

**OBJECTIVE – MODULE MATRIX**  
**BACHELOR OF FOOD AND AGRICULTURAL PRODUCT**  
**TECHNOLOGY (BFAPT)**

*Matriks Capaian Pembelajaran Luaran – Mata Kuliah*  
*Program Studi S1 - Teknologi Pangan dan Hasil Pertanian (S1 - TPHP)*



**FACULTY OF AGRICULTURAL TECHNOLOGY**  
**UNIVERSITAS GADJAH MADA**

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## Preface

The curriculum framework for higher education institutions in Indonesia undergoes regular updates, as it requires careful planning, implementation, and continuous evaluation to stay aligned with advancements in science, technology, and the arts. Additionally, curricula are tailored to meet competencies demanded by contemporary society. In Indonesia, curriculum development for higher education must adhere to the Indonesian National Qualifications Framework ([Kerangka Kualifikasi Nasional Indonesia](#), or KKNI) and the National Standards for Higher Education ([Standar Nasional Pendidikan Tinggi](#)).

To assist higher education institutions with curriculum development, the General Directorate of Learning and Student Affairs (*Direktorat Jenderal Pembelajaran dan Kemahasiswaan*) has introduced a framework that centers on defining Graduate Learning Outcomes (GLOs), or *Capaian Pembelajaran Lulusan*. These GLOs serve as the target competencies for graduates and are essential for shaping curriculum objectives. In this document, we outline the GLOs as the primary objectives for the Bachelor of Food and Agricultural Product Technology (BFAPT) program. Each module within the BFAPT curriculum has been carefully designed to align with the specified GLOs.

The GLOs of the BFAPT program are organized into four qualifications: Attitude (*sikap*), Knowledge (*pengetahuan*), General Skills (*kemampuan umum*), and Specific Skills (*kemampuan khusus*). The alignment between program modules and these competencies is presented in detail in the matrix provided in this document.



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## List of Graduate Learning Outcomes

Code	Graduate Learning Outcomes
<b>Attitude or <i>Sikap</i> (S)</b>	
S1	Show awareness of Pancasila attitudes, understanding the importance of the nation and state, and respecting cultural diversity
S2	Demonstrate social sensitivity, honesty, responsibility, self-confidence, emotional maturity, ethics, law-abiding behaviour, and awareness of lifelong learning.
<b>Knowledge or <i>Pengetahuan</i> (P)</b>	
P1	Be able to explain the structure and properties of food components / agricultural products (carbohydrates, proteins, lipids, water, other components, and food additives) and chemical changes that occur during processing
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
P3	Be able to explain the structure and properties of food components / agricultural products (carbohydrates, proteins, lipids, water, other components, and food additives) and chemical changes that occur during processing
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
P5	Be able to apply methods to assess the sensory properties of food
P6	Be able to apply the principles of food quality control and food quality assurance
P7	Be able to apply regulations needed for food products processing and marketing
P8	Be able to evaluate changes in nutrients during processing, storage, and metabolism of nutrients and bioactive components
<b>General Skills or <i>Keterampilan Umum</i> (KU)</b>	
KU1	Be able to analyze data and make decisions in order to show independent and group performance to apply knowledge in social life
KU2	Be able to argue scientifically, think logically, critically, systematically, and innovatively by utilizing information technology to produce solutions in the field of food and agricultural products technology
KU3	Be able to communicate scientifically both orally and in writing
<b>Specific Skills or <i>Keterampilan Khusus</i> (KK)</b>	
KK1	Be able to manage organizations and projects, and have the essential skills to work and interact with people from diverse backgrounds
KK2	Be able to design sustainable food processing units and agricultural products



