



MODULE HANDBOOK

Food Technology
(Bachelor's Degree)



Module Handbook Food Technology Study Program

	PADJADJARAN UNIVERSITY FACULTY OF AGRO-INDUSTRIAL TECHNOLOGY FOOD TECHNOLOGY STUDY PROGRAM	COURSE CODE: N10B181103
Module designation	Basic Chemistry	
Semester(s) in which the module is taught	1	
Person responsible for the module	1. Dian Kurniati, S.Si., M.Sc., Ph.D. 2. Dr. Edy Subroto, S.TP., M.P. 3. Dr. Endah Wulandari, S.TP., M.Si. 4. Dr. Elazmanawat Lembong, S.TP., M.Si.	
Language	Indonesian and English	
Relation to curriculum	Compulsory Program	
Teaching methods	1. Interactive Learning 2. Student-centered Learning 3. Discovery Learning	
Workload	Total workload: 119 hours Class Lecture: 2 x 50' x 14 weeks = 23,33 hours Assignment: 2 x 60' x 14 weeks = 28 hours Independent study: 2 x 60' x 14 weeks = 28 hours Laboratory practice Laboratory session: 1 x 100' x 14 weeks = 23,33 hours Independent study: 1 x 70' x 14 weeks = 16 hours Examination Midterm Examination: 3 x 50' x 1 weeks = 2,5 hours Final Examination: 3 x 50' x 1 weeks = 2.5 hours	
Credit points	4.8 ECTS (3 sks) (2-1)	
Required and recommended prerequisite for joining the modul	-	
Module objectives/intended learning outcomes	1. Demonstrate knowledge and understanding of the fundamental principles of chemistry that support expertise in the field of food science. 2. Demonstrate the ability to work independently and collaboratively in multidisciplinary teams, establish adaptive professional networks, and take responsibility for solving problems in basic chemistry through effective supervision and evaluation.	

Content	1. Introduction (Response) 2. Elements, atoms, electrons, atomic structure, structure of electrons in atoms, mole concept 3. Covalent bonds, sigma bonds, pi bonds, hybrid molecular orbitals, ionic bonds, polar covalent bonds, hydrogen bonds, coordinate bonds 4. Chemical reaction rates and reaction orders, calculation of acids, bases and buffers 5. Chemical concepts of carbon, lipid compounds, sugars, bonds between reactive groups 6. Organic chemical reactions in biological systems 7. Structure of the electronic and valence framework of phosphorus-sulfur, thiol groups, phosphates and their derivatives 8. Oxidation-reduction reactions in chemical processes 9. Chemical kinetics and equilibrium reactions 10. Light, wavelength and frequency, quantum theory, and spectrophotometers 11. Properties of gasses, colloids and solutions
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Examination forms	Form Examination: Presentation and Written Paper ● Excellent/A (80-100): The anatomy of the paper is in accordance with the established format, written with the right language rules, with an easy-to-read layout, consistent in the presentation of pictures, graphs and tables, and free from elements of plagiarism, and inspires readers. ● Very Good/B (69-79): The anatomy of the paper is in accordance with the established format, written in the correct language rules, with an easy-to-read layout, consistent in the presentation of images, graphs and tables, and free from elements of plagiarism. ● Good/C (60-68): The anatomy of the paper is in accordance with the established format, written with proper language conventions, with a layout that is not good, consistent in presenting pictures, graphs and tables, and free from elements of plagiarism. ● Fair/D (50-59): The anatomy of the paper is in accordance with the established format, written in the correct language rules, with a layout that is not good, not yet consistent in the presentation of picture, graphs and tables, but free from elements of plagiarism. ● Poor/E (<50): Failed to fulfill the requirements
Study and examination requirements	Minimum attendance requirement 80% from total lecture Assessment is carried out based on written examinations, assessment/evaluation of the learning process and performance with the following components: Final Examination: 30% Midterm Examination: 30% Lab Work: 25% Structured Assignment: 10% Quiz: 5% Study and Examination Requirement Students must attend 15 minutes before the class starts. Students must switch off all electronic devices. Students must inform the lecturer if they will not attend the class due to sickness, etc. Students must submit all class assignments before the deadline. Students must attend the exam to get final grade
Reading list	1. Munowitz, M. 2000. Principles of Chemistry. Norton & Company. New York.

	2. Neil D. Jespersen, James E. Brady, dan Alison Hyslop. 2014. Chemistry: The Molecular Nature of Matter (7th Edition). John Wiley & Sons. New York. 3. Tro, N. J. (2024). Chemistry: Structure and Properties (3rd ed.). Pearson. 4. Petrucci's General Chemistry: Principles and Modern Applications. Pearson, 2023. 5. Brady, J. E., Senese, F., & Jespersen, N. D. (2009). Chemistry: Matter and Its Changes (5th ed.). John Wiley & Sons, Hoboken, NJ. 6. Brown, T. L., LeMay, H. E., Bursten, B. E., et al. (2023). Chemistry: The Central Science (15th ed.). Pearson. 7. Oxtoby, D. W., Gillis, H. P., & Butler, L. J. (2016). Principles of Modern Chemistry (8th ed.). Cengage Learning.
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Module Handbook Food Technology Study Program

	PADJADJARAN UNIVERSITY FACULTY OF AGRO-INDUSTRIAL TECHNOLOGY FOOD TECHNOLOGY STUDY PROGRAM	COURSE CODE: N10B183125
Module designation	Biological Evaluation of Food Components	
Semester(s) in which the module is taught	3	
Person responsible for the module	1. Yana Cahyana, STP., DEA., PhD. 2. Dr. Edy Subroto, STP., MP. 3. Dr. Mahani, SP., M.Si.	
Language	Indonesian and English	
Relation to curriculum	Compulsory Program	
Teaching methods	1. Interactive Learning 2. Small Group Discussion 3. Problem Based Learning	
Workload	Total workload: 119 hours Class Lecture: 2 x 50' x 14 weeks = 23,33 hours Assignment: 2 x 60' x 14 weeks = 28 hours Independent study: 2 x 60' x 14 weeks = 28 hours Laboratory practice Laboratory session: 1 x 100' x 14 weeks = 23,33 hours Independent study: 1 x 70' x 14 weeks = 16 hours Examination Midterm Examination: 3 x 50' x 1 weeks = 2,5 hours Final Examination: 3 x 50' x 1 weeks = 2.5 hours	
Credit points	4.8 ECTS (3 sks) (2-1)	
Required and recommended prerequisite for joining the modul	Food Biochemistry and Food Chemistry	
Module objectives/intended learning outcomes	1. Know the relationship between the discipline of Biological Evaluation of Food Component and other related disciplines (biochemistry, biology) 2. Able to communicate effectively both orally and in writing about Biological Evaluation of Food Component in the scientific community and society in general 3. Able to produce safe and quality food products on an	

	industrial scale through the integrated application of the principles of Biological Evaluation of Food Component including with other scientific disciplines
Content	1. Introduction of Bioavailability and PBL 2. Absorption and metabolism of food components 3. Bioaccessibility, bioavailability and pharmacokinetics 4. Factors affecting bioavailability 5. Measuring bioavailability 6. Bioavailability of food macro and micro components and polyphenols 7. Strategies to increase bioavailability of food products
Examination forms	Form Examination: Presentation and Written Paper ● Excellent/A (80-100): The anatomy of the paper is in accordance with the established format, written with the right language rules, with an easy-to-read layout, consistent in the presentation of pictures, graphs and tables, and free from elements of plagiarism, and inspires readers. ● Very Good/B (69-79): The anatomy of the paper is in accordance with the established format, written in the correct language rules, with an easy-to-read layout, consistent in the presentation of images, graphs and tables, and free from elements of plagiarism. ● Good/C (60-68): The anatomy of the paper is in accordance with the established format, written with proper language conventions, with a layout that is not good, consistent in presenting pictures, graphs and tables, and free from elements of plagiarism. ● Fair/D (50-59): The anatomy of the paper is in accordance with the established format, written in the correct language rules, with a layout that is not good, not yet consistent in the presentation of picture, graphs and tables, but free from elements of plagiarism. ● Poor/E (<50): Failed to fulfill the requirements
Study and examination requirements	Minimum attendance requirement 80% from total lecture Assessment is carried out based on written examinations, assessment/evaluation of the learning process and performance with the following components: Final Examination: 30% Midterm Examination: 30% Lab Work: 25% Structured Assignment: 10% Quiz: 5%

	Study and Examination Requirement Students must attend 15 minutes before the class starts. Students must switch off all electronic devices. Students must inform the lecturer if they will not attend the class due to sickness, etc. Students must submit all class assignments before the deadline. Students must attend the exam to get final grade
Reading list	1. Ball. G.F.M. Bioavailability and Analysis of Vitamins in Food. 2013. Springer 2. Schonfeldt, H., Pretorius, B., Hall, N. Bioavailability of Nutrients. 2016. 3. Weaver, C.M., Heaney, R.P. Food Sources, Supplements, and Bioavailability. 2006. Humana Press 4. Anandharamakrishnan, C., Moses, J.A., Priyanka, S. Food Digestion and Absorption: Its Role in Food Product Development. 2023. Royal Society of Chemistry

