



THE MODULE HANDBOOK

FACULTY OF BIOLOGY

Animal Microtechnics

Module code	BID 20705IUP
Module level	2 nd year of Undergraduate Program in Biology
Abbreviation, if applicable	-
Sub-heading, if applicable	-
Courses included in the module, if applicable	-
Semester/term	odd
Module coordinator(s)	Dr. Susilo Hadi, M.Si.
Lecture(s)	<ol style="list-style-type: none">1. Dr. Susilo Hadi, M.Si.2. Dr. Bambang Retnoaji, M.Sc.3. Dr.med.vet. Hendry TSSG Saragih, M.P.4. Zuliyati Rohmah, M.Si., Ph.D.
Language	English
Classification within the Curriculum	Elective course
Teaching format/class hours per week during the semester	<p>This course is organized in 1 class and planned to have 13 to 14 teaching weeks and 2- 3 weeks of examination for teaching session. The Teaching session is scheduled on Monday at 11-12 am. The classroom used for this course is determined by the head of study program and can be changeable every semester due to classroom availability. Laboratory session is designed in a laboratory with maximum 12 students each group. It is held in Animal Structure and Development Laboratory. The number of the group can be adjusted if the class members are more than 12 students. Each group is scheduled to perform laboratory work in 5 days in a row (Monday to Friday). In 5 days, every groups have to do Paraffin method, Smear Method, Spread Method, Supravital Method, and Whole Mount Method. A final test of laboratory session will be held after all group are finished to carry out the laboratory work.</p>
Workload	Estimated working hour: 10,5 hours/week.
Credit points	1-1 credits
Requirements	Animal Physiology(BIB 20801IUP), Ecology(BIB 20302IUP)
Learning goals/ competencies	<p>This course supports Program Learning Outcome (PLO) number 5, which is:</p> <p>The students will be able to design and to conduct</p>



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biological research both individually or in a team, and then to analyze as well as to interpret the data and to form conclusions based on it. (S, C)

Particularly Performance indicator number 2, which is:
The students have been well equipped for basic biological research

To support the attainment of those PLO 5.2, Animal Microtechnics Course has course learning outcome as follows:

- 1. Knowledge and understanding**
Students who had successfully completed this subject would gain their knowledge and their understanding about techniques in laboratory and its applications to do either basic or development research, specially histological structure based research.
- 2. Ability/intellectual skills**
Students who had successfully completed this subject would be able to sharpen their ability and skill to develop microscopy analytical based research methods.
- 3. Practice skills:**
Students who had successfully completed this subject would be able to:
 - a. Use the microtechnique as a basic method to do a research.
 - b. Provide practice facilities of this subject at some levels of education.
- 4. Managerial and transferable skills:**
Students who had successfully completed this subject would be able to:
 - a. Either work individually or in a team
 - b. Analyse the research data
 - c. Gain their time management.
 - d. Develop this subject by doing a scientific study research.
- 5. Attitude:**
Students who had successfully completed this subject are capable:
 - a. To be confident for their ability to analyze based on the subject they learnt.
 - b. To work with others to make a better research with a better result.
 - c. To manage the time and make it efficient.

Content

Animal microtechnique is a subject which learn about animal tissues preparation techniques for microscopic



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	<p>study. The topics of teaching session covers:</p> <ol style="list-style-type: none">1. Introduction2. Fixation and Fixatives3. Sectioning Methods4. Paraffin Method5. Dye and staining protocols,6. Smear method, Strectched method, and Whole mount method7. General and Special Staining method8. Staining the cell's substances9. Methods for histological preparation and staning of bone and cartilage10. Immunohistochemistry11. In Situ Hybridization12. Photomicrography and data processing technique for photography
Study/exam achievements	<ol style="list-style-type: none">1. Theory<ol style="list-style-type: none">a. Midterm: 40%b. Final examination: 40%c. Presentation, attendance, and activity: 20%2. Laboratory work<ol style="list-style-type: none">a. Laboratory activity: 20%b. Laboratory report: 35%c. Final test: 30%
Forms of media	White board, laptop, specimens, LCD
Literature	<ol style="list-style-type: none">1. Brancroft, J. D. & H. C. Cook (1984). Manual of Histological Techniques. Churchill Livingstone. Medical Division of Longman Group Limited.2. Cook, Fimit, H. C. (1974). Manual of Histological Demonstration Techniques. Butterworths & Co. (Publisher) Ltd. London.3. Drury, R.A.B.& E.A. Wallington (1976). Carleton's Histological Techniques. Fourth ed. Oxford University Press. London4. HandariSuntoro, S. (1982). MetodePewarnaan. HistologidanHistokimia. BhataraKaryaAksara. Jakarta5. Yuehuei H. An & Kylie L. Martin. 2003. Handbook of histology methods for bone and cartilage. Humana Press Inc.