

Module Handbook

Module designation	<i>Tissue Culture Technique (course code MPB 4141)</i>
Semester(s) in which the module is taught	6
Person responsible for the module	<i>Dr. Zulfa Zakiah, & Mukarlina, M.Si</i>
Language	<i>Bahasa Indonesia</i>
Relation to curriculum	<i>elective</i>
Teaching methods	<i>lecture and lab works</i>
Workload (incl. contact hours, self-study hours)	<p><i>(Estimated) Total workload: 170 minutes x 3 unit x 16 = 8,160 minutes (136 hours)</i></p> <p><i>Contact hours (please specify whether lecture, exercise, laboratory session, etc.):</i></p> <p><i>lecture: every Thursday, 09:30 - 12:00</i></p> <p><i>laboratory session: Wednesday, 08:00 - 11:00</i></p> <p><i>Laboratory practice, specified in hours¹: 170 minutes x 16 session = 2,720 minutes (45 hours)</i></p>
Credit points	<i>3 unit</i>
Required and recommended prerequisites for joining the module	<i>Plant Physiology (course code MPB 3225)</i>

¹ When calculating contact time, each contact hour is counted as a full hour because the organisation of the schedule, moving from room to room, and individual questions to lecturers after the class, all mean that about 60 minutes should be counted.

<p>Module objectives/intended learning outcomes</p>	<p>Knowledge: Mastering and being able to apply the basic concepts and scientific methods of mathematics, physics, and chemistry that apply to the branch of biology with the specialty of tropical wetlands.</p> <p>First general skills: Able to work in teams and communicate actively orally and in writing in the field of biological sciences.</p> <p>Second general skills: Able to think creatively and innovatively in developing entrepreneurship in the field of biology</p> <p>Specific skill: Mastering biological instruments and methodologies and being able to apply them in the management of tropical wetland resources.</p>
<p>Content</p>	<p>Tissue culture techniques learn about the basic concepts of tissue culture, laboratory and tissue culture equipment, aseptic techniques, tissue culture media, organ culture, callus culture, suspension culture, haploid plant culture and protoplast culture and the production of secondary metabolites through tissue culture. Tissue culture techniques use the “Project Based Learning” (PjBL) learning method, where students work on projects-based plant propagation projects. Students work on plant propagation projects in groups in practicum activities. Project work begins with preparing a project proposal in the form of mini research until the preparation of the project report. Every week each group presents a progress report progress report.</p>
<p>Examination forms</p>	<p>Written test</p>
<p>Study and examination requirements</p>	<p>Re-registration and 75% attendance.</p>

Reading list	<ol style="list-style-type: none"> 1) <i>Bhojwani, S.S. and P.K. Dantu. 2013. Plant Tissue Culture: An Introductory Text. Springer. New Delhi</i> 2) <i>Goerge, E.F., M.A. Hall and G.J. De Klerk. 2008. Plant Propagation by Tissue Culture. 3rd Edition. Volume 1. The Background. Springer. Netherlands.</i> 3) <i>Loyola-Vargas, V.M and F. Vazquez-Flota. Plant Cell Culture Protocols: Methods in Molecular Biology. 2nd Edition. Humana Press. New Jersey.</i> 4) <i>George, EF and Sherrington PD, 1984, Plant Propagation by Tissue Culture, Handbook and Directory of Commercial Laboratories, Exergetics Ltd, Eversley, Basingstoke, England</i> 5) <i>Dodds, HJ and Roberts, LW, 1985, Experiments in Plant Tissue Culture, Cambridge University Press, Cambridge</i> 6) <i>Srivastava, P.S., A. Narula and S. Srivastava. 2004. Plant Biotechnology and Molecular Markers. Anamaya Publishers. New Delhi.</i> 7) <i>Mohan Jain, S. and S.J. Ochatt. 2010. Protocols for In Vitro Propagation of Ornamental Plants. Humana Press Inc. London.</i> 8) <i>Dixon, RA and Gonzales, RA, 2006, Plant Cell Culture: A Practical Approach, IRL Press, Oxford, Washington DC.</i>
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