Module Handbook Food Technology Study Program

	PADJADJARAN UNIVERSITY FACULTY OF AGRO-INDUSTRIAL TECHNOLOGY FOOD TECHNOLOGY STUDY PROGRAM	COURSE CODE: N10B183245
Module designation	Food Additives	
Semester(s) in which the module is taught	6	
Person responsible for the module	1. Dr. Fitry Filianty, STP., M.Si. 2. Dr. Edy Subroto, STP., MP. 3. Dr. Elazmanawati Lembong, STP., M.Si.	
Language	Indonesian and English	
Relation to curriculum	Elective Program	
Teaching methods	1. Interactive learning 2. Small Group Discussion 3. Discovery learning 4. Project-based learning 5. Study case	
Workload	Total workload: 119 hours Class Lecture: 3x 50' x 14 weeks = 35 hours Assignment: 3 x 60' x 14 weeks = 42 hours Independent study: 3 x 60' x 14 weeks = 42 hours Examination Midterm Examination: 3 x 50' x 1 weeks = 2.5 hours Final Examination: 3 x 50' x 1 weeks = 2.5 hours	
Credit points	4.8 ECTS (3 sks)	
Required and recommended prerequisite for joining the modul	Food Chemistry	
Module objectives/intended learning outcomes	1. Knowing the relationship between food science disciplines and other related disciplines 2. Able to apply logical, critical, systematic and innovative thinking in making appropriate decisions based on data and information in the context of developing science and technology 3. Able to communicate effectively both orally and in writing in the scientific community and the general public 4. Able to produce safe and quality food products on an industrial scale through the application of integrated food science and technology principles, including with	

	other scientific disciplines
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Content	1. General explanation and overview of Food Additives Risks, Benefits and Regulations 2. Food Colouring 3. Food Flavor and Flavor Enhancer 4. Food Antioxidant 5. Food Antimicrobial 6. Food Antibrowning 7. Food Sweeteners 8. Acidulants and pH Controlling Agents for Foodstuffs 9. Enzymes as Food Additives 10. Emulsifier for Foodstuff 11. Dietary Fat Substitutes and Substitutes 12. Essential Fatty Acids in Food 13. Bleach and Dough Developer 14. Gelling Agent (Hydrocolloid)
Examination forms	Form Examination: Presentation and Written Paper ● Excellent/A (80-100): The anatomy of the paper is in accordance with the established format, written with the right language rules, with an easy-to-read layout, consistent in the presentation of pictures, graphs and tables, and free from elements of plagiarism, and inspires readers. ● Very Good/B (69-79): The anatomy of the paper is in accordance with the established format, written in the correct language rules, with an easy-to-read layout, consistent in the presentation of images, graphs and tables, and free from elements of plagiarism. ● Good/C (60-68): The anatomy of the paper is in accordance with the established format, written with proper language conventions, with a layout that is not good, consistent in presenting pictures, graphs and tables, and free from elements of plagiarism. ● Fair/D (50-59): The anatomy of the paper is in accordance with the established format, written in the correct language rules, with a layout that is not good, not yet consistent in the presentation of picture, graphs and tables, but free from elements of plagiarism. ● Poor/E (<50): Failed to fulfill the requirements
Study and examination requirements	Minimum attendance requirement 80% from total lecture Assessment is carried out based on written examinations, assessment/evaluation of the learning

	process and performance with the following components: Final Examination: 35% Midterm Examination: 35% Structured Assignment: 20% Quiz: 10% Study and Examination Requirement Students must attend 15 minutes before the class starts. Students must switch off all electronic devices. Students must inform the lecturer if they will not attend the class due to sickness, etc. Students must submit all class assignments before the deadline. Students must attend the exam to get final grade
Reading list	1. Branen, A. L., Davidson, P. M., Salminen, S., & Thorngate, J. (2002). Food Additives (2nd ed.). New York: Marcel Dekker. 2. Saparinto, C., & Hidayati, D. (2006). Food Additives. Yogyakarta: Kanisius. 3. Smith, J., & Hong-Shum, L. (2011). Food Additives Data Book (2nd ed.). West Sussex: Wiley-Blackwell. 4. Ministry of Health of the Republic of Indonesia. (2012). Regulation of the Minister of Health of the Republic of Indonesia No. 33 of 2012 concerning Food Additives. Jakarta: Ministry of Health of the Republic of Indonesia. 5. Indonesian Food and Drug Monitoring Agency (BPOM RI). (2019). Regulation of the Food and Drug Monitoring Agency Number 11 of 2019 concerning Food Additives. Jakarta: BPOM RI. 6. Codex Alimentarius Commission. (2021). Class Names and the International Numbering System for Food Additives (CXG 36-1989). Rome: FAO/WHO. 7. Estiasih, T., Putri, W. D. R., & Widyastuti, E. (2022). Minor Components & Food Additives. Jakarta: Bumi Aksara.

Module Handbook Food Technology Study Program

	PADJADJARAN UNIVERSITY FACULTY OF AGRO-INDUSTRIAL TECHNOLOGY FOOD TECHNOLOGY STUDY PROGRAM	COURSE CODE: N10B182218
Module designation	Food Analysis	
Semester(s) in which the module is taught	4	
Person responsible for the module	1. Dr. Edy Subroto, STP., MP. 2. Yana Cahyana, STP., DEA., PhD. 3. Dr. Fitry Filianty, STP., M.Si. 4. Dr. Elazmanawati Lembong, STP., M.Si	
Language	Indonesian and English	
Relation to curriculum	Compulsory Program	
Teaching methods	1. Interactive Learning 2. Self-directed Learning 3. Small Group Discussion 4. Discovery Learning	
Workload	Total workload: 158,67 hours Class Lecture: 3 x 50' x 14 weeks = 35 hours Assignment: 3 x 60' x 14 weeks = 42 hours Independent study: 3 x 60' x 14 weeks = 42 hours Laboratory practice Laboratory session: 1 x 100' x 14 weeks = 23,33 hours Independent study: 1 x 70' x 14 weeks = 16 hours Examination Midterm Examination: 4 x 50' x 1 weeks = 3.33 hours Final Examination: 4 x 50' x 1 weeks = 3.33 hours	
Credit points	6.4 ECTS (4 sks) (3-1)	
Required and recommended prerequisite for joining the modul	Organic Chemistry Food Chemistry Physics and Analytical Chemistry	
Module objectives/intended learning outcomes	1. Able to master the principles of food science and technology (food chemistry and analysis, food microbiology, food safety, food regulation, food engineering and processing, food biochemistry, nutrition and health, and applied food science) 2. Able to produce safe and quality food products on an	

	industrial scale through the integrated application of the principles of food science and technology, including with other scientific disciplines
Content	1. Analysis of macromolecular and micromolecular content of foodstuffs 2. Analysis of secondary metabolites of foodstuffs 3. Various food chemical analysis techniques including analysis using instruments
Examination forms	Form Examination: Presentation and Written Paper ● Excellent/A (80-100): The anatomy of the paper is in accordance with the established format, written with the right language rules, with an easy-to-read layout, consistent in the presentation of pictures, graphs and tables, and free from elements of plagiarism, and inspires readers. ● Very Good/B (69-79): The anatomy of the paper is in accordance with the established format, written in the correct language rules, with an easy-to-read layout, consistent in the presentation of images, graphs and tables, and free from elements of plagiarism. ● Good/C (60-68): The anatomy of the paper is in accordance with the established format, written with proper language conventions, with a layout that is not good, consistent in presenting pictures, graphs and tables, and free from elements of plagiarism. ● Fair/D (50-59): The anatomy of the paper is in accordance with the established format, written in the correct language rules, with a layout that is not good, not yet consistent in the presentation of picture, graphs and tables, but free from elements of plagiarism. ● Poor/E (<50): Failed to fulfill the requirements
Study and examination requirements	Minimum attendance requirement 80% from total lecture Assessment is carried out based on written examinations, assessment/evaluation of the learning process and performance with the following components: Final Examination: 30% Midterm Examination: 30% Lab Work: 25% Structured Assignment: 10% Quiz: 5% Study and Examination Requirement Students must attend 15 minutes before the class starts. Students must switch off all electronic devices.

	Students must inform the lecturer if they will not attend the class due to sickness, etc. Students must submit all class assignments before the deadline. Students must attend the exam to get final grade
Reading list	1. S. Suzanne Nielsen. 2012. Food Analysis. Springer, New York. 2. Tanmay Sarkar. 2026. Novel Food Analysis. Springer, New York 3. Umar Santoso, dkk. 2020. Analisis Pangan. UGM University, Yogyakarta. 4. Elazmanawati Lembong dan Tensiska. 2016. Analisis Pangan. Unpad Press, Bandung.

Module Handbook Food Technology Study Program

	PADJADJARAN UNIVERSITY FACULTY OF AGRO-INDUSTRIAL TECHNOLOGY FOOD TECHNOLOGY STUDY PROGRAM	COURSE CODE: N10B182111
Module designation	Food Biochemistry	
Semester(s) in which the module is taught	3	
Person responsible for the module	1. Dr. Mahani, M.Si 2. Dr. Endah Wulandari, STP., M.Si 3. Dian Kurniati, S.Si.,M.Sc., Ph.D	
Language	Indonesian and English	
Relation to curriculum	Compulsory Program	
Teaching methods	1. Interactive Learning 2. Project Based Learning	
Workload	Total workload: 119 hours Class Lecture: 2 x 50' x 14 weeks = 23,33 hours Assignment: 2 x 60' x 14 weeks = 28 hours Independent study: 2 x 60' x 14 weeks = 28 hours Laboratory practice Laboratory session: 1 x 100' x 14 weeks = 23,33 hours Independent study: 1 x 70' x 14 weeks = 16 hours Examination Midterm Examination: 3 x 50' x 1 weeks = 2,5 hours Final Examination: 3 x 50' x 1 weeks = 2.5 hours	
Credit points	4.8 ECTS (3 sks) (2-1)	
Required and recommended prerequisite for joining the modul	Basic Chemistry and Organic Chemistry	
Module objectives/intended learning outcomes	1. Students are able to explain the fundamentals and principles of food science and technology, covering chemistry, microbiology, engineering and food processing technology 2. Students are able to analyse and evaluate the physiological development of vegetables and fruit, including initiation and colour changes, as well as carbohydrate content during the fruit ripening process; post-mortem changes in meat and fish; the conversion of muscle into meat; biochemical changes in cereals; the role of enzymes in the food industry and their mechanisms; biochemical changes in fresh milk; the mechanisms of enzymatic browning reactions and techniques for controlling them; off-	

	flavours in milk and food spoilage caused by microorganisms 3. Students are able to design, carry out and evaluate the physiological processes of fruit and vegetables; post-harvest biochemical changes in fish; post-harvest biochemical changes in cereals; the mechanisms of enzymatic browning reactions and techniques for controlling them
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Content	1. Introduction and overview of Food Biochemistry 2. Changes in the Biochemistry of Vegetables and Fruits 3. Changes in Cereal Biochemistry 4. Biochemical Changes in Fresh Milk 5. Post-Mortem Changes in Meat and Post-Fishing 6. Enzymes in the Food Industry 7. Enzymatic and Non-Enzymatic Browning 8. Biochemical Changes During Baking Process 9. Off Flavor on Milk 10. Food Damage by Microorganisms
Examination forms	Form Examination: Presentation and Written Paper ● Excellent/A (80-100): The anatomy of the paper is in accordance with the established format, written with the right language rules, with an easy-to-read layout, consistent in the presentation of pictures, graphs and tables, and free from elements of plagiarism, and inspires readers. ● Very Good/B (69-79): The anatomy of the paper is in accordance with the established format, written in the correct language rules, with an easy-to-read layout, consistent in the presentation of images, graphs and tables, and free from elements of plagiarism. ● Good/C (60-68): The anatomy of the paper is in accordance with the established format, written with proper language conventions, with a layout that is not good, consistent in presenting pictures, graphs and tables, and free from elements of plagiarism. ● Fair/D (50-59): The anatomy of the paper is in accordance with the established format, written in the correct language rules, with a layout that is not good, not yet consistent in the presentation of picture, graphs and tables, buty free from elements of plagiarism. ● Poor/E (<50): Failed to fulfill the requirements
Study and examination requirements	Minimum attendance requirement 80% from total lecture Assessment is carried out based on written examinations, assessment/evaluation of the learning process and performance with the following components: Final Examination: 30% Midterm Examination: 30% Lab Work: 25% Structured Assignment: 10% Quiz: 5%

