ACADEMIC HANDBOOK
BACHELOR OF FOOD AND AGRICULTURAL PRODUCT TECHNOLOGY (BFAPT)

Panduan Akademik

Program Studi S1 - Teknologi Pangan dan Hasil Pertanian (S1 - TPHP)

FACULTY OF AGRICULTURAL TECHNOLOGY
UNIVERSITAS GADJAH MADA
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Introductory Remarks

First of all, to the new students of the Master and Doctoral Program class of 2022, "WELCOME TO FACULTY OF AGRICULTURAL TECHNOLOGY, UGM". This book, titled "Academic Handbook of the Graduate Program for the Faculty of Agricultural Technology (FTP) at Universitas Gadjah Mada for the academic year 2022/2023" serves as an informational resource. It comprehensively covers various aspects of the faculty including academic policies, institutional resources, the education system, implementation of the Tri Dharma of higher education (education, research, and community service), curriculum details, and academic regulations.

The academic regulations provided in this guide apply to the 2022/2023 cohort of students, including both Masters and Doctoral Program students, particularly those pursuing research-based programs. Accordingly, for students of previous academic sessions, the regulations were adjusted to be only applicable at the time of entry. It is also essential to acknowledge that in addition to postgraduate students, this comprehensive set of academic regulations has been submitted to lecturers and education personnel to serve as a valuable guide for the efficient execution of their academic responsibilities.

Other parties who need this guide can contact the Dean Secretariat at the address listed.

Yogyakarta, July 2022
Dean,

Prof. Dr. Ir. Eni Harmayani, M.Sc.

Table of Contents

List of Abbreviations

Abbreviations	Definition	Translation (Bahasa Indonesia/English)
AMI	*Audit Mutu Internal*	Internal Quality Audit
ASEAN	Association of Southeast Asian Nation	
BFAPT	Bachelor in Food and Agricultural Product Technology	*Sarjana Teknologi Pangan dan Hasil Pertanian*
BPOM	*Badan Pengawas Obat dan Makanan*	Indonesian Food and Drug Supervisory Agency
CPL	*Capaian Pembelajaran Lulusan*	Programme Learning Outcome
CPMK	*Capaian Pembelajaran Mata Kuliah*	Module Learning Outcome
EDOM	*Evaluasi Dosen oleh Mahasiswa*	Lecturer evaluation by the students
FAO	Food and Agriculture Organization	
FTP	*Fakultas Teknologi Pertanian*	Faculty of Agricultural Technology
IP	*Indeks Prestasi*	Grade Point Average
KKN	*Kuliah Kerja Nyata*	Community service program
KRS	*Kartu Rencana Studi*	Study Plan Card
MBKM	*Merdeka Belajar-Kampus Merdeka*	
MLO	Module Learning Outcome	(see CPMK)
NIU	*Nomor Induk Universitas*	University Student Number
PL	*Profil Lulusan*	Graduates Profile
PLO	Programme Learning Outcomes	(see CPL)
RKAT	*Rencana Kerja dan Anggaran Tahun*	Annual Work Plan and Budget
RPKPS	*Rancangan Program dan Kegiatan Pembelajaran Semester*	Semester Learning Activity Program Plan
SKS	*Satuan Kredit Semester*	Semester Credit Unit
S-1	Bachelor degree programme	
S-2	Master degree programme	
S-3	Doctoral degree programme	
TIP	*Teknologi Industri Pertanian*	Agro-Industrial Technology
TPB	*Teknik Pertanian dan Biosistem*	Agricultural and Biosystems Engineering
TPHP	*Teknologi Pangan dan Hasil Pertanian*	(see BFAPT)

Abbreviations	Definition	Translation (Bahasa Indonesia/English)
UGM	Universitas Gadjah Mada	
UMM	*Unit Manajemen Mutu*	Quality Management Unit

Chapter I: Introduction

1.1. Introduction

The Faculty of Agricultural Technology UGM was previously one of the departments at the Faculty of Agriculture UGM. At next developments, it was felt that there was a need for a wider and deeper application of technology so that the agricultural sector played a more important role in the development of the nation and state, so the Department of Agricultural Technology developed into the Faculty of Agricultural Technology and was inaugurated on September 19, 1963.

Faculty of Agricultural Technology UGM focuses on the study of the development and application of technology for agriculture by involving chemistry, biology, microbiology, mathematics, physics, management, and engineering in soil conservation and water management systems, agricultural equipment design, food technology and agricultural products, preservation technology, development of new products of high economic value, process optimization, system analysis and management in the agricultural industry system, and agro-industry.

The implementation of these studies was organized by the Department of Food Technology and Agricultural Products, the Department of Agricultural Engineering and Biosystems, and the Department of Agricultural Industrial Technology. With these studies, the Faculty of Agricultural Technology is ready to hold various collaborations in the field of agro-industry with all stakeholders such as industry, local government, private sector, universities, research and development agencies and other institutions related to the field of agricultural technology.

The Faculty of Agricultural Technology UGM is always ready to accommodate qualified, talented, and interested student candidates who pass the selection of new student admissions organized by Universitas Gadjah Mada to be educated into scholars who have high competence and can compete at national and international levels.

1.2. Vision

Faculty of Agricultural Technology, Universitas Gadjah Mada center of excellence at international standard in the implementation of the Tri Dharma of university in the field of agro-industry.

1.3. Mission

To achieve the vision that has been set, it is carried out through the following missions:
1. Carry out higher education with international reputation in the field of agro-industry to produce graduates who are superior competence, noble character and imbued with Pancasila values.
2. Carry out research and innovation in the field of agro-industry for the development of science and technology that benefits the community, both locally, nationally and globally.

3. Carry out sustainable community service and empowerment based on the application of science and technology innovation and agrotechno-preneurship.
4. Organizing efficient, effective, accountable and professional organizational governance in accordance with the principles of good faculty governance.

1.4. Goals and Objectives

To achieve the vision and mission of the Faculty of Agricultural Technology, Universitas Gadjah Mada is becoming a center of excellence for agro-industry through five objectives :

1. Strengthening synergy between departments in implementing the Tri Dharma of University
2. Improving the quality and governance of Undergraduate and Postgraduate Programs to achieve international reputation
3. Improving the academic reputation of graduates through the development of scientific ethics, socio-techno-preneur and student soft skills
4. Improving the quality and number of innovative research results that are ready to be published and applied in industry and society in an integrated manner
5. Development of systemized external cooperation for education, research and community service

1.5. Competence of graduates

According to the Decree of the Minister of National Education Number 045 / U / 2002, what is meant by competence is a set of intelligent actions full of responsibility that a person has as a condition to be considered capable of carrying out tasks in a particular field of work. One of the educational objectives at the Faculty of Agricultural Technology UGM is to produce graduates who have high competence in the fields of science that have been studied in each study program so that they can be used for the benefit of the community.

In addition to special competencies in their fields of science, graduates of the Faculty of Agricultural Technology UGM are also expected to have general competencies that can be used as provisions for community life with the following characteristics:

1. Have the ability to solve problems, develop, and practice science and technology in the field of agricultural technology.
2. Have the ability to communicate, build cooperation, and build an entrepreneurial spirit.
3. Have a character that is social, responsible, ethical, and professional in their field.

Chapter II: Academic Guidelines

2.1. General Policy Directions

1. The Faculty of Agricultural Technology, UGM has a vision to become a center of excellence at international standard in the implementation of university Tri Dharma in the agro-industrial sector.

2. Faculty of Agricultural Technology, UGM has a mission : (i) Organizing reputable international university in the field of agro-industry to produce qualified graduates with superior competence, noble character and imbued with Pancasila values; (ii) Carrying out research and innovation in the field of agro-industry for development science and technology that benefits to society, both locally, nationally and globally; (iii) Doing sustainable community service and empowerment based on the application of science and technology innovation and agrotechno-preneurship; (iv) Carrying out efficient, effective, accountable and professional organizational governance according to good faculty governance.

3. Faculty of Agricultural Technology, UGM actively participates to actualize knowledge-based society through the provision of academic education (undergraduate and postgraduate) in the sector of food technology and agricultural products, engineering agriculture, and agricultural industrial technology in the sector of agro-industry.

4. Faculty of Agricultural Technology UGM as organizer of university Tri Dharma directed to be able to produce quality graduates with the following characteristics:
   a. Able to solve problems, develop and implement knowledge and technology in the field.
   b. Able to communicate, build cooperation, have a leadership spirit, and be a businessman.
   c. Have a social spirit, be responsible, ethical, and professional in their field.

5. The Faculty of Agricultural Technology UGM carries out quality education using a designed curriculum that is consistent with the strategic plan, vision, mission, and goal of the faculty and stakeholder demand.

6. Faculty of Agricultural Technology UGM applying student centered learning systems that direct students as longlife learner.

7. The Faculty of Agricultural Technology UGM in carrying out the learning process always refers to leadership aspects (Leadership), stakeholders demand (Relevance), the creation

of a conducive academic atmosphere (Academic atmosphere), Internal management, Sustainability, and Efficiency and Productivity (L-RAISE).

8. The Faculty of Agricultural Technology UGM carries out the efficient and productive learning process in order to make students complete their studies on time with high competence in accordance with the curriculum design and competitive in the world of work.

9. Faculty of Agricultural Technology UGM organizes education professionally so it be able to compete at national and international levels with the following policies :
   a. Effective new student recruitment strategies through various promotion techniques, debriefing for new students, refreshment for students towards the end of their study period, and efforts to provide added values to new graduates.
   b. Recruitment strategy for teaching staff through a standard, open and transparent mechanism and its development strategy to acquire teaching staff with high qualifications and reliability in accordance with the required field of knowledge and expertise.
   c. Recruitment strategy for administrative staff and technicians through a standard, open, and transparent mechanism and its development strategy to acquire reliable professional staff as needed.
   d. The strategy for procuring and providing infrastructure consisting of physical facilities/facilities for lectures, practicum, research, and library collection and information technology and communication.
   e. The Strategy of planning and development of educational programs by involving user parties, professional associations, government, alumni, students, and other stakeholders.
   f. The Strategy of planning and development of student teaching and learning processes.

10. Faculty of Agricultural Technology UGM organizes education with an emphasis on achievement of learning outcomes in terms of cognitive skills, practical skills, advanced studies and or to enter the world of work, and self-development, always involve recent developments in teaching and learning techniques, research,and other relevant developments from the world of work and professionals.

11. Faculty of Agricultural Technology UGM implements an Academic Quality Assurance System to guarantee and ensure that the learning process and the result of graduates are high quality.

2.2. The Directions of Education Sector Policy

1. Mission and Goals

a. Carrying out academic education in the sector of agricultural technology professionals can produce high quality undergraduate and postgraduate students who are able to participate in actualizing a knowledge-based society.

b. Carrying out academic education in agricultural technology based on the academic quality assurance system.

c. Providing adequate physical and academic infrastructure to actualize the quality learning process.

2. Education Programs

a. Encouraging and facilitating the Department to always increase interest and quality of prospective students through a promotion system in high schools, industry, government, research institutes, and society.

b. Optimizing the campus introduction study orientation program as a place for improving the success skills and leadership of new students.

c. Give awards to new undergraduate students who already have English proficiency equivalent to TOEFL $\geq$ 500 in form of awarding is an A grade without having to attend English courses

d. Directing and facilitating the Department to develop the research-based learning (Research-Based Learning, RBL) system with an emphasis on formation of student as active learners (Student-Centered Learning, SCL), and the graduates who have an attitude as longlife learners (Longlife student)

e. Directing and facilitating the Department in developing the Competency Based Curriculum and Problem Based Learning (PBL) or Outcome Based Education (OBE)

f. Facilitating the Department in preparing the Semester Learning Activity Program Plan (RPKPS) for each course.

3. Resource

a. Implementing a lecturer acceptance system in an open, objective and competitive manner based on the high competence criteria, good character, and high integrity.

b. Providing a conducive climate for lecturers and staff to development competencies that support their duties.

c. Providing physical and academic facilities that encourage the formation of an good academic atmosphere for lecturers, students, and employees.

d. Implement an ICT-based academic information system (Information and Communication Technologies).

4. **Programs Evaluation**

    a. Implement and develop an evaluation system for the implementation of educational programs periodically and structured from the Faculty, Department, Study Program, and Laboratory.
    b. Facilitate the Department in conducting Study Evaluation Programs based on a Self-Evaluation (EPSBED) every semester.

5. **Institutional**

    a. Implementation and development of quality educational processes administratively coordinated by the Deputy Dean for Academic and Student Affairs and operationally formulated and carried out by the Department in a transparent and accountable manner.
    b. The organizers of academic activities are faculty and department.

2.3.   The Directions of Research Sector Policy

1. **Mission and Goals**

    a. Carry out research in the field of agricultural technology professionally so that it can produce high-quality bachelors, masters, and doctorates who are able to participate actualizing the vision of the university as an international research university.
    b. Carry out research in the field of agricultural technology based on the research quality assurance system
    c. Provide adequate physical and academic infrastructure for the implementation of quality research.

2. **Research Programs**

    a. Improve the quality of lecturer and student research through collaboration inter-universities, industry, research institutes, government and society.
    b. Direct and facilitate the Department to develop the Research-Based Learning system (Research-Based Learning, RBL) with an emphasis on the formation of students as active learners (Student-Centered Learning, SCL) and graduates who have an attitude as long-life learners (Long-life learner).
    c. Direct and facilitate the Department in developing research that oriented towards increasing added value and the development of knowledge and technology.

3. **Resource**

    a. Improve research facilities in each laboratory through the RKAT funding scheme and research collaboration with external stakeholders.
    b. Encourage the formation of lecturer-student interaction in conducting research.

c. Increase the availability of scientific journals and internet networks in order to be accessed by lecturers and students for making proposals, carrying out research and preparing research reports.

d. Encourage the occurrence of resources sharing facilities between laboratories to be used by all lecturers and students.

4. **Programs Evaluation**

Implement and develop a periodic and structured evaluation system for conducting research programs at the Faculty, Department, Study Program, and Laboratory levels.

5. **Institutional**

Implementation and development of research quality operationally are formulated and carried out by the Department in a transparent and accountable manner by considering input from internal and external stakeholders.

2.4. The Directions of Policy in the Field of Community Service

1. **Mission and Goals**

a. Carry out community service in the field of agricultural technology professionally so it can participate to actualize a knowledge-based society.

b. Carry out community service in the field of agricultural technology based on a community service quality assurance system.

c. Providing adequate physical and academic infrastructure to make a quality community service process.

2. **Community Service Program**

a. Improving the quality of community service through collaboration with local government, industry, and the community.

b. Direct and facilitate the Department to develop Research-Based Community Services (RBCS).

c. Direct and facilitate the Department in developing community service oriented towards the realization of a knowledge-based society.

d. Encourage the formation of interaction between lecturers, students and the community in carrying out community service in the Community Service Program on certain themes needed by the community (Thematic KKN).

3. **Resource**

a. Improve community service facilities through the RKAT funding scheme and collaboration with external stakeholders.

b. Increasing the availability of appropriate technological information in the field of agricultural technology so that it can be accessed by lecturers and students to carry out community service.

c. Encourage the occurrence of resources sharing facilities between departments to be used by all lecturers and students in carrying out community service.

4. Programs Evaluations

Implement and develop an evaluation system for the implementation of community service programs periodically and structured from the Faculty, Department, Study Program, and Laboratory levels.

5. Institutional

Implementation and development of the quality of community service is operationally formulated and carried out by the Department on a transparent and accountable basis by considering input from internal and external stakeholders.

2.6. Principles of Implementation of Education

The principle of organizing faculty academic activities is the main principle that forms the basis for planning, implementing, monitoring and evaluating academic activities which includes:

1. The principle of accountability, namely that all implementation of academic policies must be accountable scientifically and openly and refers to the latest dynamic scientific developments.

2. The principle of transparency, namely that academic policies are carried out openly, based on clear arrangements and rules that are always oriented towards mutual trust for the implementation of a conducive academic environment and ensure the realization of synergism.

3. The principle of quality, namely that academic policies are implemented by prioritizing the quality of input, process and output.

4. The principle of togetherness, namely that academic policies are implemented in integrated, directed, structured and systematic for the benefit of the faculty comprehensively and based on the institutional vision and mission for effectiveness and efficiency.

5. The principle of democracy, namely that the implementation of dynamic academic policies must be able to ensure the accommodation of all the interests of the people more broadly without having to sacrifice scientific idealism

6. The principle of law, namely that all parties involved directly or indirectly in academic life must comply with applicable laws whose enforcement is guaranteed by the state.

7. The principle of benefit, namely that academic life is organized to provide maximum benefit to the nation and state, institutions, and all academics.

8. <u>The principle of equality</u>, namely that academic policies are implemented on the basis of equal rights to ensure the egalitarian academic environment.
9. <u>The principle of independence</u>, namely that the implementation of academic policies is always based on the capacity of the institution by relying on all existing potential and resources to optimize the capacity of institutions that continue to develop systematically and structuredly.

2.7.   Academic Quality Assurance Policy

1. Create Academic Documents consisting of Academic Policies, Academic Standards, and Academic Regulations for educational, research, and community service activities.
2. Create ISO 9001:2015-based Quality Management System documents consisting of Quality Guidelines, Procedures, Work Instructions, Supporting Documents and Forms for education, research and community service activities.
3. Create a Quality Assurance System organization consisting of lecturers and employees.
4. Carry out one cycle of quality assurance of education, research, and community service for one academic year.
5. Follow up on the results of the Internal Quality Audit (AMI) to improve the quality of education, research, and sustainable community service.

Chapter III: Institutions and Resources

3.1.   History and Development

The establishment of the Faculty of Agricultural Technology (FTP) at Universitas Gadjah Mada can be traced back to an idea that surfaced during a Teacher Council meeting in the early 1960s within the Faculty of Agriculture and Forestry. During this period, the Faculty of Agriculture and Forestry featured three distinct teaching staff organizations, including the Teacher Council, Lecturer Council, and Assistant Coordinator. At this meeting, the focus was on deliberating the directive issued by the Minister of Higher Education and Science (PTIP), which aimed to restructure the Faculty of Agriculture and Forestry by dividing it into three separate faculties. This restructuring was intended to augment the number of Exact Faculties, thus, enhancing the balance between Exact Sciences and Social Humanities. In this regard, a dedicated team was assembled to spearhead the establishment of Faculty of Agricultural Technology. This team was entrusted with various responsibilities such as formulating the definition of agricultural technology, designing the curriculum, selecting teaching staff, and conducting a comprehensive student inventory.

Various entities within the Faculty of Agriculture and Forestry were integrated into Faculty of Agricultural Technology including the Department of Agricultural Technology, and the Department of Engineering Culture along with their respective sections. However, it is important to acknowledge that the Biochemistry Section within the Faculty of Agriculture and Forestry was not integrated into the Faculty of Agricultural Technology. The preparation for the establishment of this faculty was carried out by a team consisting of Ir. Kamarijani, Ir. Soenjoto Soemodihardjo, Ir. Moch. Adnan, Ir. Hendro Pawoko Sajid, Ir. Soeharsono Martoharsono, Ir. Amien Hidayat, Ir. Hardiman, Ir. Moch. Roesdi, Ir. Soemangat, Ir. Pratjojo, Ir. Salam, Ir. Soenarto Pronohadiprodjo and Ir. Pamudji[1*).

Accordingly, on February 6, 1966, the Faculty produced its first set of graduates. Over time, the structural organization of this Faculty evolved in accordance with government policies and regulations. Initially, it comprised only two sections namely, the Agricultural Technology and the Agricultural Mechanization sections. The Agricultural Technology Section consists of five departments, which include the Department of Basic and Raw Materials Technology, Vegetable and Fruit Technology, Animal Materials Technology, Industrial Microbiology, and the Department of Other Foodstuff Technology. On the other hand, the Agricultural Mechanization Section comprised two departments, namely the Department of Soil Conservation and Water Management, and the Department of Agricultural Tools and Machinery.

[1*) Most of the mentioned figures are lecturers of the Faculty of Agricultural Technology UGM, and received additional honours during their career and life. These figures include Prof. Ir. Kamarijani (deceased), Prof. Dr. Ir. Moch Adnan, M.Sc. (deceased), Ir. Hendro Pawoko Sajid (deceased), Ir. Soeharsono Martoharsono (deceased), Ir. Hardiman, M.Sc. (deceased), Ir. Moch. Roesdi (deceased), and Ir. Soemangat, M.Sc. (retired).

In 1967, the Agricultural Technology Section was restructured to consist of four departments, namely the Department of Perennial Technology, the Department of Young Plant Technology, the Department of Animal Products Technology, and the Department of Industrial Microbiology. Meanwhile, the Agricultural Mechanization Section still retained its two departments, but the Department of Agricultural Tools and Machinery was changed into the Department of Power and Agricultural Machinery. It is also important to clarify that in 1978, the Agricultural Technology Section was renamed the Agricultural Product Processing Section while the Agricultural Mechanization Section remained as it was. During this period, the departments in each section were eliminated in line with the implementation of education with a credit system.

In accordance with PP. 5 of 1980, the term "Section" was replaced with "Department." Thus, in 1980, the Faculty of Agricultural Technology Universitas Gadjah Mada had two Departments, namely the Department of Agricultural Product Processing and the Department of Agricultural Mechanization. In 1986, a new Department was introduced, known as the Department of Agricultural Industrial Technology. Subsequently, in 1995, the Department of Agricultural Product Processing was renamed the Department of Agricultural Product Processing Technology. In this regard, following Universitas Gadjah Mada Rector Decree No. 18/P/SK/HKTL/2000 dated January 11, 2002, the Department of Agricultural Product Processing Technology was further renamed as the Department of Food and Agricultural Products Technology.

In 2016, in accordance with the Rector of Universitas Gadjah Mada Regulation Number 809/P/SK/HT/2015 regarding the Organizational Structure and Governance of Faculties within Universitas Gadjah Mada, adjustments were made. This adjustment led to the rebranding of one of the Departments within the faculty. The department was originally known as Agricultural Engineering but was rebranded as Agricultural and Biosystem Engineering.

