

.2Teamwork

.3Work with confidence within the group

Collecting information systematically and scientifically to establish principles for solving the problem

.5Initiative: motivation for action and ability to initiative

Written Communication:

The ability to express himself clearly in writing

.2Planning and organization / planning and organizing activities and their implementation

.3Flexibility and adaptation to changing situations and different environments

.4Effectively manage time, prioritize tasks and be able to work on schedule

Teaching and learning methods

Explanation and clarification

self-education

Lecturing

Assessment methods

Theoretical tests

Practical tests

Reports and studies

1-Program structure

Educational level	course code	Name of course	Credit Hours	
			theoretical	practical
First		General insects	26	39

1. Planning for personal development

- 1- .Teamwork: Working within the group effectively
- 2- .Time management: Effective time management and prioritization with the ability to work in a timely manner
- 3- Leadership: the ability to direct and motivate others
- 4- .Work independence
- 5- – negotiation and persuasion any ability of the student to convince others and discussion to reach an agreement.

2. 3. Admission Criteria (Regulations for Admission to the College or Institute)

General / central acceptance

3. The most important sources of information about the program

Website of the college or university

University Directory

The most important books and sources of the department

10.. Course structure

Week	Hours	Learning Outcomes Required Unit	Subject Name Teaching Method	Teaching Method	Assessment Method
the first	2 Theoretical +3 practical	memorizing, understand, analyze, apply	Taxonomic position of insects and their relationship to the leg arthropod division. Tools for collecting, loading and archiving insects and types of insect groups	Lecture and discussion	Oral tests
The second	2 theoretical + 3 practical	memorizing, understand, analyze, apply	The importance of insects	Lecture and discussion	Oral tests
the third	2 theoretical + 3 practical	memorizing, understand, analyze, apply	Insect location of animal world and articulated legs, insect exterior	Lecture and discussion	Oral tests
the fourth	2 theoretical + 3 practical	memorizing, understand, analyze, apply	Body areas, Head structure & Accessories,	Lecture and discussion	Oral tests
Fifth	2 theoretical + 3 practical	memorizing, understand, analyze, apply	Installation of sensor horns and accessories, types of sensor horns and modifications (filament sensor filament, crankshaft, saw	Lecture and discussion	Oral tests
VI	2 theoretical + 3 practical	memorizing, understand, analyze, apply	Theoretical Exam	Lecture and discussion	Written tests
Seventh	2 theoretical + 3 practical	memorizing, understand, analyze, apply	, Composition of mouth parts Mouth parts of adult insects (biting mouth parts, licket sorbents, perforating sorbents ...	Lecture and discussion	Oral tests
VIII	2 theoretical + 3 practical	memorizing, understand, analyze, apply	Chest installation and suffix chest rings and their installation, types of wings and modifications (membrane wing - leather ...)	Lecture and discussion	Oral tests

Ninth	2 theoretical + 3 practical	memorizing, understand, analyze, apply		Lecture and discussion	Oral tests
tenth	2 theoretical + 3 practical	memorizing, understand, analyze, apply	, Installation and growth of wings, Flight operation	Lecture and discussion	Oral tests
eleventh	2 theoretical + 3 practical	memorizing, understand, analyze, apply	Composition of the abdomen and related accessories, reproductive and reproductive suffixes	Lecture and discussion	Oral tests
twelveth	2 theoretical + 3 practical	memorizing, understand, analyze, apply	Theoretical Exam	Lecture and discussion	Oral tests
Thirteenth	2 theoretical + 3 practical	memorizing, understand, analyze, apply	Partial table of insects and insect orders	Lecture and discussion	Oral tests
fourteenth	2 theoretical + 3 practical	memorizing, understand, analyze, apply	Transformation in insects, embryonic growth	Lecture and discussion	Oral tests
Fifteenth	2 theoretical + 3 practical	memorizing, understand, analyze, apply	Study of insect orders	Lecture and discussion	Written tests

11. Infrastructure

	Required books
1- -General and Applied Entomology (Dr. Abdullah Flaih Al-Ghazzawi(-2-Practical entomology (installation and classification) d. Awad Hanna Saad	2. Key references (sources)
1- Integrated Taxonomic Information System 2- Evolution of insects and their fossil record	Recommended books and references (scientific journals, reports,)

. Evolution of the Insects
David A. Kendall (2009). "Classification of
Insect".

B electronic references, Internet sites ...

10. Course development plan

1- Increasing the space allocated for practical lessons for the purpose of expanding the student's cognitive vision

2 - Focus on the link between humans and insects as a living organism has the right to live on the planet and clarify the magnitude of the link between insects and the sustainability of life on Earth

Description of the academic program

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1. Educational institution	Muthanna University
2. Scientific Department / Center	Plant Protection / Faculty of Agriculture
3. Name of the academic or vocational program	Microbiology
4. Name of the final certificate	B.Sc.
5. Study System: Yearly / Courses / Other	Courses
6- Program Accreditation	ABET
7- Other external educational effects	Field visits / training courses for students to develop professional skills
8- Date of preparation of the description	1/9/2020
9 .Objectives of the academic program	
Introduce the student to the developments of microbiology and everything related to it.	
10 - The outputs of required program teaching, learning and evaluation methods	
A- Knowledge objectives A-1: Enables the student to know the science of microorganisms A-2 - Identify the forms of microorganisms both microscopically and visually A-3 - Studying and feeding microbiology environment A-4 Study the benefits and harms of biology for plants or animals	

B- Skills of this program

B - 1 Training students to study some families and genera of bacteria

B-2 - Introduce students to bacteria and morphology

B - 3 - Anatomy of bacteria

B - 4 - Bacterial growth

- Teaching and learning methods

Method of lecturing

- 1- Provide students with the fundamentals and lectures related to the subject
- 2- using methods presentation of 'Power point' in order to convey information properly and clearly to the student.
- 3-To Encourage the student to visit the library during asking them scientific reports about the topics that are given to them .

Assessment methods

- 1- Daily and monthly tests through questions about the topic of lessons .
- 2-Marks about participation of the student in research and scientific reports
- 3-To empower the students through making posters and illustrations about the subject.
- 4- Discussing the researches and reports in front of the student and giving them marks.
- 5- Writing the reports after the completion of the application period to know the extent to which students be able to diagnose problems and find a solutions.

C -Emotional and assessable objectives.

C1 - Ask deductive questions to the students.

C2 - To Find solutions to the problems and obstacles they face in the practical part on the subjects.

C3 – To empower the students to resolve the highest number of exercises and

applications on topics

Teaching and learning methods

1. Setting educational programs in coordination with the higher departments
Explanation and clarification
2. Developing curricula by the department similar to the work environment.
3. Sending students to the government department and directorates in order the students to do researches and reports .
4. Assigning students to conduct research and reports

D. General and qualifying skills transferred (other skills related to employability and personal development).

D- 1- Training students on how to use information resources to sustain and develop his basic information:

2- Developing student's method of transfer the information in the middle of the work.

3- Training the student to do scientific research in order to solve problems in the work and develop his methods.

8- Effectively manage time, prioritize tasks and be able to work on schedule

4. Program structure

Educational level	Course or course code	Name of course or course	Credit Hours	
			theoretical	Practical
The second		Microbiology	28	42

5. Planning for personal development

1-Continuous reading

2-Adding all that is new in the field of medical and veterinary insects

3 - Keeping pace with the development in the field of higher education and scientific research in the world by downloading all the new agricultural scientific researches and books.

6. Admission Criteria (Regulations for Admission to the College or Institute)

General / central acceptance

4. The most important sources of information about the program

Website of the college or university

University Directory

The most important books and sources of the department

11-Course structure

the week	hours	Learning Outcomes Required	The name of the unit / or subject	Method of education	Evaluation Method
1	5	Definition of biology and classification of dependent sciences	Microscope	Lecture and discussion	Oral tests
2	5	Characteristics of morphological bacteria	Culture media	Lecture and discussion	Quick exam
3	5	Anatomy of bacteria	Bacterial staining	Lecture and discussion	Oral tests
4	5	Growth of bacteria	Composite staining	Lecture and discussion	Quick exam
5	5	Fungi	Gram staining	Lecture and discussion	Oral tests
6	5	Viruses and algae	Endospore staining	Lecture and discussion	Quick exam
7	5	Rickettsia	Hanging drop	Lecture and discussion	Written exam
8	5	Primates (Protozoa)	Study of Morphological Characteristics of Hives and Yeast	Lecture and discussion	Oral tests
9	5	Methods of control of microorganisms	Movement of bacteria	Lecture and discussion	Quick exam
10	5	Microbiology of diseases	Standard plate count	Lecture and discussion	Oral tests
11	5	Inheritance of microorganisms	Direct Microscopic count	Lecture and discussion	Quick exam
12	5	Metabolism in microorganisms	Isolation and purification Methods of microorganisms	Lecture and discussion	Oral tests
13	5	Study of some families and species of bacteria	Cultural characteristics	Lecture and discussion	Quick exam
14	5	Study of some families and species of bacteria	Effect of antibiotics on bacteria	Lecture and discussion	Oral tests
15	5			Lecture and discussion	Quick exam
	5			Written exam	Written exam

Course Description For

This course description provides a brief summary of the most important characteristics of the course and the learning outcomes expected of the student to achieve, demonstrating whether it has made the most of the learning opportunities available. It must be linked to the description of the program.