### A. Objectives regarding attitude

Graduate Learning Outcomes								
Attitude or <i>Sikap</i> 1 (A1)					Attitude or <i>Sikap</i> 2 (A2)			
Show awareness of Pancasila attitudes, understanding the importance of the nation and state, and respecting cultural diversity					Demonstrate social sensitivity, honesty, responsibility, self-confidence, emotional maturity, ethics, law-abiding behaviour, and awareness of lifelong learning.			
Sem.	Code	C / E	Credits	Module	Code	C / E	Credits	Module
VIII	-				TPHP214201	C	8	Community Service
VII					TPHP214101	C	6	Research
					TPHP214102	C	8	Entrepreneurship II
					TPHP214203	C	8	Industrial Internship II
					TPHP214104	C	6	Independent Project
VI	-				-			
V	-				-			
IV	UNU 1000-1005	C	2	Theology	-			
	UNU 3000	C	2	Civics				
	UNU 161	C	2	Indonesian				
	UNU 1100	C	2	Pancasila				
III	-				-			
II	-				-			
I	-				-			

C: compulsory modules; E: elective modules



**B. Objectives regarding knowledge**

Graduate Learning Outcomes								
Knowledge or <i>Pengetahuan</i> 1 (P1)					Knowledge or <i>Pengetahuan</i> 2 (P2)			
Be able to explain the structure and properties of food components / agricultural products (carbohydrates, proteins, lipids, water, other components, and food additives) and chemical changes that occur during processing					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			
Sem.	Code	C / E	Credits	Module	Code	C / E	Credits	Module
VIII	-				-			
VII	-				-			
VI	TPHP213211	E	2	Post Harvest Physiology and Technology	TPHP213207	C	2	Preservation Technology
					TPHP213213	C	2	Food Biotechnology
V	TPHP213115	E	2	Enzyme Technology	TPHP213114	E	2	Industrial Microbiology
	TPHP213116	E	2	Food and Agricultural Product Analysis II	TPHP213117	E	2	Fermentation Technology
					TPHP213118	E	1	Fermentation Technology - Laboratory Practice
IV	TPHP212205	C	3	Food and Agricultural Product Analysis I	-			
	TPHP212206	C	2	Food and Agricultural Product Analysis I - Laboratory Practice				
III	TPHP212103	C	2	Food and Agricultural Product Chemistry	TPHP212101	C	3	Food Microbiology
					TPHP212102	C	1	Food Microbiology - Laboratory Practice
II	TPHP211203	C	3	Chemistry II (Organic)	TPHP211201	C	2	Microbiology
					TPHP211202	C	1	Microbiology - Laboratory Practice
					TPHP211204	C	3	Biochemistry



Graduate Learning Outcomes								
Knowledge or <i>Pengetahuan</i> 1 (P1)					Knowledge or <i>Pengetahuan</i> 2 (P2)			
Be able to explain the structure and properties of food components / agricultural products (carbohydrates, proteins, lipids, water, other components, and food additives) and chemical changes that occur during processing					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			
Sem.	Code	C / E	Credits	Module	Code	C / E	Credits	Module
I	TPHP211102	C	3	Chemistry I (Inorganic)	TPHP211101	C	3	Cell Biology
	TPHP211103	C	1	Chemistry - Laboratory Practice				
	TPHP211104	C	2	Physical Chemistry				
	TPHP211106	C	2	Physics				
	TPHP211107	C	1	Physics - Laboratory Practice				

C: compulsory modules; E: elective modules.



Graduate Learning Outcomes								
Knowledge or <i>Pengetahuan</i> 3 (P3)					Knowledge or <i>Pengetahuan</i> 4 (P4)			
Be able to evaluate hazards (physical, chemical, microbiological) associated with food systems, their transmission and control					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			
Sem.	Code	C / E	Credits	Module	Code	C / E	Credits	Module
VIII	-				-			
VII	-				-			
VI	-				TPHP213206	C	2	Packaging Technology
					TPHP213207	C	2	Preservation Technology
					TPHP213208	E	2	Fruit and Vegetable Technology
					TPHP213209	E	2	Cane Sugar Technology
					TPHP213212	E	2	Flavor Technology
V	TPHP213103	C	2	Food Safety	TPHP213113	E	2	Oil and Fat Technology
					TPHP213111	E	3	Coffee, Tea, and Cocoa Processing Technology
					TPHP213110	E	2	Rubber and Tobacco Technology
					TPHP213112	E	2	Spice and Seasoning Technology
IV	-				TPHP212201	C	2	Food Industrial Sanitation
					TPHP212203	C	1	Unit Operation - Laboratory Practice
					TPHP212204	C	2	Engineering Economics
					TPHP212207	E	2	Dairy Products Technology
					TPHP212208	E	2	Bakery Technology
III	-				TPHP212104	C	2	Thermal Process
					TPHP212105	C	3	Unit Operation II





