

Module Handbook

Module Name:	Phytochemistry
Module Level:	Bachelor
Abbreviation, if applicable:	Lecture FAB303
	Practical Work FAB306
Sub-heading, if applicable:	
Courses included in the module, if applicable:	
Semester/term:	5 or 6 / Third year
Module coordinator(s):	Dr. Achmad Fuad Hafid, MS., Apt.
Lecturer(s):	Dr. Achmad Fuad Hafid, MS., Apt. Drs. Herra Studiawan, MS., Apt. Dra. Rakhmawati, M.Si., Apt. Suciati, S.Si, M.Phil., PhD., Apt. Dr. Aty Widyawaruyanti, MSi., Apt Dr. Wiwied Ekasari, M.Si., Apt. Dr.Idha Kusumawati, S.Si., M.Si., Apt. Neny Purwitasari, S.Farm., MSc., Apt. Lusiana Arifianti, S.Farm., M. Farm., Apt. Rr. RetnoWidyowati, SSi., M.Pharm.,PhD
Language:	Bahasa Indonesia
Classification within the curriculum:	Compulsory Course
Teaching format/class hours per week during the semester:	Lecture 100 minutes lectures, 13 lecture classes/semester
	Practical Work 100 minutes practical work classes, 13 practical work classes /semester
Workload:	Lecture Total 22 hours a semester
	Practical Work Total 22 hours a semester
Credit Points:	Lecture 2
	Practical Work 1
Requirements:	
Learning goal/competencies:	Knowledge – To understand the concept of phytochemistry: chemical structures of compounds, identification and isolation of compounds
	Skills – To demonstrate an ability to creativity and cooperative. – To demonstrate an ability to active learning (discuss new information) for upgrading knowledge. – To demonstrate an ability to critical thinking and comprehensive and scientifically.

	<p>Competence</p> <p>– To understand the concept of phytochemistry and application for phytochemistry screening, extraction, isolation, identification, and biosynthesis of secondary metabolites from natural products.</p>
Content	<p>Lecture</p> <p>Secondary metabolites (isolation, structure, and biosynthesis) and analyses of secondary metabolites (screening and identification).</p>
	<p>Practical Work</p> <p>Extraction of plant material, phytochemical screening by using thin layer chromatography and staining reagents, isolation of secondary metabolite by column chromatography and structure determination of compounds by NMR.</p>
Study/exam achievements:	<p>Lecture</p> <p>Student are considered to be competent and pass if at least get 50% of maximum mark of the exams based learning.</p> <p>Final score is calculated as follow :</p> <p>50% Exam I + 50% Exam II</p> <p>Final index is defined as follow :</p> <p>A : ≥ 75</p> <p>AB : 70 – 74,9</p> <p>B : 65 – 69,9</p> <p>BC : 60 – 64,9</p> <p>C : 55 – 59,9</p> <p>D : 40 – 54,9</p> <p>E : <40</p>
	<p>Practical Work</p> <p>Student is considered to be competent and pass if at least get 50% of maximum mark of the exams based learning.</p> <p>Final score is calculated as follow :</p> <p>50% daily practice + 50% Exam</p> <p>Final index is defined as follow :</p> <p>A : ≥ 75</p> <p>AB : 70 – 74,9</p> <p>B : 65 – 69,9</p> <p>BC : 60 – 64,9</p> <p>C : 55 – 59,9</p> <p>D : 40 – 54,9</p> <p>E : <40</p>
Forms of Media:	LCD projector, Jeol NMR Instrument, Buchi Sepacore, rotary evaporator, UV detector, and laboratory glasswares
	<ol style="list-style-type: none"> 1. Atul Shirkhedkar, S.J. Surana, 2008, Pharmacognosy and Phytochemistry, Pragati Books PVT, Ltd, Abhyudaya Pragati, 1312 Shivaji Nagar, PUNE. 2. Harry HS Fong, 1978, <i>Phytochemical Screening</i>, Chicago College 3. Robinson, T, 1983, <i>The Constituents of Higher Plants</i>, Their

	<p>Chemistry and Interrelationships, Fifth Edition, Cordus Press, North Amherst.</p> <ol style="list-style-type: none"> 4. Kelompok Kerja Ilmiah Yayasan Pengembangan Obat Bahan Alam Phyto Medica, 1991, <i>Pedoman Pengujian dan Pengembangan Fitofarmaka, Penapisan Farmakologi, Pengujian Fitokimia dan Pengujian Klinik</i>, Pengembangan dan Pemanfaatan Obat Bahan Alam 5. Harbone, 1973, <i>Phytochemical Methods, A Guide to Modern Technique of Plants Analysis</i>. 6. Field, LD., Sternhell, S., Kalman, JR. <i>Organic Structures from Spectra</i>. 5th edition Wiley:Brisbane, 2013, pp 34 – 70 7. Camel, V., Extraction Methodologies: General Introduction in <i>Handbook of Chemical and Biological Plant Analytical Methods</i>. Hostettmann, K. Eds. Volume 1, Wiley: Chichester, 2014, pp 17 – 42 8. McDonal, PD and Bidlingmeyer, BA., Strategies for successful preparative liquid chromatography in <i>Journal of Chromatography Library: Preparative liquid chromatography</i>. Bidingmeyer, BA., Eds, Elsevier. Amsterdam, 1991, Vol 38 pp1 – 95
Notes	Students wish to enroll in this course should have taken pharmacognosy.