Diversity and Classification of Cryptogamae
Undergraduate Programme In Biology Education   **Module Handbook**

Module Name	Diversity and Classification of Cryptogamae (Keanekaragaman dan Klasifikasi Cryptogamae)
Module level	Undergraduate Programme
Course Code	02013243002
Abbreviation, if applicable	DCC
Courses included in the module, if applicable	-
Semester/Term	2nd
Module coordinator (s)	Dr. Harlita, M. Si.
Lecturer (s)	Dr. Muzzazinah, M.Si Nurmiyati, S.Pd, M.Si
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**: 26.7h/week : lecture, discussion, laboratorium activity, field study **Structured activity**: 32h/week (Through the analysis of journal articles, students learn to analyze the embryonic development of cryptogamae plants, diversity, and classification of phylum in Cryptogamae) **Self-study activity**: 32h/week (Students learn various characteristics of cryptogamae from various sources) **Practicum in laboratory**: Laboratory activity = 10 topic/week x 170 minutes = 1700 minutes Hour = 1700 minutes/60 minutes = 28.3h
Workload	

Type	CSU	Face to Face	Structured Activities	Self-study
T	2	26.7h (1.00 ECTS)	32h (1.21 ECTS)	32h (1.21 ECTS)
P	1	28.3h (1.07 ECTS)		
Total	3	119h (4.5 ECTS)		

Credit Point	3 CSU (4.5 ECTS)
Requirements	Has taken courses in General Biology
Learning goals/competencies	PLO 2 They are able to apply the basic advance knowledge in biology to solve the problem in biology. PLO 6 They are able to select and analyze the proper technology and information or data in accomplishing tasks. CLO 1 Applying the concepts and principles of diversity, identification, description and classification of cryptogamae plants in each taxon selected from Algae, Jamur, Lichen, Briophyta and Pteridophyta through practicum. (LO 2, LO 6) CLO 2 Applying the classification of taxon members Algae, Jamur, Lichen, Briophyta and Pteridophyta based on the equations and differences in morphological characteristics observed. (LO 2, LO 6) CLO 3 Designing cryptogamae diversity based-activities project. (LO 2, LO 6) CLO 4 Communicating the results of project-based diversity of Cryptogamae in oral (video), and writing (poster/report). (LO 2, LO 6) **PLO And CLO Mapping**

CLO / PLO	PLO 1	PLO 2	PLO 3	PLO4	PLO 5	PLO 6	PLO 7	PLO 8	PLO 9	PLO 10
CLO 1		*				*				
CLO 2		*				*				
CLO 3		*				*				
CLO 4		*				*				

Content	This course studies the origin of low-level plant life (Cryptogamae) which includes characterization, classification, naming, diversity, kinship and economic value of lower-level plants. In this course, the characters of lower plants (Cryptogamae) are studied; the taxonomic position of lower plants (Cryptogamae) among other organisms; the basics of the classification of lower plants (Cryptogamae); classification of lower plants (Cryptogamae); kinship and evolution of lower plants (Cryptogamae) with other plant groups; character and classification of members of Algae, Lichenes, Fungi, Bryophyta and Pteridophyta; economic potential and benefits of low-level plants (Cryptogamae). Cryptogamae diversity and classification practicum examines: 1. Schizophyta 2. Thallophyta 3. Phaeophyta 4. Rhodophyceae 5. Fungi 6. Lichenes 7. Bryophyta 8. Pteridophyta
Attribute Soft skill	1. Able to think conceptually, analytically, and logically 2. 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 grade. The final grade (FS) is calculated based on the following ratio:

Aspect	(%)
Task/quiz/presentation / laboratory activity	30
Participation	10
Mid-Term Test (Team Based Project)	30
Final Exam	30
Final Score	100