Graduate Learning Outcomes								
Knowledge or <i>Pengetahuan</i> 3 (P3)					Knowledge or <i>Pengetahuan</i> 4 (P4)			
Be able to evaluate hazards (physical, chemical, microbiological) associated with food systems, their transmission and control					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			
Sem.	Code	C / E	Credits	Module	Code	C / E	Credits	Module
					TPHP212106	C	3	Unit Operation III
					TPHP212110	E	2	Meat and Fish Technology
					TPHP212111	E	2	Legume, Cereals, and Tuber Technology
					TPHP212104	C	2	Thermal Process
II	-				TPHP211205	C	4	Unit Operation I
					TPHP211206	C	3	Applied Mathematics
					TPHP211209	C	4	Waste Management
					TPHP211210	C	2	Waste Management - Laboratory Practice
I					TPHP211105	C	2	Introduction to Agricultural Technology
					TPHP211106	C	2	Physics
					TPHP211107	C	1	Physics - Laboratory Practice
					TPHP211108	C	2	Mathematics
					TPHP211110	C	2	Physical Properties of Foods and Agricultural Products

C: compulsory modules; E: elective modules



Graduate Learning Outcomes								
Knowledge or <i>Pengetahuan</i> 5 (P5)					Knowledge or <i>Pengetahuan</i> 6 (P6)			
Be able to apply methods to assess the sensory properties of food					Be able to apply the principles of food quality control and food quality assurance			
Sem.	Code	C / E	Credits	Module	Code	C / E	Credits	Module
VIII	-				-			
VII	-				-			
VI	-				-			
V	TPHP213104	C	2	Sensory Evaluation	TPHP213106	E	2	Quality Management
	TPHP213105	C	1	Sensory Evaluation - Laboratory Practice				
IV	-				TPHP212202	C	2	Quality Control
III	TPHP211207	C	3	Statistics	-			
II	-				-			
I	-				-			

C: compulsory modules; E: elective modules



Graduate Learning Outcomes								
Knowledge or <i>Pengetahuan</i> 7 (P7)					Knowledge or <i>Pengetahuan</i> 8 (P8)			
Be able to apply regulations needed for food products processing and marketing					Be able to evaluate changes in nutrients during processing, storage, and metabolism of nutrients and bioactive components			
Sem.	Code	C / E	Credits	Module	Code	C / E	Credits	Module
VIII	-				-			
VII	-				-			
VI	-				TPHP213214	E	2	Food and Nutrition Design
V	-				TPHP213107	C	2	Functional Foods
					TPHP213108	E	2	Nutrient Formulation and Fortification
					TPHP213109	E	2	Indonesian Gastronomy
IV	-				-			
III	-				TPHP212109	C	3	Nutrition
					TPHP212107	C	2	Nutrition Evaluation in Food Processing
					TPHP212108	C	1	Nutrition Evaluation in Food Processing - Laboratory Practice
II	TPHP211208	C	2	Food Regulation	TPHP211204	C	3	Biochemistry
I	-				-			

C: compulsory modules; E: elective modules.