	Study and Examination Requirement Students must attend 15 minutes before the class starts. Students must switch off all electronic devices. Students must inform the lecturer if they will not attend the class due to sickness, etc. Students must submit all class assignments before the deadline. Students must attend the exam to get final grade
Reading list	1. Pérez-Castiñeira, J. (2024). Chemistry and Biochemistry of Food. Walter de Gruyter GmbH & Co KG. ISBN 978-3111113302 2. Miksusanti, M., dkk. (2025). Biokimia Pangan. CV Luminary Press Indonesia. ISBN 978-623-89908-7-0 3. Linder, M.C., 2010. Biokimia Nutrisi dan Metabolisme. UI Press, Jakarta 4. Murray, R.K., dkk. 2006. Biokimia Harper. Penerbit Buku Kedokteran Ed.27 5. Hariyadi, P., Aini, N. 2015. Dasar-Dasar Penanganan Pascapanen Buah dan Sayur. Penerbit Alfabeta Bandung

Module Handbook Food Technology Study Program

	PADJADJARAN UNIVERSITY FACULTY OF AGRO-INDUSTRIAL TECHNOLOGY FOOD TECHNOLOGY STUDY PROGRAM	COURSE CODE: N10B182114
Module designation	Food Chemistry	
Semester(s) in which the module is taught	4	
Person responsible for the module	1. Dr. Edy Subroto, STP., MP. 2. Yana Cahyana, STP., DEA., PhD. 3. Dr. Endah Wulandari, STP., M.Si 4. Dr. Elazmanawati Lembong, STP., M.Si.	
Language	Indonesian and English	
Relation to curriculum	Compulsory Program	
Teaching methods	1. Interactive learning 2. Student-centered Learning 3. Small Group Discussion 4. Discovery learning	
Workload	Total workload: 158,67 hours Class Lecture: 3 x 50' x 14 weeks = 35 hours Assigment: 3 x 60' x 14 weeks = 42 hours Independent study: 3 x 60' x 14 weeks = 42 hours Laboratory practice Laboratory session: 1 x 100' x 14 weeks = 23,33 hours Independent study: 1 x 70' x 14 weeks = 16 hours Examination Midterm Examination: 4 x 50' x 1 weeks = 3.33 hours Final Examination: 4 x 50' x 1 weeks = 3.33 hours	
Credit points	6.4 ECTS (4 sks) (3-1)	
Required and recommended prerequisite for joining the modul	-	
Module objectives/intended learning outcomes	1. Are able to explain the chemical structure and composition of various foodstuffs and the chemical changes that occur during processing and storage. 2. Are able to identify and solve the problem related to food chemistry 3. Are able to analyze in qualitative testing on the properties of food components	

Content	This course will study the chemical composition, structure, chemical reactions, classification, function and chemical properties of food ingredients which include: water, carbohydrates, lipids, proteins, enzymes, minerals, flavors, food systems, food additives and components that are unwanted (toxic compounds). Understanding and understanding of changes in the chemical properties of food ingredients during processing and storage.
Examination forms	Form Examination: Presentation and Written Paper ● Excellent/A (80-100): The anatomy of the paper is in accordance with the established format, written with the right language rules, with an easy-to-read layout, consistent in the presentation of pictures, graphs and tables, and free from elements of plagiarism, and inspires readers. ● Very Good/B (69-79): The anatomy of the paper is in accordance with the established format, written in the correct language rules, with an easy-to-read layout, consistent in the presentation of images, graphs and tables, and free from elements of plagiarism. ● Good/C (60-68): The anatomy of the paper is in accordance with the established format, written with proper language conventions, with a layout that is not good, consistent in presenting pictures, graphs and tables, and free from elements of plagiarism. ● Fair/D (50-59): The anatomy of the paper is in accordance with the established format, written in the correct language rules, with a layout that is not good, not yet consistent in the presentation of picture, graphs and tables, but free from elements of plagiarism. ● Poor/E (<50): Failed to fulfill the requirements
Study and examination requirements	Minimum attendance requirement 80% from total lecture Assessment is carried out based on written examinations, assessment/evaluation of the learning process and performance with the following components: Final Examination: 30% Midterm Examination: 30% Lab Work: 25% Structured Assignment: 10% Quiz: 5% Study and Examination Requirement Students must attend 15 minutes before the class starts. Students must switch off all electronic devices.

	Students must inform the lecturer if they will not attend the class due to sickness, etc. Students must submit all class assignments before the deadline. Students must attend the exam to get final grade
Reading list	1. Fennema, O.R. 2017. Food Chemistry. Fifth Edition. CRC press Taylor & Francis Group, LLC 2. John M. deMan. 2018. Principles Food Chemistry. Latest Edition. Springer. 3. O. P. Chauhan. 2022. Advances in Food Chemistry. Third Edition. Springer. 4. H.-D. Belitz. 2009. Food Chemistry. 4th Edition. Springer-Verlag Berlin Heidelberg.

Module Handbook Food Technology Study Program

	PADJADJARAN UNIVERSITY FACULTY OF AGRO-INDUSTRIAL TECHNOLOGY FOOD TECHNOLOGY STUDY PROGRAM	COURSE CODE: N10B183239
Module designation	Functional Food	
Semester(s) in which the module is taught	4	
Person responsible for the module	1. Dr. Mahani, S.P., M.Si 2. Endah Wulandari, STP.,M.Si 3. Dian Kurniati, S.Si., M.Sc., Ph.D.	
Language	Indonesian and English	
Relation to curriculum	Compulsory Program	
Teaching methods	1. Interactive Learning 2. Small Group Discovery 3. Self-directed Learning 4. Discovery Learning	
Workload	Total workload: 119 hours Class Lecture: 2 x 50' x 14 weeks = 23,33 hours Assignment: 2 x 60' x 14 weeks = 28 hours Independent study: 2 x 60' x 14 weeks = 28 hours Laboratory practice Laboratory session: 1 x 100' x 14 weeks = 23,33 hours Independent study: 1 x 70' x 14 weeks = 16 hours Examination Midterm Examination: 3 x 50' x 1 weeks = 2,5 hours Final Examination: 3 x 50' x 1 weeks = 2.5 hours	
Credit points	4.8 ECTS (3 sks) (2-1)	
Required and recommended prerequisite for joining the modul	Food Chemistry and Food Biochemistry	
Module objectives/intended learning outcomes	1. Are able to explain the scope of functional food Students able to evaluate the nutritional concepts into daily diet 2. Recognize health, safety, social and legal implication of functional food 3. Are able to evaluate and solve problem arising from functional food products developments	

	4. Have the skills to develop new functional food products
Content	1. Definition and scope of functional food 2. Free radicals, antioxidants and their effect on health 3. Dietary fibers 4. Lipids and health 5. Pre and Probiotics 6. Functional food project presentation 7. Breast milk, Formula milk and other milk derivative products 8. Maximize the functional effect of plant based-food including flavonoids 9. Flavor in functional food 10. Processing and storage effect on functional food quality (antioxidant case) 11. Experimental animals for toxicology, bioavailability 12. National and international regulation of functional food 13. Functional food project presentation 14. Functional food product expo

Examination forms	Form Examination: Presentation and Written Paper ● Excellent/A (80-100): The anatomy of the paper is in accordance with the established format, written with the right language rules, with an easy-to-read layout, consistent in the presentation of pictures, graphs and tables, and free from elements of plagiarism, and inspires readers. ● Very Good/B (69-79): The anatomy of the paper is in accordance with the established format, written in the correct language rules, with an easy-to-read layout, consistent in the presentation of images, graphs and tables, and free from elements of plagiarism. ● Good/C (60-68): The anatomy of the paper is in accordance with the established format, written with proper language conventions, with a layout that is not good, consistent in presenting pictures, graphs and tables, and free from elements of plagiarism. ● Fair/D (50-59): The anatomy of the paper is in accordance with the established format, written in the correct language rules, with a layout that is not good, not yet consistent in the presentation of picture, graphs and tables, buty free from elements of plagiarism. ● Poor/E (<50): Failed to fulfill the requirements
Study and examination requirements	Minimum attendance requirement 80% from total lecture Assessment is carried out based on written examinations, assessment/evaluation of the learning process and performance with the following components: Final Examination: 30% Midterm Examination: 30% Lab Work: 25% Structured Assignment: 10% Quiz: 5% Study and Examination Requirement Students must attend 15 minutes before the class starts. Students must switch off all electronic devices. Students must inform the lecturer if they will not attend the class due to sickness, etc. Students must submit all class assignments before the deadline. Students must attend the exam to get final grade
Reading list	1. Schmidl, M.K. dan T.P. Labuza.(eds.) 2000. Essentials of Functional Foods. An aspen Publication, Maryland.