Form of Media	Powerpoint slide, learning video, specimen

Literature (primary references)	1. Simpson MG. (2010). *Plant Systematics second edition*. Academic Press. http://www.elsevierdirect.com/companions/9780123743800
	2. Muzayyinah. (2006). . *Diversity and Classification of Vascular Plants*. Solo: UNS Press
	3. Yang, L., Wang, Z., Zhou, L., Ma, Y., Wang, Z., Ying, T., ... & Xu, W. (2012). Response and bioindicator of bryophyte and lichen as cryptogamae plants to environmental change. *Journal of Nanjing Forestry University (Natural Sciences Edition)*, *36*(3), 137-143.
	4. SETYAWAN, A. D., SUTARNO, S., & SUGIYARTO, S. (2013). Species diversity of Selaginella in Mount Lawu, Java, Indonesia. *Biodiversitas Journal of Biological Diversity*, *14*(1).
	5. MUNAWAROH, E., & YUZAMMI, Y. (2019). Species diversity of Orchids in Bukit Barisan Selatan National Park, Lampung, Indonesia. *Biodiversitas Journal of Biological Diversity*, *20*(1), 343-349.
	6. Alamsyah, M. R. N., & Pamungkas, S. J. (2021). The Diversity of Pteridophyta at Mountain Telomoyo as Biology Learning Resources. *Indonesian Journal of Biology Education*, *3*(2), 18-27.
	7. Puspitasari, R., Suedy, S. W. A., & Haryanti, S. (2018). Plant diversity based on pollen and spores morphology from sediment lake of Kedung Ombo Purwodadi. NICHE Journal of Tropical Biology, *1*(2), 35-41.

Asessment
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	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.
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.

TASK 1 (Short Communication)

- 1 Species of any of the observable species in the Cryptogamae.
- Wet/dry collection for observation.
- Characterization through observation: Morphology, Anatomy, Histology, Molecular, Benefits, Ecology
- Review of Journals and Textbooks
- Photo
- Scientific writing

Format of Articles in Reputable Scientific Journals:
(1) Title,
(2) Identity or Authorship,
(3) Abstract and keywords (Key words),
(4) Introduction and Literature Study,
(5) Research Methods/Methods,
(6) Results and Discussion,
(7) Conclusions and Suggestions,
(8) Acknowledgement), and
(9) Bibliography.

Noted:
Consulted, Collected 1 week before the presentation schedule. Published in FB, Twitter, IG, study

program website, or magazines.

Rubric for Review Article

No	Assessment Aspect / Score		Article 1		Article 2		Article 3	
			High 6-10	Low 1-5	High 6-10	Low 1-5	High 6-10	Low 1-5
1.	Articles come from the indexed journals in the last 3 years.							
2.	Articles related to the theme of learning chemistry							
3.	The number of articles at least discusses learning chemistry							
4.	Accuracy in summarizing the important parts of the abstract of the article							
5.	Accuracy of summarizing important thought concepts in the article							
6.	Accuracy of summarizing the methodology used in the article							
7.	The accuracy of summarizing the research results in the article							
8.	The accuracy of summarizing the discussion of research results in the article							
9.	The accuracy of summarizing the conclusions of the research results in the article							
10.	The accuracy of commenting on selected journal articles							
	Total score for each article summary							
	Average score obtained							

FINAL EXAM

Classification is a way of grouping and categorizing based on certain characteristics. All biologists use a classification system to group plants or animals that have structural similarities. Then, each group of plants or animals is paired with other groups of plants or animals that have similarities in other categories.

1. Why do living things on earth really need to be classified?
2. Explain the various classification systems that might be done!
3. Explain the meaning of plant identification! How to identify a plant species!
4. Explain the principles of plant nomenclature!
5. Describe the following types of plants:
    a. Holotype
    b. Lectotype
    c. Neotype
    d. Isotype
    e. Syntype
6. Explain the development of the Algae Division! Also explain the reason for the division!
7. What basis is used to separate plants, animals and fungi into different groups? Explain!

8. Explain the division of the mushroom division into several classes below it! Also explain the reason for the division!
9. Explain the symbiosis that occurs between algae and fungi to for lichen! What is the process, to form lichen?
10. Why are lichens very sensitive to pollutant emissions when compared to higher plants? Explain!
11. In general, moss plants have a small stature. It is very rare that the size is more than 50 cm. Explain why?
12. Why do we encounter so many moss plants in wet places? Give your explanation!
13. In mosses there is an alternation of generations between the sporophyte and gametophyte generations. Which of the two generations is more dominant? Explain!
14. What is the body structure of liverworts? Also explain how to reproduce!
15. Judging from the structure of the constituent tissues, which group advanced first, the liverworts or the leafworts?
16. When compared to mosses, ferns can adapt better to the terrestrial environment. Why is that?
17. Do ferns have roots, stems and leaves? Compare with caulid and philioid in mosses!
18. In the life cycle of ferns which phase is more dominant? Explain your answer!
19. What is the difference between homosporous ferns and heterosporous ferns? Explain!
20. What is the Suplir nail (Adiantum)stout cultivated as an ornamental plant group with horsetail (Equisetum)?Explain your answer!