Initially, the Faculty of Agricultural Technology was situated at SEKIP Jl. C. Simanjuntak, Yogyakarta, sharing a location and building with the Faculty of Agriculture and the Faculty of Forestry. During this period, the Faculty of Agricultural Technology only had four rooms designated as laboratories. Furthermore, the Agricultural Mechanization workshop was located in Bulaksumur, close to the Universitas Gadjah Mada Main Building. These laboratories served the practicum and research purposes of various students in the institution. Lecture sessions were conducted in a shared building, with some courses being jointly held with the Faculty of Agriculture and the Faculty of Forestry. It is also important to clarify that specific practicums, such as Botany, Zoology, Inorganic Chemistry, and Organic Chemistry, took place at Dalem Mangkubumen Ngasem, while Mineralogy practicums were conducted in one of Universitas Gadjah Mada buildings situated in Pingit.

In 1967, the Faculty of Agricultural Technology relocated to a new building situated in Karangmalang (now Yogyakarta State University). This building primarily housed faculty management and administration functions, while lectures and practicums were continually held in their original locations. Following this, in 1968, the Faculty relocated once again to a new building in Bulaksumur, situated to the east of the Universitas Gadjah Mada Administration Center Building, where it currently stands. Initially, this Bulaksumur building comprised only a few

rooms and was primarily used for faculty management and administration, with very few designated for laboratories and lectures. Over time, this building underwent gradual expansion, which brought about the construction of additional rooms, each serving various distinctive purposes, including a library, administrative offices, teaching bureau, finance department, Dean and Assistant Dean offices, laboratories (including Lab. Chemistry & Biochemistry Processing), pilot-plant facilities, and lecture rooms.This faculty received a new building spanning approximately 2000 m^2 in area in the year 1986. The new addition consisted of two units, comprising two and three floors respectively. After the commissioning of this building, there has been no need for the Faculty to utilize other buildings for educational and administrative activities. Subsequently, in 1993, an additional three-story building was annexed to the former lecture building of the Faculty of Non-Degree Technology. In this regard, the Faculty of Agricultural Technology Universitas Gadjah Mada now consists of several buildings dedicated to its various functions and activities.

The faculty comprised five distinct units designated as Unit I (one floor), Unit II (one floor), Unit III (two floors), Unit IV (three floors), and Unit V (three floors), all of which underwent significant changes. In September 2000, Units I and II were demolished, paving the way for a new six-story building funded by a soft loan from the OECF. This new structure assumed the roles of the old buildings by housing laboratories, lecture and examination rooms, seminar rooms, offices, libraries, and other facilities. Accordingly, the groundbreaking ceremony for the building took place on June 6, 2001, and it was inaugurated for use at the commencement of the academic year in September 2003/2004.

During the early establishment of the Faculty of Agricultural Technology, the curriculum consisted of a packaged system, with the educational process divided into three stages. The first stage, referred to as the "propadeuse" level, lasted for one year. At this level, students who successfully completed their studies received a propadeuse diploma without a degree, while those who did not pass were required to repeat the stage. The second stage, known as the Bakaloreat level, lasted for two years. Students who successfully completed this stage earned a bakaloreat diploma and were entitled to use the title "B.Sc." (Bachelor of Science). Subsequently, the third stage, the doctoral level, extended over two years and the students who successfully completed this stage were considered graduates of the Faculty of Agricultural Technology and were awarded a doctoral diploma. In this regard, these students were allowed to use the title "Ir" (engineer). Graduates had the option to pursue further education, including masters or doctoral programs. It is also important to clarify that the educational system utilized an absolute and closed assessment method to evaluate the academic progress of the students (graduation). By utilizing this system, students were informed only of their pass or fail status for course examinations, with no specific grades provided. The system remained in place until the 1977/1978 academic year.

In the 1978/1979 academic year, a significant transformation occurred in the education system at the Faculty of Agricultural Technology. The previous 5-year curriculum was replaced with a 4-year curriculum, which was referred to as stratum one (S-1) education. This change marked the abolition of distinct levels or stages such as propadeuse education, bakaloreat

education, or doctoral education. As a result, the traditional package system gave way to a more flexible credit system, allowing students to choose their courses from a variety of offerings. Under this new credit system, students had the liberty to select their courses, and their learning outcomes were assessed using letter grades, including A, B, C, D, and E, denoting excellent, good, sufficient, deficient, or failing performance. The assessment processes became transparent, and students were considered to have completed their studies if they had successfully accumulated a minimum of 160 semester credit units with a specific Grade Point Average (GPA) requirement (2.0), and the degree awarded upon completion of this program remained "Ir." Furthermore, this credit-based curriculum featured various areas of specialization. For instance, in the Agricultural Products Processing Section, the curriculum was divided into two specialization areas namely Food Science and Technology, and Plantation Technology. It is also important to clarify that within the Agricultural Mechanization Section, the curriculum offered three distinct specializations including Agricultural Power and Machinery, Agricultural Product Processing Engineering, and Soil Preservation and Water Management Engineering. Students were granted a maximum of 9 years to complete their studies, and those who exceeded this limit faced expulsion from the Faculty of Agricultural Technology. However, in 1983, the concept of specialization was abolished and replaced with Study Programs, which essentially served the same purpose as specializations. In the Department of Agricultural Product Processing, the curriculum included three Study Programs namely Food Technology and Nutrition, Agricultural Product Processing Technology, and Food Biotechnology.

The Department of Agricultural Mechanization comprised two distinct Study Programs namely Agricultural Power and Machinery, and Soil and Water Engineering. However, in 1986, when the Department of Agro-Industrial Technology was established, it initially had only one Study Program, which was Agro-Industrial Technology. During this period, the differentiation between the Department and the Study Program was not clearly defined. It was only in 1989 that a significant overhaul in the education system occurred. This overhaul included altering the number of credits required to complete S-1 education at the Faculty of Agricultural Technology Universitas Gadjah Mada, which was reduced to approximately 140 - 150 credits. Additionally, the title "Ir." was replaced with "Bachelor of Agricultural Technology" (S.T.P.), and a clearer distinction between the Department and the Study Program was also emphasized. In this regard, the Department was recognized as an academic entity within the faculty that was responsible for delivering academic and/or professional education in a specific branch of science or technology. However, the Study Program represented a field of study that is focused on a particular branch of science or technology with the aim of cultivating unique and specific expertise. Each Department was responsible for managing one Study Program. For instance, the Department of Food Technology and Agricultural Products hosted the Food and Nutrition Study Program, the Department of Agricultural Mechanization oversaw the Agricultural Mechanization Study Program, and the Department of Agro-Industrial Technology managed the Agro-Industrial Technology Study Program.

The 1992 National Curriculum (Kurnas) brought about alterations in the Department of Agricultural Product Processing. Specifically, the Food and Nutrition Study Program transitioned into the Agricultural Product Processing Study Program. Furthermore, it is essential to include that subsequent changes occurred with the implementation of Kurnas 1996. During this period, the Department of Agricultural Product Processing Technology underwent a transformation into the Agricultural Product Technology Study Program. The Department of Agricultural Engineering was also restructured into the Agricultural Engineering Study Program. This newly formed program comprised three distinct interests, which include Agricultural Product Engineering, Agricultural Power and Machinery, and Agricultural Natural Resources Engineering. On the other hand, the Study Program within the Department of Agro-Industrial Technology remained unchanged.

In February 2002, a modification occurred in the Agricultural Product Technology Study Program, which led to the changing of its name to the Food and Agricultural Product Technology Study Program. Meanwhile, the names of the other two study programs remained unchanged. It is also important to clarify that in the year 2002, there was a curriculum transition from the 1996 Curriculum to the 2002 Curriculum. Under the new curriculum, the graduation requirements for undergraduate (S-1) students were readjusted to range from 144 to 160 credits.

In line with Universitas Gadjah Mada Rector Decree No. 22/P/SK/HT/2006, dated January 26, 2006, which provided guidelines for the development of undergraduate study program curricula, all the undergraduate study programs underwent a transformation to adopt a Competency-Based Curriculum (KBK) starting from September 2006/2007. As part of this change, the graduation requirement for undergraduates was set at 144 - 148 credit units. It is also important to comprehend that all study interests within the Agricultural Engineering Study Program were eliminated during this transition. A significant paradigm shift also occurred in the learning system, transitioning from Teacher-Centered Learning (TCL) to Student-Centered Learning (SCL). Accordingly, under this new approach, learning no longer revolved solely around lecturers. Instead, it shifted to a student-centered model, where students took on a more active role as learners. By utilizing this framework, lecturers acted as guides and facilitators, partnering with students in the pursuit and development of knowledge. In this regard, the validity of the Competency-Based Curriculum (KBK) was strengthened through a series of enhancements outlined in Universitas Gadjah Mada Rector Decree No. 581/P/SK/HT/2010, issued on October 1, 2010.

This decree provided comprehensive guidelines for the development of the 2010 curriculum for undergraduate study programs at the university.

As stipulated in the Academic Regulations outlined in the Academic Document Book of the Faculty of Agricultural Technology for the period from 2021 to 2026, Article 36 emphasized the importance of periodically evaluating the curriculum in each Study Program. Following what was stated, this evaluation should occur at least once every five years and should involve various stakeholders, including members of the community, graduates or alumni, students, and relevant academic entities. In accordance with these regulations, a revision of the 2016 Curriculum took

place in 2021. This revision had been implemented for five years at Faculty of Agricultural Technology and its outcome was the development of the 2021 Curriculum, which is now applicable to all Postgraduate Study Programs. Furthermore, this revised curriculum incorporates key elements such as the Indonesian National Qualifications Framework (KKNI), Outcome-Based Education (OBE), and the inclusion of a research pathway alongside the regular pathway. Based on the inclusion of these key elements, the 2021 Curriculum is currently utilized for all postgraduate study programs at the faculty.

3.2.   Institutional Structure

As stated in Government Regulation No. 60/1999 article 45, the organizational structure of the faculty consists of (1) Leadership Elements such as Dean and Assistant (Vice) Dean, (2) Faculty Senate, (3) Academic Executives including Departments, Laboratories, and Lecturer Groups, and (4) Administrative Executives (Administration Department). Accordingly, in order to foster the smooth running of academic administration, the Faculty of Agricultural Technology Universitas Gadjah Mada incorporated an Academic and Student Affairs Section.

Starting from January 1, 2000, Universitas Gadjah Mada experienced a significant transformation, which included its transition into a State-Owned Legal Entity University (BHMN) in accordance with Government Regulation No. 153/2000. This change marked the beginning of a series of gradual adjustments across various domains, comprising university-wide and faculty-level organizations. Subsequently, with the implementation of Government Regulation No. 58 of 2013, which pertains to the Forms and Funding Mechanisms of Legal Entity State Universities, the status of the university shifted to that of a Legal Entity State University (PTNBH). This transition had significant implications, particularly regarding alterations in the financial management system and all aspects related to funding for educational activities at Universitas Gadjah Mada.

The organizational structure of the Faculty of Agricultural Technology is presented in Figure 3.1. Furthermore, in order to oversee the management of Study Programs, which comprises bachelor, master and doctoral degree programs, a dedicated organizational framework was developed, as shown in Figure 3.2. In this context, the leadership of the postgraduate study program was entrusted to the Head of the Study Program, who reports to the Dean through the Head of the Department.
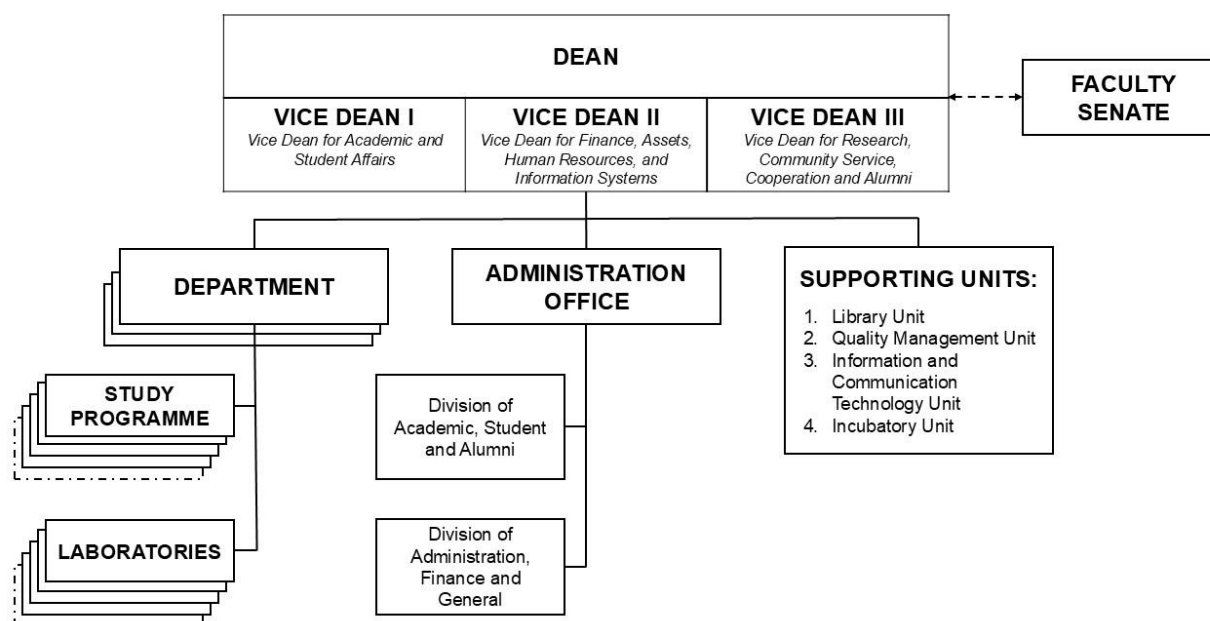
Figure 3.1 Structural Organization Chart of the Faculty of Agricultural Technology
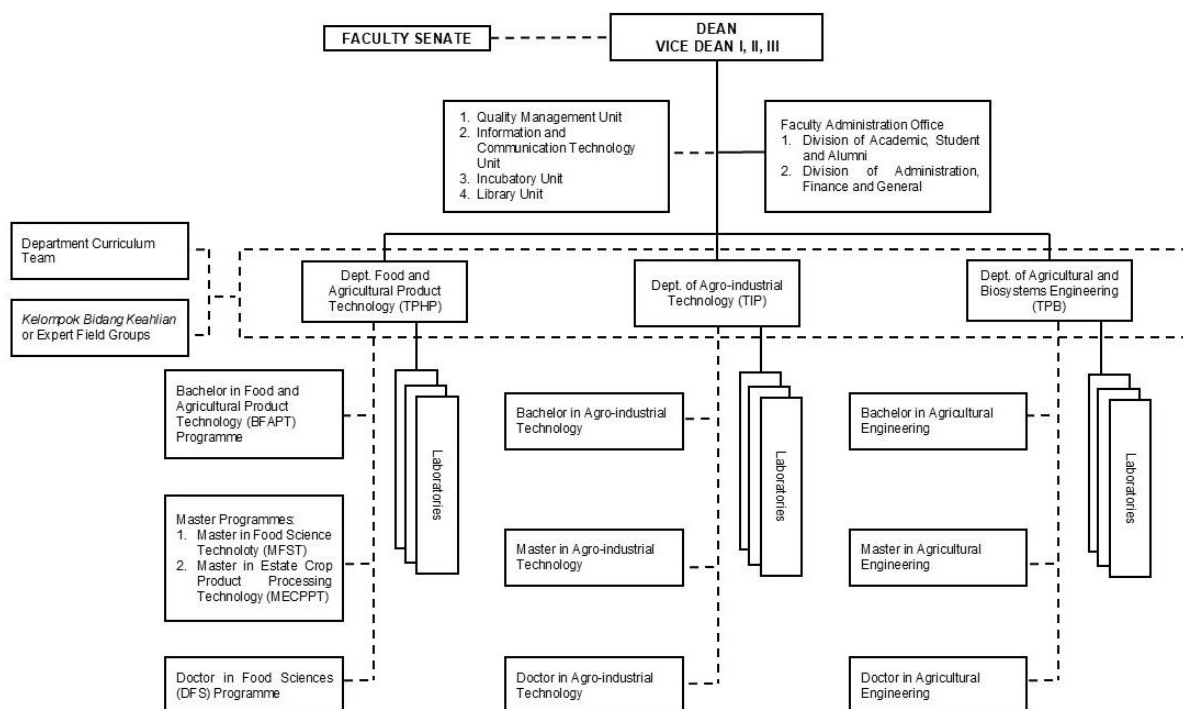
Figure 3.2 Functional Organization Chart of the Faculty of Agricultural Technology

a. **Faculty Senate**

In accordance with Government Regulation No. 153 of the year 2000, the Faculty Senate serves as the highest normative and representative body within the faculty. Its primary role includes the authority to formulate university policies and regulations specific to the respective faculty. The key tasks of the Faculty Senate, as outlined in Government Regulation No. 153 of the year 2000 and the Universitas Gadjah Mada Statutes (ART UGM), are outlined as follows:

1. Formulating academic plans and policies of the faculty.
2. Assessing the achievements and academic ethics, skills, and personality integrity of lecturers in the faculty.
3. Formulate norms and benchmarks for the implementation of faculty administration, and assess the implementation of the duties of faculty leaders.
4. Provide opinions and suggestions for the smooth management of the faculty.
5. Organizes the election of the dean.
6. Consider the nomination of the Vice Dean, Head of Department, Secretary of Department, Head of Laboratory, Head of Study Program, and Secretary of Study Program to the Dean.
7. Discusses the annual report of the faculty leadership that will be submitted to the university.
8. Approve the establishment (opening) or dissolution of study programs, laboratories, /studio

The Senate is led by a lecturer who fulfills the specified criteria, and this individual is accompanied by a Senate Secretary. Furthermore, the Chairman and Secretary of the Senate are elected from among the Senate members, which comprises professors, emeritus professors, extraordinary professors, faculty leaders (Deans and Vice Deans), Heads of Departments, and Department Representatives (lecturers). It is also important to clarify that the number of Department Representatives is determined in proportion to the number of lecturers within the respective Department, with one representative for every ten lecturers.

The leadership of the Senate of the Faculty of Agricultural Technology for the 2021-2026 period was officially selected through the consideration of two decrees issued by the Chancellor of Universitas Gadjah Mada. These decrees are as follows, firstly, Decree Number 1001/UN1.P/KPT/HUKOR/2021, dated May 7, 2021, appointing Prof. Dr. Ir. Umar Santoso, M.Sc. as the Chairman of the Senate of the Faculty of Agricultural Technology Universitas Gadjah Mada for the 2021-2026 Period. Second, Decree Number 1002/UN1.P/KPT/HUKOR/2021, also dated May 7, 2021, appointing Prof. Dr. Ir. Agnes Murdiati, M.S. as the Secretary of the Senate of the Faculty of Agricultural Technology Universitas Gadjah Mada for the 2021-2026 Period. Accordingly, the Senate leadership for the Faculty of Agricultural Technology is composed of the following:

Chairman   : Prof. Dr. Ir. Umar Santoso, M.Sc.
Secretary   : Prof. Dr. Ir. Agnes Murdiati, M.S.

b. Academic Executive

According to Government Regulation No. 60/1999 Articles 45, 50 and 51, the academic executing elements in the Faculty other than the Faculty Leaders are Department Leaders, Heads of Laboratories/Studios, Lecturer Groups, and Study Programs.

1. Faculty Leaders

The Faculty of Agricultural Technology is overseen by a Dean who is responsible for coordinating the implementation of the Tri Dharma of Higher Education (education, research, and community service). Additionally, the Dean fosters the academic community within the Faculty, which includes lecturers, students, and educational staff. The Dean also manages the administrative functions of the faculty and is accountable to the Chancellor. To support these responsibilities, the Dean is aided by three Vice Deans: (1) Vice Dean I, responsible for Academic and Student Affairs, (2) Vice Dean II, in charge of Finance, Assets, Human Resources, and Information Systems, and (3) Vice Dean III, tasked with Research, Community Service, Cooperation, and Alumni matters. Accordingly, the Vice Deans directly report to, and collaborate with the Dean in fulfilling their duties.

The Executive Elements of the Faculty of Agricultural Technology for the period from 2021 - 2026 are presented in Table 3.1.

Table 3.1 Leadership of Faculty of Agricultural Technology Universitas Gadjah Mada

No.	Structural Position	Name of Official	Period
1	Dean	Prof. Dr.Ir. Eni Harmayani, M.Sc.	2021-2026
2	Vice Dean for Academic and Student Affairs	Prof. Dr. Yudi Pranoto, S.T.P., M.P.	2021-2026
3	Vice Dean for Finance, Assets, Human Resources and Information Systems	Prof. Dr. Kuncoro Harto Widodo, S.T.P., M.Eng.	2021-2026
4	Vice Dean for Research, Community Service, Cooperation and Alumni	Dr. Sri Rahayoe, S.T.P., M.P.	2021-2026

2. Department and Study Program Leaders

Departments within faculties serve as the academic units responsible for delivering education in specific fields of science, technology, or the arts, as outlined in PP number 30 of 1990. It is important to comprehend that a department comprises key components, including its leadership (Department Head and Secretary), academic staff (lecturers), and physical resources such as laboratories. Accordingly, the Faculty of Agricultural Technology at Universitas Gadjah Mada houses three distinct Departments namely the Department of Food and Agricultural Products Technology (TPHP), the Department of Agricultural and Biosystem Engineering (TPB), and the Department of Agricultural Industrial Technology

(TIP). A breakdown of the leadership elements at the Department level within the Faculty of Agricultural Technology is presented in Table 3.2.