	2. Bidlack W.R, S.T. Omaye, M.S. Meskin dan D.K.W. Topham (ed). 2000. Phytoantimicrobial as Bioactive Agents. Technomic Publ.Co.Ltd. Lancaster. 3. Glenn R. Gibson and Christine M. Williams.(eds.) 2000. Functional foods, Concept to Product. CRC Press, Boca Raton. 4. Jonhson, I dan G. Williamson.2003. Phitochemical Functional Foods. CRC Press, Boca Raton. 5. Chhikara,N., Panghal, A., Chaudhary, G. Functional Foods. 2022. Wiley
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Module Handbook Food Technology Study Program

	PADJADJARAN UNIVERSITY FACULTY OF AGRO-INDUSTRIAL TECHNOLOGY FOOD TECHNOLOGY STUDY PROGRAM	COURSE CODE: N10B182219
Module designation	Nutrition Sciences	
Semester(s) in which the module is taught	4	
Person responsible for the module	1. Dr. Mahani, S.P., M.Si 2. Endah Wulandari, STP.,M.Si 3. Dian Kurniati, S.Si., M.Sc., Ph.D.	
Language	Indonesian and English	
Relation to curriculum	Compulsory Program	
Teaching methods	1. Interactive Learning 2. Small Group Discovery 3. Self-directed Learning 4. Discovery Learning	
Workload	Total workload: 119 hours Class Lecture: 3x 50' x 14 weeks = 35 hours Assignment: 3 x 60' x 14 weeks = 42 hours Independent study: 3 x 60' x 14 weeks = 42 hours Examination Midterm Examination: 3 x 50' x 1 weeks = 2.5 hours Final Examination: 3 x 50' x 1 weeks = 2.5 hours	
Credit points	4.8 ECTS (3 sks)	
Required and recommended prerequisite for joining the modul	Food Chemistry	
Module objectives/intended learning outcomes	1. Students able to explain about water and nutrients along with the processes of digestion, absorption, use, and disposal from the body, food as an energy source, the effect of processing on food nutrients, anti-nutrients in food stuffs and nutritional problems in Indonesia. 2. Students able to evaluate the nutritional concepts into daily diet	

Content	1. Water 2. Structure, digestive system, absorption and transportation of carbohydrates, proteins and fats 3. Carbohydrate, protein and fat metabolism 4. Structure, function, absorption, transport and deficiency of water-soluble and fat-soluble vitamins 5. Vitamin metabolism 6. Mineral metabolism 7. Nutritional needs and adequacy
Examination forms	Form Examination: Presentation and Written Paper ● Excellent/A (80-100): The anatomy of the paper is in accordance with the established format, written with the right language rules, with an easy-to-read layout, consistent in the presentation of pictures, graphs and tables, and free from elements of plagiarism, and inspires readers. ● Very Good/B (69-79): The anatomy of the paper is in accordance with the established format, written in the correct language rules, with an easy-to-read layout, consistent in the presentation of images, graphs and tables, and free from elements of plagiarism. ● Good/C (60-68): The anatomy of the paper is in accordance with the established format, written with proper language conventions, with a layout that is not good, consistent in presenting pictures, graphs and tables, and free from elements of plagiarism. ● Fair/D (50-59): The anatomy of the paper is in accordance with the established format, written in the correct language rules, with a layout that is not good, not yet consistent in the presentation of picture, graphs and tables, but free from elements of plagiarism. ● Poor/E (<50): Failed to fulfill the requirements
Study and examination requirements	Minimum attendance requirement 80% from total lecture Assessment is carried out based on written examinations, assessment/evaluation of the learning process and performance with the following components: Final Examination: 35% Midterm Examination: 35% Structured Assignment: 20% Quiz: 10% Study and Examination Requirement Students must attend 15 minutes before the class starts.

	Students must switch off all electronic devices. Students must inform the lecturer if they will not attend the class due to sickness, etc. Students must submit all class assignments before the deadline. Students must attend the exam to get final grade
Reading list	1. Stipanuk, M.H. 2000. Biochemical and Physiological Aspects of Human Nutrition. W.B Saunders Company, Philadelphia 2. Kadakkal Radhakrishnan. 2025. Handbook of Clinical and Practical Pediatric Nutrition. Springer, New York 3. Linder, M.C. 2000. Biokimia Nutrisi dan Metabolisme. UI Press. 4. Muchtadi, D. 2009. Pengantar Ilmu Gizi. Alfabeta. Bandung.

Module Handbook Food Technology Study Program

	PADJADJARAN UNIVERSITY FACULTY OF AGRO-INDUSTRIAL TECHNOLOGY FOOD TECHNOLOGY STUDY PROGRAM	COURSE CODE: N10B182111
Module designation	Organic Chemistry	
Semester(s) in which the module is taught	2	
Person responsible for the module	1. Dian Kurniati, Ph.D. 2. Dr. Edy Subroto 3. Dr. Endah Wulandari 4. Dr. Elazmanawati Lembong	
Language	Indonesian and English	
Relation to curriculum	Compulsory Program	
Teaching methods	1. Interactive Learning 2. Discovery Learning 3. Small Group Discovery	
Workload	Total workload: 119 hours Class Lecture: 2 x 50' x 14 weeks = 23,33 hours Assignment: 2 x 60' x 14 weeks = 28 hours Independent study: 2 x 60' x 14 weeks = 28 hours Laboratory practice Laboratory session: 1 x 100' x 14 weeks = 23,33 hours Independent study: 1 x 70' x 14 weeks = 16 hours Examination Midterm Examination: 3 x 50' x 1 weeks = 2,5 hours Final Examination: 3 x 50' x 1 weeks = 2.5 hours	
Credit points	4.8 ECTS (3 sks) (2-1)	
Required and recommended prerequisite for joining the modul	Basic Chemistry	
Module objectives/intended learning outcomes	1. Demonstrate knowledge and understanding of the fundamental principles of organic chemistry that support expertise in the field of food science. 2. Demonstrate the ability to work independently and collaboratively in teams, establish adaptive professional networks, and take responsibility for solving problems related to organic chemistry through supervision and evaluation.	

Content	1. Introduction (Response) 2. Nomenclature and structure of aliphatic and aromatic compounds 3. Functional groups: alkanes, alkenes, alkynes, aldehyde-ketones, alcohol-ethers, carboxylic acids, amines and amides 4. Physical and chemical properties of organic compounds 5. Classification, structure and function of carbohydrates 6. Classification, structure and function of amino acids, peptides, and proteins 7. Classification, structure and function of enzymes and nucleic acids
Examination forms	Form Examination: Presentation and Written Paper ● Excellent/A (80-100): The anatomy of the paper is in accordance with the established format, written with the right language rules, with an easy-to-read layout, consistent in the presentation of pictures, graphs and tables, and free from elements of plagiarism, and inspires readers. ● Very Good/B (69-79): The anatomy of the paper is in accordance with the established format, written in the correct language rules, with an easy-to-read layout, consistent in the presentation of images, graphs and tables, and free from elements of plagiarism. ● Good/C (60-68): The anatomy of the paper is in accordance with the established format, written with proper language conventions, with a layout that is not good, consistent in presenting pictures, graphs and tables, and free from elements of plagiarism. ● Fair/D (50-59): The anatomy of the paper is in accordance with the established format, written in the correct language rules, with a layout that is not good, not yet consistent in the presentation of picture, graphs and tables, but free from elements of plagiarism. ● Poor/E (<50): Failed to fulfill the requirements
Study and examination requirements	Minimum attendance requirement 80% from total lecture Assessment is carried out based on written examinations, assessment/evaluation of the learning process and performance with the following components: Final Examination: 30% Midterm Examination: 30%

	Lab Work: 25% Structured Assignment: 10% Quiz: 5% Study and Examination Requirement Students must attend 15 minutes before the class starts. Students must switch off all electronic devices. Students must inform the lecturer if they will not attend the class due to sickness, etc. Students must submit all class assignments before the deadline. Students must attend the exam to get final grade
Reading list	1. Brown, T. L., LeMay, H. E., Bursten, B. E., Murphy, C. J., Woodward, P. M., & Stoltzfus, M. W. (2023). Chemistry: The Central Science (15th ed.). Pearson. 2. Nelson, D. L., & Cox, M. M. (2021). Lehninger Principles of Biochemistry (8th ed.). W. H. Freeman and Company. 3. Berg, J. M., Tymoczko, J. L., Gatto, G. J., Jr., & Stryer, L. (2023). Biochemistry (10th ed.). W. H. Freeman and Company. 4. Solomons, T. W. G., Fryhle, C. B., & Snyder, S. A. (2022). Organic Chemistry (13th ed.). Wiley. 5. McMurry, J. (2023). Organic Chemistry (10th ed.). Cengage Learning. 6. Mathews, C. K., Van Holde, K. E., & Ahern, K. G. (2013). Biochemistry (5th ed.). Pearson Education.

Module Handbook Food Technology Study Program

	PADJADJARAN UNIVERSITY FACULTY OF AGRO-INDUSTRIAL TECHNOLOGY FOOD TECHNOLOGY STUDY PROGRAM	COURSE CODE: N10B182112
Module designation	Physical and Analytical Chemistry	
Semester(s) in which the module is taught	3	
Person responsible for the module	1. Dr Fitry Filianty, STP, MSi 2. Dr. Edy Subroto, STP., MP 3. Elazmanawati lembong, STP., MSi	
Language	Indonesian and English	
Relation to curriculum	Compulsory Program	
Teaching methods	1. Interactive Learning 2. Small Group Discussion 3. Student Centered Learning	
Workload	Total workload: 119 hours Class Lecture: 2 x 50' x 14 weeks = 23,33 hours Assignment: 2 x 60' x 14 weeks = 28 hours Independent study: 2 x 60' x 14 weeks = 28 hours Laboratory practice Laboratory session: 1 x 100' x 14 weeks = 23,33 hours Independent study: 1 x 70' x 14 weeks = 16 hours Examination Midterm Examination: 3 x 50' x 1 weeks = 2,5 hours Final Examination: 3 x 50' x 1 weeks = 2.5 hours	
Credit points	4.8 ECTS (3 sks) (2-1)	
Required and recommended prerequisite for joining the module	Basic Chemistry and Organic Chemistry	
Module objectives/intended learning outcomes	1. Students are able to explain the basic physical and chemical principles relevant to food systems and their application in food processing and storage 2. Students are able to understand the relationship between the physicochemical properties of food materials and the stability and quality of food products 3. Students are able to master the techniques and methods of physical and chemical analysis of food materials to evaluate the quality, safety, and composition of food	

	4. Students are able to apply the principles of physical chemistry in designing and developing solutions to problems in food processing and analysis.
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Content	1. Introduction and scope of physical and analytical chemistry 2. Qualitative Analysis 3. Analysis based on volumetric methods: acid-base titration, precipitation titration, complexometric titration, redox titration, and iodi-iodometric titration 4. Analysis based on gravimetric methods 5. Analysis based on physical properties (refractometry, densitometry, colorimetry, and polarimetry) 6. The theory of errors in analysis and methods of preparation of analysis 7. Applications of analytical chemistry in food analysis 8. Practical analysis based on physical and chemical properties
Examination forms	Form Examination: Presentation and Written Paper ● Excellent/A (80-100): The anatomy of the paper is in accordance with the established format, written with the right language rules, with an easy-to-read layout, consistent in the presentation of pictures, graphs and tables, and free from elements of plagiarism, and inspires readers. ● Very Good/B (69-79): The anatomy of the paper is in accordance with the established format, written in the correct language rules, with an easy-to-read layout, consistent in the presentation of images, graphs and tables, and free from elements of plagiarism. ● Good/C (60-68): The anatomy of the paper is in accordance with the established format, written with proper language conventions, with a layout that is not good, consistent in presenting pictures, graphs and tables, and free from elements of plagiarism. ● Fair/D (50-59): The anatomy of the paper is in accordance with the established format, written in the correct language rules, with a layout that is not good, not yet consistent in the presentation of picture, graphs and tables, but free from elements of plagiarism. ● Poor/E (<50): Failed to fulfill the requirements
Study and examination requirements	Minimum attendance requirement 80% from total lecture Assessment is carried out based on written examinations, assessment/evaluation of the learning process and performance with the following components:

	Final Examination: 30% Midterm Examination: 30% Lab Work: 25% Structured Assignment: 15% Study and Examination Requirement Students must attend 15 minutes before the class starts. Students must switch off all electronic devices. Students must inform the lecturer if they will not attend the class due to sickness, etc. Students must submit all class assignments before the deadline. Students must attend the exam to get final grade
Reading list	1. Harris, D. C. (2020). Quantitative Chemical Analysis (10th ed.). W. H. Freeman and Company. 2. Skoog, D. A., Holler, F. J., & Crouch, S. R. (2017). Principles of Instrumental Analysis (7th ed.). Cengage Learning. 3. Atkins, P., de Paula, J., & Keeler, J. (2023). Atkins' Physical Chemistry (12th ed.). Oxford University Press. 4. Nielsen, S. S. (2017). Food Analysis (5th ed.). Springer. 5. Nielsen, S. S. (2018). Food Analysis Laboratory Manual (3rd ed.). Springer. 6. Damodaran, S., Parkin, K. L., & Fennema, O. R. (2017). Fennema's Food Chemistry (5th ed.). CRC Press. 7. Miller, J. N., & Miller, J. C. (2018). Statistics and Chemometrics for Analytical Chemistry (7th ed.). Pearson. 8. AOAC International. (2023). Official Methods of Analysis of AOAC International (22nd ed.). AOAC International. 9. Codex Alimentarius Commission. (2023). Codex Alimentarius: General Standards and Methods of Analysis. Food and Agriculture Organization (FAO) & World Health Organization (WHO). 10. Harvey, D. (2016). Analytical Chemistry 2.1. LibreTexts Open Education.

Module Handbook Food Technology Program Study

	PADJADJARAN UNIVERSITY FACULTY OF AGRO-INDUSTRIAL TECHNOLOGY FOOD TECHNOLOGY STUDY PROGRAM	COURSE CODE: N10B181207
Module designation	Applied Computer in Food Technology	
Semester(s) in which the module is taught	2	
Person responsible for the module	1. Dr. Drs. Zaida M.Si 2. Parlan S.TP., M.TP	
Language	Indonesian and English	
Relation to curriculum	Compulsory course	
Teaching methods	1. Interactive learning 2. Case Study Practice 3. Discussion	
Workload	Total workload: 119 hours Class Lecture: 2 x 50' x 14 weeks = 23,33 hours Assignment: 2 x 60' x 14 weeks = 28 hours Independent study: 2 x 60' x 14 weeks = 28 hours Laboratory practice Laboratory session: 1 x 100' x 14 weeks = 23,33 hours Independent study: 1 x 70' x 14 weeks = 16 hours Examination Midterm Examination: 3 x 50' x 1 weeks = 2,5 hours Final Examination: 3 x 50' x 1 weeks = 2.5 hours	
Credit points	4.8	
Required and recommended prerequisite for joining the modul	-	
Module objectives/intended learning outcomes	After attending this course, students can apply computers in calculating and evaluating processes in food processing.	

Content	1. The basics of algebraic operations in excel 2. Use of some Mathematical and Trigonometric Functions in Excel Programs 3. Use of some Statistical and Logical Functions in Excel Programs 4. Graphs, Pivot Tables and Lookup (HLOOKUP and VLOOKUP) 5. Application of mathematical functions and Logic 6. Chemical Kinematics in Food Processing 7. Application of computers in calculating and evaluating statistical quality control in food processing 8. Evaporation and Psychrometric 9. Linear Programming 10. Application of Linear Programming 11. The Matrix and Its Operation 12. Solving the Linear Equation System in Food Technology with the determinants of the Cofactor method 13. Solution of Linear Equation System in Food Technology with Elementary Row Operation (OBE) method
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Examination forms	Form Examination: • Excellent/A (80-100): The anatomy of the paper is in accordance with the established format, written with the right language rules, with an easy-to-read layout, consistent in the presentation of pictures, graphs and tables, and free from elements of plagiarism, and inspires readers. • Very Good/B (69-79): The anatomy of the paper is in accordance with the established format, written in the correct language rules, with an easy-to-read layout, consistent in the presentation of images, graphs and tables, and free from elements of plagiarism. • Good/C (60-68): The anatomy of the paper is in accordance with the established format, written with proper language conventions, with a layout that is not good, consistent in presenting pictures, graphs and tables, and free from elements of plagiarism. • Fair/D (50-59): The anatomy of the paper is in accordance with the • established format, written in the correct language rules.
Study and examination requirements	Minimum attendance requirement 80% from total lecture Assessment is carried out based on written examinations, assessment/evaluation of the learning process and performance with the following components: Final Examination: 30% Midterm Examination: 30% Lab Work: 25% Structured Assignment: 10% Quiz: 5%
Reading list	Main: 1. Arifin J, 2002, Revealing the Power of 205 Applied Functions of Microsoft Office Excel, Elex Media Komputindo, Jakarta. 2. Singh and Heldman, "Introduction to Food Engineering", 4th Ed, Elsevier, USA, 2009

	4. Kreyszig E, Norminton EJ, 2001, Advanced Engineering Mathematics Maple Guide, John Wiley & Sons, New York 5. Verschuuren, G. 2007. Excel 2007 For Scientists and Engineers. Holy Macro Books, Po Box 82, Uniontown. Additional: 1. Holman, JP 2002. Heat Transfer. McGraw Hill. Boston 2. Sharma, SK, SJ Mulvaney. and SSHrizvi. 2000. Food Process Engineering. Theory and Laboratory Experiments. Willey-Interscience
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Module Handbook Food Technology Program Study

	PADJADJARAN UNIVERSITY FACULTY OF AGRO-INDUSTRIAL TECHNOLOGY FOOD TECHNOLOGY STUDY PROGRAM	COURSE CODE: N10B181204
Module Designation	Basic Physic	
Semester(s) in which the module is taught	2	
Person responsible for the module	1. Dr. Drs. Zaida M.Si 2. Robi Andoyo S.TP., M.Sc., Ph.D 3. Parlan S.TP., M.TP.	
Language	Indonesian and English	
Relation to curriculum	Compulsory course	
Teaching methods	1. Face to face 2. Theory Explanation 3. Small Group Discuss 4. Questions and discussions	
Workload	Total workload: 119 hours Class Lecture: 2 x 50' x 14 weeks = 23,33 hours Assignment: 2 x 60' x 14 weeks = 28 hours Independent study: 2 x 60' x 14 weeks = 28 hours Laboratory practice Laboratory session: 1 x 100' x 14 weeks = 23,33 hours Independent study: 1 x 70' x 14 weeks = 16 hours Examination Midterm Examination: 3 x 50' x 1 weeks = 2,5 hours Final Examination: 3 x 50' x 1 weeks = 2.5 hours	
Credit points	4.8	
Required and recommended prerequisite for joining the modul	-	
Module objectives/intended learning outcomes	After completing this course, students are able to calculate (C3) mechanics and fluids as a basis for calculations that can be applied in food science and technology.	

Content	1. Vector and basic Operations 2. Kinematics of point objects 3. Newton's laws and their applications 4. Effort and Energy 5. Linear Momentum and Impulse 6. Rigid body rotation 7. Fluid Statics and Fluid Dynamics 8. Kinetic Theory of Gas 9. First Law of Thermodynamics.
Examination forms	Form Examination: • Excellent/A (80-100): The anatomy of the paper is in accordance with the established format, written with the right language rules, with an easy-to-read layout, consistent in the presentation of pictures, graphs and tables, and free from elements of plagiarism, and inspires readers. • Very Good/B (69-79): The anatomy of the paper is in accordance with the established format, written in the correct language rules, with an easy-to-read layout, consistent in the presentation of images, graphs and tables, and free from elements of plagiarism. • Good/C (60-68): The anatomy of the paper is in accordance with the established format, written with proper language conventions, with a layout that is not good, consistent in presenting pictures, graphs and tables, and free from elements of plagiarism. • Fair/D (50-59): The anatomy of the paper is in accordance with the • established format, written in the correct language rules.
Study and examination requirements	Minimum attendance requirement 80% from total lecture Assessment is carried out based on written

	examinations, assessment/evaluation of the learning process and performance with the following components: Final Examination: 30% Midterm Examination: 30% Lab Work: 25% Structured Assignment: 10% Quiz: 5%
Reading list	1. Serway, R. A., Jewett, J. W., & Peroomian, V. (2026). Physics for Scientists & Engineers (11th Edition). Cengage Learning. 2. Douglas C. Giancoli. (2021). Physics for Scientists & Engineers (5th Edition). Pearson 3. Tipler, P. A., & Mosca, G. (2020). Physics for Scientists and Engineers, Extended Version (6th Edition, 2020 Media Update). Macmillan Learning. 4. David Halliday, Robert Resnick, Jearl Walker , "Fundamentals of Physics", 10th edition, Jhon Wiley, 2014 5. John D. Cutnell, Kenneth W. Johnson, David Young, Shane Stadler , "Physics", 10th edition, John Wiley, 2014 6. Muhammad Farchani Rosyid, Yusuf Dyan Prabowo, and Eko Firmansyah, Basic Physics Volume 1: Mechanics, Pot Publishers, 2014

Module Handbook Food Technology Program Study

	PADJADJARAN UNIVERSITY FACULTY OF AGRO-INDUSTRIAL TECHNOLOGY FOOD TECHNOLOGY STUDY PROGRAM	COURSE CODE: N10B183247
Module designation	Bioprocess Engineering	
Semester(s) in which the module is taught	5	
Person responsible for the module	1. Bambang Nurhadi, STP.,M.Sc.,Ph.D 2. Dr. Siti Nurhasanah S.TP., M.Si 3. Dr.rer. Nat Fatriyuna S.TP., M.Si	
Language	Indonesian and English	
Relation to curriculum	Elective courses	
Teaching methods	1. Interactive learning 2. Project based learning 3. Discussion 4. Recitation	
Workload	Total workload: 119 hours Class Lecture: 2 x 50' x 14 weeks = 23,33 hours Assignment: 2 x 60' x 14 weeks = 28 hours Independent study: 2 x 60' x 14 weeks = 28 hours Laboratory practice Laboratory session: 1 x 100' x 14 weeks = 23,33 hours Independent study: 1 x 70' x 14 weeks = 16 hours Examination Midterm Examination: 3 x 50' x 1 weeks = 2,5 hours Final Examination: 3 x 50' x 1 weeks = 2.5 hours	
Credit points	4.8	
Required and recommended prerequisite for joining the modul	Basic Chemistry	
Module objectives/intended learning outcomes	Students are able to choose and design simple bioprocess techniques, control them and perform purification and harvesting of the resulting product	

