#### Course Title: : Rhizosphere Fauna

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| **University** | **Benha** |
| **Faculty** | **Faculty of Agriculture** |
| **COURSE SPECIFICATIONS:** | |
| Program of which the course is given | Agricultural Biotechnology |
| Major or Minor element of Program | Minor |
| Departments offering the Program | Department of plant protection |
| Department offering the course | Department of plant protection |
| Academic year / Level | Level 1 Second semester |
| Date of specification approval |  |

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| **A- BASIC INFORMATION** | |
| Title | Rhizosphere fauna |
| Code | PP 0406 |
| Credit Hours | 3 Unite |
| Lecture | 2 Hours / week |
| Practical | 2 Hours / week |
| Total: | 4 Hours |

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| **B- PROFESSIONAL INFORMATION** |
| **1 – OVERALL AIMS OF COURSE** |
| 1. to know the student the express practically and theoretically, the importance of studying Rhizosphere fauna as a branch of life sciences 2. to know the student the information that help to recognize the animal classification including the differentiation between the animals of protozoa , and metazoa 3. to define the student the details soil food web, soil protozoa, nematods, earthworms, snails, slugs,rodents and soil quality. |

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| **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 animals of protozoa and metazoa  2-understand the morphology and anatomy of some animals with studying the related expressions  3- explain the positive and negative effects of the animals on the environment which reflect on the human and his life |

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| B. Intellectual Skills: |
| ***Successful completion of this course will allow students to:***  . 1- Differentiate morphologically and biologically the different species of fauna  2- Judge the infection and symptoms caused by the concerned animal parasites  3- Get benefit of beneficial animals and mass rear them in high quality and quantity |

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| C. Professional and Practical Skills: |
| 1. Train the student on mass rearing techniques of the protozoa in the lab as well as mounting and identifying these microscopic animals 2. Train the student on mass rearing techniques of the beneficial animals and how to get benefit of them in biological control programs 3. Train the student on recognizing soil animal such as soil protozoa, nematodes, earthworms, mites and other organisms in soil. 4. Train the student on dissecting the concerned animals and recognizing their internal structures |

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| D. General and Transferable Skills: |
| 1-Acquire the skills of preserving the beneficial animals from rareness  2-Gain the skills of differentiating between the different animal parasites  3-Deal with the ecosystem and solve the problems lead to disturb its balance |

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| 3. CONTENTS | | | |
| **Topic** | **No. of hours** | **Lectures** | **Practical** |
| Introduction and general principles | 4 | 2 | 2 |
| Soil food-web:soil organisms,soil organic matter and soil biomass | 4 | 2 | 2 |
| Soil protozoa their role and locations in soil | 4 | 2 | 2 |
| Nematodes, role, location, implications on soil quality,trappers | 8 | 4 | 4 |
| Earthworms; role, location ,distribution, and interactions. | 8 | 4 | 4 |
| Arthropods,abundance shredders, predators, herbivorous and fungi feeders,mites and their location and role; phyto-phagous, parasitic and predacious. | 8 | 4 | 4 |
| Mollusks; snails and slugs identifications, biology, ecologyand population;damage caused by,and feeding behavior. | 8 | 4 | 4 |
| Rodents; role, biology and ecology; damage and feeding behavior. | 8 | 4 | 4 |
| Soil quality/health assessment and management | 4 | 2 | 2 |
| Total | 56 | 28 | 28 |

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

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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. 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 skills |

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

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| 6. ASSESSMENT SCHEDULE | | |
| No | AssessmentAssessment | **Week** |
| 1 | Periodical exam | 15% |
| 2 | Practical exam | 15% |
| 3 | Oral exam | 10 % |
| 4 | Final exam | 60 % |

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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 |
| 1. **Benckiser, G. 1997.** Fauna in soil ecosystem: Marcell Dekker, Inc., USA. <http://books.google.de/books?id=H5bZySCJbnQC&printsec=frontcover&dq=Fauna+in+soil+ecosystem&hl=en&sa=X&ei=WUH3UpzHEMretAb7yYHgDQ&ved=0CC4Q6AEwAA#v=onepage&q=Fauna%20in%20soil%20ecosystem&f=false> 2. **Lee, D.L. 2002.** The biology of nematodes. CRC Press, UK. <http://books.google.de/books?id=-FrqtgJ4cfMC&printsec=frontcover&dq=The+biology+of+nematodes&hl=en&sa=X&ei=cEH3UrG9C4HStAaB7oD4BQ&ved=0CC4Q6AEwAA#v=onepage&q=The%20biology%20of%20nematodes&f=false> 3. **Marks, R. 2008**. [Nematodes](http://www.amazon.co.uk/Nematodes-Russell-Marks/dp/1436301408/ref=sr_1_1?s=books&ie=UTF8&qid=1388102597&sr=1-1&keywords=Nematodes+books). Xlibris Corporation , UK. <http://books.google.de/books?id=0qi1AAAAIAAJ&q=Nematodes&dq=Nematodes&hl=en&sa=X&ei=i0H3Uqy7OMnTtQb_t4GIBQ&ved=0CD8Q6AEwAw> 4. **Sherman, P.W. and Alcock, J. 2005.** Exploring animal behavior: Readings from American Scientist. 4th Ed, Sinauer Associates Inc., NY, USA. <http://books.google.de/books?id=b2iIlokIILsC&printsec=frontcover&dq=Exploring+animal+behavior&hl=en&sa=X&ei=p0H3Up_VDYGBtAbSnYCYBg&ved=0CC4Q6AEwAA#v=onepage&q=Exploring%20animal%20behavior&f=false> |

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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., which are necessary for teaching the course. |

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| **Course Coordinators:** | **Prof. Dr.Gad Hamada Rady**  **Prof.Dr. GhadaRifaatYossef Mohammed** |
| **Date: / / 2015** | |