### C. Objectives regarding general skills

Graduate Learning Outcomes												
General Skills or <i>Keterampilan Umum</i> 1 (KU1)					General Skills or <i>Keterampilan Umum</i> 2 (KU2)				General Skills or <i>Keterampilan Umum</i> 3 (KU3)			
Be able to analyze data and make decisions in order to show independent and group performance to apply knowledge in social life					Be able to argue scientifically, think logically, critically, systematically, and innovatively by utilizing information technology to produce solutions in the field of food and agricultural products technology				Be able to communicate scientifically both orally and in writing			
Sem.	Code	C / E	Credits	Module	Code	C / E	Credits	Module	Code	C / E	Credits	Module
VIII									TPHP214201	C	8	Community Service
VII	TPHP214101	C	6	Research	TPHP214101	C	6	Research	TPHP214101	C	6	Research
	TPHP214102	C	8	Entrepreneurship II	TPHP214102	C	8	Entrepreneurship II	TPHP214102	C	8	Entrepreneurship II
	TPHP214103	C	8	Industrial Internship II	TPHP214103	C	8	Industrial Internship II	TPHP214103	C	8	Industrial Internship II
	TPHP214104	C	6	Independent Project	TPHP214104	C	6	Independent Project	TPHP214104	C	6	Independent Project
VI	TPHP213205	C	3	Industrial Internship I	TPHP213210	E	2	Food Service Management	TPHP213204	C	2	Seminar
	TPHP213201	C	2	Entrepreneurship I	TPHP213205	C	3	Industrial Internship I	TPHP213205	C	3	Industrial Internship I
	TPHP213215	E	2	Current Topics II	TPHP213201	C	2	Entrepreneurship I	TPHP213215	E	2	Current Topics II
	TPHP213216 TPHP213217	E	1	Special Topics II Special Topics IV	TPHP213215	E	2	Current Topics II	TPHP213216 TPHP213217	E	1	Special Topics II Special Topics IV
	TPHP213218 TPHP213219 TPHP213221	E	2	Special Topics VI Special Topics VIII Special Topics XII	TPHP213216 TPHP213217	E	1	Special Topics II Special Topics IV	TPHP213218 TPHP213219 TPHP213220 TPHP213221	E	2	Special Topics VI Special Topics VIII Special Topics X Special Topics XII



Graduate Learning Outcomes												
General Skills or <i>Keterampilan Umum</i> 1 (KU1)					General Skills or <i>Keterampilan Umum</i> 2 (KU2)				General Skills or <i>Keterampilan Umum</i> 3 (KU3)			
Be able to analyze data and make decisions in order to show independent and group performance to apply knowledge in social life					Be able to argue scientifically, think logically, critically, systematically, and innovatively by utilizing information technology to produce solutions in the field of food and agricultural products technology				Be able to communicate scientifically both orally and in writing			
Sem.	Code	C / E	Credits	Module	Code	C / E	Credits	Module	Code	C / E	Credits	Module
	TPHP213222	E	3	Special Topics XIV	TPHP213218 TPHP213219	E	2	Special Topics VI Special Topics VIII	TPHP213222	E	3	Special Topics XIV
	TPHP213223 TPHP213224			Special Topics XVI Special Topics XVIII	TPHP213220 TPHP213221			Special Topics X Special Topics XII	TPHP213223 TPHP213224			Special Topics XVI Special Topics XVIII
					TPHP213222 TPHP213223 TPHP213224	E	3	Special Topics XIV Special Topics XVI Special Topics XVIII				
V	TPHP213102	C	2	Research Methodology and Experimental Design	TPHP213119	E	2	Current Topics I	TPHP213102	C	2	Research Methodology and Experimental Design
	TPHP213119	E	2	Current Topics I	TPHP213120 TPHP213121	E	1	Special Topics I Special Topics III	TPHP213119	E	2	Current Topics I
	TPHP213120 TPHP213121	E	1	Special Topics I Special Topics III	TPHP213122 TPHP213123 TPHP213124 TPHP213125	E	2	Special Topics V Special Topics VII Special Topics IX Special Topics XI	TPHP213120 TPHP213121	E	1	Special Topics I Special Topics III
	TPHP213122 TPHP213123 TPHP213124	E	2	Special Topics V Special Topics VII Special Topics IX	TPHP213126 TPHP213127	E	3	Special Topics XIII Special Topics XV	TPHP213122 TPHP213123 TPHP213124 TPHP213125	E	2	Special Topics V Special Topics VII Special Topics IX



