



**THE MODULE HANDBOOK**  
**FACULTY OF BIOLOGY**  
**MASTER PROGRAMME**

**COMPARATIVE ANATOMY OF VASCULAR PLANT**

<b>Module code</b>	BIO-60605
<b>Module level</b>	1 <sup>st</sup> year of Master Program in Biology
<b>Abbreviation, if applicable</b>	-
<b>Courses related</b>	-
<b>Semester</b>	Odd
<b>Course coordinator(s)</b>	Prof. Dr. L. Hartanto Nugroho, M.Agr.Sc.
<b>Lecture(s)</b>	1. Prof. Dr. L. Hartanto Nugroho, M.Agr.Sc. 2. Prof. Dr. Issirep Sumardi 3. Dr. E. Suharyanto, M.Sc. 4. Dr. Maryani, M.Sc.
<b>Language</b>	Bahasa Indonesia and English
<b>Classification within the Curriculum</b>	Compulsory Courses for Specific Field of Interest
<b>Teaching format/class hours per week during the semester</b>	This course is organized into one class and planned to have 14 teaching weeks and 2 weeks of examination. This course also has laboratory works credits.
<b>Workload</b>	Estimated working hour: 10,5 hours/week.
<b>Credit</b>	2-1 credits
<b>Requirements</b>	BIO 10001
<b>Course Learning Outcome</b>	1. Able to master and explain basic concepts, principles, theories, facts, and biological phenomena related to the development of vascular plant internal structures.



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	<ol style="list-style-type: none"><li>2. Able to plan, conduct, report, and analyze researches about the development of vascular plant internal structures.</li><li>3. Able to correctly plan, design, conduct, and analyze researches about vascular plant internal structures.</li></ol>
<b>Syllabus</b>	Comparative Anatomy of Vascular Plant is a compulsory subject of interest in botany learning about the characters of each tissue in vascular plants and their comparisons between lower and higher vascular plants. Origin and general structures of vascular plant; Anatomy of Gymnospermae, Monocotyledonae, Dicotyledonae; Comparative anatomy of Psilophyta; Lychophyta and Spaenophyta; Pterophyta; Cycadopsida, Coniferopsida, and Gnetopsida; Pteridophyta and Gymnospermae; Gymnospermae and Angiospermae
<b>Study/exam achievements</b>	<ol style="list-style-type: none"><li>a. Midterm: 40%</li><li>b. Final examination: 40%</li><li>c. Projects: 10%</li><li>d. Assignments : 10%</li></ol>
<b>Forms of media</b>	White board, notebook, LCD
<b>Reference</b>	<ol style="list-style-type: none"><li>1. Buvat.R., 1989. Ontogeny, Cell Differentiation, and Structure of Vascular Plants, Springer-Verlag, Berlin.</li><li>2. Eames, A.J. and L.H. Mac Daniels. An Introduction to Plant Anatomy. 2nd Edition. Tata McGraw Hill Publ. Comp. LTD; Bombay, New Delhi</li><li>3. Esau, K. 1965. Plant Anatomy, 2nd Edition. Wiley Eastern Private United, New Delhi.</li><li>4. Esau, K. 1978. Anatomy of Seed Plants. 2nd Edition. Wiley Eastern LTD.</li><li>5. Fahn, A. 1990. Plant anatomy, 4th Edition. Pergamon Press. Oxford</li><li>6. Foster, A.S. and E.M. Gifford. 1984. Comparative Morphology of Vascular Plants. 2nd Edition. Freeman. New York</li><li>7. Mauseth, J.D. 1995. Botany, An Introduction of Plant Biology, 2nd edition, Saunders College Publishing USA.</li><li>8. Pandey, B.P.1982. Plant anatomy, 3rd Edition, S. Chan and Company Ltd. New York</li><li>9. Perry. J.W. and D. Morton. 1998. Photo Atlas for Botany, Wadsworth Publishing Company, USA.</li><li>10. Raven, P.H., R.F. Ever, and S.E. Eichorn. 1999. Biology of Plants, 6th edition, W.H. Freeman and Company Worth Publisher, USA.</li><li>11. Robert, A. 2002. Plant Anatomy (online)</li></ol>



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12. Vashishta, P.C. 1972. Botany for degree students Vol IV, Vascular Cryptogams (Pteridophyta). 2nd Edition. S. Chand & Co. (Pvt) LTD, Ram Nagar, New Delhi-55
  13. Vashishta, P.C. 1985. Botany for Degree Students: Pteridophyta. S. Chand & Company Ltd, Ram Nagar, New Delhi-55
  14. Vashishta, P.C. 1985. Botany for Degree Students: Gymnospermae. S S. Chand & Company Ltd., Ram Nagar, New Delhi-55
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