



UNIVERSITAS SEBELAS MARET
FACULTY OF TEACHER TRAINING AND EDUCATION
BACHELOR OF BIOLOGY EDUCATION STUDY PROGRAM

Building D 3rd Floor FTTE UNS Jl Ir. Sutami No. 36 A Ketingan Surakarta 57126 Indonesia

E-mail: biologi@fkip.uns.ac.id; Website: <https://biologi.fkip.uns.ac.id/en/>

Ecology

Undergraduate Programme in Biology Education

Module Handbook

Module Name	Secondary metabolites (Metabolit sekunder)																							
Module level	Undergraduate Programme																							
Course Code	02013142019																							
Abbreviation, if applicable	-																							
Courses included in the module, if applicable	-																							
Semester/Term	5 th																							
Module coordinator (s)	Dr. Ir. YUDI RINANTO M.P.																							
Lecturer (s)	Dr. Ir. YUDI RINANTO M.P.																							
Language	Bahasa Indonesia (Indonesian Language)																							
Classification within the curriculum	Compulsory/Elective																							
Teaching format/class hours per week during the semester	Direct instruction/face to face/blended learning: 2 x 50 minutes / Week: lecture, discussion Structured Activity: 2 x 60 minutes / Week (Through the case method with analysis of journal articles, current issues and problems of Ecology, through the project based learning to research on ecology) Self-study Activity: 2 x 60 minutes / Week (Students learn current issues and problems of ecology) Practiucum in field: 1 x 170 minutes/week/topic																							
Workload	<table><tr><th>Type</th><th>CSU</th><th>Face to Face</th><th>Structured Activities</th><th>Self-study</th></tr><tr><td>T</td><td>1</td><td>13.3 h (0.44 ECTS)</td><td>16 h (0.53 ECTS)</td><td>16 h (0.53 ECTS)</td></tr><tr><td>P</td><td>1</td><td></td><td>45.3 (1.5 ECTS)</td><td></td></tr><tr><td>Total</td><td>2</td><td colspan="3">90.6 h (3 ECTS)</td></tr></table>				Type	CSU	Face to Face	Structured Activities	Self-study	T	1	13.3 h (0.44 ECTS)	16 h (0.53 ECTS)	16 h (0.53 ECTS)	P	1		45.3 (1.5 ECTS)		Total	2	90.6 h (3 ECTS)		
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Credit Point	2 CSU (3 ECTS)
Requirements	This course studies the biosynthesis of secondary metabolic compounds in plants. The group of compounds to be discussed includes groups of compounds: alkaloids, flavonoids, terpenoids, glycosides, tannins, saponins.

Learning Outcome	PLO 1 Demonstrating basic knowledge about science and mathematics related to biological problems and learning PLO 2 Use basic biological knowledge and biology branches to solve biological problems PLO 5 Integrating appropriate technology and information/data in the completion of regular assignments in biology and learning PLO 6 Demonstrate the ability to work in the laboratory and in the field by paying attention to aspects of work safety, environmental issues, social and ethical issues PLO 7 Solve problems within the scope of work and present ideas Argumentatively PLO 8 Communicate, both orally and in writing effectively by using the right communication media on target. PLO 9 Apply managerial and leadership principles in multi-disciplinary and cultural teamwork PLO 10 Demonstrate a responsible attitude towards work, creative, conscientious, disciplined, tolerant, adaptive, independent and always lifelong learning. CLO 1
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Attribute Soft skill	1. Able to think conceptually, analitically, and logically Have good communication skills												
Study/exam achievements	Students are considered to complete the course and pass if they obtain at least 60% of maximum final score. The final score (FS) is calculated based on the following ratio: <table border="1"> <tr> <th>Assessment</th><th>Proportion</th></tr> <tr> <td>Task/presentation/laboratory activity</td><td>30%</td></tr> <tr> <td>Participation</td><td>20%</td></tr> <tr> <td>Mid-Term Test</td><td>20%</td></tr> <tr> <td>Final Exam</td><td>30%</td></tr> <tr> <td>Final Score</td><td>100%</td></tr> </table>	Assessment	Proportion	Task/presentation/ laboratory activity	30%	Participation	20%	Mid-Term Test	20%	Final Exam	30%	Final Score	100%
Assessment	Proportion												
Task/presentation/ laboratory activity	30%												
Participation	20%												
Mid-Term Test	20%												
Final Exam	30%												
Final Score	100%												
Learning Methods	Lecture, discussion, and workshop												
Form of Media	Power point slide, multimedia, specimen												
Literature (primary references)	1. Evans, W.C., Trease and Evans Pharmacognosy, 15th Edition, W.B. Saunders, Edinburg-London-New York-Philadelphia- St. Loui-Sydney-Toronto, 2002 2. Samuelsson, G., , Drugs of NaturalOrigin, A Textbook of Pharmacognosy, 4th revised edition, Apotekarsocieteten, Swedish Pharmaceutical Press, Stockholm, Sweden, 1999												