Table 3.2 Leadership of Faculty of Agricultural Technology Universitas Gadjah Mada

No.	Structural Position	Name of Official	Period
1	Head of TPHP Department	Prof. Dr. Ir. Tyas Utami, M.Sc.	2021-2026
2	Secretary of TPHP Department	Dr. Dwi Larasatie Nur Fibri, S.T.P., M.Sc.	2021-2026
3	Head of the TPB Department	Prof. Dr. Ir. Lilik Sutiarso, M.Eng.	2021-2026
4	Secretary of TPB Department	Dr. Arifin Dwi Saputro, S.T.P., M.Sc.	2021-2026
5	Head of TIP Department	Dr. Ir. Didik Purwadi, M.EC..	2021-2026
6	Secretary of TIP Department	Mohammad Affan Fajar Falah, S.T.P., M.Agr., Ph.D.	2021-2026

In accordance with Decree No. 234/U/2000 issued by the Minister of National Education, a Study Program serves as a structured educational unit, which is outlined in a study plan, to provide guidance for the execution of academic and/or professional education. This educational approach is based on a defined curriculum with the goal of equipping students with the requisite knowledge, skills, and attitudes in line with the objectives of the curriculum. Furthermore, this program essentially represents a specialized field of study within a specific area of science, technology, and/or art, allowing students to attain expertise in a specifically selected field. It is also important to clarify that the Faculty of Agricultural Technology offers a total of 10 distinct study programs, as detailed in Table 3.3.

Table 3.3 Departments and Study Programmes at the Faculty of Agricultural Technology Universitas Gadjah Mada

Department	Study Programme	Strata	Description
Food and Agricultural Product Technology	1. Food and Agricultural Product Technology	S-1	Operational since 1963
	2. Food Science and Technology	S-2	Operational since 1983
	3. Estate Crop Technology	S-2	Operational since 1983
	4. Food Science	S-3	Operational since 1999
Agriculture and Biosystems Engineering	1. Agricultural Engineering	S-1	Operational since 1963
	2. Agricultural Engineering	S-2	Operational since 1983
	3. Agricultural Engineering	S-3	Operational since 1999

Department	Study Programme	Strata	Description
Agro-Industrial Technology	1. Agro-Industrial Technology 2. Agro-Industrial Technology 3. Agro-Industrial Technology	S-1 S-2 S-3	Operational since 1986 Operational since 2006 Operational since 2019

Notes. Strata S-1 = Bachelor degree study programmes; **Strata S-2** = Master degree study programmes; **Strata S-3** = Doctoral degree study programmes

The comprehensiveness of a Study Program comprises several vital components, including its leadership, which consists of the Head and Secretary of the Study Program (at the Bachelor level, these roles may be held by the Head or Secretary of the Department), the curriculum structure, and the enrolled students. Accordingly, the Head of the Study Program has the responsibility for ensuring the quality of educational activities and the calibre of graduates produced. Both the Head of the Department and the Head of the Study Program report directly to the Dean. The Heads of Study Programs within the Faculty of Agricultural Technology are presented in Table 3.4.

Table 3.4 Study Program Managers at the Faculty of Agricultural Technology Universitas Gadjah Mada

No.	Structural Position	Name of Official	Period
Department of Food and Agricultural Product Technology			
1.	Head of Food and Agricultural Product Technology Program	Prof. Dr. Ir. Tyas Utami, M.Sc.	2021-2026
2.	Head of Food Science and Technology Master Program	Dr. Ir. Muhammad Nur Cahyanto, M.Sc.	2021-2026
3.	Secretary of Food Science and Technology Master Program	Dr. Widiastuti Setyaningsih, S.T.P., M.Sc.	2021-2026
4.	Head of Estate Crop Technology Master Program	Prof. Dr. Ir. Chusnul Hidayat	2021-2026
5.	Head of Food Science Doctoral Program	Dr. Ria Millati, S.T., M.T.	2021-2026
Department of Agriculture and Biosystems Engineering			
6.	Head of Agricultural Engineering Program	Prof. Dr. Ir. Lilik Sutiarso, M.Eng. Dr.	2021-2026
7.	Head of Agricultural Engineering Master Program	Ir. Nursigit Bintoro, M.Sc.	2021-2026
8.	Head of Agricultural Engineering Doctoral Program	Dr. Rudiati Evi Masithoh, S.T.P., Dev.Tech.	2021-2026
Department of Agro-Industrial Technology			
9.	Head of Agro-Industrial Technology Program	Dr. Ir. Didik Purwadi, M.EC	2021-2026
10.	Head of Agro-Industrial Technology Master Program	Anggoro Cahyo Sukartiko, S.T.P., M.Sc., Ph.D.	2021-2026
11.	Head of Agro-Industrial Technology Doctoral Program	Dr. Atris Suryantohadi, STP, MT.	2021-2026

3. Head of Laboratories

The Faculty of Agricultural Technology comprises a total of 16 laboratories, which are evenly distributed among its three Departments. Specifically, the Department of Food and Agricultural Product Technology houses 5 laboratories, the Department of Agriculture and Biosystems Engineering has 5 laboratories, and the Department of Agro-Industrial Technology maintains 6 laboratories. Following this, the leadership of these laboratories is entrusted to Laboratory Heads, who are responsible for overseeing and guiding the advancement of scientific work within their respective fields, in collaboration with their team of lecturers. Beyond laboratory resources, the Faculty of Agricultural Technology also offers additional educational support facilities, including incubator units. A detailed overview of Laboratory Heads and Supporting Units within the Faculty of Agricultural Technology are presented in Table 3.5.

Table 3.4 Head of Laboratory and Graduate Competency Support Unit at Faculty of Agricultural Technology Universitas Gadjah Mada

No.	Structural Position	Name of Official	Period
Department of Food and Agricultural Product Technology			
1.	Lab. of Chemistry, Biochemistry and Agricultural Products	Dr. Andriati Ningrum, S.T.P., M.Agr.	13 Jan 2022 – 31 Jan 2025
2.	Lab. of Food and Nutrition	Dr. Ir. Priyanto Triwitono, M.P.	13 Jan 2022 – 31 Jan 2025
3.	Lab. of Biotechnology	Rachma Wikandari, S.T.P., M.Biotech., Ph.D.	13 Jan 2022 – 31 Jan 2025
4.	Lab. of Process Engineering	Dr. Ir. Supriyadi, M.Sc.	13 Jan 2022 – 31 Jan 2025
5.	Lab. of Waste Management	Dr. Dian Anggraini Suroto, S.T.P., M.P., M.Eng.	13 Jan 2022 – 31 Jan 2025
Department of Agriculture and Biosystems Engineering			
1.	Lab. of Agricultural Machinery Energy	Dr. Radi, S.T.P., M.Eng.	13 Jan 2022 – 31 Jan 2025
2.	Lab. of Land and Water Resources Engineering	Chandra Setyawan, S.T.P., M.Eng., Ph.D.	13 Jan 2022 – 31 Jan 2025
3.	Lab. of Food and Postharvest Engineering	Dr. Devi Yuni Susanti, S.T.P., M.Sc	13 Jan 2022 – 31 Jan 2025
4.	Lab. of Biological Physics	Dr. Murtiningrum, S.T.P., M.Eng.	13 Jan 2022 – 31 Jan 2025
5.	Lab. of Agricultural Building Environmental Engineering	Andri Prima Nugroho, S.T.P., M.Sc., Ph.D.	13 Jan 2022 – 31 Jan 2025
Department of Agro-Industrial Technology			
1.	Lab. of Management and System Industry	Dr. Novita Erma Kristanti, S.T.P., M.P.	13 Jan 2022 – 31 Jan 2025
2.	Lab. of System Analysis and Simulation	Dr. Agung Putra Pamungkas, S.T.P., M.Agr.	13 Jan 2022 – 31 Jan 2025

No.	Structural Position	Name of Official	Period
3.	Lab. of Industrial Design and Waste Control	Dr. Ir. Makhmudun Ainuri, M.Si.	13 Jan 2022 – 31 Jan 2025
4.	Lab. of Quality Analysis and Standardizations	Mohammad Affan Fajar Falah, S.T.P., M.Agr., Ph.D.	13 Jan 2022 – 31 Jan 2025
5.	Lab. of Bioindustry	Dr. Darmawan Ari Nugroho, S.T.P., M.P.	13 Jan 2022 – 31 Jan 2025
6.	Lab. of Production System	Dr. Nafis Khuriyati, S.T.P., M.Agr.	13 Jan 2022 – 31 Jan 2025
Graduate Competency Support Unit			
1.	Incubator	Ir. Suharno, M.Eng., M.Eng.Sc.	29 Jan 2021 – 28 Jan 2023

4. Administration Implementation

The administrative functions within the Faculty of Agricultural Technology are managed by the Administration Department, which is led by the Head of the Administration Office. This office is supported by two Section Heads namely (1) Academic and Student Affairs Section and (2) Finance and General Administration Section. Following this, each of these sections is further assisted by several executives who contribute to the smooth operation of administrative tasks. In this regard, the administrative personnel of the Faculty of Agricultural Technology are as follows:

Head of Administration Office : Agung Wijayanto, S.E., M.Acc.
Head of Academic and Student Affairs Section : Nur Cahyati Wahyuni, S.Ant., M.Sc.
Head of Finance and General Administration Section : Indira Fauzia Basrawy, S.Sos., M.B.A.

5. Quality Management Unit

To ensure the effective implementation of academic policies, plans, and the ideals outlined in Academic Documents (including Policies, Standards, and Academic Regulations), the faculty established a Quality Management Unit (UMM). This unit operates under the oversight of an academic quality assurance organization, with a Quality Manager Representative (QMR) serving as its chairperson. In this regard, the QMR holds the responsibility of reporting to the Dean and overseeing the proper execution of quality management processes and is assisted by an administrator. Within the academic period of 2022, the UMM personnel are as follows:

Chairman : Dr. Ir. Retno Indrati, M.Sc.
Administration : Hilaria Lestari Budiningsih, A.Md.

3.3. Human Resources

As of July 2022, the lecturers and education personnel (employees) of the Faculty of Agricultural Technology, Universitas Gadjah Mada are presented in Tables 3.6, 3.7, and 3.8 below.

Table 3.6 List of Lecturers at Faculty of Agricultural Technology Universitas Gadjah Mada

No.	Lecturer Name	Identity Number (NIP/NIU)
Department of Food Agricultural Product Technology		
1.	Prof. Dr. Ir. Agnes Murdiati, M.S.	195208101978032001
2.	Prof. Dr. Ir. Endang Sutriswati Rahayu, M.S.	195402221980032001
3.	Dr. Ir. Retno Indrati, M.Sc.	195901101985032001
4.	Prof. Dr. Ir. Umar Santoso, M.Sc.	195902171985031002
5.	Prof. Dr. Ir. Djagal Wiseso Marseno, M.Agr.	195911221986121001
6.	Dr. Ir. Supriyadi, M.Sc.	196012131986031001
7.	Dr. Ir. Muhammad Nur Cahyanto, M.Sc.	196107051986031004
8.	Dr. Ir. Priyanto Triwitono, M.P.	196112011987101001
9.	Prof. Dr. Ir. Tyas Utami, M.Sc.	196204181986032001
10.	Prof. Dr. Ir. Eni Harmayani, M.Sc.	196306091987102001
11.	Prof. Dr. Ir. Sri Raharjo, M.Sc.	196307231986031001
12.	Prof. Dr. Ir. Chusnul Hidayat	196409191994031002
13.	Dr. Rini Yanti, S.T.P., M.P.	197105201999032001
14.	Dr. Ria Millati, S.T., M.T.	197205152006042001
15.	Prof. Dr. Yudi Pranoto, S.T.P., M.P.	197308261999031002
16.	Bangun Prajanto Nusantoro, S.T.P., M.Sc.	197609031999031002
17.	Dr.nat.techn. Francis M Constance Sigit Setyabudi, S.T.P., M.P.	197610142008121003
18.	Dr. Dian Anggraini Suroto, S.T.P., M.P., M.Eng.	197801012005012001
19.	Zaki Utama, S.T.P., M.P.	197806092002121004
20.	Dr.rer.nat. Lucia Dhiantika Witasari, S.Farm., Apt., M.Biotech.	198406222015042003
21.	Dr. Widiastuti Setyaningsih, S.T.P., M.Sc.	198407212012122002
22.	Rachma Wikandari, S.T.P., M.Biotech., Ph.D.	198601262018032001
23.	Yunika Mayangsari, S.Si., M.Biotech., Ph.D.	198606022020122013
24.	Dr. Dwi Larasatie Nur Fibri, S.T.P., M.Sc.	198702262015042002
25.	Dr. Arima Diah Setiowati, S.T.P., M.Sc.	198703252020122011

No.	Lecturer Name	Identity Number (NIP/NIU)
26.	Bambang Dwi Wijatniko, S.T.P., M.Agr.Sc., M.Sc.	199204032019031015
27.	Dr. Andriati Ningrum, S.T.P., M.Agr.	111198306201308201
28.	Aulia Ardhi, S.T.P., M.Sc.	111198709201802101
29.	Andika Sidar, S.T.P., M.Biotech.	111198712201607201
30.	Dr. Manikharda, S.T.P., M.Agr.	111198901202001201
31.	Fiametta Ayu Purwandari, S.T.P., M.Sc.	111198907201607202
32.	Wahyu Dwi Saputra, S.T.P., M.Agr.Sc., Ph.D.	111199106202204101
33.	Qurrotul A'yun, S.T.P., M.Sc.	111199108201811201
34.	Andika Wicaksono Putro, S.T.P., M.Sc.	111199212201811102
35.	Ardhika Ulfah, S.T.P., M.Sc.	111199309202101201
36.	Ashri Nugrahini, S.T.P., M.Sc.	111199310202201201
37.	Ana Kemala Putri Jauhari, S.T., M.T.	111199312201812201
Department of Agricultural and Biosystems Engineering		
1.	Prof. Dr. Ir. Sahid Susanto, M.S.	195312211980031005
2.	Prof. Dr. Ir. Bambang Purwantana, M.Agr.	196112161989031001
3.	Dr. Ir. Nursigit Bintoro, M.Sc.	196305251989031004
4.	Prof. Dr. Ir. Lilik Sutiarso, M.Eng.	196407071990031002
5.	Dr. Joko Nugroho Wahyu Karyadi, S.T.P., M.Eng.	197001041998031001
6.	Dr. Murtiningrum, S.T.P., M.Eng.	197009051997022001
7.	Dr. Sri Rahayoe, S.T.P., M.P.	197012311997022001
8.	Dr. Rudiati Evi Masithoh, S.T.P., M.Dev.Tech.	197305251999032002
9.	Dr. Devi Yuni Susanti, S.T.P., M.Sc.	197906082005012001
10.	Hanim Zuhrotul Amanah, S.T.P., M.P., Ph.D.	198007092008012013
11.	Dr. Ngadisih, S.T.P., M.Sc.	198009072008122003
12.	Dr. Radi, S.TP., M.Eng.	198110072015041001
13.	Sri Markumningsih, S.T.P., M.Sc.	198603212014042001
14.	Chandra Setyawan, STP., M.Eng., Ph.D.	198605082015041001
15.	Andri Prima Nugroho, S.T.P., M.Sc., Ph.D.	198607202015041001
16.	Bayu Dwi Apri Nugroho, S.T.P., M.Agr., Ph.D.	111197904201406101
17.	Dr. Arifin Dwi Saputro, S.T.P., M.Sc.	111198507201304102

No.	Lecturer Name	Identity Number (NIP/NIU)
18.	Hanggar Ganara Mawandha, S.T., M.Eng., Ph.D.	111198811201811102
19.	Rizki Maftukhah, S.T.P., M.Sc.	111198902201607201
20.	Ansita Gupitakingkin Pradipta, S.T., M.Eng.	111198908201802202
21.	Redika Ardi Kusuma, S.T.P., M.Si.	111199002201811101
22.	Bayu Nugraha, S.T.P., M.Sc., Ph.D.	111199003201607102
23.	Yudha Dwi Prasetyatama, S.T., M.Eng.	111199010201607101
24.	Makbul Hajad, S.T.P., M.Eng., Ph.D.	111199011201812101
25.	Ing. Rose Tirtalistyani, S.T., M.Agr.	111199203201811201
26.	Muhamad Khoiru Zaki, S.P., M.P., Ph.D.	111199304202201101
27.	Siti Mariyam, S.T.P., M.Sc.	111199311202101201
28.	Aryanis Mutia Zahra, S.TP., M.Si.	111199409202101201
29.	Dr. Prieskarinda Lestari, S.T.	111199601202110201
Department of Agro-Industrial Technology		
1.	Prof. Dr. Ir. Mochammad Maksum, M.Sc.	195406231978031002
2.	Ir. Suharno, M.Eng., M.Eng.Sc.	195911071985031005
3.	Dr. Ir. Makhmudun Ainuri, M.Si.	196004201988031001
4.	Dr. Ir. Endy Suwondo, DEA	196009281985031003
5.	Dr. Ir. R. Wahyu Supartono	196306191988031003
6.	Dr. Ir. Dyah Ismoyowati, M.Sc.	196310201989032001
7.	Dr. Ir. Adi Djoko Guritno, MSIE.	196311121988031002
8.	Dr. Ir. Didik Purwadi, M.EC.	196405111989031003
9.	Dr. Ir. Guntarti Tatik Mulyati, M.T.	196503251992032002
10.	Dr. Wagiman, S.T.P., M.Si.	196705121995121001
11.	Dr. Atris Suyantohadi, S.T.P., MT.	196809061997021001
12.	Ir. Pujo Saroyo, M.Eng.Sc.	196901231993031004
13.	Dr. Jumeri, S.T.P. M.Si	197101011997021001
14.	Prof. Dr. Kuncoro Harto Widodo, S.T.P., M.Eng.	197106021995121001
15.	Dr. Henry Yuliando, S.T.P., M.M., M.Agr.	197107221998031002
16.	Ibnu Wahid Fakhrudin Aziz, S.T.P., M.T.	197112151997021001
17.	Dr. Nafis Khuriyati, S.T.P., M.Agr.	197408081999032002

No.	Lecturer Name	Identity Number (NIP/NIU)
18.	Mohammad Affan Fajar Falah, S.T.P., M.Agr., Ph.D.	197504101999031001
19.	Dr. Darmawan Ari Nugroho, S.T.P., M.P.	197709042002121001
20.	Muhammad Prasetya Kurniawan, S.T.P., M.Sc.	198009082005011002
21.	Dr. Novita Erma Kristanti, S.T.P., M.P.	198011102008122002
22.	Anggoro Cahyo Sukartiko, S.T.P., M.P., Ph.D.	198101202010121005
23.	Dr. Mirwan Ushada, S.T.P., M.App.Life.Sc.	198105182009121003
24.	Dr. Agung Putra Pamungkas, S.T.P., M.Agr.	198403282012121002
25.	Arita Dewi Nugrahini, S.T.P., M.T., Ph.D.	198601102015042001
26.	Moh. Wahyudin, S.T.P., M.Sc.	198606232015041001
27.	Imam Bagus Nugroho, S.Si., M.Sc.	111198812202201101
28.	Annisa Dwi Astari, S.T.P., M.T.	111199103201607201
29.	Megita Ryanjani Tanuputri, S.T.P., M.Sc., Ph.D.	111199206201706201
30.	Rosa Amalia, S.T.P., M.Sc.	111199401202101201
31.	Sintia Putri Pradita, S.T.P., M.Sc.	111199405202201202
32.	Shafira Wuryandani, S.T.P., M.Sc.	111199406202101201
33.	Rendayu Jonda Neisyafitri, S.T.P., M.Sc.	111199602202101201

Table 3.7 Qualifications of Lecturers at Faculty of Agricultural Technology Universitas Gadjah Mada

No.	Position or Education	Number of Permanent Lecturers assigned to the Department			Total in Faculty	Percentage (%)
		Dept. TPHP	Dept. TPB	Dept. TIP		
Functional Position						
1.	Teaching Staff	11	9	7	27	27
2.	Expert Assistant	4	3	3	10	10
3.	Assistant Professor	8	11	13	32	33
4.	Associate Professor	6	3	8	16	16
5.	Professor	9	3	2	14	14
	TOTAL	37	29	33	99	100
Highest Education						
1.	Undergraduate	0	0	0	0	0
2.	Graduate/Profession/Sp-1	11	8	11	30	30

No.	Position or Education	Number of Permanent Lecturers assigned to the Department			Total in Faculty	Percentage (%)
		Dept. TPHP	Dept. TPB	Dept. TIP		
3.	Postgraduate/Sp-2	26	21	22	69	70
	TOTAL	37	29	33	99	100
Civil Service and Non-Civil Service Lecturers						
1.	Civil Service (PNS)	26	15	26	67	68
2.	Non-Civil Service (Non PNS)	11	14	7	32	32
	TOTAL	37	29	33	99	100

Table 3.8 Employee Qualifications of Education Personnel at Faculty of Agricultural Technology Universitas Gadjah Mada

No		Number of Education Personnel in Different Last Education Type										Total	(%)
		Doc.	Mas.	Bac.	Dip.4	Dip.3	Dip.2	Dip.1	HS	JHS	ES		
1.	Librarian	0	1	0	0	1	0	0	0	0	0	2	3
2.	Labourer/ Technician/ Analyst/ Operator/ Programmer	0	0	10	0	2	0	0	17	0	0	29	40
3.	Administration	0	3	16	0	3	0	0	12	0	0	34	46
4.	Others: security guards, cleaners, waiters, drivers, etc.	0	0	0	0	0	1	0	5	2	0	8	11
	TOTAL	0	4	26	0	6	1	0	34	2	0	73	100

Notes. Doc. = Doctoral degree; **Mas.** = Master degree; **Bac.** = Bachelor degree; **Dip.4** = 4-year diploma; **Dip.3** = 3-year diploma; **Dip.3** = 2-year diploma; **Dip.1** = 1-year diploma; **HS** = high school graduate; **JHS** = junior high school graduate; **ES** = elementary school graduate.

3.4. Learning and Research Infrastructure

Infrastructure for carrying out learning and research processes consists of office buildings, lecture halls (equipped with computers, LCD, air conditioning, and white boards), laboratory (for research and practicum), library, discussion room, examination room, and field laboratories in Kalitirto, Brebah, Sleman, Yogyakarta.

3.4.1 Office building

The UGM FTP building consists of 4 units with a total area of 17,950 m^2. the building used for the purposes of office space (administration) consisting of the Dean's room, Faculty Senate, Administration and Academic Administration, lecture rooms, laboratories, libraries, courtrooms,

and discussion/oral examinations, seminar rooms, function rooms, and space for student activities. The area of several main rooms is presented in Table 3.9.