Graduate Learning Outcomes												
General Skills or <i>Keterampilan Umum</i> 1 (KU1)					General Skills or <i>Keterampilan Umum</i> 2 (KU2)				General Skills or <i>Keterampilan Umum</i> 3 (KU3)			
Be able to analyze data and make decisions in order to show independent and group performance to apply knowledge in social life					Be able to argue scientifically, think logically, critically, systematically, and innovatively by utilizing information technology to produce solutions in the field of food and agricultural products technology				Be able to communicate scientifically both orally and in writing			
Sem.	Code	C / E	Credits	Module	Code	C / E	Credits	Module	Code	C / E	Credits	Module
	TPHP213125			Special Topics XI	TPHP213128			Special Topics XVII				Special Topics XI
	TPHP213126	E	3	Special Topics XIII					TPHP213126	E	3	Special Topics XIII
	TPHP213127			Special Topics XV					TPHP213127			Special Topics XV
	TPHP213128			Special Topics XVII					TPHP213128			Special Topics XVII
IV	-				-				-			
III	-				-				-			
II	TPHP211207	C	3	Statistics	-				TPHP211207	C	3	Statistics
I	-				-				TPHP211109	C	2	English for Food Technology

C: compulsory modules; E: elective modules.



#### D. Objectives regarding specific skills

Graduate Learning Outcomes								
Specific Skills or <i>Keterampilan Khusus 1 (KK1)</i>					Specific Skills or <i>Keterampilan Khusus 2 (KK2)</i>			
Be able to manage organizations and projects, and have the essential skills to work and interact with people from diverse backgrounds					Be able to design sustainable food processing units and agricultural products			
Sem.	Code	C / E	Credits	Module	Code	C / E	Credits	Module
VIII	TPHP214201	C	8	Community Service	-			
VII	TPHP214101	C	6	Research	-			
	TPHP214102	C	8	Entrepreneurship II				
	TPHP214203	C	8	Industrial Internship II				
	TPHP214104	C	6	Independent Project				
VI	TPHP213205	C	3	Industrial Internship I	TPHP213202	C	2	Product Development and Process Technology
	TPHP213215	E	2	Current Topics II	TPHP213203	C	3	Product Development and Process Technology - Laboratory Process
	TPHP213216 TPHP213217	E	1	Special Topics II Special Topics IV				
	TPHP213218 TPHP213219 TPHP213220 TPHP213221	E	2	Special Topics VI Special Topics VIII Special Topics X Special Topics XII				
	TPHP213222 TPHP213223 TPHP213224	E	3	Special Topics XIV Special Topics XVI Special Topics XVIII				
V	TPHP213119	E	2	Current Topics I	TPHP213101	C	3	Plant Design
	TPHP213120 TPHP213121	E	1	Special Topics I Special Topics III				



Graduate Learning Outcomes								
Specific Skills or <i>Keterampilan Khusus 1 (KK1)</i>					Specific Skills or <i>Keterampilan Khusus 2 (KK2)</i>			
Be able to manage organizations and projects, and have the essential skills to work and interact with people from diverse backgrounds					Be able to design sustainable food processing units and agricultural products			
Sem.	Code	C / E	Credits	Module	Code	C / E	Credits	Module
	TPHP213122 TPHP213123 TPHP213123 TPHP213125	E	2	Special Topics V Special Topics VII Special Topics IX Special Topics XI				
	TPHP213126 TPHP213127 TPHP213127	E	3	Special Topics XIII Special Topics XV Special Topics XVII				
IV	-				TPHP212204	C	2	Engineering Economics
III	-				-			
II	-				TPHP211209	C	3	Waste Management
I	-				-			

C: compulsory modules; E: elective modules