



BACHELOR IN FOOD & AGRICULTURAL PRODUCT TECHNOLOGY

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MODULE HANDBOOK

UNIT OPERATION III

Module designation	Unit Operation III
Module code	TPHP212106
Module level	Bachelor
Semester(s) in which the module is taught	Semester 3 / Odd Semester
Person responsible for the module	Bangun Prajanto Nusantara, S.T.P., M.Sc. Prof. Dr. Ir. Supriyadi, M.Sc. Dr. Rini Yanti, S.T.P., MP. Prof. Dr. Ir. Chusnul Hidayat Dr. Qurrotul A'Yun, S.T.P., M.Sc. Dr. Inasanti Pandan Wangi, S.T.
Language	Indonesian
Relation to curriculum	Compulsory Courses
Teaching methods	Case-based learning
Workload (incl. contact hours, self-study hours)	- Lectures 3 credits x 50 minutes x 16 meetings = 2400 minutes = 40 hours = 40 hours/30 hours = 1.33 ECTS - Structured Assignments 3 credits x 60 minutes x 16 meetings = 2880 minutes = 48 hours = 48 hours/30 hours = 1.6 ECTS - Self-study 3 credits x 60 minutes x 16 meetings = 2880 minutes = 48 hours = 48 hours/30 hours



	= 1.6 ECTS Total workload = 4.53 ECTS (136 hours)			
Credit points	3 credits / 4.53 ECTS			
Required and recommended prerequisites for joining the module	No requirement needed			
Module objectives/intended learning outcomes	Programme Learning Outcome (PLO)			
	PLO P4	Be able to use the principles of food engineering, food preservation and processing, packaging materials and methods, cleaning and sanitation, and water and waste management		
	Module Learning Outcome (MLO)			
	MLO P4.25	Be able to use engineering principles and unit operations in raw material preparation, separation and purification to produce food products on a laboratory or pilot plant scale		
Content	1. The basic principles of operating units 2. The principles of drying 3. The principles of drying in food processing 4. The principles of Evaporation in food processing 5. The principles of evaporation in food processing 6. The principles of crystallization in food processing 7. The principles of cooling and freezing in food processing			
Examination forms	Evaluation Base	Evaluation Components	MLO	Percentage
	A. Participatory Activities	Discussion	-	-
	B. Case Study Results	Presentation	-	-
		Report	-	-
		Midterm Exam	MLO P4.25	25%
		Final Exam	MLO P4.25	30%
	C. Cognitive	Skill-Based Assessment (SBA)	-	-
		Quiz	-	-
		Midterm Exam	MLO P4.25	25%
		Final Exam	MLO P4.25	20%
		Total		100%
Study and examination requirements	The final grade in the module is composed of (55% project results and 45% cognitive). Students must attend 75% of the total meetings to take the exam.			



Reading list	Main: 1. Geankoplis, C.J., 1985, "Transport Processes and Unit Operations", Prentice Hall, Inc., Singapore 2. Singh, R.P and Heldman,D.R. 2001. Introduction to Food Engineering, Fourth Edition, Academic Press. Food Science and Technology, International Series. 3. Earle, R. L. 1983. Unit Operations in Food Processing, 2nd Edition, Pergamon Press, NY. 4. Toledo, R.T. 1981. Fundamentals of Food Process Engineering. AVI. Pbl. Westport, Connecticut: Woodhead Publishing. 5. Fellows, P. 2000. Processing Technology: Principle and Practice. Woodhead Publishing
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