Content	1. Review: Basics of biology and biochemistry 2. Kinetics of Microorganisms (Microbial and Enzymatic) 3. Continuous Culture 4. Bioreactor 5. Selection and Multiplication of Bioreactor Scale 6. Bioreactor Operation and Control 7. Recovery and purification of bioprocess products 8. Application of bioprocess in food technology
Examination forms	Form Examination: • Excellent/A (80-100): The anatomy of the paper is in accordance with the established format, written with the right language rules, with an easy-to-read layout, consistent in the presentation of pictures, graphs and tables, and free from elements of plagiarism, and inspires readers. • Very Good/B (69-79): The anatomy of the paper is in accordance with the established format, written in the correct language rules, with an easy-to-read layout, consistent in the presentation of images, graphs and tables, and free from elements of plagiarism. • Good/C (60-68): The anatomy of the paper is in accordance with the established format, written with proper language conventions, with a layout that is not good, consistent in presenting pictures, graphs and tables, and free from elements of plagiarism. • Fair/D (50-59): The anatomy of the paper is in accordance with the • established format, written in the correct language rules.
Study and examination requirements	Minimum attendance requirement 80% from total lecture Assessment is carried out based on written examinations, assessment/evaluation of the learning process and performance with the following components:

	Final Examination: 30% Midterm Examination: 30% Lab Work: 25% Structured Assignment: 10% Quiz: 5%
Reading list	1. Michael L. Shuler and Fikret Kargi. 2002. Bioprocess Engineering. Prentice Hall PTR 2. Martinus A. J. S. van Boekel. 2009. Kinetic Modeling of Reactions in Foods. CRC Press, Taylor & Francis Group

Module Handbook Food Technology Program Study

	PADJADJARAN UNIVERSITY FACULTY OF AGRO-INDUSTRIAL TECHNOLOGY FOOD TECHNOLOGY STUDY PROGRAM	COURSE CODE: N10B181101
Module designation	Calculus	
Semester(s) in which the module is taught	1	
Person responsible for the module	1. Dr. Drs. Zaida M.Si 2. Bambang Nurhadi S.TP., M.Sc., Ph.D 3. Parlan S.TP., M.TP	
Language	Indonesian and English	
Relation to curriculum	Compulsory course	
Teaching methods	1. Face to face 2. Theory Explanation 3. Small Group Discussion 4. Questions and discussions	
Workload	Total workload: 119 hours Class Lecture: 2 x 50' x 14 weeks = 23,33 hours Assignment: 2 x 60' x 14 weeks = 28 hours Independent study: 2 x 60' x 14 weeks = 28 hours Laboratory practice Laboratory session: 1 x 100' x 14 weeks = 23,33 hours Independent study: 1 x 70' x 14 weeks = 16 hours Examination Midterm Examination: 3 x 50' x 1 weeks = 2,5 hours Final Examination: 3 x 50' x 1 weeks = 2.5 hours	
Credit points	4.8	
Required and recommended prerequisite for joining the modul	-	
Module objectives/intended learning outcomes	After completing this course, students will be able to apply (C4) calculus as a basis for calculations that can be applied in food science and technology.	

Content	1. Riel Number System 2. Absolute value equations and inequalities; Domains and Range 3. Graphics and Functions; Quadratic Linear, Polynomial, Trigonometry, Translation and Inversion 4. Limit and Continuity 5. Differentials and Their Applications; Tangent and Normal Line, Approx. 6. Integral and Its Application; area and wide area 7. Volume and Rotary Object Volume 8. Transcendent Function; Logarithms, natural logarithms and exponential 9. Ordinary Differential Equation (ODE) of first order.
Examination forms	Form Examination: Assignment Paper rubric: • Excellent/A (80-100): The anatomy of the paper is in accordance with the established format, written with the right language rules, with an easy-to-read layout, consistent in the presentation of pictures, graphs and tables, and free from elements of plagiarism, and inspires readers. • Very Good/B (69-79): The anatomy of the paper is in accordance with the established format, written in the correct language rules, with an easy-to-read layout, consistent in the presentation of images, graphs and tables, and free from elements of plagiarism. • Good/C (60-68): The anatomy of the paper is in accordance with the established format, written with proper language conventions, with a layout that is not good, consistent in presenting pictures, graphs and tables, and free from elements of plagiarism. • Fair/D (50-59): The anatomy of the paper is in accordance with the • established format, written in the correct language rules.
Study and examination requirements	Minimum attendance requirement 80% from total lecture Assessment is carried out based on written

	examinations, assessment/evaluation of the learning process and performance with the following components: Final Examination: 30% Midterm Examination: 30% Lab Work: 25% Structured Assignment: 10% Quiz: 5%
Reading list	Main : 1. KA Stroud, Dexter J. Booth, Mathematics for Engineering, Fifth Edition, Volumes I and II, Erlangga Publisher, Jakarta 2003 2. Purcell, E. J., Varberg, D., & Rigdon, S. E. (2011). Calculus (9th Edition). Pearson Education 3. Stewart, Clegg, & Watson (2021), Calculus (9th Ed.) 4. Hass, Heil, Weir, & Bogacki (2024), Thomas' Calculus (15th Ed.) 5. Larson & Edwards (2023), Calculus (12th Ed.) Additional: 1. Koko Martono, Calculus, Erlangga Publisher, Jakarta, 2014

Module Handbook Food Technology Program Study

	PADJADJARAN UNIVERSITY FACULTY OF AGRO-INDUSTRIAL TECHNOLOGY FOOD TECHNOLOGY STUDY PROGRAM	COURSE CODE: N10B183246
Module designation	Canning Technology	
Semester(s) in which the module is taught	6	
Person responsible for the module	1. Bambang Nurhadi, STP., M.Sc., Ph.D 2. Robi Andoyo, STP., M.Sc., Ph.D 3. Parlan S.TP., M.TP	
Language	Indonesian and English	
Relation to curriculum	Compulsory course	
Teaching methods	1. Interactive learning 2. Self-directed learning 3. Small Group Discussion 4. Discovery learning	
Workload	Total workload: 119 hours Class Lecture: 2 x 50' x 14 weeks = 23,33 hours Assignment: 2 x 60' x 14 weeks = 28 hours Independent study: 2 x 60' x 14 weeks = 28 hours Laboratory practice Laboratory session: 1 x 100' x 14 weeks = 23,33 hours Independent study: 1 x 70' x 14 weeks = 16 hours Examination Midterm Examination: 3 x 50' x 1 weeks = 2,5 hours Final Examination: 3 x 50' x 1 weeks = 2.5 hours	
Credit points	4.8	
Required and recommended prerequisite for joining the modul	-	

Module objectives/intended learning outcomes	1. Students can understand the concept of kinetics in the sterilization process 2. Students can determine the appropriate canning technique of food ingredients with different physical, chemical and biological characteristics which basically determine the level of risk they face. 3. Students can calculate the adequacy of heat in the sterilization process 4. Students can choose the right packaging material or type of can based on the characteristics of the canned material
Content	1. Introduction of Canning Technology 2. Reaction kinetics and microbial death in foods 3. Raw Material (Meat and Fish) 4. Raw material (Fruit and vegetables) 5. Microbial aspects and thermobacteriology 6. Container for canned foods and controlling container quality 7. Heat penetration in canned foods - theoretical considerations 8. Determination of heat penetration parameters 9. Thermal processes - development, validation, adjustment, and control 10. Thermal processing equipment and systems 11. Aseptic processing and packaging: methods, equipment, materials and commercial application 12. Postprocess container handling and storage 13. Quality Assurance of the end product

Examination forms	Form Examination: Assignment Paper rubric: • Excellent/A (80-100): The anatomy of the paper is in accordance with the established format, written with the right language rules, with an easy-to-read layout, consistent in the presentation of pictures, graphs and tables, and free from elements of plagiarism, and inspires readers. • Very Good/B (69-79): The anatomy of the paper is in accordance with the established format, written in the correct language rules, with an easy-to-read layout, consistent in the presentation of images, graphs and tables, and free from elements of plagiarism. • Good/C (60-68): The anatomy of the paper is in accordance with the established format, written with proper language conventions, with a layout that is not good, consistent in presenting pictures, graphs and tables, and free from elements of plagiarism. • Fair/D (50-59): The anatomy of the paper is in accordance with the • established format, written in the correct language rules.
Study and examination requirements	Minimum attendance requirement 80% from total lecture Assessment is carried out based on written examinations, assessment/evaluation of the learning process and performance with the following components: Final Examination: 30% Midterm Examination: 30% Lab Work: 25% Structured Assignment: 10% Quiz: 5%
Reading list	Main : 1. Featherstone, S. (2015). A Complete Course in Canning and Related Processes (14th Edition, Volumes 1–3). Woodhead Publishing (Elsevier). 2. Les Bratt. 2010. Fish Canning Handbook. Blackwell Publishing Ltd 3. Eve Adamson, Traci Cumbay, Karan Davis Cutler, Suzanne DeJohn, Kathleen Fisher, Theresa A. Husarik, Amy Jeanroy, Rob Ludlow, Bryan Miller, Marty Nachel, The National

	4. Gardening Association (NGA), Brittain Phillips, Marie Rama, Tom Schneider, Cheryl K. Smith, Karen Ward, Kimberly Willis, 5. Gerald D. Wootan, DO, M.Ed. 2011. Canning & Preserving All-in-One For Dummies. John Wiley & Sons, Inc., Hoboken, New Jersey
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Module Handbook Food Technology Program Study

	PADJADJARAN UNIVERSITY FACULTY OF AGRO-INDUSTRIAL TECHNOLOGY FOOD TECHNOLOGY STUDY PROGRAM	COURSE CODE: N10B182113
Module designation	Engineering Economics and Food Industry Management	
Semester(s) in which the module is taught	3	
Person responsible for the module	1. Dr. rer. nat Fetriyuna S.TP., M.Si 2. Dr. Drs. Zaida M.Si 3. Parlan S.TP., M.Si	
Language	Indonesian and English	
Relation to curriculum	Compulsory course	
Teaching methods	1. Face to face 2. Theory Explanation 3. Small Group Discussion 4. Questions and discussions	
Workload	Total workload: 119 hours Class Lecture: 3 x 50' x 14 weeks = 35 hours Assignment: 3 x 60' x 14 weeks = 42 hours Independent study: 3 x 60' x 14 weeks = 42 hours Examination Midterm Examination: 3 x 50' x 1 weeks = 2.5 hours Final Examination: 3 x 50' x 1 weeks = 2.5 hours	
Credit points	4.8	
Required and recommended prerequisite for joining the modul	-	
Module objectives/intended learning outcomes	Able to make choices to direct the best course of action from various alternative engineering scenarios and can explain systematically the costs and benefits of engineering projects involving engineering design and analysis.	