1. Educational institution	Muthanna University
2. Scientific Department / Center	Plant Protection / Faculty of Agriculture
3. Name of the academic or vocational program	Medical and veterinary insects
4. Name of the final certificate	B.Sc.
5. Study System: Yearly / Courses / Other	Courses
6. Accredited accreditation program	ABET
7. Other external influences	Field visits / training courses for students to develop professional skills
8. Date of preparation of the description	1 - 9 - 2020
9 .Objectives of the academic program	
<ul style="list-style-type: none"> •Study of modern methods to control insect vectors •Study the philosophy of combating medical and veterinary insects •The importance of the study of medical and veterinary insects •Identify insect vectors • Learn how to transmit medical insects for diseases that carry them 	
10 .Required program outputs and teaching, learning and assessment methods	

A-Cognitive objectives

A-1. Identify the types of insect vectors.

A-2: Identify the methods of fighting insect pathogens.

Gather information on disease vector control programs.

A-4 that the student has mastered how to face the epidemiological cases of diseases that affect humans through insects.

A-5 - to be able to find solutions in the case of epidemic diseases that affect humans and animals.

B- the skills objectives of the program

B - 1 - Students' knowledge of programs to isolate and diagnose epidemiological conditions in an area.

B-2 - Take the decision quickly to control insect vectors after confirming the transmission of the disease.

B - 3 - access to the information network and know the talk in the fight against insect vectors.

B.4. The use of modern technology in the diagnosis of epidemiological cases in an area.

B - 5 - be proficient in the use of modern methods and advanced diagnosis.

Teaching and learning methods

Method of lecturing

1-Lecture method.

2- The method of the lecture accompanied by discussion.

3- Slideshows with course templates.

4-Displaying explanatory films to combat.

Assessment methods

1- Theoretical tests

2-Practical tests

3- Short weekly tests

4- Reports and studies

C - Emotional and value objectives.

C1 - benefit from the diagnosis of disease cases and insect vectors for the purpose of preventing the disease.

C2 - acquire skills through the transmission of disease and the distribution of insects and methods of breeding.

C3 - the possibility of combating insect vectors.

C - a skill to think according to the ability of the student and that aims to understand the student when and how to think in the processes of increasing the economic return of the beekeeper and raise his standard of living.

Developing students' pride in the materials they teach and the service they provide.

Teaching and learning methods

5. Presentation of models for stock pests and scientific films related to the material

6. Explanation and clarification

7. Brainstorming

8. The strategy of thinking skill and making the appropriate decision, ie, the student makes a good decision when thinking about the diagnosis of a pest and the process of control and to think about the consequences of this decision and its environmental effects.

Assessment methods

1. Theoretical tests

2. Practical tests

3. Short weekly tests

4. Reports and studies

D. General and qualifying skills transferred (other skills related to employability and personal development.)

D- 1 Verbal communication includes:

The ability to express ideas clearly and confidently in speech

2-Teamwork

3- Work with confidence within the group

4-Collecting information systematically and scientifically to establish principles for solving the problem

5-Initiative: motivation for action and ability to initiative

Written Communication:

The ability to express himself clearly in writing

6- Planning and organization / planning and organizing activities and their implementation

7-Flexibility and adaptation to changing situations and different environments

8- Effectively manage time, prioritize tasks and be able to work on schedule

Teaching and learning methods

Explanation and clarification

self education

Lecturing

Assessment methods

Theoretical tests

Practical tests

Reports and studies

Short and quick tests

7. Program structure

Educational level	Course or course code	Name of course or course	Credit Hours	
			theoretical	Practical
the second		Medical and veterinary insects	28	42

10.-Course structure

the week	hours	Learning Outcomes Required	The name of the unit / or subject	Method of education	Evaluation Method
1	5	Save, understand, practical application	Medical importance of insects	Lecture and discussion	Oral tests
2	5	Save, understand, practical application	Epidemiology of diseases	Lecture and discussion	Quick exam
3	5	Save, understand, practical application	Parasitic pathogens of humans and animals transmitted by insects	Lecture and discussion	Oral tests
4	5	Save, understand, practical application	Medical importance of mosquitoes	Lecture and discussion	Quick exam
5	5	Save, understand, practical application	Medical importance of mosquitoes	Lecture and discussion	Oral tests
6	5	Save, understand, practical application	Exam month only	Lecture and discussion	Quick exam
7	5	Save, understand, practical application	Medical importance of Hermes	Lecture and discussion	Written exam
8	5	Save, understand, practical application	Medical importance of cockroaches	Lecture and discussion	Oral tests
9	5	Save, understand, practical application	Medical importance of flies	Lecture and discussion	Quick exam
10	5	Save, understand, practical application	Worming myiasis	Lecture and discussion	Oral tests
11	5	Save, understand, practical application	Medical importance of lice	Lecture and discussion	Quick exam
12	5	Save, understand, practical application	The medical importance of fleas	Lecture and discussion	Oral tests
13	5	Save, understand, practical application	The medical importance of dreams and ticks	Lecture and discussion	Quick exam
14	5	Save, understand, practical application	The second exam	Lecture and discussion	Oral tests
15	5	Save, understand, practical application	Medical importance of insects	Lecture and discussion	Quick exam
	5	Save, understand, practical application		Written exam	Written exam

10- Infrastructure	
1. Integrated pest control / d. Free Membership	1-Required books
1. Integrated pest control / d. Eyad Yousef Al - Haj Ismail	2. Key references (sources)
2. Plant diseases / George Akrios	3-Recommended books and references (scientific journals, reports,)
- All sites of agricultural magazines and plant diseases magazines	B - electronic references, Internet sites

12 - Course development plan
<p>1- Add some diseases that include warehouse diseases, especially for fruits.</p> <p>2 Nursery diseases for the multiplication of fruit trees.</p>

Description of the academic program

This academic program description provides a brief outline of the most important characteristics of the program and the learning outcomes expected of the student to achieve, demonstrating whether he or she has made the most of the opportunities available. It is accompanied by a description of each course within the program

1. Educational institution	Muthanna University
2. Scientific Department / Center	Plant Protection / Faculty of Agriculture
3. Name of the academic or vocational program	Insect taxonomy
4. Name of the final certificate	B.Sc.
5. Study System: Yearly / Courses / Other	quarterly
6. Accredited accreditation program	ABET
7. Other external influences	Field visits / training courses for students to develop professional skills
8. Date of preparation of the description	1- 9 - 2020

9 .Objectives of the academic program

- 1-The student identified the most important insect orders .
- 2-The student was introduced to the status of insects within the taxonomic ranks .
- 3- The student identified the types of taxonomic keys used to distinguish .
between types of insects
- 4-The student to identify the types of samples saved in museums.

10 .Required program outputs and teaching, learning and assessment methods

A-Cognitive objectives

- 1-Identify the types of insects and taxonomic ranks by levels and classes
- 2-Identify the functions of taxonomist and the nature of his work in the diagnosis of insect species
- 3 - Study the types of samples saved in museums and reference when classification of insects

B- the skills objectives of the program‘

- 1-Summer training .
- 2-Research .
- 3-Scientific reports .
- 4-Collect and diagnose insect specimens

Teaching and learning methods

Method of lecturing

- 1-Method of lecturing
- 2-Explanation and clarification
- 3-daily tests sudden and weekly continuous
- 4-exercises and activities in the classroom
- 5-Guide students to some websites
- 6-Slides view
- 7-the way of displaying scientific films on insects
- 8-Self-learning method
9. Method of collecting and diagnosing samples

Assessment methods

- 1- Theoretical tests
- 2-Practical tests

3- Short weekly tests

4- Reports and studies

C - Emotional and value objectives.

1-Recognize the relationship of classification of insects with other sciences

2-Identify how to distinguish and diagnose insect species

3-Identify the types of variations between insect species

4 - the possibility of the application of prevention and protection systems for .farm plants.

5- a skill to think according to the ability of the student and that aims to understand the student when and how to think in the control operations and prevention operations for fields, orchards and farms.

Teaching and learning methods

9. Presentation of models for stock pests and scientific films related to the material

10.Explanation and clarification

11.Brainstorming

12.The strategy of thinking skill and making the appropriate decision, ie, the student makes a good decision when thinking about the diagnosis of a pest and the process of control and to think about the consequences of this decision and its environmental effects.