Table 3.9 Area of several office spaces and learning support

No.	Room Use	Total Space	Total Area (m²)
1	Dean's Room	1	100
2	Academic Senate Room	1	20
3	Department Manager's Room	3	150
4	Faculty Meeting Room	1	100
5	Department Meeting Room	3	150
6	Administration Room	1	352
7	Big Seminar Room	1	400
8	Medium Seminar Room	1	280
9	Small Seminar Room	3	210
10	Small Examination Room	6	120
11	Lecture hall	13	1042
12	Function Room (Auditorium)	1	400
13	Library Room	1	400
		TOTAL	3.724

3.4.2 Lecture Facilities

The number of students attending courses for each course varies. Eye courses offered for new students (Year I) generally have participants numbering between 100 – 150 students because it is a compulsory subject, while elective courses generally have few participants. For this purpose The Faculty of Agricultural Technology provides lecture halls with different capacities, ranging from lecture halls with a capacity of 25 seats to 200 seats in sufficient quantity. All lecture halls are equipped with blackboard facilities or white board, overhead projector, LCD, air conditioning, computer connected to the internet, facilities wireless internet (Wi Fi), and for large lecture halls a sound system is also provided.

3.4.3   Laboratory

The UGM Faculty of Agricultural Technology (FTP-UGM) has a laboratory which is used for research in the context of developing knowledge or used for a means of improving the motor skills (psychomotor) of students during the following education. In total there are 16 laboratories and one incubator unit that are used for equip students in various ways to face the world of work (such as engineering interviews, make cover letters, personality, psychotest, and so forth).

The laboratories at UGM FTP are:

1. **Laboratory of Chemistry, Biochemistry and Agricultural Products**. Develop knowledge related to chemical aspects such as chemical analysis, physiology and technology postharvest, food additives, applied food chemistry and biochemistry, including testing the quality of food and other agricultural products in terms of chemical aspects.

2. **Biotechnology Laboratory.** Developing knowledge related to microbial-biological aspects such as microbiological analysis of agricultural products, fermentation, microbial enzymes, microbial isolation and identification, industrial microbiology, food microbiology and processing, including the handling of agricultural waste and genetic engineering.

3. **Food and Nutrition Laboratory.** Develop knowledge related to nutritional aspects, for example in vitro nutrition, bioassays, evaluation of food nutrition, community nutrition, nutrition experimental, and others. This laboratory is equipped with a room for testing sensory as a means for organoleptic testing of a food product, laboratory kitchen and animal laboratory.

4. **Process Engineering Laboratory.** Develop knowledge related to physical aspects, for example analysis of physical properties, water activity, engineering kinetics, design agricultural product processing factory, processing equipment design, development food products and agricultural products, and others. This laboratory is equipped with a "pilot plant" as a means to develop processing technology and handling various food commodities and agricultural products, such as units processing (refining) oil, soy milk processing units, smoking units, fruit juice processing, essential oil distillation units, and so on.

5. **Waste Management Laboratory**. Develop processing techniques and utilization of food waste and agricultural products through the application of microbiology, chemical, and process engineering

6. **Food Engineering and Postharvest Laboratory.** The scientific field studied application of principles and concepts of engineering science in handling, processing, and distribution of agricultural products in relation to conservation and product conversion efforts in agriculture. Includes knowledge in the design of postharvest equipment and food processing, development, operation, and product management processes agriculture.

7. **Laboratory of Environmental Engineering and Agricultural Buildings**. Formal Coverage: Development of science and technology in the aspect of technical analysis of environmental conditions buildings as well as efforts to control the environment of agricultural buildings to comply with demands of the requirements of cultivated agricultural products. Material Scope: materials buildings, environmental control equipment, and agricultural products. Practical

equipment and main research including: pressure test equipment, Vicat tools, SSD moisture test equipment (saturated surface dry), oven, silo model, pressure transducer, proving ring, analog digital converter, evaporative cooler, oxygen meter, pH meter, NOx and SOx meter, thermohygrometer, growth chamber, air sampler, and Hot Wire Anemometer.

8. **Agricultural Machinery Energy Laboratory.** Formal Coverage: design of machine elements, agricultural machinery design, ergonomics, energy conversion, mechanical technology, tools & agricultural machinery, mechatronics. Material scope: energy and machinery for production & biomass process. Laboratory facilities: machine testing unit, manufacturing unit, unit design, energy conversion units, electrical units, electronics, and mechatronics

9. **Land and Water Resources Engineering Laboratory**. Formal Scope: development of science and technology in the field of soil and water engineering in relation to agricultural engineering. Material Coverage: soil, water and agricultural techniques. Main Equipment : hygrothermograph recorder, ombrometer recorder, cup anemometer, A-pan evaporimeter, digital planimeter, theodolite, BTM, measuring tape, compass, abney level, GIS, AWRL, current meter, water pass, analyte balance, oven, permeameter, casagrande , tensiometer, soil sampler, water pump, flow meter, and neutron probe.

10. **Laboratory of Biological Physics**. Formal Scope: interdisciplinary science that applies techniques from physics and knowledge of biological structures and their functions and systems. Material Coverage: biomass in relation to the fields of physics and biology. Main Equipment : Morphometrics, measurement of energy and tension in plants and animals related to providing physical stimulation of heat, force, sound, light and electric charge, the nature of the phenomenon of movement of water, gasses and nutrients through the physiological activities of plants and animals.

11. **Quality Analysis and Standardization Laboratory**. Formal Scope: Understanding and mastery of the concept of quality and related testing methods, understanding and mastery of the seven tools and eight steps in carrying out quality control at all stages in the industrial system, understanding of the quality management system that applies on a national and international scale. Material Scope: Agricultural and food product/result .

12. **Industrial System Management Laboratory**. Formal Scope : Development and application of various managerial techniques such as scientific management, business organization, quantitative management and others. Material Coverage : Agricultural industry, which includes animal, vegetable and microbial product processing industries.

13. **Production System Laboratory.** Development of techniques and technologies for integrating production resources-labor, agricultural materials, capital and energy in a more effective and efficient way to produce production output with added value.

14. **Industrial System Analysis and Simulation Laboratory.** Formal Scope: applying the principles of analysis and design, modeling and system simulation studies in an industrial application in the field of agriculture based on computer technology both hardware and software in achieving optimization functions. Material Coverage: Analysis and simulation of

agricultural industrial systems, system capital and numerical computation, as well as agricultural industrial system informatics. Main Equipment: hardware in the form of computers connected to a network system (LAN), and software in the form of computer operating system programs, computer language programs, and applications used to perform computational analysis and simulation of industrial systems.

15. **Bioindustry Laboratory**. Support for tools/equipment and laboratory scale production systems that are ready to be upgraded to pilot scale including PCR tools/equipment, fermenter, evaporator, spray dryer, freeze dryer, and various analysis equipment.

16. **Reka Industrial Laboratory and Control of Side Products**. Formal Scope: development of engineering science in layout and material handling, process design and agro-industrial process control systems (new products, development and packaging), agro-industrial machine tools, work design, control of by-products, and agro-industry environment. Material Coverage: competency in construction, maintenance, evaluation and assessment. Supporting Equipment : vacuum pump, BOD incubator, UPL mock-up, flour machine, triple beam balance scale, blender, melinjo chip pounder, rice cooker, meat breaking machine, coconut grater machine, stainless steel vessel, vessel for fluid study, and tools and other complements.

3.4.4 Library

The UGM Faculty of Agricultural Technology Library is located on the fourth floor of the new building. Books, scientific journals, research reports, and various reference collections for lectures, practicums, and other learning processes are available in the library of the Faculty of Agricultural Technology. The final data of the library is as shown in Table 3.10.

Table 3.10 Library Collection of the Faculty of Agricultural Technology

No.	Collection Type	Amount (Title)
1	Text and Reference Books	9048
2	Thesis	5680
3	Dissertation	960
4	Report	210
5	Research	585

Note: Data as of July 2022

The library uses an open loan system (open access) to serve the needs of students and other users. This system gives flexibility to library users to choose and take the desired library materials themselves. To make it easier for users to find information or collections, the library provides a search facility in the form of an online OPAC/catalog. With this online catalog, users can search

for information with several search points, namely, author, title, and subject. The OPAC is integrated with the UGM library and can be accessed via the http://opac.lib.ug.ac.id page

Users can also access databases subscribed to by the UGM Library such as Science Direct, ACS Publication, Proquest, Scopus, Wiley Online-Ebooks and others using the computers available in the library via the http://lib.ugm.ac.id page. For those who bring laptops in the library, hot spots have also been provided.

Students, lecturers, and UGM FTP staff are automatically members of the library. However, to be able to take advantage of the available services, you must first have a library membership card (LMC). Membership cards can be obtained by registering at the circulation section of the UGM FTP Library, by filling out the registration form and submitting 2 passport photographs measuring 2 x 3 cm. Services are provided every working day Monday to Thursday at 07.00-15.30 WIB, and Friday at 07.00-14.30 WIB without a break.

3.5   Student and Alumni Affairs

Number of student bodies (active students) for all study levels (S-1, S-2, and S-3) in The Faculty of Agricultural Technology can be seen in Table 3.11, while the number of alumni can be seen in Table 3.12.

Table 3.11 Number of Students of the Faculty of Agricultural Technology in 2022

No.	Education level	Departement			Amount	Percentage of total students (%)
		TPHP	TPB	TIP		
1	**Undergraduate**	**313**	**289**	**355**	**957**	**82**
2	**Postgraduate**	**147**	**46**	**23**	**216**	**18**
	2.1. S-2 ITP	86	0	0	86	7
	2.2. S-2 THP	13	0	0	13	1
	2.3. S-2 TEP	0	27	0	27	2
	2.4. S-2 TIP	0	0	19	19	2
	2.5. S-3 IP	48	0	0	48	4
	2.6. S-3 ITP	0	19	0	19	2
	2.7. S-3 TIP	0	0	4	4	0

	Total	460	335	378	1173	100

Data as of July 2022; ITP = Food Science and Technology; THP = Plantation Product Technology; TEP = Engineering Agriculture; TIP = Agricultural Industry Technology; IP = Food Science; ITP = Agricultural Engineering Science

Table 3.12 Number of Alumni of the Faculty of Agricultural Technology Until 2022

NO	Education level	Departement			Amount	percentage of total students (%)
		TPHP	TPB	TIP		
1	**Undergraduate**	**3552**	**2649**	**1787**	**7988**	**85**
2	**Postgraduate**	**1039**	**274**	**116**	**1429**	**15**
	2.1. S-2 ITP	764	0	0	764	8
	2.2. S-2 THP	175	0	0	175	2
	2.3. S-2 TEP	0	230	0	230	2
	2.4. S-2 TIP	0	0	116	116	1
	2.5. S-3 IP	100	0	0	100	1
	2.6. S-3 ITP	0	44	0	44	1
	2.7. S-3 TIP	0	0	0	0	0
	Total	**4591**	**2923**	**1903**	**9417**	**100**

Data as of July 2022; ITP = Food Science and Technology; THP = Plantation Product Technology; TEP = Engineering Agriculture; TIP = Agricultural Industry Technology; IP = Food Science; ITP = Agricultural Engineering Science

Chapter IV: Education System

4.1. Semester Credit System

Implementation of education at FTP-UGM uses the **Semester Credit System**, namely a system that regulates the planning, preparation and implementation of educational programs by using lecture credits and practicum as a measure of educational load. Each course and practicum is given a weight according to the needs to fulfill the achievement of educational goals. In the credit system, the study load that must be completed by students at a level of study is expressed in the number of **Semester Credit Units (SKS).**

Based on differences in interests, talents and abilities between one student and another, the method and time for completing the study load and the composition of study activities do not have to be the same for every student even though they are sitting in the same school year.

The main objectives of using the semester credit system are to:

1. Provide opportunities for students who are capable and study hard so that can complete the study in the shortest time.
2. Provide opportunities for students to participate in Education activities that matches interests, talents, and abilities.
3. Make it easier to adjust the curriculum to the development of science and technology.
4. Improve the student proficiency evaluation system.

In the credit system, the educational burden that concerns the student's study load and the teaching load for lecturers requires measure. This measure is expressed in credit units called semester credit units and abbreviated as SKS. The amount of these credits needs to be determined for each educational activity such as lectures, laboratory practice, field practice, seminars, research, and other activities. The amount of credits for each educational activities are determined by the number of hours (time) used to organize these activities, which are as follows:

1. **Credits for college**. One college credit is equivalent to educational activities for 3 (three) hours a week. Because in one semester there are 16 weeks, one credit is equal to educational activities for 48 hours in one semester.
   a. For students, three hours of educational activities a week (1 credit) consists of 1 hour of lectures, namely scheduled face-to-face with lecturers, plus 1 hour of series education, which are activities planned by lecturers but not scheduled, such as homework, essay writing and so on, and 1 hour more, student independent activities. In lecture activities including scheduled exams between times (insert/midterm exams, quizzes, etc.).
   b. For lecturers, one credit (3 hours of activities / week) consists of 1 hour of lectures, namely scheduled face-to-face with students, 1 hour of planning series and evaluation activities, and 1 hour for the development of lecture subject matter.
2. **Credits for laboratory practice (practicum).** The calculation of educational load related to psychomotor abilities and physical activities, which is usually carried out in practicum activities

in the laboratory and field, is basically the same as the calculation for lecture activities. The difference is that 1 hour of lecture is considered to have a load equivalent to physical or psychomotor activity of 2 -3 hours. Thus, 1 credit of this activity for students is equal to 2-3 hours of physical or psychomotor activities plus 1 hour of series activities, for example for making reports and 1 hour for independent activities so that the total number is 4-5 hours a week or 64-80 hours in one semester. If a lecture is accompanied by practicum, the total credits are arranged according to the number of each credits.

3. **Credits for Field Work Practice**. The calculation of credits for field work or factory practice is determined like credits for laboratory practice, which is 4 - 5 hours a week or 64 - 80 hours in one semester. If fieldwork practice is carried out for a long time to determine the credits, it is necessary to consider the average working hours a day that are actually used by students in the field, so that the weight of credits can be fulfilled.

4. **Credits of Research**. The calculation of credits for research to compile a thesis is similar to the calculation for physical and psychomotor activities (practicum), which is 1 Research credit is an activity for 64 - 80 hours in one semester. Research that must be carried out by students for thesis preparation to obtain a Bachelor of Agricultural Technology (S.T.P., S-1 program) is assessed at 5-6 credits, including thesis writing and examinations.

The study load and the composition of study activities taken by a student in a semester need not be the same as that taken by other students. In determining the study load each semester, a student needs to pay attention to their abilities. This can be seen from the results of his studies in previous semesters as measured by the Achievement Index (see Study Evaluation article).

If a student works normally for an average of 6-8 hours during the day and 2 hours at night, based on the provisions of 1 credit for lecture activities, physical and psychomotor activities, and other educational activities and considering social and community activities, then ideally the educational load that can be taken by a student range from 16-20 credits or an average of 18 credits each semester.

4.2. Academic Calendar

All implementations of learning process activities at the Faculty of Agricultural Technology UGM in 2022/2023 are regulated based on the academic calendar as Table 4.1.

Table 4.1 Academic Calendar of Faculty of Agricultural Technology UGM Academic Year 2022/2023 Undergraduate Program

Odd Semester

TIME	ACTIVITIES
June 25, 2022 – Agustus 13, 2022	KKN-PPM Operational Period 2
July 1, 2022 –July 31, 2022	Odd Semester 2022/2023 registration for old students
July 4, 2022 - July 22, 2022	Pre KRS Period

TIME	ACTIVITIES
July 31, 2022	Deadline for Payment of Odd Semester 2022/2023 Tuition Fees for Old Students
August 1, 2022 - August 13, 2022	PPSMB New Student Year 2022 (starting with admission ceremony)
August 1, 2022 - August 12, 2022	KRS and guardianship period Odd Semester 2022/2023 for old student
August 11, 2022 - August 12, 2022	KRS Period Odd Semester 2022/2023 for New Students (conducted by unit/faculty operators)
August 15, 2022	Beginning of academic activities for Odd Semester 2022/2023
August 15, 2022 - August 19, 2022	Online registration for KKN-PPM period 3
August 24, 2022 - August 25, 2022	Diploma and Bachelor Graduation period IV T.A. 2021/2022
August 29, 2022 – September 2, 2022	Online registration for KKN-PPM period 4
October 3, 2022 - October 14, 2022	Midterm Exam (UTS) Odd Period 2022/2023
October 10, 2022 - October 21, 2022	PDDikti reporting period 2021-2
October 12, 2022 - November 30, 2022	KKN-PPM operational period 3
October 19, 2022 - October 21, 2022	Case resolution period for students who do not register for 2 (two) consecutive semesters and reconciliation of payment data
November 23, 2022 - November 24, 2022	Diploma and Bachelor Graduation Period I T.A. 2022/2023
December 2, 2022	The last day of the Odd Semester 2022/2023 lecture period
December 5, 2022 - December 16, 2022	Final Odd Semester Examination (UAS) Period 2022/2023
December 16, 2022 - February 4, 2023	KKN-PPM operational period 4
December 19, 2022	73rd Anniversary Celebration
December 19, 2022 - January 31, 2023	End of semester break/announcement of exam results

Even Semester

TIME	ACTIVITIES
January 2, 2023 - January 31, 2023	Registration for Even Semester 2022/2023
January 9, 2023 - January 20, 2023	Pre-KRS Period
January 31, 2023	Deadline for payment of Even Semester tuition fees
February 1, 2023 - February 10, 2023	KRS period and even semester guardianship 2022/2023
February 13, 2023 - February 17, 2023	Online registration for KKN-PPM period 1
February 13, 2023	The beginning of academic activities for Even Semester 2022/2023

February 27, 2023 - March 6, 2023	Online registration for KKN-PPM period 2
February 22, 2023 - February 23, 2023	Diploma and Bachelor Graduation Period II T.A. 2022/2023
March 20, 2023 - May 8, 2023	KKN-PPM operational period 1
April 3, 2023 - April 14, 2023	Midterm Exam (UTS) Even Period 2022/2023
April 10, 2023 - April 20, 2023	PDDikti reporting period 2022-1
April 18, 2023 - April 20, 2023	Case resolution period for students who do not register for 2 (two) consecutive semesters and reconciliation of payment data
May 24, 2023 - May 25, 2023	Diploma and Bachelor Graduation Period III T.A. 2022/2023
June 9, 2023	The last day of the Even Semester 2022/2023 lecture period
June 12, 2023 - June 23, 2023	Final Even Semester Exam (UAS) Period 2022/2023
June 23, 2023 - August 11, 2023	KKN-PPM Operational Period 2
June 26, 2023 - July 31, 2023	Semester break/announcement of exam results
August 23, 2023 - August 24, 2023	Diploma and Bachelor Graduation Period IV T.A.2022/2023

Source: UGM Academic Calendar for Academic Year 2022/2023. Implementation will be adjusted with conditions in the field

4.3.   Academic Supervisor Lecturer

Academic Supervisor Lecturer (DPA) is a lecturer appointed by the Department / Study Program and appointed by the Faculty to be a guardian for a number of students in completing their studies. During their studies at FTP-UGM, each student will be guided by one DPA. The duties of the DPA are:

1. Provide direction to students in preparing their study plans.
2.   Provide consideration to students regarding educational activities that should be taken and the number of credits that can be taken for the ongoing semester.
3. Certify the KRS checklist made by the student being guided, changes and cancellations of courses.
4. Follow the development of the number of credits that have been taken and the achievements of students who are guided.
5. Has a role as a "Guardian Lecturer" so that they must help overcome difficulties experienced by students that can hinder their learning process which can reduce student academic achievement.
6. Encourage students to always improve their academic achievements

4.4.   Filing Study Plan Card (KRS)

At the beginning of each semester, every active student is required to register planned educational activities by filling out a Study Plan Card (KRS). Filling KRS has many uses,

including being a guide in student study planning so that students can determine their steps and strategies well. In addition, KRS is also a lecture/practicum schedule that can remind students of their assignments at any time. The courses and / or practicums filled in are binding. This means that all courses and practicums listed in KRS will also be included in the KHS (Study Results Card) and transcripts as long as there is no cancellation. To help smooth the filling of KRS, the faculty provides guidelines in the form of:

1. Academic calendar.
2. Course schedule that shows the time and place of lectures, lecturers, status (compulsory/elective) and study load (SKS) of courses.
3. Academic supervisor lecturer

a.   Schedule and procedure for filling KRS :

1. KRS filling is done by students online using the Internet through SIA-SIMASTER UGM.
2. KRS filling must be consulted and approved by the Academic Supervisor lecturer (DPA).
3. The filling and submission of KRS must be in accordance with the schedule determined by the Faculty. If outside the predetermined schedule (late) will be penalized.
4. The procedure for filling KRS online is carried out as follows:
   a. Students carry out registration / registration by making tuition payments at the bank, after that the student status will be activated by the Academic and Student Affairs Section of the Faculty
   b. Students open the SIA-SIMASTER UGM Portal then fill out the course lecturer evaluation (EDoM)
   c. Students fill in courses and practicum (temporary) which will be taken into SIA-SIMASTER
   d. Print the completed KRS and KHS of the previous semester, then discuss the courses taken with DPA.
   e. After discussion with DPA and has been able to determine the courses and practicum that can be taken, students refill the courses and practicum results of the discussion with DPA into SIA-SIMASTER.
   f. Through SIA-SIMASTER, DPA verifies KRS and gives its approval if the KRS filling is appropriate.
   g. Students print KRS from SIA-SIMASTER in duplicate 3, ask for DPA's signature as proof of DPA approval and submit the KRS form signed by DPA to the Faculty Academic and Student Affairs Section to be asked for the Faculty stamp in the Academic and Student Affairs Section. The first sheet is for the academic section, the second sheet is for DPA, and the third sheet is for students.
5. In writing the Course Code, it must be careful, errors in writing the course code cause KRS cannot be processed by computers in the Academic and Student Affairs Section and are the responsibility of the student concerned.
6. For practicum subjects that have their own code, please write it yourself.

