|  |  |  |
| --- | --- | --- |
|  |  |  |

#### Course Title: Economic Entomology

|  |  |
| --- | --- |
| **University** | **Benha** |
| **Faculty** | **Faculty of Agriculture** |
| **COURSE SPECIFICATIONS:** |
| Program of which the course is given | Agricultural Biotechnology |
| Major or Minor element of Program | Major |
| Departments offering the Program | Plant protection department |
| Department offering the course | Plant protection department |
| Academic year / Level | **Level 4 First semester** |
| Date of specification approval | \*\*\*\*\*\*\* |

|  |
| --- |
| **A- BASIC INFORMATION**  |
| Title  | **Economic Entomology** |
| Code | **PP 0403** |
| Credit Hours  | 3 unite  |
| Lecture | 2 Hours / week |
| Practical | 2Hours / week  |
| Total: | 4Hours |

|  |
| --- |
| **B- PROFESSIONAL INFORMATION** |
| **1 – OVERALL AIMS OF COURSE** |
| 1. to know the student insects attacking economic crops (field crops and horticultural crops), or crop products including store insects (e.g. grain stores). to define the student the types of different computers.
2. to define the student Description and behavior of these insects and methods of controlling their harmful effects are included.
 |

|  |
| --- |
| **2 – Intended Learning Outcomes of Course (ILOs)** |
| **A. Knowledge and Understanding:** |
| ***By the end of the course, students should:***1. provide the student with the information that help in recognizing and differentiating the insect orders
2. understand the morphology and anatomy of the insect body and internal anatomy
3. study the harmful and benefit insects to the crops and stored products
 |

|  |
| --- |
| B. Intellectual Skills: |
| ***Successful completion of this course will allow students to:***1. Differentiate morphologically and biologically the different orders of insects
2. Judge the infection and symptoms caused by the harmful insects to the crops and stored products
 |

|  |
| --- |
| C. Professional and Practical Skills: |
| 1. Train the student on mass rearing techniques of the insects in the lab as well as mounting and identifying these insects.
2. Train the student on recognizing and differentiating the insect symptoms and how to avoid the infestation caused by these insects
3. Train the student on dissecting the concerned insect and recognizing their internal structures
 |

|  |
| --- |
| D. General and Transferable Skills: |
| 1. Acquire the skills of preserving the insects samples
2. Gain the skills of differentiating between the different insects order
3. Deal with the ecosystem and solve the problems lead to disturb between the benefit and harmful insect balance
 |

|  |
| --- |
| 3. CONTENTS |
| **Topic** | **No. of hours** | **Lectures** | **Practical** |
| Introduction to the different control methods. | 4 | 2 | 2 |
| General and polyphagous insect pests.  | **4** | 2 | 2 |
| Identify the most important arthropod pests injuring fruits, vegetables, and field crop . | **4** | 2 | 2 |
| Describe the life history and host range of each pest. | **8** | 4 | 4 |
| Insects attacking field crops. | **4** | 2 | 2 |
| Vegetable crops insect pests. | **4** | 2 | 2 |
| Orchard or fruit trees insect pests | **4** | 2 | 2 |
| Wood trees insect pests. | **4** | 2 | 2 |
| Ornamental plant pests. | **4** | 2 | 2 |
| Medical and aromatic plant pests. | **4** | 2 | 2 |
| Stored products pests | **4** | 2 | 2 |
| The most important methods and materials used to minimize the pest population under economic injury level. | **8** | 4 | 4 |
| Total  | 56 | 28 | 28 |

|  |
| --- |
| 4. TEACHING AND LEARNING METHODS |
| 1. Course lectures
2. Practical lessons in laboratory
3. Anatomize the concerned insect in the lab and recognize their internal structures
4. Present prepared slides , cross sections and specimens
 |

|  |
| --- |
| 5. STUDENT ASSESSMENT METHODS |
| ***Students will be evaluated by attendance, fulfillment and effort in exercises and presentations, and examination grades:***1. mid – term exam to assess knowledge , understanding and intellectual skills
2. oral exam to assess knowledge , understanding and intellectual skills
3. practical examination to assess professional and practical skills
4. Final – term examination to assess knowledge , understanding and intellectual skills
5. Semester work to assess general and transferable skill
 |

|  |
| --- |
| 6. ASSESSMENT SCHEDULE |
| No | AssessmentAssessment | **Week** |
| 1 | mid – term examination  | 7 |
| 2 | oral examination  | 15 |
| 3 | Periodical exam | 15 |
| 4 | Final-termexamination | 16 |

|  |
| --- |
| 7. WEIGHTING OF ASSESSMENT |
| No | AssessmentAssessment | **%** |
| 1 | mid – term examination  | 15% |
| 2 | oral examination  | 10% |
| 3 | Periodical exam | 15 % |
| 4 | Final-termexamination | 60 % |
| TOTAL | 100 % |

|  |
| --- |
| 8. LIST OF REFERENCES |
| 1. **Dreistadt, S. H., Clark, J. K., and Flint, M. L.1994.** Pests of landscape trees and shrubs: An integrated pest management guide. Div. Agric., Univ. California, CA, USA.
 |
| 1. **Hoover, G. A. 2000**. Insects and mites, *In* W. K. Hock, G. A. Hoover, and G. W. Moorman Eds, “Woody ornamental insect, mite, and disease pest management. Pennsylvania State Univ., College of Agric. Sci.
 |
| 1. **Borror, D.J; C.A. Triplehon and N.F. Johnson (1989):**An introduction to the study of insect. New york, Saunders college Publishing (pp. 875).
 |
| 1. **Radcliffe, E.B., Hutchison, W.D. and Concelado, R.E. (2008):** Integrated pest management: Concepts, tactics, strategies and case studies. Cambridge Univ. Press, UK
 |

|  |
| --- |
| 9. FACILITIES REQUIRED FOR TEACHING AND LEARNING |
| 1. Classroom equipped with data show ,computer ,whiteboard and pens
2. insect specimens
3. rearing containers for beneficial animals
 |

|  |  |
| --- | --- |
| **Course Coordinators:**  | **Prof. Dr. fawzy shalby** **Prof. Dr. Adel Abd Elhamid** |
| **Date: / / 2015** |