Assessment methods

5. Theoretical tests

6. Practical tests

7. Short weekly tests

8. Reports and studies

D. General and qualifying skills transferred (other skills related to employability and personal development.)

D- 1 Verbal communication includes:

The ability to express ideas clearly and confidently in speech

2-Teamwork

3- Work with confidence within the group

4-Collecting information systematically and scientifically to establish principles for solving the problem

5-Initiative: motivation for action and ability to initiative

Written Communication:

The ability to express himself clearly in writing

6- Planning and organization / planning and organizing activities and their implementation

7-Flexibility and adaptation to changing situations and different environments

8- Effectively manage time, prioritize tasks and be able to work on schedule

Teaching and learning methods

Explanation and clarification

self education

Lecturing

Assessment methods

Theoretical tests

Practical tests

Reports and studies

Short and quick tests

8. Program structure

Educational level	Course or course code	Name of course or course	Credit Hours	
			theoretical	Practical
Sccond		Insect taxonomy	28	42

9. Planning for personal development

- 1-Continuous reading
- 2-Adding all that is new in the field of grain pests stored
- 3-Keeping pace with the development in the field of higher education and scientific research in the world by downloading all the new agricultural scientific researches and books .

10. Admission Criteria (Regulations for Admission to the College or Institute)

General / central acceptance

4. The most important sources of information about the program

Website of the college or university
University Directory
The most important books and sources of the department

10.-Course structure					
week	hours	Learning Outcomes Required	The name of the unit / or subject	Method of education	Evaluation Method
1	5	Save, understand, practical application	Taxonomy, edefinition and history and its relationship to other sciences and stages of development.	Lecture and discussion	Oral tests
2	5	Save, understand, practical application	Modern taxonomy and its comparison with the ancient taxonomy, division orders, life patterns with examples	Lecture and discussion	Quick exam
3	5	Save, understand, practical application	Insect division, taxonomic stratification. And caste system with examples.	Lecture and discussion	Oral tests
4	5	Save, understand, practical application	Introduction to the origin of the arthropod division (historical background) theories of formation and evolution, a table of the geological history of the Earth,	Lecture and discussion	Quick exam
5	5	Save, understand, practical application	Describe the insects, divide them and their ranks with examples.	Lecture and discussion	Oral tests
6	5	Save, understand, practical application	Types of museum collections, patterns (types of models) with examples	Lecture and discussion	Quick exam
7	5	Save, understand, practical application	Individual variations, types, and the reason for their appearance, with examples	Lecture and discussion	Written exam
8	5	Save, understand, practical application	scientific naming, conditions, writing the scientific name, taxonomic keys, with examples	Lecture and discussion	Oral tests
9	5	Save, understand, practical application	Diagnosis of models and taxonomic differentiation with examples.	Lecture and discussion	Quick exam
10	5	Save, understand, practical application	Taxonomic characteristics, geographical distribution of organisms by geographical regions, with examples.	Lecture and discussion	Oral tests
11	5	Save, understand, practical application	Dream of stored materials _ types and methods of detecting the injury of stored materials dream and control methods used	Lecture and discussion	Quick exam
12	5	Save, understand, practical application	The most important types of rodents common in grain	Lecture and discussion	Oral tests

			stores, damage to mice and rats		
13	5	Save, understand, practical application	Chemical means used in the control of mice and rats	Lecture and discussion	Quick exam
14	5	Save, understand, practical application	The most important types of toxins used in the control, non-chemical means in the control	Lecture and discussion	Oral tests
15	5	Save, understand, practical application	Birds harmful to grain in the stores and the most important types, the importance of agricultural and the most important damage and types of control methods used against them.	Lecture and discussion	Quick exam
	5	Save, understand, practical application		Written exam	Written exam

10- Infrastructure

1. Structure and Insect taxonomy \ Jaleel Abo al-Hab	1-Required books
2. Plant diseases / George Akrios	3-Recommended books and references (scientific journals, reports,)
- All sites of agricultural magazines and plant diseases magazines	B - electronic references, Internet sites

12 - Course development plan

- 1- Add some diseases that include warehouse diseases, especially for fruits.
- 2 Nursery diseases for the multiplication of fruit trees.

Description of the academic program

This academic program description provides a brief outline of the most important characteristics of the program and the learning outcomes expected of the student to achieve, demonstrating whether he or she has made the most of the opportunities available. It is accompanied by a description of each course within the program

1. Educational institution	Muthanna University
2. Scientific Department / Center	Plant Protection / Faculty of Agriculture
3. Name of the academic or vocational program	Insect Physiology
4. Name of the final certificate	B.Sc.
5. Study System: Yearly / Courses / Other	quarterly
6. Accredited accreditation program	ABET
7. Other external influences	Field visits / training courses for students to develop professional skills
8. Date of preparation of the description	1- 9 - 2020
9 .Objectives of the academic program	
1-The student identify the internal organs of insects . 2-The student was Identify the functions of internal organs of insects . 3- The student identified use knowledge of internal organ functions in insect . control methods 4-The student to Knowledge of hormones and pheromones in insects.	

10 .Required program outputs and teaching, learning and assessment methods

A-Cognitive objectives

- 1- Identify the installation of internal organs of insects
- 2-Identify the Structure and functions of the nervous system and transmission of nerve stimuli
- 3 - Study the Structure and functions of the respiratory system and breathing methods in insects.

B- the skills objectives of the program‘

- 1-Summer training .
- 2-Research .
- 3-Scientific reports .
- 4-Collect and diagnose insect specimens

Teaching and learning methods

Method of lecturing

- 1-Method of lecturing
- 2-Explanation and clarification
- 3-daily tests sudden and weekly continuous
- 4-exercises and activities in the classroom
- 5-Guide students to some websites
- 6-Slides view
- 7-the way of displaying scientific films on insects
- 8-Self-learning method
9. Method of collecting and diagnosing samples

Assessment methods

- 1- Theoretical tests

- 2-Practical tests
- 3- Short weekly tests
- 4- Reports and studies

C - Emotional and value objectives.

- 1-Recognize the relationship of classification of insects with other sciences
- 2-Identify how to distinguish and diagnose insect species
- 3-Identify the types of variations between insect species
- 4 - the possibility of the application of prevention and protection systems for .farm plants.
- 5- a skill to think according to the ability of the student and that aims to understand the student when and how to think in the control operations and prevention operations for fields, orchards and farms.

Teaching and learning methods

- 13.Presentation of models for stock pests and scientific films related to the material
- 14.Explanation and clarification
- 15.Brainstorming
- 16.The strategy of thinking skill and making the appropriate decision, ie, the student makes a good decision when thinking about the diagnosis of a pest and the process of control and to think about the consequences of this decision and its environmental effects.

Assessment methods

- 9. Theoretical tests
- 10.Practical tests
- 11.Short weekly tests
- 12.Reports and studies

D. General and qualifying skills transferred (other skills related to employability and personal development).

D- 1 Verbal communication includes:

The ability to express ideas clearly and confidently in speech

2-Teamwork

3- Work with confidence within the group

4-Collecting information systematically and scientifically to establish principles for solving the problem

5-Initiative: motivation for action and ability to initiative

Written Communication:

The ability to express himself clearly in writing

6- Planning and organization / planning and organizing activities and their implementation

7-Flexibility and adaptation to changing situations and different environments

8- Effectively manage time, prioritize tasks and be able to work on schedule

Teaching and learning methods

Explanation and clarification

self education

Lecturing

Assessment methods

Theoretical tests

Practical tests

Reports and studies

Short and quick tests

11. Program structure

Educational level	Course or course code	Name of course or course	Credit Hours	
			theoretical	Practical
third		Insect Physiology	28	42

12. Planning for personal development

- 1-Continuous reading
- 2-Adding all that is new in the field of grain pests stored
- 3-Keeping pace with the development in the field of higher education and scientific research in the world by downloading all the new agricultural scientific researches and books .