7. There is no "plan" (Practical Work plan, Thesis plan, Factory Design plan II, etc.).
8. The number of credits taken by new students (semesters I and II) is the package offered by each study program, a number of lists of courses written in smester I and II in the curriculum of each study program.
9. For second-year students onwards, the number of credits that can be taken depends on the grade point average (IP) obtained in the previous semester.
10. The maximum credit collection must not exceed 24 credits. If there is an excess of credits, the Academic and Student Affairs Section will cancel the excess.

b.   The changes of study plan and cancellation of educational activities.

Students who will **change** the Study Plan Card (KRS) are given the opportunity to do so **within no later than one week after** the lecture starts running. KRS conversion can be caused by:

1. There is a change in the lecture schedule that causes the time to coincide with one of the courses taken.
2. Cancellation of courses offered due to the number of participants not fulfilling the minimum number of classes.
3. Personal considerations of students, for example, do not need to be taken in that semester, feel too much lecture load, and others.

The opportunity for **cancellation** of an educational activity that has been listed in the KRS is given no later **than two weeks after the lecture starts running** (according to the academic calendar). Changes and cancellations of educational activities must be authorized by the Academic Supervisor with the same procedure as the procedure for filling out the study plan card. Changes and cancellations of educational activities after this time are not permitted.

c.   Cancellation of overload credits (SKS).

Cancellation of courses due to **overload credits** at the end of the study period is carried out with the approval of the academic supervisor, known to the Head of Department, and the Vice Dean for Academic and Student Affairs. Cancellation is carried out only on **elective courses** in the order starting from **the last course taken**.

Courses with **E grades** cannot be canceled. Courses with E grades must be retaken or improved so that their status passes (at least with D grades).

4.5.   Lecture and Practicum Process

Draft Lecture and Practicum Schedules are prepared by the Academic and Student Affairs Section, then submitted to the Departments and announced to students for response. After there is a revision then announced for enactment. Starting from the odd semester of 2013/2014, parallel lectures will be held for all compulsory courses offered. Lectures are held from morning to noon from 07.15 - 14.40 WIB, while practicum is held in the afternoon from 13.30- 17.30 WIB. The implementation of lectures is coordinated by the Academic and Student Affairs Section, while the practicum is the responsibility of the Department / Study Program.

a.   **Code of Conduct**
1.   **For Students**
   a.   Students are required to attend lectures regularly according to a predetermined schedule in an orderly manner.
   b.   Not allowed to attend two or more lectures/practicums at the same time.
   c.   Students are required to fill in the attendance list. **The number of lecture attendance in one semester is at least 75%** of the total of lectures carried out. Absenteeism due to certain valid reasons is only allowed maximum 25% of the lectures held. Students who have an attendance of < 75% **are not allowed to take the final exam**.
   d.   Before the lecture begins, students must be in the lecture room provided. Students who are late for more than 15 minutes after the lecture is running are not allowed to enter the lecture hall unless there is a reason that is logical enough and allowed by the lecturer.
   e.   During lectures, students are required to dress neatly not wearing T-shirts, tight clothes and or sandals in any form. Must be polite, and must maintain the situation calm

2.   **For Lecturer**
   a.   The lecturers must arrive on time. The delay limit (if without prior notice) is 30 minutes. After this deadline, lectures were declared abolished. Students sign the attendance list and count admission.
   b.   Providing lectures with a Student Centered Learning approach, where students are more active in the learning process.
   c.   Pay attention to the fluency of lectures.
   d.   Provide opportunities for students to ask questions.
   e.   Check the correctness of the student attendance list.
   f.   Fill the table of lecturer attendance forms on the attendance list.

b.   **Practicum Rules**
Due to the special properties of the laboratory, the practicum rules are specifically regulated by each laboratory coordinated by the Head of the Laboratory/Department Practicum Coordinator. However, there are things that are general provisions that apply to all practicums, which are.
1.   **For Students**
   a.   Students are required to attend practicum regularly according to a predetermined schedule in an orderly manner.
   b.   Students are required to fill in the attendance list. Absence due to certain valid reasons is only allowed a maximum of 1 (one) practicum. Absenteeism more than once, the practicum is considered void and the practicum must be repeated and is not allowed to take the response/exam.
   c.   Fifteen (15) minutes before the practicum begins, students must be ready with the necessary equipment.

d. Students who are late more than 30 minutes after the practicum runs are not allowed to enter the practicum. Thus it is considered absent practicum.

e. During practicum, students are required to dress neatly, may not wear T-shirts, tight clothes and / or sandals in any form, and be polite and polite. In addition, it must follow the applicable regulations from the laboratory concerned (e.g. wearing practicum coats, hand protectors/t-shirts, face covers, etc.).

2. **For lecturer/assistant**
    a. Practicum lecturers/assistants must arrive on time.
    b. Pay attention to the smooth running of the practicum.
    c. Provide opportunities for students to ask questions and guide them.
    d. Check the correctness of the student attendance list.
    e. Fill out the practicum attendance list.

3. **Requirements to become an Assistant Practicum**
    a. Students of the Faculty of Agricultural Technology UGM who are legally and actively registered.
    b. Have taken courses in accordance with the practicum offered with a certain value (according to the provisions of the Department).
    c. Have a Cumulative Achievement Index and certain course grades (mentioned in point 3.b) (in accordance with the provisions of the Department).
    d. Mastering practicum material.

4.6. Practical Work or Industrial Internship

Industrial Internship or Practical Work is carried out in factories or agricultural product processing companies or in the field in accordance with the study program taken by students. Students of the Food Technology and Agricultural Products Study Program mostly carry out practical work in agricultural / food processing factories or in plantation companies. Students of the Agricultural Industry Technology Study Program mostly carry out practical work in factories or companies engaged in food and agro-industry such as textile factories, paper mills, food industries, plantations, and others. Meanwhile, students of the Agricultural Engineering Study Program mostly do practical work in the field in collaboration with related agencies such as the Department of Public Works, the Ministry of Agriculture, the Department of Forestry, as well as industries related to agricultural machinery and processing of agricultural products.

Practical Work or Industrial Internship has several objectives that are specifically outlined in the curriculum of each study program. Meanwhile, in general, the objectives of practical work can be mentioned as follows:

1. Increase students' insight into the professional fields they are interested in

2. It is a place for training skills that are scientific (knowledge) and skills (skills / psychomotor) in accordance with the fields of knowledge that have been obtained in lectures and practicums, as well as a place for community training.

Students may carry out Industrial Internship if they have met the following requirements:
1. Have taken (taken and examined) courses/practicum **at least 80 credits** for **Practical Work** and **at least 110 credits** for **Industrial Internship**.
2. Grade Point Average of all courses/practicums that have been taken at least 2.0.
3. Able to complete Practical Work / Industrial Internship including preparation of reports and examinations within 1 (one) semester or 6 months.
4. Pass the additional requirements determined by the Study Program/Department.

Practical Work is carried out for 1 (one) month minimum, while **Industrial Internship is carried out for at least 2 (two) months**. The length of time is equivalent to 2-4 credits. The procedure to be able to carry out Industrial Internship is regulated as follows:
1. Register to carry out Industrial Internship by filling out the form provided by the Academic and Student Affairs Section with a valid student card and a practice card form that has been notarized/signed by the academic supervisor and Study Plan Card (KRS).
2. Based on the list on the form, the Faculty will send an application letter to the appropriate factory/company/institution. Students can request a translucent of the letter. Students can also designate the name and place of the factory / company / institution in question if there has been contact between the student and the factory before.
3. The answers from factories/companies/institutions will be notified to students through a written announcement posted on the announcement board. This applies to both "accepting" and "rejecting" Industrial Internship applications for students. If the manufacturer's answer is to refuse, then the student must start over.
4. As soon as the answer is received from the factory/company/agency, the Faculty will submit it to the Department/Study Program for the determination of the supervisor and the subsequent guidance process.

After completing the Practical Work/Industrial Internship, students are **required** to request a Certificate of completion from the company/factory/agency where the Industrial Internship/Internship is carried out. The **original** certificate must be submitted to the Academic and Student Affairs Section and **a copy** of it is used by the student for other purposes (e.g. exams, bound in reports, etc.). In addition, students are required to make a report on Industrial Internships whose format and method of preparation are regulated by each Department/Study Program. Industrial Internship as an academic activity has a weight equivalent to 2-4 credits.

4.7.   Community Service Programs (KKN)

Community Service Programs is a **compulsory** intracurricular activity carried out by placing students from a certain Study Program together with other interdisciplinary units in areas covering a number of villages for a certain period of time. Based on that understanding, KKN is an integrated activity between education and community service. Students in carrying out their duties must live in the village and work for a certain period of time to assist rural communities in carrying out development and help solve the problems faced.

KKN is held with the following objectives:

1. For University Institutions to produce bachelors as successors of development who are more aware of the very complex problems faced by society in development, and learn to deal with these problems pragmatically and interdisciplinary.
2. To bring University Institutions closer to the community and bring University Institutions closer to the demands of development.
3. Help the Government in accelerating development and preparing development cadres in rural areas.
4. Develop interdisciplinary cooperation.
5. So that students understand and appreciate the interdisciplinary or cross-sectoral way of thinking and working, the usefulness of their educational results for development in general and rural development in particular, and know the difficulties faced by rural communities in development and the overall context of rural development development problems.
6. To mature the minds of students in every study and problem solving that exists in society in a pragmatic scientific way.
7. Provide skills to students to carry out village development and development programs
8. Fostering students to become innovators, motivators, and problem solvers.
9. Provide experience and skills to students as development cadres, in addition to the expected formation of attitudes and a sense of love and responsibility for the progress of society, especially rural communities, so that,after becoming bachelor they can be placed anywhere.

The KKN program is organized by the Directorate of Community Service to UGM Society (DPkM). The KKN program as an academic activity originally had a weight of 3 credits and was carried out every semester (regular KKN) and in short semesters (short semester KKN) for 6 months, consisting of preparation (1 month), debriefing and pre-KKN (1 month), **operational implementation (2 months)**, and completion (making reports and exams, 2 months). Starting from the 2022/2023 Academic Year, KKN activities have a total weight of 8 credits, which are a combination of 3 courses, namely UNU222001 KKN 4 credits, UNU222002 Community Communication 2 credits and UNU222003 Application of Appropriate Technology 2 credits. KKN-UGM participants are students from all faculties within UGM who are eligible.The academic requirements for KKN participants are:

1. Officially registered as a student of Universitas Gadjah Mada in the current academic year.
2. Have taken a **minimum of 96 credits**.
3. Minimum grade point average is 2.0.
4. No E grade.
5. During regular KKN, students are only allowed to take/repeat a maximum of one course or thesis

The assessment system for students who carry out KKN is carried out based on work achievements stated in:
1. Knowledge of practical theory expressed in the form of summative tests.
2. Work discipline includes compliance with the obligation to stay at the work site.
3. Cooperation between students, with officials, community leaders, and community members.
4. Passion, namely to what extent the participation of students in various community activities.
5. Implementation of development and development programs at the work site at hand.
6. Students who are declared not to have passed KKN (grade E) are required to repeat KKN.

4.8. Thesis

With reference to the Decree of the Minister of Education and Culture No. 056 / U / 1994 concerning guidelines for the preparation of the Higher Education Curriculum, the purpose of implementing the thesis in the S-1 study program is so that student students at the end of their studies are able to:
a. Apply the knowledge and technological skills possessed in accordance with their expertise in productive activities and service to the community.
b. Mastering the scientific basics and knowledge and methodology of certain expertise so as to be able to find, understand, explain, and formulate ways of solving in their area of expertise.
c. Mastering the basics of science so as to be able to think, behave, and act as a scientist.
d. Able to follow the development of knowledge and technology in accordance with their fields in the form of scientific work

Like the field of engineering or technology, the thesis can be in the form of scientific work from research, literature review, or scientific work in the form of goods or service facilities (models, software, management procedures and governance, and so on). Thesis that has a load of between 4-6 credits, the preparation process must be completed within the equivalent of 1 (one) semester.

To be able to take a thesis, students are required to fulfill academic requirements, that is **the number of credits that have been taken is 100 credits with a minimum grade point average (GPA) of 2.0**. Students who will take a thesis must fill out the KRS attached with a Thesis Monitoring Card provided by the Academic and Student Affairs Section. Thesis Monitoring Card

must be renewed in midterm (± 3 months after lecture/academic activities begin). KRS that is not attached with a Thesis Monitoring Card (including its renewal) will not be processed. The thesis guidance process is fully handed over to the Department / Study Program. Thesis Writing Guide can be seen in the appendix section of this Academic Guide.

4.9.   Exam System
a.   Written Exam

Exams can be carried out in various ways, such as written exams, oral exams, exams in the form of seminars, exams in the form of essay writing and so on. Exams can also be conducted in various combinations of these methods. The way the exam is used is adapted to educational activities.

The exam is held with the aim and purpose to:

1. Assess whether a student has competence about the material provided during lectures/practicums.
2. Assess whether the material tested is in accordance with the material given in the lecture/practicum and the implementation of the delivery of the material is good enough, so that students with reasonable effort can understand the material.

In order for the purpose of exams to be achieved, it is necessary to hold several exams in one semester, namely at least one insert exam (midterm exam) and one final exam.

Exams for courses and practicum are carried out in writing, while PKL and thesis exams and certain tasks are carried out orally. The thesis examination is conducted by a team of examiners consisting of lecturers of the Faculty of Agricultural Technology UGM or by lecturers of other faculties within UGM, or experts from an institution.

The implementation of the written examination is determined by a committee chaired by the Head of the Academic and Student Affairs Section with the responsibility of Vice Dean I (Academic and Student Affairs). The draft exam schedule was announced in advance to get responses from students to avoid the exam time of two courses taken by students taking place at the same time. An official schedule is announced after a long period of time to provide a response that is deemed sufficient. Before the exam, students must take an Exam Card in the Academic and Student Affairs Section. The requirements for taking the exam card are regulated by the academic and student affairs sections.

The rules for the written examination are:

1. Examinees must dress neatly, modestly, and do not wear sandals and T-shirts.
2. Examinees must arrive at the exam venue 15 minutes before the exam starts, and bring the necessary equipment.
3. The examinee must occupy a seat according to the exam number and be able to present a notarized student card and exam card.

4. Examinees are not allowed to bring books, notes and bags into the examination room, except for exams that are allowed to open books.
5. Examinees are not allowed to start doing exam questions before permission from the supervisor.
6. During the exam, the examinee must maintain courtesy, neatness and cleanliness and not leave the room without permission from the supervisor.
7. Examinees are not allowed to cheat or create the impression of cheating. Cheating in any form will not be reprimanded, directly recorded in the Minutes of Examination and will affect the assessment.
8. Examinees who arrive late for more than 15 minutes are not allowed to enter the examination room without permission from the supervisor. Examinees who arrive more than 30 minutes late (or 1/4 part of the time provided for the exam time) are not allowed to take the exam for any reason.
9. Examinees who have finished doing the exam can leave the examination room and the answer sheets are left in their seats without disturbing the peace of the exam.
10. Examinees who violate the exam rules may be subject to sanctions, expulsion from the examination room or other sanctions determined by the committee.
11. If the examinee is unable to attend due to illness or had a disaster, the certificate must be submitted to the teaching department no later than one day after the exam.
12. Follow-up exams may be scheduled one week after the main exam ends.
13. Follow-up examinations are only intended for those who at the time of the main examination are unable to attend due to illness indicated by a doctor's certificate, have a family disaster in the vertical direction indicated by a certificate from the local government, or have an assignment or represent an institution indicated by a letter of assignment.
14. Matters that have not been regulated in this order will be notified later.

Students who are allowed to take the exam are students who fulfill the stipulated conditions. Exam results are announced openly (posted on the announcement board so that they are easy to read by students). **The results of educational activity exams that are not listed in the KRS are invalid and the exam is considered void**.

Grade data can be obtained based on insert exam scores, end-of-semester exams, and the value of other series activities such as quizzes, essay writing, homework, class participation, practicum and so on. The final grade given to students is determined based on the grade data, which means that this final grade is a conclusion / combination of grades achieved by students in final examinations and series activities. In determining the final grade, the weight of the grade that are its components needs to be determined and notified to students by the lecturer concerned. Assessors are lecturers or supervisors of courses/practicums/final projects. The declared grade is eternal and cannot be changed.

b.   Oral Exam

Oral examinations are conducted for certain educational activities such as Thesis, Industrial Internship, and special assignments or courses/practicums set by lecturers. Thesis examiner is a team consisting of at least 3 people with a composition of 2 (two) supervisors and 1 (one) examining lecturer, or 1 (one) supervisor and 2 (two) examining lecturers. The main supervisor must be from FTP UGM, while the accompanying supervisor or examiner can be from outside FTP UGM. The Industrial Internship Supervisor can concurrently serve as an Industrial Internship / Practical Work examiner but there must be a companion examiner on the industrial practical work / internship exam.

The rules for oral examinations for students are:
1. Attend according to the predetermined schedule, no later than 15 minutes before the exam starts.
2. Dress modestly and neatly, white long-sleeved top, black bottom. Male students wear black ties.
3. Sandals/slippers are prohibited.
4. Food and drinks are prohibited inside the examination room.
5. Enter the examination room after getting permission from the examining lecturer.
6. Do not activate the phone.
7. During the exam, be polite.

4.10.   Study Evaluation System
a.   Academic Achievement

Study evaluation is intended to see students' academic achievement during the learning process. Study evaluation is carried out in stages, namely every semester, the first two years, and at the end of the study (7 years). The basis for conducting an evaluation is the Grade Point Average (IP) obtained by students during academic activities. In determining/calculating the achievement index, the letter grade must be changed in the form of numbers according to their weight. The weight of the letter grade is set as follows:

Table 4.2 Equivalence of letter grade weights

Letter grades	Weight	Letter grades	Weight	Letter grades	Weight
A	4	B-	2.75	C/D	1.5
A-	3.75	B/C	2.5	D+	1.25
A/B	3.5	C+	2.25	D	1
B+	3.25	C	2	E	0
B+	3	C-	1.75		

By using this weighted value, the calculation of the achievement index (IP) is done with the following formula:

$$IP = \frac{\sum(SKS \times Weight)}{\sum SKS}$$

The grade point average (IP) ranges from 0 to 4. An example to calculate the student achievement index can be seen in Table 4.3.

Table 4-3. Example of calculating academic achievement index

No	Courses	Number of Credits	Grades
1	Mathematics	2	A
2	Basic Physics	2	B
3	Basic Physics Practicum I	1	A
4	Basic Chemistry I	3	B
5	Basic Chemistry Practicum I	1	A
6	Islam	2	A
7	Indonesian	2	A
8	Introduction to Agricultural Technology	2	A
9	Computer Deployment	1	A
10	General Biology	3	B
11	Computer Deployment Practicum	2	A

Then the Achievement Index can be calculated as follows:

IP =2x4+2x3+1x4+….+(2x4)2+2+1+…+2=7621=3.62

b. Study Evaluation

1) End-of-semester evaluation

This evaluation is carried out at the end of each semester to determine student achievement in a semester based on the grade point average (GPA/IP) in that semester. IP evaluation results are used to determine the number of credits allowed to be taken in the next semester. Guidelines for these purposes are:

1. If the GPA/IP < 1.50; The maximum number of credits that can be taken is 12 credits
2. If 1.50 ≤ GPA/IP < 2.00; The maximum number of credits that can be taken is 15 credits
3. If 2.00 ≤ GPA/IP < 2.50; The maximum number of credits that can be taken is 18 credits
4. If 2.50 ≤ GPA/IP < 3.00; The maximum number of credits that can be taken is 21 credits
5. If the GPA/IP ≥ 3.00; The maximum number of credits that can be taken is 24 credits

2) Evaluation of the results of the first phase of the study

At the end of the first two years, starting from the time the student is first registered as a student of the Faculty of Agricultural Technology UGM, the results of student studies are evaluated to determine whether the student may continue his studies, or must leave the faculty (drop out).

Students can continue their studies at FTP UGM if during the first two years (4 semesters) they can **collect at least 30 credits with IP > 2.0**. If within two years students are able to collect more than 30 credits then for the evaluation 30 credits with the best grades are taken. Students who cannot fulfil these requirements can resign or be expelled from the Faculty of Agricultural Technology UGM.

3) Monitoring study progress

After an evaluation at the end of the second year, several evaluations are still carried out to monitor the progress of student studies. If students cannot complete their studies until semester 10, intensive monitoring is held for those concerned to find out the progress of their studies. Monitoring is carried out at the end of the 10th, 11th, 12th and 13th semesters. Students are warned so that they can carry out their studies more diligently. A copy of the warning was conveyed to the student's parents, Dean, Department Chair, and Academic Supervisor.

At the end of semester 14, a final study evaluation is carried out for the students concerned. If students fulfill the requirements to graduate, the person concerned is included in the judiciary, while those who do not graduate are welcome to leave the Faculty of Agricultural Technology UGM. The requirements to pass are:

1. The minimum number of credits as required in the curriculum (144 credits).
2. Minimum grade point average of 2.00
3. No E grades
4. The number of credits for educational activities with a D grade is not more than 25%
5. The study time/period does not exceed the provisions.

4) Final evaluation of the study

At the end of the study period, students are evaluated for their study results to determine their graduation and graduation predicate. This evaluation is carried out if the student's study period determined by the curriculum has expired (7 years) or if the student requests an evaluation (through judicial registration). The final stage of evaluation includes the number of credits obtained during the study, cumulative achievement index, the number of D grades and E grades, and other requirements determined.

Students are declared to have passed the final stage of evaluation and can be judged if they meet the conditions specified as follows:

1. Have taken a minimum of 144 credits.
2. Have taken all required compulsory courses.

3. Grade Point Average < 2.00.
4. The number of credits with a D grade is not more than 25% of the total number of credits taken during the study.
5. No E Grades
6. Have completed the final project (Thesis, Practical Work / Field Work Practice / Industrial Internship, and KKN)
7. Do not exceed the study time limit specified in the curriculum (14 semesters).
8. Have completed the specified administrative requirements (loan-free laboratory facilities, libraries, etc.).

