# THE MODULE HANDBOOK
## FACULTY OF BIOLOGY

### Acarology

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| **Module code** | BIO 21303 |
| **Module level** | Undergraduate |
| **Abbreviation, if applicable** | - |
| **Sub-heading, if applicable** | - |
| **Courses included in the module, if applicable** | - |
| **Semester/ term** | Odd |
| **Module coordinator(s)** | Soenarwan Hery Poerwanto, S.Si., M.Kes. |
| **Lecture(s)** | 1. Soenarwan Hery Poerwanto, S.Si., M. Kes.<br>2. Dra. Rr. Upiek Ngesti Wibawaning Astuti, DAP.&E., M.Kes.<br>3. Dila Hening Widyarini, S.Si., M.Sc. |
| **Language** | Indonesia |
| **Classification within the Curriculum** | Elective course |
| **Teaching format/ class hours per week during the semester** | This course consists of 2 credits of theory and 1 credit of practice and is planned to have 13 to 14 learning weeks excluded midterm and final examination. Evaluation of laboratory work will be held in the end of laboratory work schedule. The capacity of classroom should be for 40-50 students. The material will be delivered with combined between SCL, TCL, and case study. |
| **Workload** | Estimated working hour: 9 hours/week |
| **Credit points** | 2-1 credits |
| **Requirements** | Animal Systematics (BIO 31101) |
| **Learning goals/ competencies** | **1. Work ability**<br>a. Plan, implement, analyze, and report on the experimental scientific / research in the field Acarology.<br>b. Using information and communication technology in learning.<br>c. Working in groups in the laboratory and field.<br><br>**2. Mastery of knowledge**<br>a. Understand the basic concepts of Acarina diversity and its role in the ecosystem. |

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| | b. Mastering and applying scientific methods in the field of Acarology.<br>c. Analyze and solve a problem and to develop problem-solving design and research activities about Acarina<br><br>**3. Authority and responsibillity**<br>a. Perform based communications technology effectively, whether written, oral, and with images relating Acarology.<br>b. Implement and integrate a branch of biology (especially Acarology) into another branch.<br>c. Able to anticipate problems in the field Acarology and give suggestion if may needed. |
| **Content** | Acarology (BIO 21303) to learn about the animals that belong to the Acarina (Tick and Mite): Subordo Astigmata, Prostigmata, Mesostigmata, and Metastigmata that includes morphology and anatomy related to the structure and function, classification, physiology (digestive system, circulatory, respiratory , nervous, reproductive), life cycle and ecology, the role of human life (benefits and losses caused), Immunology, as well as learn how the collection, preservation, culture and identification that is used as a cornerstone in the development of applications. Acarology starter molecular biology. Acarology an elective courses for students of Biology Faculty. Students are required to attend classes with weights 2 credits and practicum with weights 1 Credit to increase knowledge and skills in dealing with helminthes. This course consists of 7 subjects with the number of meetings 14-16 times per semester. Learning methods by implementing Student Centered Learning (SCL) combined with the Student Teacher Aesthetic Role-Sharing (STARS) with improved interactive communication between teacher and students and a teacher as a facilitator and partner learning for students in a harmonious atmosphere. STARS also apply patrap Three Realms, namely Ing ngarsa sung tuladha (exemplary), Ing Madya Mangun Karsa (empowering and motivating) and Tut Wuri Handayani (control and motivate students for succeed). |
| **Study/ exam achievements** | **1. Theory**<br>a. Midterm: 35%<br>b. Final examination: 35%<br>c. Presentation, attendance and activity: 30%<br>**2. Laboratory Work**<br>a. Weekly test: 20 %<br>b. Laboratory activity: 10 %<br>c. Laboratory report: 40 %<br>d. Final test: 30 % |