13. Admission Criteria (Regulations for Admission to the College or Institute)

General / central acceptance

4. The most important sources of information about the program

Website of the college or university

University Directory

The most important books and sources of the department

10.-Course structure

week	hours	Learning Outcomes Required	The name of the unit / or subject	Method of education	Evaluation Method
1	5	Save, understand, practical application	The body's wall in insects: - Its importance in the life of insects and its components, bloating in insects.	Lecture and discussion	Oral tests
2	5	Save, understand, practical application	Digestive system: - Physiological functions of the parts of the gut, digestion absorption, the role of organisms in the digestion of food.	Lecture and discussion	Quick exam
3	5	Save, understand, practical application	Output in insects: - Typical output device, methods of excretion of toxic and excess materials, the role of the device in water balance.	Lecture and discussion	Oral tests
4	5	Save, understand, practical application	Respiratory system: - How to breathe in the ground and water intruding insects	Lecture and discussion	Quick exam
5	5	Save, understand, practical application	Circulatory system: - Description of the organ, blood and its chemical components, blood cell function and blood plasma.	Lecture and discussion	Oral tests
6	5	Save, understand, practical application	Nervous system and reproductive organs in insects: - Description of the organ, the method of transfer of instructions and organs of sense.	Lecture and discussion	Quick exam
7	5	Save, understand, practical application	Reproductive system: - The method of formation of eggs and Hiamin in the female and male organs.	Lecture and discussion	Written exam
8	5	Save, understand, practical application	Hormones: - Types, their role in growth, development, reproduction and insect growth regulators.	Lecture and discussion	Oral tests
9	5	Save, understand, practical application	Diagnosis of models and taxonomic differentiation with examples.	Lecture and discussion	Quick exam
10	5	Save, understand, practical application	Pheromones: - Types, their role in the life of the insect	Lecture and discussion	Oral tests
11	5	Save, understand,	Internal anatomy of the American cockroach.	Lecture and	Quick

		practical application		discussion	exam
12	5	Save, understand, practical application	The speed of the passage of food in the gastrointestinal tract - movement and duration of survival in various parts of the gut.	Lecture and discussion	Oral tests
13	5	Save, understand, practical application	Detection of the activity of enzyme amylase and enzyme in different parts of the gut.	Lecture and discussion	Quick exam
14	5	Save, understand, practical application	Measurement of heart rate in the American cockroach and factors affecting the heartbeat.	Lecture and discussion	Oral tests
15	5	Save, understand, practical application	study types of blood cells - identify these types and how to diagnose and how to prepare slides to identify them.	Lecture and discussion	Quick exam
	5	Save, understand, practical application		Written exam	Written exam

10- Infrastructure

1. Insect Physiology \ Stephen Simpson	1-Required books
2. Insect Physiology / Thabet Aldarkzly	3-Recommended books and references (scientific journals, reports,)
- All sites of agricultural magazines and plant diseases magazines	B - electronic references, Internet sites

12 - Course development plan

- 1- Add some diseases that include warehouse diseases, especially for fruits.
- 2 Nursery diseases for the multiplication of fruit trees.

Description of the academic program

This academic program description provides a brief outline of the most important characteristics of the program and the learning outcomes expected of the student to achieve, demonstrating whether he or she has made the most of the opportunities available. It is accompanied by a description of each course within the program

1. Educational institution	Muthanna University
2. Scientific Department / Center	Plant Protection / Faculty of Agriculture
3. Name of the academic or vocational program	Honey bees breeding
4. Name of the final certificate	B.Sc.
5. Study System: Yearly / Courses / Other	Courses
6. Accredited accreditation program	ABET
7. Other external influences	Field visits / training courses for students to develop professional skills
8. Date of preparation of the description	1- 9 - 2020
9 .Objectives of the academic program	
Study of modern methods in beekeeping <ul style="list-style-type: none">•Study the philosophy of beekeeping•The importance of the study of beekeeping•Knowledge of pest control methods affecting the bee population•Identify the bees•Identify ways to sort honey•Benefits of bee range products	
10 .Required program outputs and teaching, learning and assessment methods	

A-Cognitive objectives

A-1: Identify the members of the honeybee community

A-2: Identify the philosophy and principles of beekeeping

Collect information on beekeeping programs

A-4 that the student mastered how to beekeeping.

A-5 to be able to find solutions in the case of epidemic diseases that affect honey bees and methods of treatment.

B- the skills objectives of the program

B-1 - Students' knowledge of honey bee breeding and screening programs

B-2 - take the decision quickly to control pests that affect honeybees

B-3 - access to the information network and knowledge of modern beekeeping

B-4 - Using modern technology in sorting honey

B - 5 - To master the use of modern methods and advanced in education.

Teaching and learning methods

Method of lecturing

1-Lecture method.

2- The method of the lecture accompanied by discussion.

3- Slideshows with course templates.

4-Displaying explanatory films to combat.

Assessment methods

1- Theoretical tests

2-Practical tests

3- Short weekly tests

4- Reports and studies

C - Emotional and value objectives.

C-1-Benefiting from beekeeping, especially its products.

C2 - acquire skills on beekeeping and methods of propagation.

C3 - the possibility of sorting honey.

C - a skill to think according to the ability of the student and that aims to understand the student when and how to think in the processes of increasing the economic return of the beekeeper and raise his standard of living.

Developing students' pride in the materials they teach and the service they provide.

Teaching and learning methods

17.Presentation of models for stock pests and scientific films related to the material

18.Explanation and clarification

19.Brainstorming

20.The strategy of thinking skill and making the appropriate decision, ie, the student makes a good decision when thinking about the diagnosis of a pest and the process of control and to think about the consequences of this decision and its environmental effects.

Assessment methods

13.Theoretical tests

14.Practical tests

15.Short weekly tests

16.Reports and studies

D. General and qualifying skills transferred (other skills related to employability and personal development.(

D- 1 Verbal communication includes:

The ability to express ideas clearly and confidently in speech

2-Teamwork

3- Work with confidence within the group

4-Collecting information systematically and scientifically to establish principles for solving the problem

5-Initiative: motivation for action and ability to initiative

Written Communication:

The ability to express himself clearly in writing

6- Planning and organization / planning and organizing activities and their implementation

7-Flexibility and adaptation to changing situations and different environments

8- Effectively manage time, prioritize tasks and be able to work on schedule

Teaching and learning methods

Explanation and clarification

self education

Lecturing

Assessment methods

Theoretical tests

Practical tests

Reports and studies

Short and quick tests

14.Program structure

Educational level	Course or course code	Name of course or course	Credit Hours	
			theoretical	Practical
Third		Honey bees breeding	28	42

15.Planning for personal development

1-Continuous reading

2-Adding all that is new in the field of grain pests stored

3-Keeping pace with the development in the field of higher education and scientific research in the world by downloading all the new agricultural scientific researches and books .

16.Admission Criteria (Regulations for Admission to the College or Institute)

General / central acceptance

4. The most important sources of information about the program

Website of the college or university

University Directory

The most important books and sources of the department

10.-Course structure

the week	hours	Learning Outcomes Required	The name of the unit / or subject	Method of education	Evaluation Method
1	5	Save, understand, practical application	Historical basis of beekeeping, economic importance of beekeeping, bee species, hierarchy of bees	Lecture and discussion	Oral tests
2	5	Save, understand, practical application	Honey bee strains, genetic characteristics adopted for the diagnosis of bee strains, good qualities of honey - producing strains	Lecture and discussion	Quick exam
3	5	Save, understand, practical application	External anatomy of the body of the bees (head and appendages, chest and appendages, abdomen and appendages)	Lecture and discussion	Oral tests
4	5	Save, understand, practical application	The digestive system and its accessories, the mechanics of digestion, the method of converting nectar to honey, the output device (sections, work and its role in the disposal of toxic substances and waste), bee glands	Lecture and discussion	Quick exam
5	5	Save, understand, practical application	Circulatory system, sections, functions, respiratory system, sections, respiratory stomata and distribution, nervous system	Lecture and discussion	Oral tests
6	5	Save, understand, practical application	Exam month only	Lecture and discussion	Quick exam
7	5	Save, understand, practical application	Female reproductive system, divisions, factors affecting the rate of egg count laid by the queen, male	Lecture and discussion	Written exam

			reproductive system, divisions		
8	5	Save, understand, practical application	Life of members of the bee (queen, worker, male)	Lecture and discussion	Oral tests
9	5	Save, understand, practical application	The various phenomena in the life of members of the sect (expulsion, false mothers, theft) causes, signs of emergence, methods of control	Lecture and discussion	Quick exam
10	5	Save, understand, practical application	The basic rules for the establishment of apiary, the foundations of beekeeping, the catalysts for the success of standard beekeeping	Lecture and discussion	Oral tests
11	5	Save, understand, practical application	The importance of bees in the mixed pollination of plants, the number of beehives needed for pollination per unit area planted.	Lecture and discussion	Quick exam
12	5	Save, understand, practical application	Monthly Exam	Lecture and discussion	Oral tests
13	5	Save, understand, practical application	Diseases of bees	Lecture and discussion	Quick exam
14	5	Save, understand, practical application	Effect of chemical pesticides on honey bees, and methods of protecting bees from pesticide risk	Lecture and discussion	Oral tests
15	5	Save, understand, practical application	Birds harmful to grain in the stores and the most important types, the importance of agricultural and the most important damage and types of control methods used against them.	Lecture and discussion	Quick exam
	5	Save, understand, practical application		Written exam	Written exam

10- Infrastructure	
1. Integrated pest control / d. Free Membership	1-Required books
1. Integrated pest control / d. Eyad Yousef Al - Haj Ismail	2. Key references (sources)
2. Plant diseases / George Akrios	3-Recommended books and references (scientific journals, reports,)
- All sites of agricultural magazines and plant diseases magazines	B - electronic references, Internet sites

