

### +The Module Handbook

Module name :	Animal Microtechnics
Module level :	-
Abbreviation, if applicable :	-
Sub-heading, if applicable :	-
Courses included in the module, if applicable :	-
Semester/ term :	<i>Even</i>
Module coordinator(s) :	Dr. Susilo Hadi, M.Si.
Lecture(s) :	<ul style="list-style-type: none"> <li>a. Dr. Susilo Hadi, M.Si.</li> <li>b. Dr. Bambang Retnoaji, M.Sc.</li> <li>c. Dr.med.vet. Hendry TSSG Saragih, M.P.</li> <li>d. Zuliyati Rohmah, M.Si., Ph.D.</li> <li>e. Luthfi Nurhidayat, S.Si., M.Sc.</li> </ul>
Language :	Indonesia
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 classromm availability.</p> <p>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).vIn 5 days, every groups have to do Parrafin 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 :	<p>This course consists of 1 credits of teaching session (theory) and 1 credit of Laboratory session.</p> <p>This course estimated working hour:</p> <p>1 credits of teaching session means 1 hours/week for class session, 1 hours/week for assignment, 1 hours/week for independent/personal activity.</p> <p>1 credit of Laboratory Session means 3 hours/week of laboratory work</p>
Credit points :	2/1 credits

Requirements :	Animal Structure and Development
Learning goals/ competencies :	<p>This course supports Program Learning Outcome (PLO) number 5, which is:</p> <p><b>The students will be able to design and to conduct 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)</b></p> <p>Particularly Performance indicator number 2, which is:</p> <p><b>The students have been well equipped for basic biological research</b></p> <p>To support the attainment of those PLO 5.2, Animal Microtechnics Course has course learning outcome as follows:</p> <ol style="list-style-type: none"> <li><b>a. Knowledge and understanding</b> 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.</li> <li><b>b. Ability/intellectual skills</b> Students who had successfully completed this subject would be able to sharpen their ability and skill to develop microscopy analytical based research methods.</li> <li><b>c. Practice skills:</b> Students who had successfully completed this subject would be able to:       <ol style="list-style-type: none"> <li>a. Use the microtechnique as a basic method to do a research.</li> <li>b. Provide practice facilities of this subject at some levels of education.</li> </ol> </li> <li><b>d. Managerial and transferable skills:</b> Students who had successfully completed this subject would be able to:       <ol style="list-style-type: none"> <li>a. Either work individually or in a team</li> <li>b. Analyse the research data</li> <li>c. Gain their time management.</li> <li>d. Develop this subject by doing a scientific study reasearch.</li> </ol> </li> <li><b>e. Attitude:</b> Students who had successfully completed this subject are capable:       <ol style="list-style-type: none"> <li>a. To be confident for their ability to analyze based on the subject they learnt.</li> <li>b. To work with othes to make a better research with a better result.</li> <li>c. To manage the time and make it efficient.</li> </ol> </li> </ol>

Content :	<p>Animal microtechnique is a subject which learn about animal tissues preparation techniques for microscopic study. The topics of teaching session covers:</p> <ol style="list-style-type: none"> <li>1. Introduction</li> <li>2. Fixation and Fixatives</li> <li>3. Sectioning Methods</li> <li>4. Paraffin Method</li> <li>5. Dye and staining protocols,</li> <li>6. Smear method, Strectched method, and Whole mount method</li> <li>7. General and Special Staining method</li> <li>8. Staining the cell's substances</li> <li>9. Methods for histological preparation and staning of bone and cartilage</li> <li>10. Immunohistochemistry</li> <li>11. In Situ Hybridization</li> <li>12. Photomicrography and data processing technique for photography</li> </ol>
Study/ exam achievements :	<p><b>Teaching Session (Theory):</b></p> <ul style="list-style-type: none"> <li>• Midterm 40 %</li> <li>• Final Examination 40 %</li> <li>• Presentation, attendance, and Activity: 20 %</li> </ul> <p><b>Laboratory session (Practical):</b></p> <ul style="list-style-type: none"> <li>• Lab Activity 20%</li> <li>• Lab Report 50%</li> <li>• Final Test 30%</li> </ul> <p><b>Final Score:</b>  (1 x Teaching Session score) + (1 x Lab. Session score)  -----  2</p>
Forms of media :	<i>White Board, Laptop, LCD Projector, Laboratory, Specimens</i>
Literature :	<ol style="list-style-type: none"> <li>a. Brancroft, J. D. &amp; H. C. Cook (1984). Manual of Histological Techniques. Churchill Livingstone. Medical Division of Longman Group Limited.</li> <li>b. Cook, Fimit, H. C. (1974). Manual of Histological Demonstration Techniques. Butterworths &amp; Co. (Publisher) Ltd. London.</li> <li>c. Drury, R.A..B.&amp; E.A. Wallington (1976). Carleton's Histological Techniques. Fourth ed. Oxford</li> </ol>

	<p>University Press. London</p> <p>d. Handari Suntoro, S. (1982). Metode Pewarnaan. Histologi dan Histokimia. Bhatara Karya Aksara. Jakarta</p> <p>e. Yuehuei H. An &amp; Kylie L. Martin. 2003. Handbook of histology methods for bone and cartilage. Humana Press Inc.</p>
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