Students who graduate based on the evaluation of the results of the final stage of study are given a predicate according to the weight of their graduation. The predicate is as follows:

1. **Cumlaude** or **Honors** graduation predicate is given to students who are undergraduates with the following conditions:
   a. Grade Point Average between 3.51 - 4.00
   b. The period of study is not more than 5 years
   c. Meet the requirements of passing the Bachelor of Agricultural Technology
2. **Very Satisfactory** graduation predicate is given to students who graduate undergraduate with the following conditions:
   a. Grade Point Average between 3.01 - 3.50
   b. Meet the requirements for passing the Bachelor of Agricultural Technology
3. **Satisfactory** graduation predicate is given to students who graduate from undergraduate with the following conditions:
   a. Grade Point Average between 2.76 - 3.00
   b. Meet the requirements of passing the Bachelor of Agricultural Technology.

4.11. Non-active Study Period and Academic Leave

The non-active study period is a period when students cannot participate or carry out educational activities for one semester or more for certain reasons. Non-active studies are categorized into two types, namely non-active studies with academic leave permits hereinafter referred to as academic leave, and non-active studies without academic leave permits hereinafter referred to as inactive without permission.

1) Academic Leave
a. The general provisions for academic leave are:
   1. Obtain special permission from the Rector of UGM or Dean of the Faculty of Agricultural Technology UGM to not actively participate in or carry out educational activities or temporarily stop for certain reasons.

    2. Academic leave is given to students who have participated in educational activities for at least 2 (two) consecutive years since becoming students or who have passed the final study evaluation of the second year.

    3. Academic leave is not granted to first-year, second-year, and students who have received the same permission cumulatively for 4 (four) semesters.

    4. The maximum length of academic leave permission is 4 (four) consecutive semesters or the cumulative number is 4 (four) semesters.

b. Special provisions for academic leave

    1. The length of academic leave is not counted as the period of study.

    2. During student leave is not allowed:

       i.   Perform registration

       ii.   Participate in academic activities (lectures, practicum, thesis guidance, practical work, examinations, judiciary, etc.)

       iii.   Participate in extracurricular activities.

       iv.   Use library and laboratory facilities and other facilities belonging to the faculty and belonging to the university.

c. To obtain academic leave, students are required to make a submission academic leave letter to the Dean or Rector.

d. The procedure for submitting an submission for academic leave is regulated as follows:

    1. If the academic leave in question is 2 (two) consecutive semesters or less than that, the submission letter for academic leave is addressed to the Dean of the Faculty. In the submission letter, it must be clearly stated the reason for applying for academic leave and the time (semester) taken for leave known/signed by the Academic Supervisor and Head of Department/Study Program. The submission letter must be accompanied by:

       1) Photocopy of the last valid student card.

       2) Certificate of study progress (transcript).

    2. If the academic leave is more than 2 (two) consecutive semesters, the submission letter for academic leave is addressed to the Rector of UGM with a copy to the Dean of the Faculty. The letter must clearly state the reason for applying for academic leave and the time (semester) taken for leave known/signed by the Academic Supervisor and Head of the Department/Study Program. The submission letter is submitted to the Academic and Student Affairs Section which will then be submitted to the UGM Rector. The submission letter must be attached with:

       1) Photocopy of the last valid student card.

       2) Certificate of study progress (transcript).

e. Submissions for academic leave are submitted before the end of a semester, no later than one and a half months before heredity, and are intended for the inactivity of educational activities in the following semester.

f. In special cases, submission for academic leave for the current semester are only allowed if the submission for permission is submitted no later than 1 month from the start of

educational activities for very special reasons (e.g. serious illness so that they cannot participate in the learning process)

g. Submissions for academic leave are not granted for educational activities of the past semester.

2) Reactive Permissions

a. Students who will be active again in educational activities after academic leave, are required to submit an reactive submission letter

b. An active submission letter after academic leave must be submitted **no later than eight weeks** before the lecture activity begins by attaching:
1. Copy of the last KTM (Student card) at the time of applying for academic leave.
2. Certificate of academic leave that he has obtained from the university or faculty.

c. Late submission of an active application is subject to sanctions for not processing the submission.

d. Students who are on academic leave for more than two years with the permission of the Rector, if they will be active again, are required to submit an active submission to the Rector. Likewise for students who are on study leave with the permission of the Dean is required to submit an reactive submission to the Dean.

3) Inactive (non-active) Student Without Permission

a. Non-active students without permission are students who do not participate in academic activities (lectures, practicum, research or guidance) and do not apply for academic leave permits or do not register academically

b. Students who are inactive without the permission of the Dean / Rector if they will be active again and allowed by the Dean / Rector are subject to the following conditions:
1. During the period of inactivity is considered as an active student and the duration of inactivity is used to calculate the period of study.
2. Non-active students without permission if they participate in academic activities are required to pay UKT (Single Tuition Fee) in the amount of UKT which was previously paid by the student.

c. **Students who are not registered for 3 (three) consecutive semesters without valid information are considered to have resigned**.

4.12. Judicium

Judicium is defined as the announcement of the Student graduation from the Faculty of Agricultural Technology UGM to obtain a Bachelor of Agricultural Technology (STP) through a meeting of the Faculty Lecturer Council. The judicium **must** be followed by every undergraduate candidate from the Faculty of Agricultural Technology UGM and **must not be represented**. Students who at the time of the judiciary are absent, the judiciary becomes void.

The judicium is held at the end of **January, April, July, and October**. Students who want to take part in the judicium are required to register at the Academic and Student Affairs Section, Faculty of Agricultural Technology, UGM no later than the middle date of the month of the judicium period to be implemented. While the judicium will be held in the last week of the month. Students who will take part in the judicium must have fulfil the following requirements:

1. Have registered at the Academic and Student Affairs Section of the Faculty of Agricultural Technology UGM.
2. Have completed the final project examination (Thesis, Industrial Internship/Practical work, Factory Design) no later than the end of the month before the judicium period.
3. Have passed all courses
4. Have fulfilled a minimum of 144 credits
5. No E grades.
6. Value D ≤ 25% of the total credits taken.
7. Final project exam scores and repeat course scores must have been entered in the Academic and Student Affairs Section no later than 2 days before the pre-judicial date.
8. Grade Point Average (GPA) greater than or equal to 2.00.
9. Have taken the TOEFL Test
10. Have completed the administrative requirements no later than two days before the judicium date in the Education Subdivision of the Faculty of Agricultural Technology UGM.

A few days before the judicium is usually held in advance Pre-judicium at the Faculty level whose implementation is led by the Vice Dean for Academic and Student Affairs. Pre-judicium is a limited lecturer meeting from the three departments within the Faculty of Agricultural Technology UGM and aims to check the completeness of the academic requirements of prospective judicial participants. Lecturers participating in the Pre-judicium meeting are determined by each Department Administrator. In addition, before the pre-judicium at the faculty level, a pre-judicium at department level is also carried out whose implementation is coordinated by each department.

Judicium meetings are led by the Dean or Vice Dean for Academic and Student Affairs if the Dean is unable to attend. Students must be present at the judicium ceremony dressed in a predetermined *uniform, namely a long-sleeved white shirt wearing a black tie and black pants for men, while women dress in white top and black bottoms*.

Students who do not come/participate in the judicium mean that they have not been able to attend the graduation ceremony and have not been declared graduated, so they have to wait for the next judicium event.

Under certain conditions, students may submit a request for course scores to the lecturer before the official announcement of the exam results is made, for the purposes of participating in the judicium. For this reason, the provisions are regulated as follows: 1). Requests for grades to lecturers can be given after 2 (two) weeks from the date of the course exam and 2). Requests for

grades to the supervisor lecturer submitted before 2 (two) weeks from the date of the exam, then the lecturer has the right to refuse.

4.13. Graduation

Graduation is an official undergraduate release ceremony after students complete their studies in a Study Program. The graduation ceremony was organized by Universitas Gadjah Mada and was attended by all students who had been declared graduated during the judicium at its Faculty. At the time of graduation, a bachelor's diploma was handed over to each graduate. The Rector together with the Vice Rector for Education and Teaching handed over diplomas to bachelors who graduated with Cumlaude (Honors) predicate who became representatives of each Faculty. The Dean together with the Vice Dean for Academic and Student Affairs handed over undergraduate diplomas from study programs according to their respective Faculties.

If the diploma is not taken within 1 (one) year from the graduation ceremony, then if there is damage or loss of the diploma, it is not the responsibility of the faculty.

4.14. Study Time Limit

Based on the Regulation of the Minister of Education and Culture of the Republic of Indonesia No. 3 of 2020 concerning National University Standards (SN-PT) Article 7 clause 1 concerning the period and study load of the implementation of undergraduate education programs for 7 academic years maximum (14 semesters) with a student study load at least 144 credits.

If students apply for academic leave, the leave period is not counted as a study period. If the student is inactive and without applying for academic leave, then the period of inactivity will be counted as the period of study. If it turns out that the period of study and the requirements for completion of studies are not fulfilled the student must leave the faculty concerned or be expelled.

Chapter V: Curriculum

5.1.   Introduction

Definition of Curriculum for Higher Education according to the Regulation of the Minister of Education and Culture of the Republic of Indonesia No. 3 of 2020 concerning National Higher Education Standards (NHES) is a set of plans and arrangements regarding the objectives, content, and subject matter and methods used as guidelines for organizing learning activities to achieve Higher Education goals.

As mentioned earlier the curriculum must be evaluated every academic year and must be revised at least once every five years (Article 36, FTP-UGM Academic Regulations, 2021-2025), so in 2021 the 2016 curriculum will be exactly 5 years old, therefore it needs to be revised. From the implementation of the revision of the 2016 Curriculum, the 2021 Curriculum was produced, so that at this time all Departments in FTP-UGM have compiled the new 2021 Curriculum. Curriculum changes are made to respond to changes in the demands of the times which require that undergraduate graduates must have high competence in the field of science they study, and at the same time have good character so that they can participate in realizing the creation of a knowledge society and ultimately increase the nation's competitiveness at the regional and international levels.

The curriculum for all study programs at the Faculty of Agricultural Technology UGM is prepared by the Curriculum Team in each Department and coordinated by the Faculty through the Dean's Decree. Starting the New Academic Year 2021/2022, all S-1 study programs at FTP-UGM use a new curriculum, namely the 2021 Curriculum based on OBE (outcome-based education) and implementing MBKM, replacing the 2016 Curriculum.

According to Kepmendiknas No. 045/U/2002, competence is defined as a set of intelligent, responsible actions that a person has as a condition for being considered capable by the community in carrying out tasks in certain fields of work. From the description above, it is clear that the curriculum plays a very important role in shaping the competence of graduates in certain fields of knowledge so that graduates are able to make a real contribution to social life.

5.2   Curriculum implementation according to 2021 regulations

1) **Requirements to complete studies at the Faculty of Agricultural Technology, UGM based on the 2021 curriculum** as shown in the following table

Table 5.1. Requirements for completion of studies at FTP-UGM

No	Requirements	Study Program		
		TPHP	TEP	TIP
1	Number of credits to be taken (minimum)	144	144	144

No	Requirements	Study Program		
		TPHP	TEP	TIP
2	Cumulative Performance Index (minimum)	2.0	2.0	2.0
3	Total D Score(max)	25%	25%	25%
4	Total E Score	0	0	0
5	Compulsory Courses	125-127	131	116
6	Elective Courses (minimum)	17-19	13	28
7	Length of Study (max)	7 year	7 year	7 year

2) Final Assignment requirements

a. Practical Work/Industrial Internship

At the time of Practical Work / Industrial Internship, students must have taken **at least 80 credits for Practical Work** or **110 credits for Industrial Internship with a minimum GPA of 2.00**. In addition, they must also fulfill additional requirements determined by the Department / Study Program.

b. Thesis

At the time of registering the thesis, students must have taken **at least 110 credits with a minimum GPA of 2.00**. Thesis Examination can only be carried out if the student does not have an E grade.

c. Community Service Program (CSP)

At the time of registering CSP both short and regular semesters, students must have taken **at least 96 credits with a minimum GPA of 2.00**. When doing CSP students are only allowed to take/repeat a maximum of one course or thesis.

3) Course Repetition Requirements and Assessment

a. Students **can only repeat** a particular course a **maximum of 2 times (3 times taking)**, except when the three grades obtained are E

b. **The best grade** will be taken to determine GPA.

c. Taking courses and practicums that have mandatory or elective status but stand alone must be taken both (one package), except if repeating.

d. Other rules in detail can be seen in the Academic Document Book

e. Matters of a special nature concerning the study program will be regulated separately by the Study Program concerned.

4) Method of Delivery

The paradigm of the learning process that has been more oriented to Teacher Centered Learning (TCL) began to change towards Student Centered Learning (SCL). Learning is more student-centered, lecturers act as facilitators or guides. Lecturers and students work together to develop science and technology. Student Centered Learning is applied through various learning methods including Research-Based Learning (RBL), Problem-Based Learning (PBL), Case-Based Learning, Collaborative Learning, and so on. The learning developed at UGM is student-centered or student centered learning (SCL) by utilizing a learning management system (LMS).

Starting from the first Semester of the academic year 2006/2007, Faculty of Agricultural Technology UGM agreed to implement the learning process with SCL approach. Learning methods with SCL are encouraged to be able to effectively achieve the learning outcome (LO) of graduates through group discussions, simulations, case studies, bed-side teaching, flipped learning, Project-based, problem-based, and other relevant methods. All study programs implement this learning method with various forms of learning processes adapted to the conditions of each course. This method is continued and refined in the implementation of the 2021 curriculum, the implementation of which has begun since the first Semester of the 2011/2012 academic year.

In UGM Rector Regulation No. 14 of 2020 regarding the basic curriculum framework of Universitas Gadjah Mada, it is stated that learning is also encouraged to implement blended learning (hybrid learning) which combines face-to-face learning with interactive learning through online (online) using information technology in order to meet graduate LO.

5) Assessment

In each learning process assessment must be done to measure how far the level of competence of students is to the course material and practicum that has been followed. The results of the assessment of student competence must be a combination of several forms of evaluation such as homework assignments, quizzes, seminars, group discussions, insertion exams, and final exams. As far as possible avoided assessment consisting only of final exam scores and inserts.

Chapter VI: Curriculum of Bachelor in Food and Agricultural Product Technology

6.1. Vision, mission, graduate competencies, and graduation requirements

6.1.1. Introduction

The availability of abundant natural resources is not always a prerequisite for the realization of the welfare of a country's population. The development of a nation's welfare is more determined by the quality of its human resources, management, and government leadership. The quality of food and agricultural products in Indonesia is increasingly pressured by the influx of imported food and agricultural products with better quality and prices that are affordable to consumers, especially after the implementation of the ASEAN Economic Community on December 31, 2015. Similarly, export commodities of Indonesian food and agricultural products face increasingly tough competition in the global market. To overcome these problems, it is necessary to improve quality in all aspects, which leads to an increase in the nation's competitiveness.

The improvement of product quality may result from the decrease in production costs stemming from a reduced number of production failures, reduced delays, and more efficient use of materials and equipment. This results in increased productivity for high-quality products. The availability of high-quality products at competitive prices has the opportunity to capture domestic and global market share. Securing market share guarantees the survival of the country's food and agricultural products industries. The latter immensely absorb labour and can create new job opportunities. This in turn, contributes to the improvement of the nation's welfare.

The Bachelor of Food and Agricultural Product Technology (BFAPT) study programme fully understands the magnitude of the challenges faced by this nation and country, both now and in the future. For this reason, the BFAPT has the foresight to proactively participate in overcoming the problem of improving the quality of human resources and developing new knowledge and technology that will prosper the community through the implementation of the BFAPT study programme. The implementation of BFAPT is intended to produce graduates with the competence and character to develop themselves and work productively for the progress of the nation.

6.1.2. Visions

To become a study program with a global reputation and firmly rooted at the national level in the field of food and agricultural products.

6.1.3. Missions

1. To organize higher education with a global reputation in the field of food and agricultural products technology to produce graduates with superior competence, noble character, and imbued with the values of Pancasila.

2. To carry out research and innovation in the field of food and agricultural products technology for the development of knowledge that benefits society, both locally, nationally, and globally.
3. To carry out sustainable community service and empowerment based on the application of science and technology innovation and food-techno-preneurship.

6.1.4. Objectives

1. Producing scholars who are able to design value-added processes for food ingredients and agricultural products by combining the principles of food science with various engineering processing processes to produce products that are safe, quality, and environmentally friendly.
2. Producing technological innovations that can improve the competitiveness of food and agricultural products
3. Providing technology packages that add value to food products and agricultural products utilized by the community.

6.2. Graduate Profiles

6.2.1. Graduate Profiles

	Graduate Profile (*Profil Lulusan* or PL)	**Description of Graduate Profie**
PL1	Professionals in the food and agricultural products industry	Bachelor of Food and Agricultural Product Technology graduates can play a professional role in the Food and Agricultural Products Industry, among others, as a production supervisor, working in the quality control department and product research and development.
PL2	Entrepreneurs in the field of food and agricultural products	Bachelor of Food and Agricultural Product Technology graduates can act as a creative and innovative entrepreneurs knowledgeable in the processing of diverse food and agricultural products, product and process development, catering business, entrepreneurship, etc.
PL3	Researchers and academics	Bachelor of Food Technology and Agricultural Product graduates can work as researchers at research centers or institutes or in the food industry, conducting studies related to the technology applications of food and agricultural products and product development. Additionally, they may pursue postgraduate studies in the field.

	Graduate Profile (*Profil Lulusan* or PL)	Description of Graduate Profie
		Bachelor of Food Technology and Agricultural Products can prospectively pursue academic careers as lecturers and researchers at universities with the field of food and agricultural products technology or other related disciplines.
PL4	Bureaucrats in the field of food and agricultural products	Bachelors in Food Technology and Agricultural Product graduates can act in bureaucratic positions in the food and agricultural product sectors, government institutions such as BPOM, Ministry of Agriculture, Ministry of Industry, or in world organizations such as WHO and FAO.

6.2.2. Learning Outcomes

	Programme Learning Outcomes
	Attitude or *Sikap* (S)
S1	▪ Show awareness of Pancasilaist 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.
	Knowledge or *Pengetahuan* (P)
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

	Programme Learning Outcomes
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
	General Skills or *Keterampilan Umum* (KU)
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
	Specific Skills or *Keterampilan Khusus* (KK)
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

6.3. Study Completion Requirements

Number of credits to be taken	Minimum 144 credits
Cumulative Performance Index	≥ 2.0
Length of Study	Designed so that most students can complete their studies within 4 years.
Others	● Maximum D grade of 25% from the number of credits ● No E grade
Compulsory Modules	125 - 127 credits
Elective Modules	Minimum 17 - 19 credits

6.4. Types of Modules

The overall modules of the Curriculum 2021 of the Bachelor Program of Food and Agricultural Products Technology are presented in Table 1. In total, there are 120 credits for compulsory (C) modules and 24 to 28 credits for elective (E) modules.