12 - Course development plan
<p>1- Add some diseases that include warehouse diseases, especially for fruits.</p> <p>2 Nursery diseases for the multiplication of fruit trees.</p>

Description of the academic program

This academic program description provides a brief outline of the most important characteristics of the program and the learning outcomes expected of the student to achieve, demonstrating whether he or she has made the most of the opportunities available. It is accompanied by a description of each course within the program

1. Educational institution	Muthanna University
2. Scientific Department / Center	Plant Protection / Faculty of Agriculture
3. Name of the academic or vocational program	Biological Control
4. Name of the final certificate	B.Sc.
5. Study System: Yearly / Courses / Other	Courses
6- Program Accreditation	ABET
7- Other external educational effects	Field visits / training courses for students to develop professional skills
8- Date of preparation of the description	1/9/2020
9 .Objectives of the academic program	
<ul style="list-style-type: none">•Study the evolution of the thought of biological control of insect pests•Study the philosophy of vital enemies•The importance of information in pest control•Knowledge of pest control methods and alternatives to integrated control•Identify the biological control•Identify the philosophy of biological control•Identify the life of vital enemies	
10- The outputs of required program teaching, learning and evaluation methods	

A- Knowledge objectives

A-1: Identify the biological control

A-2 - Identify the philosophy and principles of biological control

A-3 - Information gathering and injury forecasting - Develop an integrated control program

A-4 that the student mastered how to prevent the occurrence of diseases and control.

A.5. Be able to find solutions in the case of epidemic epidemics and ways of controlling them.

A-6 that the student acquires how to disseminate the information obtained in the control of insect pests.

B- Skills of this program

B - 1 - Students' knowledge of the biological control programs for each crop

B-2 - Decision-making quickly to control pests

B - 3 - access to the information network and know the talk in the fight against insect pests

B - 4 - The use of modern technology in the prediction of infection and conduct appropriate control

B - 5 - To master the use of modern methods and advanced control.

- Teaching and learning methods

Method of lecturing

1-Lecture method.

2- The method of the lecture accompanied by discussion.

3- Slideshows with course templates.

4-Displaying explanatory films to combat.

Assessment methods

- 1- Theoretical tests
- 2- Practical tests
- 3- Short weekly tests
- 4- Reports and studies

C - Emotional and value objectives.

C1 - ability to diagnose diseases and pests.

C2 - acquire skills on pest control in fields and nurseries.

C3 - the possibility of the application of prevention and protection systems for fields from potential diseases

Teaching and learning methods

- 21. Presentation of models for stock pests and scientific films related to the material
- 22. Explanation and clarification
- 23. Brainstorming
- 24. The strategy of thinking skill and making the appropriate decision, ie, the student makes a good decision when thinking about the diagnosis of a pest and the process of control and to think about the consequences of this decision and its environmental effects.

Assessment methods

- 17. Theoretical tests
- 18. Practical tests
- 19. Short weekly tests
- 20. Reports and studies

D. General and qualifying skills transferred (other skills related to employability and personal development.)

D- 1 Verbal communication includes:

The ability to express ideas clearly and confidently in speech

2-Teamwork

3- Work with confidence within the group

4-Collecting information systematically and scientifically to establish principles for solving the problem

5-Initiative: motivation for action and ability to initiative

Written Communication:

The ability to express himself clearly in writing

6- Planning and organization / planning and organizing activities and their implementation

7-Flexibility and adaptation to changing situations and different environments

8- Effectively manage time, prioritize tasks and be able to work on schedule

Teaching and learning methods

Explanation and clarification

self education

Lecturing

Assessment methods

Theoretical tests

Practical tests

Reports and studies

Short and quick tests

17. Program structure

Educational level	Course or course code	Name of course or course	Credit Hours	
			theoretical	Practical
the fourth		Biological control	28	42

18. Planning for personal development

1-Continuous reading

2-Adding all that is new in the field of medical and veterinary insects

3 - Keeping pace with the development in the field of higher education and scientific research in the world by downloading all the new agricultural scientific researches and books.

19. Admission Criteria (Regulations for Admission to the College or Institute)

General / central acceptance

4. The most important sources of information about the program

Website of the college or university

University Directory

The most important books and sources of the department

10.-Course structure

the week	hours	Learning Outcomes Required	The name of the unit / or subject	Method of education	Evaluation Method
1	5	Save, understand, practical application	Introduction to the role of bio-resistance in plant protection	Lecture and discussion	Oral tests
2	5	Save, understand, practical application	Procedures for introducing vital 1.enemies: Diagnosis of the lesion as an alien species. 2.Determine the original habitat of the pest. 3. External exploration of vital enemies.	Lecture and discussion	Quick exam
3	5	Save, understand, practical application	Quarantine of imported models. education and mass propagation of vital enemies.	Lecture and discussion	Oral tests
4	5	Save, understand, practical application	Final evaluation of vital enemies ((isolation and exclusion method, construction of life tables)).	Lecture and discussion	Quick exam
5	5	Save, understand, practical application	Important groups of insect parasites Ranks to which parasitic insects belong: -1Membranes of paranormal wings. Parasites of the wing type.	Lecture and discussion	Oral tests
6	5	Save, understand, practical application	Incomplete phases of parasitic insects: Types of eggs	Lecture and discussion	Quick exam
7	5	Save, understand, practical application	-Types of larval ages. - Important groups of insect predators	Lecture and discussion	Written exam
8	5	Save, understand, practical application	Ranks to which predatory insects belong: The rank of the May	Lecture and discussion	Oral tests

			fly. The rank of shivers.		
9	5	Save, understand, practical application	Rank straight wings. Half - wing rank.	Lecture and discussion	Quick exam
10	5	Save, understand, practical application	Rank of the wings. Rank with two wings	Lecture and discussion	Oral tests
11	5	Save, understand, practical application	Rank of membranous wings. Rank of sheath wings.	Lecture and discussion	Quick exam
12	5	Save, understand, practical application	Pathogens: Types of bacteria and viruses in resistance to insect pests	Lecture and discussion	Oral tests
13	5	Save, understand, practical application	Types of pathogenic fungi	Lecture and discussion	Quick exam
14	5	Save, understand, practical application	Types of insect pathogenic worms	Lecture and discussion	Oral tests
15	5	Save, understand, practical application	Biological resistance of the bush using insects	Lecture and discussion	Quick exam
	5	Save, understand, practical application		Written exam	Written exam

10- Infrastructure

1. Integrated pest control / d. Free Membership	1-Required books
1. Integrated pest control / d. Eyad Yousef Al - Haj Ismail	2. Key references (sources)
2. Plant diseases / George Akrios	3-Recommended books and references (scientific journals, reports,)
- All sites of agricultural magazines and plant diseases magazines	B - electronic references, Internet sites

12 - Course development plan

1- Add some diseases that include warehouse diseases, especially for fruits.

2 Nursery diseases for the multiplication of fruit trees.

Description of the academic program

This academic program description provides a brief outline of the most important characteristics of the program and the learning outcomes expected of the student to achieve, demonstrating whether he or she has made the most of the opportunities available. It is accompanied by a description of each course within the program

1. Educational institution	Muthanna University
2. Scientific Department / Center	Plant Protection / Faculty of Agriculture
3. Name of the academic or vocational program	Integrated pests management
4. Name of the final certificate	B.Sc.
5. Study System: Yearly / Courses / Other	Courses
6. Accredited accreditation program	ABET
7. Other external influences	Field visits / training courses for students to develop professional skills
8. Date of preparation of the description	1 - 9- 2020
9 .Objectives of the academic program	
<ul style="list-style-type: none">•Study the evolution of the thought of integrated management of pest control•Study the philosophy of integrated pest management•The importance of information in pest management•Knowledge of pest management and integrated control alternatives•Identify integrated pest management•Identify the philosophy and principles of integrated pest control•Information gathering and injury forecasting - an integrated control program<ul style="list-style-type: none">• Finding the best ways to control diseases through natural (applied, mechanical, agricultural, Biological, Legislative, Chemical, Genetic, Integrated Control Programs)	
10 .Required program outputs and teaching, learning and assessment methods	

A-Cognitive objectives

A-1: Identify the integrated management of pest control

A-2: Identify the philosophy and principles of integrated pest control

A-3 - Information gathering and injury forecasting - Develop an integrated control program

A-4 that the student mastered how to prevent the occurrence of diseases and control.

A.5. Be able to find solutions in the case of epidemic epidemics and ways of controlling them.

A-6 that the student acquires how to disseminate the information obtained in the control of diseases.

B- the skills objectives of the program‘

B - 1 - Students' knowledge of integrated control programs for each crop and death

B-2 - Decision-making quickly to control pests

B - 3 - access to the information network and know the talk in the fight against insect pests

B - 4 - The use of modern technology in the prediction of infection and conduct appropriate control

B - 5 - To master the use of modern methods and advanced control.

