

Module Descriptions

Module designation	Plant Biochemistry (course code MPU 2238)
Semester(s) in which the module is taught	4 st semester of Bachelor Programme in Biology
Person responsible for the module	1. Dr. Elvi Rusmiyanto, S.Si., M.Si.
Lecture (s)	1. Dr. Elvi Rusmiyanto, S.Si., M.Si. 2. Dr. Zulfa Zakiah, S.Si., M.Si
Language	Indonesia
Names of other study programmes with which the module is shared	-
Relation to curriculum	Elective course
Teaching methods	Collaborative learning, discussion, lecture
Workload (incl. contact hours, self-study)	Total workload: 4.38 ECTS Lecture: 26,6 hours (0,99 ECTS) Assignment: 46.5 hours (1.72 ECTS) Self-study: 44.9 hours (1.67 ECTS) Self-study hours are estimation numbers of hours; each student will approach studying in different ways.
Credit points	2 credits
Required and recommended prerequisites for joining the module	-
Module objectives/intended learning outcomes	Intended Learning Outcomes (ILO) Knowledge (ILO-2) Able to integrate and apply biological science and other scientific fields that support the development of biological science. General Skill (ILO-3) Able to collaborate effectively within a team and to communicate actively, both orally and in writing, in the domain of biology. Course learning outcomes (CO) CLO 8. The ability to analyze the relationship between the structure and function of the cells, tissues, and organs that constitute living organisms. CLO 17. The ability to collaborate within a team to successfully complete case studies or projects in the field of biology and to present the findings effectively.
Content	Introduction, Primary plant metabolism and its products, Secondary metabolism and its products, Terpenoids (essential oils and non-essential oil terpenoid compounds), Alkaloids, Flavonoids, Steroids, Qualitative and quantitative biochemical methods, Other important natural compounds.
Examination forms	Theory 100% a. Midterm (written test) 30% b. Final Exams (written test) 40% c. Assignment (presentation, literature review) 20% d. Activity (individual quiz or discussion activity) 10%

Study and examination requirements	75% attendance
Reading list	1. Heldt, H.-W., & Piechulla, B. (2021). <i>Plant Biochemistry</i> (5th ed.). Academic Press. 2. Dewick, P. M. 2009. <i>Medical Natural Products : A Biosynthesis Approach</i>, John Wiley and Sons Ltd. Chichester. 3. Leland J. Cseke, Ara Kirakosyan, Peter B. Kaufman, Sara L. Warber, James A. Duke, and Harry L. Brielmann, 2006, <i>Natural Products from Plants</i>. Second Edition. Taylor & Francis Group. CRC Press. Boca Raton. 4. Garrett, R. H and C.M. Grisham. 2009. <i>Biochemistry</i>. 5th edition. Brooks/Cole Cengage Learning. Virginia 5. Gandjar, I. G dan A. Rohman. 2008. <i>Kimia Farmasi Analisis</i>. Pustaka Pelajar. Yogyakarta 6. Corrado Tringali, 2004, <i>Sources Isolation, characterisation and biological properties</i>. Taylor & Francis Inc. New York. 7. Sherma, J. 2003. <i>Basic TLC Techniques, Materials, and Apparatus</i>. In <i>Handbook of Thin-Layer Chromatography</i>. Third Edition. edited by Joseph Sherma and Bernard Fried. Marcel Dekker, Inc. New York. 8. Bonner, J., & Varner, J. E. (Eds.). (2012). <i>Plant biochemistry</i>. Elsevier.