



BACHELOR IN FOOD & AGRICULTURAL PRODUCT TECHNOLOGY

Jl. Flora No. 1, Bulaksumur, Yogyakarta, Indonesia, 55281

Telp : +62 274 549650

Email : tphp@ugm.ac.id

Website : <https://s1tphp.ugm.ac.id/>

MODULE HANDBOOK

FERMENTATION TECHNOLOGY - LABORATORY PRACTICE

Module designation	Fermentation Technology - Laboratory Practice	
Module code	TPHP213118	
Module level	Bachelor	
Semester(s) in which the module is taught	Semester 5 / Odd Semester	
Person responsible for the module	Dian Anggraini Suroto, S.T.P., M.P., M.Eng., Ph.D.	
Language	Indonesian	
Relation to curriculum	Elective Courses	
Teaching methods	Discussion	
Workload (incl. contact hours, self-study hours)	1. Practical Work 1 credits x 170 minutes x 16 meetings = 2720 minutes = 45.33 hours = 45.33 hours/30 hours = 1.5 ECTS Total workload = 1.5 ECTS (45.33 hours)	
Credit points	1 credit / 1.5 ECTS	
Required and recommended prerequisites for joining the module	Fermentation Technology	
Module objectives/intended learning outcomes	Programme Learning Outcome (PLO)	
	PLO P2	Be able to explain microbes in food, both beneficial, pathogenic, and destructive, as well as the influence of the food system on their growth, survival, and control
	Module Learning Outcome (MLO)	



	MLO P2.13	Be able to discuss the role of environmental factors (eg water activity, pH, temperature) on cell growth and death, formation of metabolite production and biomass through the fermentation process		
Content	1. Explanation of lecture program units (SAP), lecture rules, literature, and evaluation methods. 2. Parameters when microbial growth (μ, μ_m, K_s, $Y_{x/s}$, $Y_{p/s}$) 3. Exercise questions Determination of parameters when microbial growth (μ, μ_m, K_s, $Y_{x/s}$, $Y_{p/s}$) 4. Initial test 5. Determination of parameters during microbial growth (μ, μ_m, K_s, $Y_{x/s}$, $Y_{p/s}$) 6. Determination of biomass standard curve 7. Determination of microbial growth kinetics parameters (μ, μ_m, K_s) 8. Determination of microbial growth kinetics parameters ($Y_{x/s}$, $Y_{p/s}$) 9. Determination of microbial growth kinetics parameters (μ, μ_m, K_s, $Y_{x/s}$, $Y_{p/s}$) 10. Making a report on microbial growth kinetics parameters (μ, μ_m, K_s, $Y_{x/s}$, $Y_{p/s}$)			
Examination forms	Evaluation Base	Evaluation Components	MLO	Percentage
	A. Participatory Activities	Discussion	-	-
	B. Case Study Results	Practicum Activity	MLO P2.13	65%
		Report	MLO P2.13	15%
		Midterm Exam	-	-
		Final Exam	-	-
	C. Cognitive	Skill-Based Assessment (SBA)	-	-
		Quiz	-	-
		Pre-test and post-test	MLO P2.13	10%
		Final Exam	MLO P2.13	10%
	Total		100%	
Study and examination requirements	The final grade in the module is composed of (80% project results and 20% cognitive). Students must attend 75% of the total meetings to take the exam.			
Reading list	Main: 1. Cornish-Bowden, A. (1981) Basic Mathematics for Biochemists. Chapman and Hall, London. 2. Jackson, A.T. (1990) Process Engineering in Biotechnology. Open University Press, Milton Keynes.			



	3. Pirt, S.J. (1975) Principles of Microbe and Cell Cultivation. Blackwell Scientific Publications, Oxford. 4. Petunjuk Praktikum Teknologi Fermentasi (2020). Departemen Teknologi Pangan dan Hasil Pertanian, Fakultas Teknologi Pertanian, Universitas Gadjah Mada, Yogyakarta.
Last Modified	July 31 st , 2024