Teaching and learning methods

Method of lecturing

1-Lecture method.

2- The method of the lecture accompanied by discussion.

3- Slideshows with course templates.

4-Displaying explanatory films to combat.

Assessment methods

- 1- Theoretical tests
- 2- Practical tests
- 3- Short weekly tests
- 4- Reports and studies

- C - Emotional and value objectives.
- C1 - ability to diagnose diseases and pests.
- C2 - acquire skills on pest control in fields and nurseries.
- C3 - the possibility of the application of prevention and protection systems for fields from potential diseases

Teaching and learning methods

25. Presentation of models for stock pests and scientific films related to the material
26. Explanation and clarification
27. Brainstorming
28. The strategy of thinking skill and making the appropriate decision, ie, the student makes a good decision when thinking about the diagnosis of a pest and the process of control and to think about the consequences of this decision and its environmental effects.

Assessment methods

21. Theoretical tests
22. Practical tests
23. Short weekly tests
24. Reports and studies

D. General and qualifying skills transferred (other skills related to employability and personal development.)

D- 1 Verbal communication includes:

The ability to express ideas clearly and confidently in speech

2-Teamwork

3- Work with confidence within the group

4-Collecting information systematically and scientifically to establish principles for solving the problem

5-Initiative: motivation for action and ability to initiative

Written Communication:

The ability to express himself clearly in writing

6- Planning and organization / planning and organizing activities and their implementation

7-Flexibility and adaptation to changing situations and different environments

8- Effectively manage time, prioritize tasks and be able to work on schedule

Teaching and learning methods

Explanation and clarification

self education

Lecturing

Assessment methods

Theoretical tests

Practical tests

Reports and studies

Short and quick tests

20. Program structure

Educational level	Course or course code	Name of course or course	Credit Hours	
			theoretical	Practical
the fourth		Biological control	28	42

21. Planning for personal development

- 1-Continuous reading
- 2-Adding all that is new in the field of medical and veterinary insects
- 3 - Keeping pace with the development in the field of higher education and scientific research in the world by downloading all the new agricultural scientific researches and books.

22. Admission Criteria (Regulations for Admission to the College or Institute)

General / central acceptance

4. The most important sources of information about the program

Website of the college or university

University Directory

The most important books and sources of the department

Description of the academic program

This academic program description provides a brief outline of the most important characteristics of the program and the learning outcomes expected of the student to achieve, demonstrating whether he or she has made the most of the opportunities available. It is accompanied by a description of each course within the program

1. Educational institution	Muthanna University
2. Scientific Department / Center	Plant Protection / Faculty of Agriculture
3. Name of the academic or vocational program	Biological Control
4. Name of the final certificate	B.Sc.
5. Study System: Yearly / Courses / Other	Courses
6- Program Accreditation	ABET
7- Other external educational effects	Field visits / training courses for students to develop professional skills
8- Date of preparation of the description	1/9/2020
9 .Objectives of the academic program	
<ul style="list-style-type: none">•Study the evolution of the thought of biological control of insect pests•Study the philosophy of vital enemies•The importance of information in pest control•Knowledge of pest control methods and alternatives to integrated control•Identify the biological control•Identify the philosophy of biological control•Identify the life of vital enemies	
10 - The outputs of required program teaching, learning and evaluation methods	

A- Knowledge objectives

A-1: Identify the biological control

A-2 - Identify the philosophy and principles of biological control

A-3 - Information gathering and injury forecasting - Develop an integrated control program

A-4 that the student mastered how to prevent the occurrence of diseases and control.

A.5. Be able to find solutions in the case of epidemic epidemics and ways of controlling them.

A-6 that the student acquires how to disseminate the information obtained in the control of insect pests.

B- Skills of this program

B - 1 - Students' knowledge of the biological control programs for each crop

B-2 - Decision-making quickly to control pests

B - 3 - access to the information network and know the talk in the fight against insect pests

B - 4 - The use of modern technology in the prediction of infection and conduct appropriate control

B - 5 - To master the use of modern methods and advanced control.

- Teaching and learning methods

Method of lecturing

1-Lecture method.

2- The method of the lecture accompanied by discussion.

3- Slideshows with course templates.

4-Displaying explanatory films to combat.

Assessment methods

- 1- Theoretical tests
- 2- Practical tests
- 3- Short weekly tests
- 4- Reports and studies

- C - Emotional and value objectives.
- C1 - ability to diagnose diseases and pests.
 - C2 - acquire skills on pest control in fields and nurseries.
 - C3 - the possibility of the application of prevention and protection systems for fields from potential diseases

Teaching and learning methods

- 29. Presentation of models for stock pests and scientific films related to the material
- 30. Explanation and clarification
- 31. Brainstorming
- 32. The strategy of thinking skill and making the appropriate decision, ie, the student makes a good decision when thinking about the diagnosis of a pest and the process of control and to think about the consequences of this decision and its environmental effects.

Assessment methods

- 25. Theoretical tests
- 26. Practical tests
- 27. Short weekly tests
- 28. Reports and studies

D. General and qualifying skills transferred (other skills related to employability and personal development.)

D- 1 Verbal communication includes:

The ability to express ideas clearly and confidently in speech

2-Teamwork

3- Work with confidence within the group

4-Collecting information systematically and scientifically to establish principles for solving the problem

5-Initiative: motivation for action and ability to initiative

Written Communication:

The ability to express himself clearly in writing

6- Planning and organization / planning and organizing activities and their implementation

7-Flexibility and adaptation to changing situations and different environments

8- Effectively manage time, prioritize tasks and be able to work on schedule

Teaching and learning methods

Explanation and clarification

self education

Lecturing

Assessment methods

Theoretical tests

Practical tests

Reports and studies

Short and quick tests

23. Program structure

Educational level	Course or course code	Name of course or course	Credit Hours	
			theoretical	Practical
the fourth		Biological control	28	42

24. Planning for personal development

- 1-Continuous reading
- 2-Adding all that is new in the field of medical and veterinary insects
- 3 - Keeping pace with the development in the field of higher education and scientific research in the world by downloading all the new agricultural scientific researches and books.

25. Admission Criteria (Regulations for Admission to the College or Institute)

General / central acceptance

4. The most important sources of information about the program

Website of the college or university

University Directory

The most important books and sources of the department

10.-Course structure

the week	hours	Learning Outcomes Required	The name of the unit / or subject	Method of education	Evaluation Method
1	5	Save, understand, practical application	Introduction to the role of bio-resistance in plant protection	Lecture and discussion	Oral tests
2	5	Save, understand, practical application	Procedures for introducing vital 1.enemies: Diagnosis of the lesion as an alien species. 2.Determine the original habitat of the pest. 3. External exploration of vital enemies.	Lecture and discussion	Quick exam
3	5	Save, understand, practical application	Quarantine of imported models. education and mass propagation of vital enemies.	Lecture and discussion	Oral tests
4	5	Save, understand, practical application	Final evaluation of vital enemies ((isolation and exclusion method, construction of life tables)).	Lecture and discussion	Quick exam
5	5	Save, understand, practical application	Important groups of insect parasites Ranks to which parasitic insects belong: -1Membranes of paranormal wings. Parasites of the wing type.	Lecture and discussion	Oral tests
6	5	Save, understand, practical application	Incomplete phases of parasitic insects: Types of eggs	Lecture and discussion	Quick exam
7	5	Save, understand, practical application	-Types of larval ages. - Important groups of insect predators	Lecture and discussion	Written exam
8	5	Save, understand, practical application	Ranks to which predatory insects belong: The rank of the May	Lecture and discussion	Oral tests

			fly. The rank of shivers.		
9	5	Save, understand, practical application	Rank straight wings. Half - wing rank.	Lecture and discussion	Quick exam
10	5	Save, understand, practical application	Rank of the wings. Rank with two wings	Lecture and discussion	Oral tests
11	5	Save, understand, practical application	Rank of membranous wings. Rank of sheath wings.	Lecture and discussion	Quick exam
12	5	Save, understand, practical application	Pathogens: Types of bacteria and viruses in resistance to insect pests	Lecture and discussion	Oral tests
13	5	Save, understand, practical application	Types of pathogenic fungi	Lecture and discussion	Quick exam
14	5	Save, understand, practical application	Types of insect pathogenic worms	Lecture and discussion	Oral tests
15	5	Save, understand, practical application	Biological resistance of the bush using insects	Lecture and discussion	Quick exam
	5	Save, understand, practical application		Written exam	Written exam

10- Infrastructure

1. Integrated pest control / d. Free Membership	1-Required books
1. Integrated pest control / d. Eyad Yousef Al - Haj Ismail	2. Key references (sources)
2. Plant diseases / George Akrios	3-Recommended books and references (scientific journals, reports,)
- All sites of agricultural magazines and plant diseases magazines	B - electronic references, Internet sites

12 - Course development plan

- 1- Add some diseases that include warehouse diseases, especially for fruits.
- 2 Nursery diseases for the multiplication of fruit trees.