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Assessment

Presentation Assessment Rubric

Dimension	Weight (%)	Score	WxS	Comments
Material mastery	30			
The accuracy of solving the problem	30			
Communication skills	20			
Ability to deal with questions	10			
Props/presentations	10			
Final Score	100			

DIMENSION	Scale				
	Very Good	Good	Sufficient	Deficient	Very Deficient
	≥85	71-84	60-70	50-60	<50
Organization	Well organized by presenting facts that are supported by examples that have been analyzed according to the concept	well organized and present convincing facts to support conclusions.	The presentation has focus and presents some evidence to support the conclusion	Sufficiently focused, but insufficient evidence to be used in drawing conclusions	There is no clear organization. Facts are not used to support statements.
Content	Content can inspire listeners to develop their minds.	Contents are accurate and complete. Listeners get new insights about the topic.	Content is generally accurate, but incomplete. Listeners can learn some implied facts, but they don't add new insight into the topic	The content is less accurate, because there is no factual data, it does not add to the listener's understanding	The content is inaccurate or too general. Listeners don't learn anything or are sometimes misled.
Presentation Style	Speak with passion, transmit enthusiasm and enthusiasm to listeners	The speaker is calm and uses proper intonation, speaks without relying on notes, and interacts intensively with the listener. The speaker always makes eye contact with the listener.	In general the speaker is calm, but with a flat tone and quite often relies on notes. Sometimes eye contact with the listener is ignored.	Based on the notes, no ideas are developed outside the notes, the sound is monotonous	The speaker is anxious and uncomfortable, and reads notes rather than speaking. Listeners are often ignored. There is no eye contact because the speaker is looking more at the whiteboard or screen.



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PAPER ASSESSMENT RUBRIC

ASPECT	INDICATOR	SCORE
Background	All the descriptions in this section lead to the main problem and writing of the paper	4
	Just get to the point	3
	Irrelevant general statements	2
	No background	1
The aim of writing	The formulation of the purpose of writing is clear, pithy and systematic	4
	The formulation of the goal is long, but the goal is clear enough	3
	The formulation of objectives is stated in general and the purpose is not clear	2
	No goals written	1
Formulation of the problem	Problems are formulated in a clear, pithy and systematic way	4
	The formulation of the problem is prolonged, but the purpose is quite clear	3
	The formulation of the problem is stated in general terms and the purpose is not clear	2
	There is no written problem formulation	1
Writing Systematics	The systematics of logical writing follows the rules of writing scientific reports	4
	Systematic writing logical but not sequential	3
	Systematic writing is not logical and not in sequence	2
	There is no good writing systematic	1
Discussion	A systematic, logical, original and comprehensive discussion and presents the latest research results	4
	A systematic, logical, original and comprehensive discussion but does not present the latest research results	3
	The discussion is not systematic, logical and comprehensive and does not present the latest research results	2
	Short discussion and copy paste from the internet	1
Conclusion	Conclusions are drawn based on the discussion and the data presented in a clear, concise and systematic way	4
	Conclusions are not drawn based on the discussion and the data presented in a clear, concise and systematic way	3
	Conclusions are not drawn based on the discussion and the data presented are less clear, less concise and less systematic	2
	No conclusion written	1
Reference	Bibliography from trusted sources, following the rules of writing and up to date	4
	Bibliography from trusted sources, following the rules of writing, but not up to date	3
	The bibliography is not from a trusted source, does not follow the rules of writing and is not up-to-date	2
	There is no bibliography	1