Content	1. Introduction and Scope of Engineering Economics 2. Interest Concepts and Interest Formulas 3. Cash Flow 4. Break Event Point Analysis 5. Depreciation 6. Selection of Economic Alternatives 7. Asset Replacement Analysis
Examination forms	Form Examination: Assignment Paper rubric: • Excellent/A (80-100): The anatomy of the paper is in accordance with the established format, written with the right language rules, with an easy-to-read layout, consistent in the presentation of pictures, graphs and tables, and free from elements of plagiarism, and inspires readers. • Very Good/B (69-79): The anatomy of the paper is in accordance with the established format, written in the correct language rules, with an easy-to-read layout, consistent in the presentation of images, graphs and tables, and free from elements of plagiarism. • Good/C (60-68): The anatomy of the paper is in accordance with the established format, written with proper language conventions, with a layout that is not good, consistent in presenting pictures, graphs and tables, and free from elements of plagiarism. • Fair/D (50-59): The anatomy of the paper is in accordance with the • established format, written in the correct language rules.
Study and examination requirements	Minimum attendance requirement 80% from total lecture Assessment is carried out based on written examinations, assessment/evaluation of the learning process and performance with the following components: Final Examination: 35% Midterm Examination: 35% Lab Work: - Structured Assignment: 20%

	Quiz: 10%
Reading list	Main : 1. Park, C. S. (2023). Contemporary Engineering Economics (7th ed.). Pearson. 2. Chan S. Park, Fundamentals Of Engineering Economics, Pearson Prentice Hill, New Jersey, 2004 3. Blank, L. T., & Tarquin, A. J. (2023). Engineering Economy (9th ed.). McGraw-Hill 4. Newnan, D. G., Eschenbach, T. G., & Lavelle, J. P. (2020). Engineering Economic Analysis (14th ed.). Oxford University Press. 5. Sullivan, W. G., Wicks, E. M., & Koelling, C. P. (2019). Engineering Economy (17th ed.). Pearson. Additional : 1. Fraser, N. M., Jewkes, E. M., & Pirnia, M. (2020). Engineering Economics: Financial Decision Making for Engineers (7th ed.). Pearson.

Module Handbook Food Technology Program Study

	PADJADJARAN UNIVERSITY FACULTY OF AGRO-INDUSTRIAL TECHNOLOGY FOOD TECHNOLOGY STUDY PROGRAM	COURSE CODE: N10N4213
Module designation	Field Work Practice	
Semester(s) in which the module is taught	6	
Person responsible for the module	Dr. Aldi Dwi Pangawikan S.TP., M.Sc	
Language	Indonesian and English	
Relation to curriculum	Compulsory course	
Teaching methods	1. Practice 2. Discussion 3. Compile reports 4. Seminar or oral exam	
Workload	Total workload: 127 hours Class Lecture: 2 x 50'x 14 weeks = 23 hours Assignment: 2 x 50'x 14 weeks = 23 hours Independent study: 2x50'x14 weeks = 23 hours Examination Midterm Examination: 2x50'x1 weeks = 1.67 hours Final Examination: 2x50'x1 weeks = 1.67 hours	
Credit points	-	
Required and recommended prerequisite for joining the modul	-	
Module objectives/intended learning outcomes	1. Students have sufficient work experience as a provision after completing their studies. 2. Students are able to understand and explain and compile reports regarding the entire series of activities that have been carried out. 3. Students can provide suggestions for improvement if needed. 4. Students can use it as material for completing their final project by conducting research coordinated with the company and supervisors	

	at the Faculty
Content	1. The aims and objectives of the institution. 2. Management and organizational structure. 3. Location or work area including accessibility. 4. Layout within the institution. (See PKL revision) 5. Human resources or employment. 6. Material resources. 7. Equipment and machines used. 8. driving resources. 9. Buildings and other infrastructure. 10. The ongoing production process, can be in the form of: ➤ Food production process ➤ Food handling process flow ➤ Etc 11. Storage in warehouse 12. And other things deemed necessary.

Examination forms	Form Examination: Presentation and Written Paper Assignment Paper rubric: • Excellent/A (80-100): The anatomy of the paper is in accordance with the established format, written with the right language rules, with an easy-to-read layout, consistent in the presentation of pictures, graphs and tables, and free from elements of plagiarism, and inspires readers. • Very Good/B (69-79): The anatomy of the paper is in accordance with the established format, written in the correct language rules, with an easy-to-read layout, consistent in the presentation of images, graphs and tables, and free from elements of plagiarism. • Good/C (60-68): The anatomy of the paper is in accordance with the established format, written with proper language conventions, with a layout that is not good, consistent in presenting pictures, graphs and tables, and free from elements of plagiarism. • Fair/D (50-59): The anatomy of the paper is in accordance with the • established format, written in the correct language rules, with a
Study and examination requirements	Minimum attendance requirement 80% from total lecture Assessment is carried out based on written examinations, assessment/evaluation of the learning process and performance with the following components: Final Examination: 30% Midterm Examination: 30% Lab Work: 25% Structured Assignment: 10% Quiz: 5% Study and Examination Requirement Students must attend 15 minutes before the class starts. Students must switch off all electronic devices. Students must inform the lecturer if they will not attend the class due to sickness, etc. Students must submit all class assignments before the deadline. Students must attend the exam to get final grade

Reading list

Main :

Food Technology Study Program-FTIP-Unpad.
2018. Field Work Practice Guidelines.

Module Handbook Food Technology Program Study

	PADJADJARAN UNIVERSITY FACULTY OF AGRO-INDUSTRIAL TECHNOLOGY FOOD TECHNOLOGY STUDY PROGRAM	COURSE CODE: N10B183133
Module designation	Food Hydrocolloids	
Semester(s) in which the module is taught	5	
Person responsible for the module	1. Bambang Nurhadi S.TP., M.Sc., Ph.D 2. Dr. rer. nat. Feriyuna S.TP., M.Si 3. Dr. Siti Nurhasanah S.TP., M.Si.	
Language	Indonesian and English	
Relation to curriculum	Elective Courses	
Teaching methods	1. Interactive Learning 2. Discussion	
Workload	Total workload: 119 hours Class Lecture: 2 x 50' x 14 weeks = 23,33 hours Assignment: 2 x 60' x 14 weeks = 28 hours Independent study: 2 x 60' x 14 weeks = 28 hours Laboratory practice Laboratory session: 1 x 100' x 14 weeks = 23,33 hours Independent study: 1 x 70' x 14 weeks = 16 hours Examination Midterm Examination: 3 x 50' x 1 weeks = 2,5 hours Final Examination: 3 x 50' x 1 weeks = 2.5 hours	
Credit points	4.8	
Required and recommended prerequisite for joining the modul	-	
Module objectives/intended learning outcomes	1. Able to understand the types, sources and functions of hydrocolloids in food processing 2. Able to characterize, produce, and apply hydrocolloids in food processing 3. Able to analyze hydrocolloid products	

Content	1. Introduction to Hydrocolloids 2. Types of Hydrocolloids 3. Function of Colloidal System in Food Product 4. Source and Production of Hydrocolloid 5. Analysis of Hydrocolloid 6. Production and identification of Hydrocolloid 7. Characterization of Hydrocolloid and Its Application 8. Analysis of Hydrocolloid Product 9. Cellulose 10. Gum 11. Whey 12. Synthetic Hydrocolloids
Examination forms	Form Examination: Assignment Paper rubric: • Excellent/A (80-100): The anatomy of the paper is in accordance with the established format, written with the right language rules, with an easy-to-read layout, consistent in the presentation of pictures, graphs and tables, and free from elements of plagiarism, and inspires readers. • Very Good/B (69-79): The anatomy of the paper is in accordance with the established format, written in the correct language rules, with an easy-to-read layout, consistent in the presentation of images, graphs and tables, and free from elements of plagiarism. • Good/C (60-68): The anatomy of the paper is in accordance with the established format, written with proper language conventions, with a layout that is not good, consistent in presenting pictures, graphs and tables, and free from elements of plagiarism. • Fair/D (50-59): The anatomy of the paper is in accordance with the • established format, written in the correct language rules.
Study and examination requirements	Minimum attendance requirement 80% from total lecture Assessment is carried out based on written examinations, assessment/evaluation of the learning process and performance with the following components:

	Final Examination: 30% Midterm Examination: 30% Lab Work: 25% Structured Assignment: 10% Quiz: 5%
Reading list	Main : 1. Phillips, G. O., & Williams, P. A. (Eds.). (2021). Handbook of Hydrocolloids (3rd ed.). Woodhead Publishing–Elsevier. 2. Maria G. Semenova and Eric Dickinson. 2010. Biopolymers in Food Colloids: Thermodynamics and Molecular Interactions. Koninklijke Brill NV, Leiden, The Netherlands. 3. GO Phillips and PA Williams. 2000. Handbook of Hydrocolloids. CRC Press LLC 2000 Corporate Blvd, NW, Boca Raton FL 33431, USA. 4. Fang, Y., Zhang, H., & Nishinari, K. (Eds.). (2021). Food Hydrocolloids: Functionalities and Applications. Springer. Additional: Thomas R. Laaman. 2011. Hydrocolloids in food processing. Blackwell Publishing, Ltd. and Institute of Food Technologists

Module Handbook Food Technology Program Study

	PADJADJARAN UNIVERSITY FACULTY OF AGRO-INDUSTRIAL TECHNOLOGY FOOD TECHNOLOGY STUDY PROGRAM	COURSE CODE: N10B182221
Module designation	Form Conversion and Separation Engineering	
Semester(s) in which the module is taught	5	
Person responsible for the module	1. Dr. Siti Nurhasanah S.TP., M.Si 2. Bambang Nurhadi, STP., M.Sc., Ph.D. 3. Dr. rer. nat Fetriyuna STP., M.Si	
Language	Indonesian and English	
Relation to curriculum	Compulsory Courses	
Teaching methods	1. Interactive learning 2. Project based learning 3. Discussion	
Workload	Total workload: 119 hours Class Lecture: 2 x 50' x 14 weeks = 23,33 hours Assigment: 2 x 60' x 14 weeks = 28 hours Independent study: 2 x 60' x 14 weeks = 28 hours Laboratory practice Laboratory session: 1 x 100' x 14 weeks = 23,33 hours Independent study: 1 x 70' x 14 weeks = 16 hours Examination Midterm Examination: 3 x 50' x 1 weeks = 2,5 hours Final Examination: 3 x 50' x 1 weeks = 2.5 hours	
Credit points	4.8	
Required and recommended prerequisite for joining the modul	Food Processing Engineering Principles	
Module objectives/intended learning outcomes	Students can understand and understand the principles and mechanisms of conversion and separation of food ingredients and can analyze appropriate techniques in food processing applications.	