Table 6.1 Curriculum of the Bachelor Program of Food and Agricultural Products Technology Distribution of Modules for Each Semester

No	Modules Code Number	Modules Name	Credits		Status	
			Theory	Practical	C	E
Semester I						
1	TPHP211101	Cell Biology	3	0	3	0
2	TPHP211102	Chemistry I (Inorganic)	3	0	3	0
3	TPHP211103	Chemistry – Laboratory practice	0	1	1	0
4	TPHP211104	Physical Chemistry	2	0	2	0
5	TPHP211105	Introduction to Agricultural Technology	2	0	2	0
6	TPHP211106	Physics	2	0	2	0
7	TPHP211107	Physics – Laboratory practice	0	1	1	0
8	TPHP211108	Mathematics	2	0	2	0
9	TPHP211109	English for Food Technology	2	0	2	0
10	TPHP211110	Physical Properties of Foods and Agricultural Products	2	0	2	0
Semester II						
1	TPHP211201	Microbiology	2	0	2	0
2	TPHP211202	Microbiology – Laboratory practice	0	1	1	0
3	TPHP211203	Chemistry II (Organic)	3	0	3	0
4	TPHP211204	Biochemistry	3	0	3	0
5	TPHP211205	Unit Operation I	3	0	3	0
6	TPHP211206	Applied Mathematics	2	0	2	0
7	TPHP211207	Statistics	3	0	3	0
8	TPHP211208	Food Regulation	2	0	2	0
9	TPHP211209	Waste Management	3	0	3	0
10	TPHP211210	Waste Management – Laboratory practice	0	1	1	0

No	Modules Code Number	Modules Name	Credits		Status	
			Theory	Practical	C	E
Semester III						
1	TPHP212101	Food Microbiology	3	0	3	0
2	TPHP212102	Food Microbiology – Laboratory practice	0	1	1	0
3	TPHP212103	Food and Agricultural Product Chemistry	2	0	2	0
4	TPHP212104	Thermal Process	2	0	2	0
5	TPHP212105	Unit Operation II	3	0	3	0
6	TPHP212106	Unit Operation III	3	0	3	0
7	TPHP212107	Nutrition Evaluation in Food Processing	2	0	2	0
8	TPHP212108	Nutrition Evaluation in Food Processing Laboratory practice	0	1	1	0
9	TPHP212109	Nutrition	3	0	3	0
10	TPHP212110	Meat and Fish Technology	2	0	0	2
11	TPHP212111	Legume, Cereals and Tuber Technology	2	0	0	2
Semester IV						
1	TPHP212201	Food Industrial Sanitation	2	0	2	0
2	UNU3000	Civics	2	0	2	0
3	UNU161	Indonesian language	2	0	2	0
4	TPHP212202	Quality Control	2	0	2	0
5	TPHP212203	Unit Operation – Laboratory practice	0	1	1	0
6	TPHP212204	Engineering Economics	2	0	2	0
7	UNU1100	Pancasila	2	0	2	0
8	UNU1000 -1005	Theology	2	0	2	0
9	TPHP212205	Food and Agricultural Product Analysis I	3	0	3	0
10	TPHP212206	Food and Agricultural Product Analysis I – Laboratory practice	0	1	1	0
11	TPHP212207	Dairy Products Technology	2	0	0	2

No	Modules Code Number	Modules Name	Credits		Status	
			Theory	**Practical**	**C**	**E**
12	TPHP212208	Bakery Technology	2	0	0	2
Semester V						
1	TPHP213101	Plant Design	3	0	3	0
2	TPHP213102	Research Methodology and Experimental Design	2	0	2	0
3	TPHP213103	Food Safety	2	0	2	0
4	TPHP213104	Sensory Evaluation	2	0	2	0
5	TPHP213105	Sensory Evaluation – Laboratory Practice	0	1	1	0
6	TPHP213106	Quality Management	2	0	2	0
7	TPHP213107	Functional Foods	2	0	2	0
8	TPHP213108	Nutrient Formulation and Fortification	2	0	0	2
9	TPHP213109	Indonesian Gastronomy	2	0	0	2
10	TPHP213110	Rubber and Tobacco Technology	2	0	0	2
11	TPHP213111	Coffee, Tea and Cocoa Processing Technology	3	0	0	3
12	TPHP213112	Spice and Seasoning Technology	2	0	0	2
13	TPHP213113	Oil and Fat Technology	2	0	0	2
14	TPHP213114	Industrial Microbiology	2	0	0	2
15	TPHP213115	Enzyme Technology	2	0	0	2
16	TPHP213116	Food and Agricultural Product Analysis II	2	0	0	2
17	TPHP213117	Fermentation Technology	2	0	0	2
18	TPHP213118	Fermentation Technology – Laboratory Practice	0	1	0	1
19	TPHP213119	Current Topics I	2	0	0	2
20	TPHP213120	Special Topics I	1	0	0	1

No	Modules Code Number	Modules Name	Credits		Status	
			Theory	Practical	C	E
21	TPHP213121	Special Topics III	1	0	0	1
22	TPHP213122	Special Topics V	2	0	0	2
23	TPHP213123	Special Topics VII	2	0	0	2
24	TPHP213124	Special Topics IX	2	0	0	2
25	TPHP213125	Special Topics XI	2	0	0	2
26	TPHP213126	Special Topics XIII	3	0	0	3
27	TPHP213127	Special Topics XV	3	0	0	3
28	TPHP213128	Special Topics XVII	3	0	0	3
Semester VI						
1	TPHP213201	Entrepreneurship I	2	0	2	0
2	TPHP213202	Product Development and Process Technology	2	0	2	0
3	TPHP213203	Product Development and Process Technology – Laboratory Practice	0	3	3	0
4	TPHP213204	Seminar	2	0	2	0
5	TPHP213205	Industrial Internship I	0	3	3	0
6	TPHP213206	Packaging Technology	2	0	2	0
7	TPHP213207	Preservation Technology	2	0	2	0
8	TPHP213208	Fruit and Vegetable Technology	2	0	0	2
9	TPHP213209	Cane Sugar Technology	2	0	0	2
10	TPHP213210	Food Service Management	2	0	0	2
11	TPHP213211	Post Harvest Physiology and Technology	2	0	0	2
12	TPHP213212	Flavor Technology	2	0	0	2
13	TPHP213213	Food Biotechnology	2	0	0	2
14	TPHP213214	Food and Nutrition Design	2	0	0	2
15	TPHP213215	Current Topics II	2	0	0	2

No	Modules Code Number	Modules Name	Credits		Status	
			Theory	Practical	C	E
16	TPHP213216	Special Topics II	1	0	0	1
17	TPHP213217	Special Topics IV	1	0	0	1
18	TPHP213218	Special Topics VI	2	0	0	2
19	TPHP213219	Special Topics VIII	2	0	0	2
20	TPHP213220	Special Topics X	2	0	0	2
21	TPHP213221	Special Topics XII	2	0	0	2
22	TPHP213222	Special Topics XIV	3	0	0	3
23	TPHP213223	Special Topics XVI	3	0	0	3
24	TPHP213224	Special Topics XVIII	3	0	0	3
Semester VII						
Final Project						
1	TPHP214101	Research	0	6	6	0
2	TPHP214102	Entrepreneurship II	0	8	8	0
3	TPHP214103	Industrial Internship II	0	8	8	0
4	TPHP214104	Independent Project	0	6	6	0
Semester VIII						
1	UNU222001	Community Service	0	4	4	0
2	UNU222002	Community Communication	0	2	2	0
3	UNU222003	Application of Appropriate Technology	0	2	2	0

6.5. Implementation of Independent Learning-Independent Campus

6.5.1. Implementation Model of Merdeka Belajar – Kampus Merdeka (MBKM) Program

Based on the Decree of Minister of Education, Culture, Research, and Technology of Indonesia number 3 in 2020 concerning the National Standard of Hihger Education, the *Merdeka Belajar - Kampus Merdeka* (MBKM) program is established to facilitate the rights of the students to learn outside the campus environment. The BFAPT study programme facilitates the recent policy change by allocating the MBKM program in the seventh (7th) semester as an off-campus

learning to fulfil the final project in the form of internship, entrepreneurship, independent project or research. The distribution of credits within 8 semesters for the students that select the MBKM program will have a total of 144 credits, which is the same total credits with the regular BFAPT program.

Table 6.2 Curriculum of the Bachelor Program of Food and Agricultural Products Technology Distribution of Modules for Each Semester

Semester	Credits	Student Learning Activities
1	20	Compulsory General Modules of the Study Program inside BFAPT campus
2	23	Compulsory General Modules of the Study Program inside BFAPT campus
3	20	Compulsory General Modules of the Study Program inside and outside BFAPT campus, intra-university
4	20	Compulsory General Modules of the Study Program inside and outside BFAPT campus, intra-university
5	21	Modules of the Study Program intra- and inter-university
6	21	Modules of the Study Program intra- and inter-university

6.5.2. Compulsory General Modules within BFAPT Study Programme

No	Modules Code Number	Modules Name	Credits
1	TPHP211101	Cell Biology	3
2	TPHP211102	Chemistry I (Inorganic)	3
3	TPHP211103	Chemistry – Laboratory practice	1
4	TPHP211104	Physical Chemistry	2
5	TPHP211105	Introduction to Agricultural Technology	2
6	TPHP211106	Physics	2
7	TPHP211107	Physics – Laboratory practice	1
8	TPHP211108	Mathematics	2
9	TPHP211109	English for Food Technology	2
10	TPHP211110	Physical Properties of Foods and Agricultural Products	2
11	TPHP211201	Microbiology	2
12	TPHP211202	Microbiology – Laboratory practice	1
13	TPHP211203	Chemistry II (Organic)	3

No	Modules Code Number	Modules Name	Credits
14	TPHP211204	Biochemistry	3
15	TPHP211205	Unit Operation I	3
16	TPHP211206	Applied Mathematics	2
17	TPHP211207	Statistics	3
18	TPHP211208	Food Regulation	2
19	TPHP211209	Waste Management	3
20	TPHP211210	Waste Management – Laboratory practice	1
21	TPHP212101	Food Microbiology	3
22	TPHP212102	Food Microbiology – Laboratory practice	1
23	TPHP212103	Food and Agricultural Product Chemistry	2
24	TPHP212104	Thermal Process	2
25	TPHP212105	Unit Operation II	3
26	TPHP212106	Unit Operation III	3
27	TPHP212107	Nutrition Evaluation in Food Processing	2
28	TPHP212108	Nutrition Evaluation in Food Processing – Laboratory Practice	1
29	TPHP212109	Nutrition	3
30	TPHP212201	Food Industrial Sanitation	2
31	UNU3000	Civics	2
32	UNU161	Indonesian	2
33	TPHP212202	Quality Control	2
34	TPHP212203	Unit Operation – Laboratory practice	1
35	TPHP212204	Engineering Economics	2
36	UNU1100	Pancasila	2
37	UNU1000 -1005	Theology	2

No	Modules Code Number	Modules Name	Credits
38	TPHP212205	Food and Agricultural Product Analysis I	3
39	TPHP212206	Food and Agricultural Product Analysis I – Laboratory practice	2
40	TPHP213101	Plant Design	3
41	TPHP213102	Research Methodology and Experimental Design	2
42	TPHP213103	Food Safety	2
43	TPHP213104	Sensory Evaluation	2
44	TPHP213105	Sensory Evaluation – Laboratory Practice	1
45	TPHP213107	Functional Foods	2
46	TPHP213201	Entrepreneurship I	2
47	TPHP213202	Product Development and Process Technology	2
48	TPHP213203	Product Development and Process Technology – Laboratory Practice	3
49	TPHP213204	Seminar	2
50	TPHP213205	Industrial Internship I	3
51	TPHP213206	Packaging Technology	2
52	TPHP213207	Preservation Technology	2
53	TPHP214101	Research	6
54	TPHP214102	Entrepreneurship II	8
55	TPHP214103	Industrial Internship II	8
56	TPHP214104	Independent Project	6
57	UNU222001	Community Service	4
58	UNU222002	Community Communication	2
69	UNU222003	Application of Appropriate Technology	2
		Total	119

Excluding the final project with 6-8 credits.

6.5.3. Learning Modules Outside BFAPT Study Programme

The total number of credits that students can take is a minimum of 144 credits. The compulsory modules in the program that must be taken are 119 credits, excluding the final project of 6-8 credits. Commodity elective modules that students should/must take are 10 credits. Thus, the elective modules that students can take in order to fulfill a minimum of 144 credits are 7-9 credits. For example, the students that take the final project with a weight of 6 credits, then the elective modules that can be taken are at least 9 credits, and so on. These elective modules can be selected from the elective modules in the study program, modules outside the study program on campus, modules in similar study programs off campus, or modules in different study programs off campus.

Table 6.3 Lists of modules type for elective modules

Modules Types	Maximum Credits	Description
Outside on-campus study programs	4	The modules taken have the same total credit, CPL and competence that are related.
In the same study program, off campus	10	The modules taken have the same total credit, recommended by the study programme and agreed upon by the association of similar study programs.
In a different study program, off campus	4	The modules taken have the same total credit, have the same CPL and competence that are related.
Maximum Total Credit	**18**	

Table 6.4 Forms of learning activities that are counted as final project

No	Forms of learning activities	Can be implemented with credits weights		Description
		Regular	MBKM	
1	Research	6	6	Can be converted to several modules that have PLO compatibility and learning activity times that match the modules credit.
2	Industrial Internship II	8	8	MBKM activities can be converted to several modules that have PLO compatibility and learning activity time in accordance with the credit of the modules.

No	Forms of learning activities	Can be implemented with credits weights		Description
		Regular	**MBKM**	
3	Entrepreneurship II	8	8	MBKM Entrepreneurial activities can be converted to several modules that have compatibility PLO and learning activity time that is in accordance with the credit of the module, including entrepreneurship module.
4	Independent Project	6	6	Can be converted to several modules that have the same PLO and learning activity time that in accordance with the credit of the module.
5	Student Mobility	6-18	6-18	1 semester at another university, then the credits are transferred. According to the activity. If conducting research is equal to 6 credits. If taking lectures, according to free elective modules that can be taken which is 12 - 18 credits.

6.6. Module Structure

Table 6.5 Forms of learning activities that are counted as final project

Semester	1	2	3	4	5	6	7	8	Total
Compulsory	23	23	20	20	12	16	28	8	147
Elective	0	0	4	4	45	35	0	0	88
Total	23	23	24	24	57	51	28	8	235

Table 6.6 Credits distribution of theoretical and practical modules in the Curriculum 2021

Semester	1	2	3	4	5	6	7	8	Total
Theoretical	18	21	22	21	55	43	0	0	180
Practical	2	2	2	3	2	8	28	8	55
Total	20	23	24	24	57	51	28	8	235

6.7. Module Syllabus

The module syllabus is a brief description that explains the module content in the form of topics that participants will meet to read, study, observe, research, and discuss with lecturers and students to produce a deep and comprehensive understanding, then leads to the student competencies in the modules that are being taught. The modules are divided into compulsory (C) and elective (E) modules.

Table 6.7 Modules Syllabus

No	Modules Code Number	Modules Name	Cred	C/E	Syllabus
1	TPHP211101	Cell Biology	3	C	- Prokaryotic and eukaryotic cells, - Growth and self-reproduction of prokaryotic and eukaryotic organisms, - Cell components of macromolecules (building blocks) and macromolecules, - Replication processes, - Transcription processes, - Translation processes, - Principles of gene expression regulation, evolution and biodiversity.
2	TPHP211102	Chemistry I (Inorganic)	3	C	- Materials, compounds, elements and methods of measurement, - Atomic theory and the process of its discovery, - Chemical calculations, - Gas law, - Electrons in atoms, - Basic chemical bonds, - The concept of acids and bases, - Thermochemical and thermodynamic reactions, - Reaction kinetics, - Core chemistry and oxidation-reduction reactions.
3	TPHP211103	Chemistry – Laboratory practice	1	C	- Laboratory techniques, - Occupational health and safety, - Introduction to lab equipment and good laboratory practices, - Kinetics reaction,

No	Modules Code Number	Modules Name	Cred	C/E	Syllabus
					- Lowering solution freezing point, - Determination of commercial acetic acid concentration, - Water hardness analysis, - Electric conduction, - Buffer.
4	TPHP211104	Physical Chemistry	2	C	- Gas laws, - Law of Thermodynamic I (enthalpy and change), - Law of Thermodynamic II (entropy and changes), - The concept of chemical equilibrium.
5	TPHP211105	Introduction to Agricultural Technology	2	C	- The basic concepts of agricultural technology, - The concepts of agricultural industry, - The role of agricultural technology in agricultural industry, - The development of science and technology, and national development. - Profession and professionalism of Agricultural Technology. - Curriculum mapping of Bachelor in Food and Agricultural Product Technology program.
6	TPHP211106	Physics	2	C	- Basic concepts of physics, - Units - Kinematics - Dynamics - Newton's law, - Conservation laws, - Vibration - Fluid mechanics - Material (heat) - Thermodynamics, - Equation state - Gas properties, - Heat and mass transfer.
7	TPHP211107	Physics – Laboratory practice	1	C	- Thermometer measurement, - Humidity, - Heat-electric equivalence,

No	Modules Code Number	Modules Name	Cred	C/E	Syllabus
					- Surface tension of water, - Measurement of specific gravity, - Solids, - Spring constant, - Modulus of elasticity of wire, - Modulus of elasticity of rods, - Positive lens diopters, - Refractive index of liquids, - Dispersion of light, - Positive and negative lenses, - Photometry.
8	TPHP211108	Mathematics	2	C	- Functions and limits, - Functions and graphics, - Functions and variables, - Vectors and matrices, - Clusters of linear equations, - Differential and integral equations.
9	TPHP211109	English for Food Technology	2	C	The module is designed to produce undergraduates who are able to do a speed read, understand texts, English terms that are commonly encountered in the field of food and agricultural product technology, listen and understand information in English carefully. Furthermore, this module is designed to improve undergraduates' skills in conveying thoughts, opinions, or ideas orally or in writing in English.
10	TPHP211110	Physical Properties of Foods and Agricultural Products	2	C	- The properties of food and agricultural products in relation to processing operations, - Food materials with various sources have variability in their physical properties and content, - The related physical properties include shape, size, density, texture and color, as well as their implications for the

No	Modules Code Number	Modules Name	Cred	C/E	Syllabus
					processing operations applied.
11	TPHP211201	Microbiology	2	C	- Methods of isolation and identification of microbes, - Nutritional needs, media type, and media selection for microbial growth, - Metabolic pathways, factors in microbial growth and death, - Microbial ecology and industrial applications of microbes.
12	TPHP211202	Microbiology – Laboratory practice	1	C	- Introduction of laboratory equipment and methods of sterilization, - Aseptic method technique, - Media and method of manufacture, - Enumeration and isolation techniques, - Morphology and bacterial staining, - Yeast morphology, - Mold morphology, - Microbial physiology, - Introduction gene bank on NCBI site, - Homology analysis sequence of nucleotide and protein.
13	TPHP211203	Chemistry II (Organic)	3	C	- Chemical bonds, - Characteristics of organic compounds, - Atoms and molecules, - Nomenclature of organic compounds, - Alkanes, alkenes, alkynes, halides and alcohols, - Carboxylic acids, and ethers, - Amines and esters, - Aldehydes and ketones, - Aliphatic compounds,

No	Modules Code Number	Modules Name	Cred	C/E	Syllabus
					- Stereochemistry.
14	TPHP211204	Biochemistry	3	C	Biochemistry is a compulsory module discussing the chemical reactions that underlie life phenomena. This module provides basic knowledge about the structure and the role of water, acid-base reactions, and macromolecules which consist of protein, enzyme, carbohydrate, and lipid. Furthermore, it also elucidates the bioenergetics and the concept of macromolecule metabolism, including glycolysis, gluconeogenesis, Krebs cycle, electron transfer, photosynthesis, pentose phosphate pathway, protein degradation, synthesis, and degradation of lipid.
15	TPHP211205	Unit Operation I	3	C	A basic engineering modules for food processing and agricultural products which includes: - Dimensions and units, - Fluid flow, - Thermodynamics, - Conservation of mass and energy, - Thermodynamic properties of water and water vapor, - Heat transfer and mass transfer
16	TPHP211206	Applied Mathematics	2	C	- Concepts and methods of solving linear differentials, partial differentials, and integrals, - Development, modification of settlement methods and strategies, - Application of mathematical models and formulas in the food processing process.

No	Modules Code Number	Modules Name	Cred	C/E	Syllabus
17	TPHP211207	Statistics	3	C	- Measurement, - Central tendency (mean, median, mode), - Data processing and presentation techniques (graphs, diagrams) and variation measures (range, mean deviation, standard deviation and variance) - Parametric and non-parametric statistical concepts, - Probability and distribution, - Standard normal distribution, - Test of parametric statistical requirements (normality, homogeneity of variance, linearity, regression), - Two-mean difference test, - Correlation and determination test, - One-way simple ANOVA, - Computerized data processing, - The basics of multivariate analysis (PCA, PLS).
18	TPHP211208	Food Regulation	2	C	Food regulation is a compulsory module discussing regulations and legislation related to food production, distribution and trade. The module discusses development of standards related to food quality and safety, consumer protection, halal certification, and intellectual property protection. Other materials taught are: - Supervision of the implementation of food quality standards, - Institutions related to food regulations (world and domestic), - Policy for making food legislation, - Current issues related to regulations and violations in food processing and

No	Modules Code Number	Modules Name	Cred	C/E	Syllabus
					distribution, - Implementation of SNI and its consequences.
19	TPHP211209	Waste Management	3	C	- Understanding the concept of environment, waste, and pollution, - Rules and regulations on environment in Indonesia, - Environmental impact assessment, - Characteristics and parameters of waste, - Concept of waste management - Waste minimization - Waste utilization strategy (biorefinery, composting, biogas, physico-chemical waste utilization) - Basics of handling liquid waste (physically, chemically, and microbiologically) such as activated sludge process, trickling filter, oxidation.
20	TPHP211210	Waste Management – Laboratory practice	1	C	- Determination of waste parameter, - Wastewater treatment chemically and with activated sludge process.
21	TPHP212101	Food Microbiology	3	C	A compulsory module discussing: - Beneficial microbes, - The concept of microbial interactions with food, - Factors that affect growth, - Food spoilage by microbes, - Pathogenic microbes in food, - Physiology of pathogenic microbes, - The role of food processing on microbial growth, - Various ways of controlling microbes.

No	Modules Code Number	Modules Name	Cred	C/E	Syllabus
22	TPHP212102	Food Microbiology – Laboratory practice	1	C	- Food microbiological testing methods and techniques, - Microbiological control of foodstuffs through the addition of preservatives and cooling, - Microbial storage for industry.
23	TPHP212103	Food and Agricultural Product Chemistry	2	C	- Major food components: ice water, carbohydrates, lipids, amino acids, enzymes and proteins, - Micro food components: vitamins, minerals, dyes, flavors, additives, bioactive compounds, nutraceuticals, and toxicants, - Enzymatic and non-enzymatic reactions of food ingredients, - Food systems: Post-mortem, Physiology of edible muscle tissues, - Post-harvest physiology of edible plant tissues.
24	TPHP212104	Thermal Process	2	C	Thermal process is a compulsory module discussing about: - Microbes that play a role in the process of sterilization and pasteurization of food, - Heat penetration in food products, - Kinetics of microbial death and deterioration of food quality due to heating, - Design of heating processes for packaged foods, - Evaluation of heat adequacy using improved general methods and mathematical methods (Ball and Stumbo).
25	TPHP212105	Unit Operation II	3	C	Unit Operation II is a module that discusses the application of process basics including: - Preparation of raw materials - Size reduction, - Mixing and homogenization, - Mechanical and diffusional separation and purification.

No	Modules Code Number	Modules Name	Cred	C/E	Syllabus
26	TPHP212106	Unit Operation III	3	C	The basic principles of evaporation, crystallization, drying, cooling and freezing processes and their application to food processing and agricultural products
27	TPHP212107	Nutrition Evaluation in Food Processing	2	C	The module provides knowledge about the nutritional changes (carbohydrate, protein, vitamin, mineral) during: - Post-harvest handling processing, - Storage by chemical, - In vitro and in vivo (bioassay) evaluation - The effect to the nutrition content and health.
28	TPHP212108	Nutrition Evaluation in Food Processing Laboratory practice	1	C	A laboratory practical module that provides practice to evaluate the quantity and quality of food and agriculture product nutrients (chemical, in vitro and in vivo) during post-harvesting, processing, and storage, including oil quality change, phytate, vitamin, resistant starch, protein digestibility, and mineral.
29	TPHP212109	Nutrition	3	C	The module studies the correlation between nutrition and health, which includes the function of food intake in meeting the nutritional needs for growth, maintenance, and optimal health maintenance. The module content includes: - Digestive system, - Nutritional physiology, - Metabolism of nutrients (carbohydrates, lipids, proteins, vitamins, minerals, and water) and its effects on health, - Energy, - Nutritional disorders.