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| **Forms of media** | White board, LCD |
| **Literature** | 1. Mc Daniel, B. 1944. How to Know the *Acarina* and *Ticks*. The Pictured Key Nature Series. Wm. C. Brown Company Publishers. Iowa, 335pp<br>2. Mehlhorn, H. ed. 2001. Encyclopedic Reference of Parasitology. Springer. Berlin.<br>3. Robinson W H. 2005. Handbook of Urban Insects and Arachnids. Cambridge university press. Cambridge, p 6-15<br>4. Schmidt, G. S., and L.S.Roberts. 2000. Foundations of Parasitology 6th edition. Mc Graw-Hill Book Co. Singapore, 539-550, 559-570, 607-628<br>5. Smiley. R.L. 1991. *Acarina* (Acari). ed: J. Richard Gorham. Insect and Mite Pests in Food, An Illustrated Key. Superintendent of Documents, U.S. Government Printing Office. Washington, B.C.<br>6. Colloff, M.J. 2009. Dust Mites. CSIRO Publishing. Australia. Pp. 13-14; 20-62 ; 77-82.<br>7. Zhang, Z.Q., 2003. Mites of Greenhouse: Identification, Ecology and Control. CABI Publishing, Cambridge, USA.11-29, 99-101, 141-142, 203-205.<br>8. Krantz, G.W. 1978. A Manual of Acarology. Departemen of Entomology. Oregon State University Book Store. Inc. Corvaliss<br>9. Cable, R.M. 1977. An Ilustrated Laboratory Manual of Parasitology. Fifth Edition. Burgess Publishing Company, Minneapolis-United States of Amerika.<br>10. Institute for Medical Reseacher. 1998. Diseases of Acarology. Bahagian Acarology, Kuala Lumpur, Malaysia.<br>11. Krantz, G.W. 1978. A Manual of Acarology. Departemen of Entomology. Oregon State University Book Store. Inc. Corvaliss<br>12. Nadchatram, M. and Dohany, A.L. 1974. A Pictorial Key to The Subfamilies Genera and Subgenera of Southeast Asian Chiggers (Acari, Prostigmata, Trombiculidae). Buletin Number 16. Rajiv Printer, Kuala Lumpur.<br>13. Zhang, ZQ. 2003. Mite of Greenhouse (Identification, Biology and Control). CABI Publishing, UK.<br>14. Abbas, K.A., Lichtman, A.H. and Pober, J.S. 2000. Celluler and Moleculer Immunology. W.B. Saunders Company, New York.<br>15. Ogra, P.L. Mestecky, J., Lamm, ME., Strober, W.Mc.Ghee,JR., Bienenstock, J. 1994. Handbook of Mucosal Immunology, academic Press, Inc. New York.<br>16. Anwar, C. dan Murshal, Y. 1989. Atlas Parasitologi Kedokteran. Edisi II. Penerbit Hipokrates, Jakarta.<br>17. Tee R D, D J Gordon, S Gordon, B Crook, A J Nunn, A W Musk, K M Venables, A J Newman Taylor. 1992. |

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18. Mehlhorn, H. ed. 2001. Encyclopedic Reference of Parasitology. Springer. Berlin. Pp. 56-62.
19. Melnyk, J.P, A. Smith, C. Scoot-Dupree, M.F. Marcone and A. Hill. 2010. Identification of cheese mite species inoculated on Mimolette and Milbenkase cheese through cryogenic scanning electron microscopy. *J. Dairy Sci*. 93 :3461–3468.
20. Palyvos, N.E., C.G Athanassius, P.A Eliopoulos, and G.T. Papadoulis. 2001. Distribution and Migration of Insect and Mites in Flat Storage containing Wheat. *Phytoparasitica* 29(5) : 379-392.
21. Tuma, D., Sinha, R.N., Muir, W.E., Abramson, D., 1990, Odor Volatiles Associated with Mite- Infested Bin-Stored Wheat. J. Chem.Ecol. 16, 713- 724.
22. Voorhost, R and Varekamp, H. 1969. House dust mites at atop and the house dust mites. Staflen Science Publishing Company. Leiden. Pp. 45-52.
23. Wagner, R. 2004. Storage mites. Lboklin Press. Luxemburg. Pp. 11-12.