

Course Module

Processing and Utilization Technology of Fiber Faculty of Forestry Mulawarman University

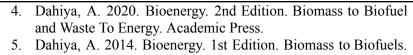
1) Module description

A Module Handbook or collection of module descriptions that is also available for students to consult should contain the following information about the individual modules:

Module name	Processing and Utilization Technology of Fiber		
Modul level, if applicable	Doctoral		
Code, if applicable	220401902P039		
Subtitle, if applicable	-		
Courses, if applicable	-		
Semester(s) in which the module is taught	The subject is available throughout all academic semesters		
Person responsible for the module	Dr. Wiwin Suwinarti, M.P.		
Lecturer	Dr. Wiwin Suwinarti, M.P. Prof. Dr. Rudianto Amirta, M.P.		
Language	Indonesia		
Relation to curriculum	Compulsory Course		
Type of teaching, contact hours	Direct instruction, discussion, and assignment		
Workload	Number of meetings per semester 16 meetings (14 meetings for learning activity, 1 meeting for mid-semester, 1 meeting for final examination) For this course, students are required to meet a minimum of 79.3 hours per semester, which consist of: - 23.33 hours for lecture - 28 hours for structured assignments - 28 hours for individual study		
Credit points	Credit points: 2 SKS / 3.2 ECTS Details: 1 Credit = 170 min / week 1 Credit = 170 min x 14 week = 2380 min / semester 1 Credit = 39.7 h / semester 1 ECTS = 25 h / Semester 1 Credit = 1.59 » 1.6 2 Credit = 1.6 x 2 = 3.2 ECTS		

Requirements according to			
the examination regulations	-		
Recommended prerequisites	-		
	Intended Learning Outcome (ILO)		
	Attitude (A)		
	1. ILO1 (A1) - Internalize scientific values, norms, and ethics		
	Knowledge (K)		
	 ILO2 (K1) - Able to synthesize knowledge acquired from research findings with novelty and its implementation ILO3 (K2) - Able to discover and develop scientific conceptions with novelty value, and able to develop scientific arguments as science solutions 		
Module objectives/intended learning outcomes	Specific Skills (SS)		
	4. ILO6 (SS1) - Able to manage data and information to support decision-making processes		
	Content Learning Outcome (CLO)		
	 CLO1: Students are able to critically analyze and synthesize advanced fiber processing technologies through the evaluation of scientific articles and research publications in fiber-based industries. ILO2 (K1). CLO2: Students are able to evaluate and discuss innovative fiber utilization technologies for bioenergy production by engaging in critical reviews of recent journal articles and case studies. ILO3 (K2). CLO3: Students are able to design and lead research projects, supported by thorough literature reviews and discussions, to contribute to advancements in sustainable fiber processing and bioenergy utilization. ILO6 (SS1). CLO4: Students are able to demonstrate ethical responsibility and sustainability awareness in fiber-based industry practices and bioenergy research. ILO1 (A1). 		
Contents	This course provides an in-depth exploration of fiber processing technologies and their utilization in various industries, including bioenergy applications. Students will gain a strong foundation in fiber properties and characteristics, enabling them to critically analyze fiber processing methods, innovations, and industrial applications. The course also emphasizes sustainability, ethical considerations, and research-driven advancements in fiber-based industries. Through scientific article reviews, case studies, and group discussions, students will develop critical thinking and problem-solving		

	skills necessary for evaluating fiber processing technologies and bioenergy utilization. Assessments include a midterm examination, research presentations, and a final examination to ensure a comprehensive understanding and application of fiber technology concepts. List below: 1. Introduction to Fiber Processing and Utilization (1st session) → CLO1 2. Properties and Characteristics of Fibers (2nd and 3rd sessions) → CLO1 3. Fiber Processing Technologies (4th and 5th sessions) → CLO1 4. Fiber Utilization in Fiber-Based Industries (6th and 7th sessions) → CLO2 5. Midterm Examination (UTS) (8th session) → Assessment 6. Fiber Utilization in Bioenergy (9th and 10th sessions) → CLO2 7. Innovations and Future Trends in Fiber Processing and Utilization (11th session) → CLO2 8. Article Discussions on Fiber Technology and Bioenergy (12th and 13th sessions) → CLO3 9. Case Studies in Industrial Applications of Fiber Processing (14th session) → CLO3 10. Research Presentation and Group Discussions (15th session) → CLO4 11. Final Examination (UAS) (16th session) → Assessment			
	Evaluation and assessment of learning achievement based on scheme 1 in the Academic Regulations of Mulawarman University:			
	N Objects of o Evaluation/Assessment:	Forms of E/A	Quantity (%)	
	1 Affective	Participation	10	
Study and examination requirements and forms of examination	2 Assignments/Case Study	Group Presentation	25	
	3 Project	Presentation	25	
	4 Mid-Semester Test	Written test	15	
	5 Final Examination	Written test	25	
	Total	•	100	
Media employed	Class, Ms. Powerpoint, Ms. Word, C	omputer, LCD, STA	ıK	
Reading list	 Kolowski, R. and M.M. Talarczyk. 2020. Handbook of Natural Fibres 2nd Edition Volume 1. Woodhead Publishing. Kolowski, R. and M.M. Talarczyk. 2020. Handbook of Natural Fibres 2nd Edition Volume 2. Woodhead Publishing. Fanguiero, R and S. Rana. 2015. Natural Fibres: Advances In Science and Technology Towards Industrial Applications. Springer. 			



Academic Press.

6. Love, J. And J.A. Bryant. 2017. Biofuels and Bioenergy. John Wiley & Sons Ltd.

- 7. Kaltschmitt, M. And H. Hofbauer. 2019. Biomass Conversion and Biorefinery. Hybrid-Springer.
- 8. Zhang, B. And Y. Wang. 2013. Biomass Processing, Conversion And Biorefinery. Nova.
- 9. Jurnal Tentang Serat, Bioenergi dan Konversi Biomassa
- 10. Additional articles which related to subjects