Description of the academic program

This academic program description provides a brief outline of the most important characteristics of the program and the learning outcomes expected of the student to achieve, demonstrating whether he or she has made the most of the opportunities available. It is accompanied by a description of each course within the program

1. Educational institution	Muthanna University
2. Scientific Department / Center	Plant Protection / Faculty of Agriculture
3. Name of the academic or vocational program	Pest stores
4. Name of the final certificate	B.Sc.
5. Study System: Yearly / Courses / Other	quarterly
6. Accredited accreditation program	ABET
7. Other external influences	Field visits / training courses for students to develop professional skills
8. Date of preparation of the description	1- 9 - 2020
9 .Objectives of the academic program	
<ul style="list-style-type: none"> •Study of modern methods to control insect vectors •Study the philosophy of combating insect control and diagnosis •The importance of studying pest stocks •Identify pests that affect grain stores •Recognize how pest stocks move to stores and infect grain 	
10 .Required program outputs and teaching, learning and assessment methods	
<p>A-Cognitive objectives</p> <p>A-1: Identify the types of pests that affect stored grain.</p> <p>A-2: Identify methods to control pest stocks.</p> <p>Gather information on stockpile control programs.</p>	

A-4 that the student has mastered how to cope with epidemiological cases of storage pests and ways to control them.

A-5 to be able to find solutions in the case of infestation of grain pests stored.

B- the skills objectives of the program:

B - 1 - Students' knowledge of isolation programs and diagnosis of storage lesions that affect grain.

B-2 - Deciding quickly to control pests infesting grains when the injury occurs.

B - 3 - access to the information network and know the talk in the fight against pest stocks.

B - 4 - the use of modern technology in the diagnosis of epidemiological cases in the area of injury.

B - 5 - be proficient in the use of modern methods and advanced diagnosis.

Teaching and learning methods

Method of lecturing

1-Lecture method.

2- The method of the lecture accompanied by discussion.

3- Slideshows with course templates.

4-Displaying explanatory films to combat.

Assessment methods

1- Theoretical tests

2-Practical tests

3- Short weekly tests

4- Reports and studies

C - Emotional and value objectives.

C -1- benefit from the diagnosis of cases in the grain stores through the symptoms and signs of injury.

C -2- Acquisition of skills on methods of pest transmission and distribution of

insects and breeding methods.

C – 3-the possibility of combating insects that affect stored grain.

C-4-Developing the pride of students in the materials they teach and the service they provide.

Teaching and learning methods

33.Presentation of models for stock pests and scientific films related to the material

34.Explanation and clarification

35.Brainstorming

36.The strategy of thinking skill and making the appropriate decision, ie, the student makes a good decision when thinking about the diagnosis of a pest and the process of control and to think about the consequences of this decision and its environmental effects.

Assessment methods

29.Theoretical tests

30.Practical tests

31.Short weekly tests

32.Reports and studies

D. General and qualifying skills transferred (other skills related to employability and personal development.(

D- 1 Verbal communication includes:

The ability to express ideas clearly and confidently in speech

2-Teamwork

3- Work with confidence within the group

4-Collecting information systematically and scientifically to establish principles for solving the problem

5-Initiative: motivation for action and ability to initiative

Written Communication:

The ability to express himself clearly in writing

6- Planning and organization / planning and organizing activities and their implementation

7-Flexibility and adaptation to changing situations and different environments

8- Effectively manage time, prioritize tasks and be able to work on schedule

Teaching and learning methods

Explanation and clarification

self education

Lecturing

Assessment methods

Theoretical tests

Practical tests

Reports and studies

Short and quick tests

Program structure

Credit Hours		Name of course or course	Course or course code	Educational level
Practical	theoretical			
42	28	Pest stores		Fourth

Planning for personal development

1-Continuous reading

2-Adding all that is new in the field of grain pests stored

3-Keeping pace with the development in the field of higher education and scientific research in the world by downloading all the new agricultural scientific researches and books .

Admission Criteria (Regulations for Admission to the College or Institute)

General / central acceptance

4. The most important sources of information about the program

Website of the college or university

University Directory

The most important books and sources of the department

10.-Course structure

the week	hours	Learning Outcomes Required	The name of the unit / or subject	Method of education	Evaluation Method
1	5	Save, understand, practical application	Common methods for storing grain in Iraq	Lecture and discussion	Oral tests
2	5	Save, understand, practical application	Signs of damage to stored grains due to the types of pests stored	Lecture and discussion	Quick exam
3	5	Save, understand, practical application	Direct and indirect damages of grains as a result of the insect infestation and the comparison of field insects to the grain in the field	Lecture and discussion	Oral tests
4	5	Save, understand, practical application	Insect groups of stored materials and their basic subdivisions.	Lecture and discussion	Quick exam
5	5	Save, understand, practical application	Study of some environmental factors and their relationship with warehouse insects.	Lecture and discussion	Oral tests
6	5	Save, understand, practical application	Food preference for grain insects and stored materials and the most important indicators in the storage environment	Lecture and discussion	Quick exam
7	5	Save, understand, practical application	Ways to control warehouse insects in general	Lecture and discussion	Written exam
8	5	Save, understand, practical application	Traditional methods and types, natural and mechanical control, biological methods and chemical methods using evaporators and their common types in control with the ideal characteristics.	Lecture and discussion	Oral tests
9	5	Save, understand, practical application	Appropriate conditions for the storage of fungi and	Lecture and discussion	Quick exam

			the most important types of fungi associated with grain and stored materials		
10	5	Save, understand, practical application	Damage of stores fungi and the most important types of mycotoxins common in grain stores infected with common types of fungi producing them. Types of grain bacteria and materials stored in the grain stores	Lecture and discussion	Oral tests
11	5	Save, understand, practical application	Dream of stored materials _ types and methods of detecting the injury of stored materials dream and control methods used	Lecture and discussion	Quick exam
12	5	Save, understand, practical application	The most important types of rodents common in grain stores, damage to mice and rats	Lecture and discussion	Oral tests
13	5	Save, understand, practical application	Chemical means used in the control of mice and rats	Lecture and discussion	Quick exam
14	5	Save, understand, practical application	The most important types of toxins used in the control, non-chemical means in the control	Lecture and discussion	Oral tests
15	5	Save, understand, practical application	Birds harmful to grain in the stores and the most important types, the importance of agricultural and the most important damage and types of control methods used against them.	Lecture and discussion	Quick exam
	5	Save, understand, practical application		Written exam	Written exam

10- Infrastructure	
1. Integrated pest control / d. Free Membership	1-Required books
1. Integrated pest control / d. Eyad Yousef Al - Haj Ismail	2. Key references (sources)
2. Plant diseases / George Akrios	3-Recommended books and references (scientific journals, reports,)
- All sites of agricultural magazines and plant diseases magazines	B - electronic references, Internet sites

12 - Course development plan
<p>1- Add some diseases that include warehouse diseases, especially for fruits.</p> <p>2 Nursery diseases for the multiplication of fruit trees.</p>

10- .Course structure					
Evaluation Method	Method of education	The name of the unit / or subject	Learning Outcomes Required	hours	week
(1 Introduction: - Ecology, , methods of studying ecology, , steps to study the environment .of an insect	environmen t or environmen t of the organism and the concept of ecosystem	division of ecology, insect ecology, definitions			3
Natural (2 balance in insects	Factors that helped insects to spread	natural equilibrium factors			3
factors of biological ability	environmen tal resistance factors	a) non-vital) factors: - (temperature, humidity			3
b) biotic) factors representing	light, wind, atmospheri 'c pressure	food, competition, and vital enemies			3
Competition	Competition between individuals of one species	competition between species vital enemies			3

10 -Infrastructure	
	Required textbooks -1
Mansoura University faculty of Agriculture Economic Insects Section/ecology of insect	(Key references (sources .2

Ecology of Insects/Concepts and Application	Recommended books and references (scientific journals, (... 'reports
www.blackwell-science.com	electronic references, Internetsites

10- .Course development plan
<p>Insect ecology gives the theoretical foundations for integrated pest management and environmental conservation programs. In addition, various studies in insect ecology enrich the general ecology with assumptions and theories that are considered the cornerstone of building this science.</p>

Description of the academic program

This academic program description provides a brief outline of the most important characteristics of the program and the learning outcomes expected of the student to achieve, demonstrating whether he or she has made the most of the opportunities available. It is accompanied by a description of each course within the program

1. Educational institution	Al-Muthanna University
2. Scientific Department / Center	Plant Protection / Faculty of Agriculture
3. Name of the academic or vocational program	Mycology
4. Name of the final certificate	B.Sc.
5. Study System: Yearly / Courses / Other	Quarterly
6. Accredited accreditation program	ABET
7. Other external influences	Field visits / training courses for students to develop professional skills
8. Date of preparation of the description	1 - 9 -2020

9 .Objectives of the academic program

Students gain cognitive skills learned fungi , and the positive and negative effects on humans and agricultural crops and familiarity of students forms and structures and life cycles of different fungal species and knowledge of any of the sections and fungal people back those fungi .

