#### Course Title: Pesticide Biotechnology

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| **University** | **Benha** |
| **Faculty** | **Faculty of Agriculture** |
| **COURSE SPECIFICATIONS:** |
| Programof which the course is given | Agricultural Biotechnology  |
| Major or Minor element of Program | Minor |
| 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 |  |

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| **A- BASIC INFORMATION**  |
| Title  | Pesticide Biotechnology  |
| Code | PP 0401 |
| Credit Hours  | 3unite |
| Lecture | 2 Hours / week |
| Practical | 2Hours / week  |
| Total: | 56Hours |

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| **B- PROFESSIONAL INFORMATION** |
| **1 – OVERALL AIMS OF COURSE** |
| * To know the student the importance biotechnology in pest control.
* To define the student how to minimize using of traditional pesticides.
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| **2 – Intended Learning Outcomes of Course (ILOs)** |
| **A. Knowledge and Understanding:** |
| ***By the end of the course, students should:**** Understanding the different between traditional pest control and pesticide biotechnology.
* Understanding the different between polluted pesticides and safe pesticides to human health and environment.
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| B. Intellectual Skills: |
| ***Successful completion of this course will allow students to:**** Select the best safe means to pest control.
* Understand the effectiveness of pesticides from bio-origin.
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| C. Professional and Practical Skills: |
| * Extracting and preparing bio-pesticides from bio-origin.
* Using the bio-agents as pest control means.
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| D. General and Transferable Skills: |
| * Extracting and preparingbio-pesticides from bio-origin.
* Using the bio-agents aspest control means.
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| 3. CONTENTS |
| **Topic** | **No. of hours** | **Lectures** | **Practical** |
| Introduction: Biotechnology definitions | 4 | 2 | 2 |
| Importance pesticide biotechnology | 4 | 2 | 2 |
| Biotechnology and traditional breeding | 4 | 2 | 2 |
| Biotechnology products | 4 | 2 | 2 |
| Microbial pesticides | 4 | 2 | 2 |
| Repellents and attractants | 4 | 2 | 2 |
| Antifeedants | 4 | 2 | 2 |
| Pant-origin pesticides | 4 | 2 | 2 |
| Using of plant morphology against pest attack | 4 | 2 | 2 |
| Using of plant physiology against pest attack | 4 | 2 | 2 |
| Using of plant secretions | 4 | 2 | 2 |
| Risk assessment process to non-target organisms | 4 | 2 | 2 |
| Harmful effects of bio-pesticides to human | 4 | 2 | 2 |
| Harmful effects of bio-pesticides to environment | 4 | 2 | 2 |

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| 4. TEACHING AND LEARNING METHODS |
| 1. The main subject areas are covered in the lectures (see syllabus Plan).
2. Several student seminar sessions give the opportunity for students to bring questions or discuss any aspects of the course with the tutor.
3. Students are given a topic to research in small groups which they report as an oral presentation. Collective feedback on the strengths and weaknesses of the presentations are provided.
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| 5. STUDENT ASSESSMENT METHODS |
| ***Students will be evaluated by attendance, fulfillment and effort in exercises and presentations, and examination grades:***1. Laboratory work: to assess the ability of students to understand and perform small laboratory experiments.
2. Oral exam
3. Periodical exams
4. Theoretical final exam
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| 6. ASSESSMENT SCHEDULE |
| No | AssessmentAssessment | **Week** |
| 1 | Periodical exam  | 4th and 8th |
| 2 | Practical exam | 15th |
| 3 | Oral exam | 14th |
| 4 | Final exam | 16th |

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| 7. WEIGHTING OF ASSESSMENT |
| No | AssessmentAssessment | **%** |
| 1 | Periodical exam  | 15% |
| 2 | Practical exam | 15% |
| 3 | Oral exam | 10 % |
| 4 | Final exam | 60 % |
| TOTAL | 100 % |

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| 8. LIST OF REFERENCES |
| Huang, J.K., Wang, Q.F., Zhang, Y.D., 2001. Agricultural biotechnology development and research capacity. Working Paper, Center for Chinese Agricultural Policy, Chinese Academy of Sciences, Beijing.Widawsky, D., Rozelle, S., Jin, S.Q., Huang, J.K., 1998. Pesticide productivity, host-plant resistance and productivity in China. Agric. Econ. 19, 203–217.Attathom, T., 2002. Biotechnology for insect pest control. Proc. Sat. Forum, "Sustainable Agricultural System in Asia," Nagoya: JuneProc. Sat. Forum, "Sustainable Agricultural System in Asia," Nagoya.Leonard Gianessi, L.,Sankula, S., Reigner, N. 2003. The National Center for Food and Agricultural Policy 1616 P Street, NW Suite 100 Washington, DC 20036. Plant Biotechnology: Potential Impact for Improving Pest Management in European Agriculture, A Summary of Nine Case Studies.Woźniak, M., Bartoszek, A., Bekierska, A., Bell-lloch, J., Groot, T., Singer, E. 2006 Managing innovations in biotechnology European Project Semester, Guide to biotechnology: Biotech Industry Organisation.  |

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| 9. FACILITIES REQUIRED FOR TEACHING AND LEARNING |
| 1. Teaching aids/ materials: e.g. boards – overhead projector – data-show projector – stationary..etc.
2. Teaching room/hall.
3. Computers.
4. Facilities for site visits etc., http://www.tandfonline.com/doi/full/10.4161/gmcr.20061which are necessary for teaching the course.
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| **Course Coordinators:**  | **Prof. Dr. Mohamed MohamedAzab****Prof. Dr.**  |
| **Date: / / 2015** |