No	Modules Code Number	Modules Name	Cred	C/E	Syllabus
30	TPHP212110	Meat and Fish Technology	2	E	- Biochemical changes in carcass and skeletal muscle after post mortem and their impact on quality, - Control of spoilage and pathogenic microbial contamination in fresh and processed meat and fish production chains, - Application of preservation principles and processing technology that provides added value, - Utilization of by-products of meat and fish processing, - Current topics relevant to the industry and trade in meat and fish products.
31	TPHP212111	Legume, Cereals and Tuber Technology	2	E	The module explains the knowledge of post-harvest technology and processing of nuts, grains, and tubers into raw materials and finished products, in the form of protein concentrates and isolates, peanut butter, noodles, candy, and other food products. The module also discusses starch and methods to extract the starch.
32	TPHP212201	Food Industrial Sanitation	2	C	Sanitation in food industry is a compulsory module discussing the concept of sanitation in the food industry, the relationship between microbial contaminants and allergens with sanitation. Other materials discussed in this module are: - Cleaning compounds and sanitisers, - Cleaning practices and use of sanitisers - Personal hygiene, - Pest control, - The role of sanitation in building design and equipment layout in the food industry,

No	Modules Code Number	Modules Name	Cred	C/E	Syllabus
					- Cleaning and sanitation practices in the food industry, - Water management for the food industry.
33	UNU3000	Civics	2	C	The module discusses topics regarding the national defense and security in a comprehensive manner, including: - Archipelago insight, - National resilience, - Politics and strategy of national defense - Security system and the universal people's defense system, - The embodiment of national security in the development of science.
34	UNU161	Indonesian	2	C	- The use of Indonesian both verbally (art of communication, interviews, presentations) and in writing - Correct grammar and vocabulary in writing scientific papers.
35	TPHP212202	Quality Control	2	C	A compulsory module about food quality, quality control, and quality assurance. The topics discussed including: - The variation and application of quality improvement concept, - Qualitative and quantitative quality control tools, - Food quality determinants and measurement principle (objectively and subjectively), - Formulation, implementation, and quality standards development.

No	Modules Code Number	Modules Name	Cred	C/E	Syllabus
36	TPHP212203	Unit Operation – Laboratory practice	1	C	Application of mass transfer theory, heat transfer, and operating units in processing and evaluation of thermal processes
37	TPHP212204	Engineering Economics	2	C	- The definition and function of engineering economics for decision-making. - The definition of equivalence, interest, tax, currency value, and depreciation - Methods to estimate capital cost estimates, production cost, and pricing. - Investment analysis based on profit, cashflow, BEP, IRR, ROI, and BCR.
38	UNU1100	Pancasila	2	C	- The reality and philosophy of Pancasila, the 1945 Constitution and discussion of social issues based on the approach and application of Pancasila values, - Contextual value of Pancasila in the academic field.
39	UNU1000 - 1005	Theology	2	C	- The basics of Islamic religious teachings - The concept of life for the Muslim generation - The virtue of studying in Islam - The role of the Muslim generation in science and technology - Food security in the perspective of Islam - Regulation and implementation of halal in the food industry - The fiqh rules of slaughtering animals according to Islamic law - Sharia economics - Islamic marketing & business finance. For non-Islamic religious education, the module follows the syllabus from UGM.

No	Modules Code Number	Modules Name	Cred	C/E	Syllabus
40	TPHP212205	Food and Agricultural Product Analysis I	3	C	The module is designed to provide knowledge of basic concepts of analytical chemistry such as - The principles of chemical analysis methods - The preparation for conducting chemical analysis of food and agricultural products. - Choosing the correct method for sampling technique and sample handling, chemical analysis procedure (including proximate analysis and several minor compounds analysis), and processing the data from the analysis to create valid data.
41	TPHP212206	Food and Agricultural Product Analysis I – Laboratory practice	2	C	- Solution preparation and standardization for analysis, - Sample preparation, - Proximate analysis and minor components, - Gravimetric and volumetric methods, - The use of chromatography and spectrophotometry methods for quantitative determination of food components.
42	TPHP212207	Dairy Products Technology	2	E	- Characteristics of fresh milk and its handling as raw material for the milk processing industry, - Fresh milk quality parameters and testing methods, - Technology for the use of milk components as an ingredient in food products, - Dairy-based product processing technology (powder, liquid, semi-solid, and fermented), - Current topics are relevant to the industry and trade of dairy products.

No	Modules Code Number	Modules Name	Cred	C/E	Syllabus
43	TPHP212208	Bakery Technology	2	E	- Characteristics of bakery product ingredients (flour, shortening, developer ingredients, sugar, eggs and minor ingredients), - The implications of ingredients for formulas, process conditions, equipment and quality control, - Characteristics of local flour (other than wheat) to develop bakery products.
44	TPHP213101	Plant Design	3	C	- The concept of raw material and product specifications in relation to the description of basic operations and design, - Process design that is more efficient and guaranteed food safety as well as more energy efficient and environmentally friendly, - Flowchart (process flow, material flow, material and energy balance, equipment flow), - Definition of capacity, equipment capacity, equivalent capacity and factory capacity, - Selection of process equipment, - Layout of production equipment and facilities, - Building design that supports technical feasibility and sanitation, - Factors for choosing a factory location, - Economic feasibility analysis (estimation method, capital, production cost, selling price and profit determination, profit analysis, ROI, POT, IRR, BEP).

No	Modules Code Number	Modules Name	Cred	C/E	Syllabus
45	TPHP213102	Research Methodology and Experimental Design	2	C	- The principles and steps of a logical and systematic way of thinking to gather information through surveys and problem solving through an experimental research process, - The stages consist of problem identification, problem specification, literature review, hypothesis making, preparation of research methods sampling techniques, experimental design, collecting data, statistical analysis, data presentation, and conclusion drawing. - The types of research methods and experimental designs as well as research ethics.
46	TPHP213103	Food Safety	2	C	The module discussed the potential hazards of food (biological, physical, chemical hazards including natural toxins, food borne diseases, risk assessment, and the principles of HACCP). In addition, students are expected to design HACCP applications in food processing units.
47	TPHP213104	Sensory Evaluation	2	C	- Sensory properties of food ingredients/products and their results agriculture - Humans and their senses as an assessment tool - The theoretical basis for the assessment of sensory properties in relation to the assessment of the quality of the material/product and its acceptance by consumers - The influence of physiological and psychological factors in the assessment - The required facilities and good practices in testing - Tthe type of sensory test and

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					its use, - The statistical basis used in calculating the sensory test data.
48	TPHP213105	Sensory Evaluation – Laboratory Practice	1	C	The practical module trains students to recognize the sensation of sensory attributes (texture and flavor) and how to assess them so that they have experience as panelists. In addition, students' skills in selecting and training panelists will be studied in depth. Determination of baseline and panelist sensitivity will be carried out in this practicum. Students will also learn to conduct sensory tests which include evaluation of the attributes of taste, odor, flavor, textural properties and sensory profiles with appropriate methods, as well as statistically processing data to be interpreted and concluded.
49	TPHP213106	Quality Management	2	E	The module consists of fundamental principles and vocabulary in quality management, such as - ISO 9001 quality management system standards, - Documentation systems, - Implementation stages, - ISO 9001 certification, - Relation of ISO 9001 to food safety management system standards (ISO 22000), - Test and calibration laboratory standards (ISO 17025), - Halal assurance systems (HAS 23000) .
50	TPHP213107	Functional Foods	2	C	- The concept of functional food - Types of bioactive compounds contained in functional food, - Sources of functional food, - Physiological effects of functional food on health.

No	Modules Code Number	Modules Name	Cred	C/E	Syllabus
51	TPHP213108	Nutrient Formulation and Fortification	2	E	- The concept of formulation and fortification, - Nutritional needs and problems during the growth and development of children to adults and the elderly, - Colostrum & breast milk, - Formulations for specific target consumers (infants, children, pregnant women, the elderly, special diets -LBW, stunting, lactose intolerance) formulation technology. - Fortification (fortification, vehicle, technology) - Application of fortification of vitamin A, Iodium, and Fe, - The evaluation of the effectiveness of fortification (bioavailability) in fortified foods.
52	TPHP213109	Indonesian Gastronomy	2	E	Gastronomy talks about how humans utilize their environment into food, manage it, choose and sort, consume, and enjoy it for sustainability so that a healthy, prosperous, and independent life can be accomplished in fulfilling their food needs. The module discusses the scope of gastronomy, biodiversity, local knowledge, and the role of gastronomy in human life. Other materials discussed are the distinct taste of Indonesian dishes, the compounds that make up, the combination of spices, and their correlation to the mechanisms that occur in the human body. Elements of world-class cuisines, cooking techniques, and theory of the art of cooking and serving are also explained in this module.

No	Modules Code Number	Modules Name	Cred	C/E	Syllabus
53	TPHP213110	Rubber and Tobacco Technology	2	E	- Downstream rubber and tobacco products and their economic value, - Post-harvest rubber and tobacco, - Description and specification of raw materials, - Process design of rubber and tobacco processing - Process control factors during processing.
54	TPHP213111	Coffee, Tea and Cocoa Processing Technology	2	E	- The nature of coffee and types of coffee, - Wet-dry processing methods and the manufacture of downstream coffee products. - The nature of tea shoots, non-fermented and fermented tea processing, - Scented tea and tea downstream products, - Types and characteristics of cocoa beans, - Processing of fermented and non-fermented methods, - Processing of cocoa powder and fat and cocoa downstream products.
55	TPHP213112	Spice and Seasoning Technology	2	E	The module discuss chemical components in spices, particularly those related to the function of spices and seasoning and condiments in food processing, the use of all three according to food processing techniques and ingredients used. processed. The module also explains about the Patterning Theory, which is the use of seasoning and condiment includes efficiency and evaluation of the suitability of several seasonings and condiments

No	Modules Code Number	Modules Name	Cred	C/E	Syllabus
56	TPHP213113	Oil and Fat Technology	2	E	- Introduction to the chemical structure of fats and oils, - Sources of oils and fats, - Methods of extraction, cleaning, and purification, - Physical and chemical properties of oils and their relationship to quality, - Fat and oil derivative products, - Modification of fats and oils, - Latest trends of fats and oil, and its applications.
57	TPHP213114	Industrial Microbiology	2	E	- Solid substrate fermentation, - Factors affecting the growth and production of metabolites, - Application of fungi, bacteria, and yeasts in the fermentation industry.
58	TPHP213115	Enzyme Technology	2	E	- The characteristics of enzymes as biocatalysts - Introduction to enzyme kinetics - Extraction, purification, and immobilization of enzymes and their application - The characteristics of enzymes that play a role in the food industry, - The application of enzymes in food processing.
59	TPHP213116	Food and Agricultural Product Analysis II	2	E	The module talks about basic principles of chemical analysis method for food and agricultural products using chromatography, electrophoresis, and spectrophotometry, including validation of test methods and methods used in sample preparation.
60	TPHP213117	Fermentation Technology	2	E	The module explains the design of fermentation process at industrial scale, including: - Growth media formulation, - Preservation of microbes, - Development of inoculum, - Bioreactor design,

No	Modules Code Number	Modules Name	Cred	C/E	Syllabus
					- Aeration, process control, and downstream processing.
61	TPHP213118	Fermentation Technology – Laboratory Practice	1	E	The practical module studies the microbial growth kinetics parameters (specific growth rate, maximum specific growth rate, saturation constant, biomass yield, product yield).
62	TPHP213119	Current Topics I	2	E	The module discusses the latest science and technology developments in the field of food and agricultural products, carried out in the Odd Semester.
63	TPHP213120	Special Topics I	1	E	Contains student academic activities to accommodate student mobility activities with credits in accordance with universities partners and can be implemented in the Odd Semester.
64	TPHP213121	Special Topics III	1	E	Contains student academic activities to accommodate student mobility activities with credits in accordance with universities partners and can be implemented in the Odd Semester.
65	TPHP213122	Special Topics V	2	E	Contains student academic activities to accommodate student mobility activities with credits in accordance with universities partners and can be implemented in the Odd Semester.
66	TPHP213123	Special Topics VII	2	E	Contains student academic activities to accommodate student mobility activities with credits in accordance with universities partners and can be implemented in the Odd Semester.

No	Modules Code Number	Modules Name	Cred	C/E	Syllabus
67	TPHP213124	Special Topics IX	2	E	Contains student academic activities to accommodate student mobility activities with credits in accordance with universities partners and can be implemented in the Odd Semester.
68	TPHP213125	Special Topics XI	2	E	Contains student academic activities to accommodate student mobility activities with credits in accordance with universities partners and can be implemented in the Odd Semester.
69	TPHP213126	Special Topics XIII	3	E	Contains student academic activities to accommodate student mobility activities with credits in accordance with universities partners and can be implemented in the Odd Semester.
70	TPHP213127	Special Topics XV	3	E	Contains student academic activities to accommodate student mobility activities with credits in accordance with universities partners and can be implemented in the Odd Semester.
71	TPHP213128	Special Topics XVII	3	E	Contains student academic activities to accommodate student mobility activities with credits in accordance with universities partners and can be implemented in the Odd Semester.
72	TPHP213201	Entrepreneurship I	2	C	- The concept of entrepreneurship, - Entrepreneurial character, - How to build a business, - Business plans, - Business and financial management, - Marketing strategies and techniques.
73	TPHP213202	Product	2	C	The module is about the

No	Modules Code Number	Modules Name	Cred	C/E	Syllabus
		Development and Process Technology			development of food and agricultural products including idea generation, screening/idea selection, development product (concept test), and commercialization. Furthermore, the application of process fundamentals to develop more efficient and innovative processing techniques includes the concept of process development, process chain design, process control, and scale up process were also discussed.
74	TPHP213203	Product Development and Process Technology – Laboratory Practice	3	C	- Designing and realizing product concepts that have been defined, as well as designing and optimizing existing processes, - Application of business analysis and process verification at optimum conditions to produce product prototypes as required, - Limited production with packaging, marketing, and business plans.
75	TPHP213204	Seminar	2	C	The module is designed for students, to be able to understand the principles of scientific communication using various media and scientific communication techniques, which include preparing scientific manuscripts and presenting them both orally and in writing. The orientation of the module is to improve students' ability to write scientific articles, make effective presentations, and convey ideas formally in discussions in scientific forums. In this module, students will be taught the types of scientific writing, systematic writing, and how to make posters. In addition,

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					students will be taught types of oral presentations, how to visually present data, how to create attractive media and effective presentation techniques. As an exercise, students will write abstracts of scientific articles and make oral presentations which will be evaluated by the lecturer. The criteria that will be evaluated are the quality of the media, presentation performance and discussion activities in the presentation. The evaluation given is expected to improve students' ability to make presentations effectively.
76	TPHP213205	Industrial Internship I	3	C	Students are expected to carry out tasks in the food/agricultural product industry given by the industry for a minimum of 6 weeks including problem formulation, problem solving plans and implementation, information collection, data processing, report preparation and presentation of internship assignments in industry and in the department.
77	TPHP213206	Packaging Technology	2	C	- Packaging materials (traditional, paper, plastic, glass and cans), their properties and applications, - Packaging methods (aseptic-non-aseptic), fruit and vegetable packaging, dry products, modified packaging, active packaging and smart packaging, - Shelf life and labeling concept.
78	TPHP213207	Preservation Technology	2	C	- The deterioration of the quality of agricultural products due to mechanical, physical, chemical, and microbiological processes

No	Modules Code Number	Modules Name	Cred	C/E	Syllabus
					- The preservation of agricultural products by physical, chemical, and microbiological methods (fermentation) and their effect on product quality which includes: a. minimal processing of vegetables and fruit b. drying, c. intermediate moisture foods, d. refrigeration and freezing, e. irradiation, f. acidification and pasteurization, g. sterilization, h. preservation with preservatives, i. controlled atmosphere preservation, j. osmotic dehydration, k. microwave heating, l. ohmic heating, m. pulsed electric field, n. high pressure preservation, o. magnetic field, p. preservation by a combination of various methods
79	TPHP213208	Fruit and Vegetable Technology	2	E	Principles and methods of processing fruit and vegetables into food products such as: - Jam-jelly-marmalade, - Fermented fruit and vegetable products, - Canned fruit and vegetable, - Frozen fruit and vegetable, - Dried fruit and vegetable, - Fruit juice.
80	TPHP213209	Cane Sugar Technology	2	E	- Physiology of sugarcane maturation, - Chemical changes in sucrose due to processing, - Sugarcane juice extraction, - Sugarcane juice purification,

No	Modules Code Number	Modules Name	Cred	C/E	Syllabus
					- Sugarcane juice evaporation, - Sucrose crystallization, - Sugar crystal separation, - Drying sugar crystals.
81	TPHP213210	Food Service Management	2	E	Food Service Management is a module about the management of profit-oriented food services such as restaurants, catering, canteens, cafes, transportation industry, and the management of non-profit food services such as school catering, orphanages, elderly homes, hospitals, and also food services that handles emergency/disaster situations. The module material covers: - Menu planning, - Planning equipment requirements, - Menu production, - How to evaluate the quantity and quality of products and services (management of purchases, storage and expenses for managing stock of materials before processing).
82	TPHP213211	Post Harvest Physiology and Technology	2	E	- Physiological properties of horticultural products (vegetables, fruit, tubers, and cut flowers) related to environmental conditions after harvesting, - Aspects of morphoanatomy, physiology, physical and biology, - Methods or technology to maintain quality and freshness, reduce shrinkage, increase shelf life required in marketing (packing house), packaging, transportation, refrigeration, storage in controlled, and hypobaric atmospheres.

No	Modules Code Number	Modules Name	Cred	C/E	Syllabus
83	TPHP213212	Flavor Technology	2	E	- Flavor classification, - Raw materials, - Flavor extraction methods, - Flavor manufacture, - Analysis, - Use and regulations of flavor.
84	TPHP213213	Food Biotechnology	2	E	Food biotechnology module provides knowledge about genetic modification and strain improvement in microorganisms (bacteria, yeast, and mold) which are implemented in the food industry. The topics about genetic modification technology involves recombinant technology and gen editing, while strain improvement involves protoplast mutation and fusion. The module also discusses the food safety of gene modification products.
85	TPHP213214	Food and Nutrition Design	2	E	- The concept of food and nutrition planning, - Analysis of the global and national food situation, - Production systems and national food consumption patterns, - Daily intake levels and food balance sheet, - Food security, - Governmental program interventions on food and nutrition, and family nutrition planning.
86	TPHP213215	Current Topics II	2	E	Discussion of the latest science and technology developments in the field of food and agricultural products carried out in the Even Semester
87	TPHP213216	Special Topics II	1	E	Facilitating student academic activities to accommodate student mobility activities with credits in accordance with partner universities that can be carried out in Even Semesters.

No	Modules Code Number	Modules Name	Cred	C/E	Syllabus
88	TPHP213217	Special Topics IV	1	E	Facilitating student academic activities to accommodate student mobility activities with credits in accordance with partner universities that can be carried out in Even Semesters.
89	TPHP213218	Special Topics VI	2	E	Facilitating student academic activities to accommodate student mobility activities with credits in accordance with partner universities that can be carried out in Even Semesters.
90	TPHP213219	Special Topics VIII	2	E	Facilitating student academic activities to accommodate student mobility activities with credits in accordance with partner universities that can be carried out in Even Semesters.
91	TPHP213220	Special Topics X	2	E	Facilitating student academic activities to accommodate student mobility activities with credits in accordance with partner universities that can be carried out in Even Semesters.
92	TPHP213221	Special Topics XII	2	E	Facilitating student academic activities to accommodate student mobility activities with credits in accordance with partner universities that can be carried out in Even Semesters.
93	TPHP213222	Special Topics XIV	3	E	Facilitating student academic activities to accommodate student mobility activities with credits in accordance with partner universities that can be carried out in Even Semesters.
94	TPHP213223	Special Topics XVI	3	E	Facilitating student academic activities to accommodate student mobility activities with credits in accordance with partner universities that can be carried out in Even Semesters.

No	Modules Code Number	Modules Name	Cred	C/E	Syllabus
95	TPHP213224	Special Topics XVIII	3	E	Facilitating student academic activities to accommodate student mobility activities with credits in accordance with partner universities that can be carried out in Even Semesters.
Undergraduate Final Project					
96	TPHP214101	Research	6	C	- Formulation of problems, - Defining the research objectives, - Theoretical basis and hypotheses, - Planning the solution to the specified problems - Data collection - Preparation of research reports - Presentation of research results.
97	TPHP214102	Entrepreneurship II	8	C	The module aims to increase the capacity of entrepreneurship in the community, government institutions, private sector as well as mentoring micro, small and medium enterprises. Students design a business plan as a final project. The scope of business is in the field of food and agricultural products with the type of business in the manufacturing and culinary fields. The program output targets to be achieved are proposing a business plan, final report on entrepreneurial activities, and financial reports.
98	TPHP214103	Industrial Internship II	8	C	- Specify points of problems, research objectives, theoretical basis, and hypotheses. - Planning how to solve the problems and collect data. - Preparation of research reports and presentation of research results.
99	TPHP214104	Independent Project	6	C	Independent Project is a form of final project carried out by students working independently

No	Modules Code Number	Modules Name	Cred	C/E	Syllabus
					under the supervision of an assigned supervisor. Students make a proposal and after the proposal is approved by the supervisor, students must conduct research in the field, conduct in-depth analysis, prepare reports, review literature or case studies, and make presentations of the final report in front of the supervisor and two examiners. The report must be completed within three months after the proposal is approved. Students are required to conduct at least 8 sessions of one consultation/discussion with their supervisor. Topics in the Independent Project can be real problems related to food technology and agricultural products to be researched in the field or community, or real problems to be explored, or arguments to be defended. In the proposal students must be able to indicate where they will start and where they will end in terms of answering questions, exploring phenomena, understanding theories, improving or adding skills.
100	TPHP214201	Community Service	3	C	Practice students' abilities to identify real problems in the community, organize and work in groups, formulate activity plans in problem solving, manage the provision and use of resources, and create real work for the community.