Also know the division and classification of innate races .

And to know the Arabic and scientific name of innate races

Identify useful species and races such as truffles and mushrooms

Know the species that cause injuries to humans and crops and farm animals.

To know the effect of mycotoxins on human health

10. Required program outputs and teaching, learning and evaluation methods

1- Cognitive goals

- A - 1 - identify the concept of fungi and methods of diagnosis
- A - 2 identify the ways of reproduction of fungi
- A - 3 recognize the methods of feeding fungi
- A -4 Recognize the structures of fungi bodies
- A - 5 identify the most important benefits and harms of fungi
- A -6 Describe the cycles of fungi life

B - Objectives skills yeh of the special pal program

- B - 1 knowledge of the concept of fungi, especially plant ones
- B - 2 enable students to diagnose fungi laboratory
- B - 3 the ability of the student to identify and distinguish between toxic species and species useful and used as food

Teaching and learning methods

- Method of lecturing
- Explanation and clarification
- View slides
- Method of displaying scientific films about fungi
- Self - learning method
- Method of collection and diagnosis of samples

Assessment methods

- Theoretical tests
- Practical tests
- Reports and studies

C - emotional and value objectives.

- C - ability to analyze the results and diagnosis of fungi
- C .2 acquire the skills of pathogenic fungi plant
- C - the possibility of the application of prevention and protection systems for farm plants .
- C .4 The skill of thinking by the student 's ability and is designed so that the student understands when and how to think in control operations and prevention fields, orchards and farms .

Teaching and learning methods

- 1- Method of presentation of innate models and scientific films related to the

subject

2. Explanation and clarification
3. Brainstorming
4. The strategy of thinking skill and making the right decision.

Assessment methods

33. Theoretical tests
34. Practical tests
35. Short weekly tests
36. Reports and studies

D. General and qualifying skills transferred (other skills related to employability and personal development.)

D- 1 Verbal communication includes:

The ability to express ideas clearly and confidently in speech

2- Teamwork

3- Work with confidence within the group

4- Collecting information systematically and scientifically to establish principles for solving the problem

5- Initiative: motivation for action and ability to initiative

Written Communication:

The ability to express himself clearly in writing

6- Planning and organization / planning and organizing activities and their implementation

7- Flexibility and adaptation to changing situations and different environments

8- Effectively manage time, prioritize tasks and be able to work on schedule

Teaching and learning methods

Explanation and clarification

self education				
Lecturing				
Assessment methods				
Theoretical tests				
Practical tests				
Reports and studies				
Short and quick tests				
26.Program structure				
Educational level	Course or course code	Name of course or course	Credit Hours	
			theoretical	Practical
Fourth		Mycology	28	42

Planning for personal development				
1-Continuous reading				
2-Adding all that is new in the field of grain pests stored				
3-Keeping pace with the development in the field of higher education and scientific research in the world by downloading all the new agricultural scientific researches and books .				
27.Admission Criteria (Regulations for Admission to the College or Institute)				
General / central acceptance				
4. The most important sources of information about the program				
Website of the college or university				
University Directory				
The most important books and sources of the department				

10. -Course structure

the week	hours	Learning Outcomes Required	The name of the unit / or subject	Method of education	Evaluation Method
1	5	Save, understand, practical application	Fungal cell and explain the variation in composition among different fungal groups installation	Definition of devices used in the lab fungus and working methods	Oral tests
2	5	Save, understand, practical application	Different feeding patterns in the fungus. - Foundations divisional-fungal.	Culture media	Quick exam
3	5	Save, understand, practical application	Reproduction patterns in the fungus (sexual and asexual).	Isolate different types of fungi from different environments	Oral tests
4	5	Save, understand, practical application	Study sticky fungus and examples of the economic importance and have life cycles of some of its members.	Isolate the fungus from the air	Quick exam
5	5	Save, understand, practical application	Study Oomycetes and examples economic importance and have life cycles of some of its members	Isolate the fungus from the water	Oral tests
6	5	Save,	Study	Isolate the fungus	Quick

		understand, practical application	zgomycetes and examples economic importance and have life cycles of some of its members	from the soil	exam
7	5	Save, understand, practical application	Study Ascomycetes and examples of the economic importance and have life cycles of some of its members	Isolate of different plant parts	Written exam
8	5	Save, understand, practical application	The study of fungi Basidiomycetes and examples of the economic importance and have life cycles of some of its members	Isolation of infected seeds internal and external fungal	Oral tests
9	5	Save, understand, practical application	Study Deuteromycetae and examples of the economic importance and have life cycles of some of its members.	Purification fungal strains (filamentous and yeasts) isolated all the isolated environment, and examined	Quick exam
10	5	Save, understand, practical application	Fungus - supplement	Expertise of fungi using taxonomic keys, and the study of the morphology and keep track of the different fungi Forums	Oral tests
11	5	Save, understand, practical application	fungus damage to food grains and causing plant and animal diseases.	Microscopic examination of ready-sliced or samples infected or	Quick exam

				plant images fungus	
12	5	Save, understand, practical application	Mycotoxins: aflatoxin, Alorjotah, poisonous mushrooms.	Study virtual qualities of the vegetative structures of fungi sexual and eccentrics	Oral tests
13	5	Save, understand, practical application	fungus damage to food grains and causing plant and animal diseases.	Microscopic examination of ready-sliced or samples infected or plant images fungus	Quick exam
14	5	Save, understand, practical application	Mycotoxins: aflatoxin, Alorjotah, poisonous mushrooms.	Study virtual qualities of the vegetative structures of fungi sexual and eccentric	Oral tests

The section of insects

The research in the insects' field at the Department of Plant Protection, college of Agriculture, Muthanna university is a wide and complex field because it includes a very large insect species may reach up to 75% of the animal kingdom. The research in insects filed include two sides:

The first direction / Harmful insects

In this direction, the department is planning to apply the latest scientific research methods to protect agricultural fields from the danger of agricultural pests of all kinds through conducting scientific researches and studies that contribute to solving these problems. This direction includes different aspects:

- 1- Study the insect pests in terms of diagnosis, life cycle and environment (this includes taxonomists, entomologists and ecologists). In addition, studying the nature of the damage to plants and methods of control to limit the danger of these pests (including pesticides and ecologists).
- 2- Studying the non-insect animal pests (eg rodents, birds, snails, etc.) in terms of diagnosis, life cycle and environment (including pesticides and ecology specialists). In extra, the research includes studying the potential diseases to human and animal and the best methods to control these kinds of pests.
- 3- Studying the medical and veterinary insects (such as mosquitoes, flies, cockroaches, etc.) that transmit diseases to humans, animals, and plants through diagnosis and study of their lives and control methods.
- 4- Conducting research in the toxicology and pesticides field to raise the awareness of students who work in the field of agriculture on the best ways to use and evaluate pesticides and the danger of pesticides residues on the environment.
- 5- Studying stored grain pests is main part of the research in the department which include research in different aspect such as the diagnosis, the life cycle, and control method for this kind of pest.

The second direction / beneficial insects

This part of research focuses on beneficial insects (honeybees, parasites, insect predators) and these programs aim to develop the productive and

research agriculture sector and solve problems related to this section. Research and studies on some environmental concepts must be conducted to understand the relationship between the pest and the host. One of the most important topics is the topic of biological control of pests using natural enemies such as predators, parasites and pathogens. In addition, some researches focus on using of alternative treatments such as plant metabolites to reduce dependence on chemical pesticides for pest control.

The section of plant diseases

This section contains three directions:

The first direction / plant pathogens

The research focus on detect pathogens, which include fungi, which constitute 90% of the research side of the department in addition to bacteria, viruses and nematodes. In addition, a research conduct on isolation and diagnosis of pathogens both from the plant or soil. Then, the identification of the most dangerous species and identify the symptoms that appear on the infected plants to compare with the food deficiency.

The second direction/ control methods

This direction contains two sides:

- 1- The use of chemical pesticides, which is one of the old methods in the control process but considered one of the necessary methods. In extra, extensive researches have been carried out in this field to ensure the lethal concentrations of these compounds and the damage that may result from the use of these compounds.
- 2- Many researches were conducted in area of using of biocontrol or biocides against different pathogens including fungi, nematodes, and bacteria. In other words, this method is modern and considered environmentally friendly as it works to reduce the risk of environmental pollution due to the use of chemical pesticides. Further, some researches were conducted on the toxins that can be produced by these organisms which can be used by these organisms in biological resistance.

The third direction is using of microorganisms as a bio-fertilizer for plants which can increases plant growth and reduces the plant in