CPL Assessment Instrument 06/LO 06 Have knowledge related to biological research methodology and its learning, can apply and publish the results



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Assessment

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Dimension	Weight (%)	Score	WxS	Comments
Task/presentation/ Laboratorium activity	30		30%	
Participation	20		20%	
Mid-Term Test	20		20%	
Final Exam	30		30%	
Final Score	100%			

Task

DIMENSION	Scale				
	Very Good	Good	Sufficient	Deficient	Very Deficient
	≥85	71-84	60-70	40-59	<40
Organisation	Well organized by presenting facts that are supported by examples that have been analyzed according to the concept	well organized and present convincing facts to support conclusions.	The presentation has focus and presents some evidence to support the conclusion	Sufficiently focused, but insufficient evidence to be used in drawing conclusions	There is no clear organization. Facts are not used to support statements.
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Task of Portofolio

Aspect	Item Indicator	Very Good	good	Sufficient	deficient	Very Deficient
		≥85	71-84	60-70	40-59	<40
	Right concept	Concepts wrote according to demands	Concepts wrote according to demands	Concepts wrote according to demands	Concepts wrote according to demands	The written concept does not match the demands
		Followed by a logical explanation	Followed by a logical explanation	Followed by an illogical explanation	Followed by an illogical explanation	Followed by an illogical explanation
		Focus and specific	Lack of focus and specific	Lack of focus and specific	Not focused and specific	Not focused and specific
	Detailed understanding	There is a related explanation	There is a related explanation	There is a related explanation	Lack of related explanation	No related explanation
		The order of ideas is very orderly	The order of ideas is very orderly	The order of ideas is not organized	The order of ideas is not organized	The order of ideas is not organized
		Clear	Unclear	Unclear	Unclear	Unclear
	Write down all the necessary information	Complete supporting information	Complete supporting information	Complete supporting information	Incomplete supporting information	Supporting information does not match
		Information as needed	Information as needed	The information does not match your needs	The information does not match your needs	The information does not match your needs
		Information arranged logically	Information arranged less logically	Information arranged less logically	Information arranged less logically	Information arranged less logically
	equipped with data or pictures	Complete data	Complete data	Complete data	Incomplete data	Incomplete data
		Picture exists	Picture exists	The image does not exist	The image does not exist	The image does not exist
		Flowchart is available	The flowchart does not exist	The flowchart does not exist	The flowchart does not exist	The flowchart does not exist
	High level of thinking	Integration of analysis, synthesis, and evaluation or create	Integration of analysis, synthesis, and evaluation	Integration of analysis, synthesis	Integration of analysis	Integration of analysis
		Hierarchy right	Hierarchy right	Hierarchy right	Hierarchy is not correct	Hierarchy is not correct
	Sentence structure	PUEBI compliant	PUEBI compliant	Found not suitable for PUEBI	Not compatible with PUEBI	Not compatible with PUEBI
		Correct punctuation	Incorrect punctuation	Incorrect punctuation	Incorrect punctuation	Incorrect punctuation
	There is a reference	Appropriate reference	Inappropriate reference	Inappropriate reference	Inappropriate reference	Inappropriate reference
		Complete as required	Not complete	not complete	not according to demands	Not complete and not according to demands
	Writing Organization	Organized according to a logical mindset	Organized according to a logical mindset	Not regular according to a logical mindset	Not regular according to a logical mindset	Disorganized according to a logical mindset
		Focus	Less focus	Less focus	Not focus	Not focus



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	Clear and communicative writing	Easy to understand	Easy to understand	Easy to understand	Not understood	Not understood
		The plot is clear	The plot is clear	The plot is not clear	The plot is not clear	The plot is not clear
		Don't make double assumptions	It was found that there was a double assumption	It was found that there was a double assumption	It was found that there was a double assumption	give rise to double assumptions

Participation

Participation assesment by direct observation in interaction on class meeting.

Aspect	Item Indicator	Very Good	Good	Sufficient	Deficient	Very Deficient
		≥85	71-84	60-70	40-59	<40
	Qustion	v	v	v	v	
	Explain	v	v			
	Sugestion	v				
	Not agrre with reason	v	v	v		
	Aggre with reason	v	v	v	v	v