Content	1. Size reduction 2. Size Enlargement 3. Encapsulation 4. Mixing 5. Extrusion 6. Sedimentation 7. Centrifugation 8. Filtration 9. Extraction 10. Crystallization 11. Distillation 12. Membrane separation
Examination forms	Form Examination: Assignment Paper rubric: • Excellent/A (80-100): The anatomy of the paper is in accordance with the established format, written with the right language rules, with an easy-to-read layout, consistent in the presentation of pictures, graphs and tables, and free from elements of plagiarism, and inspires readers. • Very Good/B (69-79): The anatomy of the paper is in accordance with the established format, written in the correct language rules, with an easy-to-read layout, consistent in the presentation of images, graphs and tables, and free from elements of plagiarism. • Good/C (60-68): The anatomy of the paper is in accordance with the established format, written with proper language conventions, with a layout that is not good, consistent in presenting pictures, graphs and tables, and free from elements of plagiarism. • Fair/D (50-59): The anatomy of the paper is in accordance with the • established format, written in the correct language rules.
Study and examination requirements	Minimum attendance requirement 80% from total lecture Assessment is carried out based on written examinations, assessment/evaluation of the learning process and performance with the following

	components: Final Examination: 30% Midterm Examination: 30% Lab Work: 25% Structured Assignment: 10% Quiz: 5%
Reading list	Main : 1. Singh, R. P., Heldman, D. R., & Erdoğdu, F. (2024). Introduction to Food Engineering (6th ed.). Academic Press–Elsevier. 2. Toledo, RT 1991. Fundamentals of Food Process Engineering. Chapman & Hall, New York 3. Barbosa-Canovas. 2005. Food Powders : Physical Properties, Processing, and Functionality. Kluwer Academic, New York 4. Zeki Berk.. 2009. Food Process Engineering and Technology. Elsevier. USA 5. Smith. Introduction to Food Process Engineering. Second edition. Springer. London 6. Heldman, D. R., Lund, D. B., & Sabliov, C. M. (Eds.). (2019). Handbook of Food Engineering (3rd ed.). CRC Press. Supporters: 1. Fellows, PJ 2000. Food Processing Technology. Principles and Practice. CRC Press, Boca Raton. 2. Berk, Z. (2018). Food Process Engineering and Technology (3rd ed.). Academic Press–Elsevier.

Module Handbook Food Technology Program Study

	PADJADJARAN UNIVERSITY FACULTY OF AGRO-INDUSTRIAL TECHNOLOGY FOOD TECHNOLOGY STUDY PROGRAM	COURSE CODE: N10B182116
Module designation	Heat Transfer and Thermal Process	
Semester(s) in which the module is taught	3	
Person responsible for the module	1. Robi Andoyo, Ph.D 2. Zaida, Drs., M.Si 3. Syamsul Huda, STP., M.Si	
Language	Indonesian and English	
Relation to curriculum	Compulsory Courses	
Teaching methods	1. Interactive learning 2. Project based learning 3. Discussion 4. Recitation	
Workload	Total workload: 119 hours Class Lecture: 2 x 50' x 14 weeks = 23,33 hours Assignment: 2 x 60' x 14 weeks = 28 hours Independent study: 2 x 60' x 14 weeks = 28 hours Laboratory practice Laboratory session: 1 x 100' x 14 weeks = 23,33 hours Independent study: 1 x 70' x 14 weeks = 16 hours Examination Midterm Examination: 3 x 50' x 1 weeks = 2,5 hours Final Examination: 3 x 50' x 1 weeks = 2.5 hours	
Credit points	4.8	
Required and recommended prerequisite for joining the modul	Principles of Food Processing Engineering	
Module objectives/intended learning outcomes	Students can understand and understand the principle of heat transfer by conduction, convection and radiation as well as its application to heat exchangers and their calculations. Students can explain heat transfer operations and	

	are able to choose and calculate and apply them in the food processing process.
Content	1. Heat transfer One-dimensional steady state conduction 2. Steady state multidimensional conduction heat transfer 3. Unsteady State Conduction Heat Transfer 4. Convection Heat Transfer 5. Radiation Heat Transfer 6. Heat Exchanger 7. Sterilization 8. Microwave Heating
Examination forms	Form Examination: • Excellent/A (80-100): The anatomy of the paper is in accordance with the established format, written with the right language rules, with an easy-to-read layout, consistent in the presentation of pictures, graphs and tables, and free from elements of plagiarism, and inspires readers. • Very Good/B (69-79): The anatomy of the paper is in accordance with the established format, written in the correct language rules, with an easy-to-read layout, consistent in the presentation of images, graphs and tables, and free from elements of plagiarism. • Good/C (60-68): The anatomy of the paper is in accordance with the established format, written with proper language conventions, with a layout that is not good, consistent in presenting pictures, graphs and tables, and free from elements of plagiarism. • Fair/D (50-59): The anatomy of the paper is in accordance with the established format, written in the correct language rules
Study and examination requirements	Minimum attendance requirement 80% from total lecture Assessment is carried out based on written examinations, assessment/evaluation of the learning process and performance with the following components: Final Examination: 30% Midterm Examination: 30%

	Lab Work: 25% Structured Assignment: 10% Quiz: 5%
Reading list	Main: 1. Fellows, PJ 2000. Food Processing Technology. Principles and Practice. CRC Press, Boca Raton. 2. Holman, JP 2002. Heat Transfer. McGraw Hill. Boston. 3. Heldman, DR and DB Lund. 1992. Handbook of Food Engineering. Marcel Dekker, New York. 4. Toledo, RT 1991. Fundamentals of Food Process Engineering. Chapman & Hall, New York

Module Handbook Food Technology Program Study

	PADJADJARAN UNIVERSITY FACULTY OF AGRO-INDUSTRIAL TECHNOLOGY FOOD TECHNOLOGY STUDY PROGRAM	COURSE CODE: N10B183132
Module designation	Nanotechnology in Food Processing	
Semester(s) in which the module is taught	5	
Person responsible for the module	1. Robi Andoyo, Ph.D 2. Bambang Nurhadi, Ph.D	
Language	Indonesian and English	
Relation to curriculum	Elective Courses	
Teaching methods	1. Interactive learning 2. Discussion	
Workload	Total workload: 119 hours Class Lecture: 2 x 50' x 14 weeks = 23,33 hours Assignment: 2 x 60' x 14 weeks = 28 hours Independent study: 2 x 60' x 14 weeks = 28 hours Laboratory practice Laboratory session: 1 x 100' x 14 weeks = 23,33 hours Independent study: 1 x 70' x 14 weeks = 16 hours Examination Midterm Examination: 3 x 50' x 1 weeks = 2,5 hours Final Examination: 3 x 50' x 1 weeks = 2.5 hours	
Credit points	4.8	
Required and recommended prerequisite for joining the modul	-	
Module objectives/intended learning outcomes	Students are able to master and use the principles of nano technology in various aspects of food processing, explain the production process of food nanomaterials both theoretically and practically, present papers related to nanotechnology and create food concepts based on nano technology.	

Content	1. Introduction to nanotechnology 2. Changing the Properties of Materials by Changing Their Size 3. Searching for Nanoscale Objects in food 4. Design of nanomaterials 5. Nanosensors - QC - Food safety 6. Nanotechnology in food processing - Farming technology - Packaging - Formulation 7. Nano encapsulation 8. Nanomaterial measurement 9. Case study > student presentation 10. Excursion > Unpad Nanotech Research Center (PRINT-G)
Examination forms	Form Examination: • Excellent/A (80-100): The anatomy of the paper is in accordance with the established format, written with the right language rules, with an easy-to-read layout, consistent in the presentation of pictures, graphs and tables, and free from elements of plagiarism, and inspires readers. • Very Good/B (69-79): The anatomy of the paper is in accordance with the established format, written in the correct language rules, with an easy-to-read layout, consistent in the presentation of images, graphs and tables, and free from elements of plagiarism. • Good/C (60-68): The anatomy of the paper is in accordance with the established format, written with proper language conventions, with a layout that is not good, consistent in presenting pictures, graphs and tables, and free from elements of plagiarism. • Fair/D (50-59): The anatomy of the paper is in accordance with the established format, written in the correct language rules

Study and examination requirements	Minimum attendance requirement 80% from total lecture Assessment is carried out based on written examinations, assessment/evaluation of the learning process and performance with the following components: Final Examination: 30% Midterm Examination: 30% Lab Work: 25% Structured Assignment: 10% Quiz: 5%
Reading list	Main: 1. Nanotechnology application in food, Academic Press, 2017 2. An Introduction to Nanoscience and Nanotechnology, Wiley, 2006

Module Handbook Food Technology Program Study

	PADJADJARAN UNIVERSITY FACULTY OF AGRO-INDUSTRIAL TECHNOLOGY FOOD TECHNOLOGY STUDY PROGRAM	COURSE CODE: N10B183241
Module designation	Plant Design	
Semester(s) in which the module is taught	6	
Person responsible for the module	1. Dr. rer. nat. Fetriyuna S.TP., M.Si 2. Dr. Drs. Zaida M.Si; 3. Parlan S.TP., M.Si	
Language	Indonesian and English	
Relation to curriculum	Compulsory Courses	
Teaching methods	1. Face to face 2. Theory Explanation 3. Small Group Discussion 4. Questions and discussions	
Workload	Total workload: 119 hours Class Lecture: 2 x 50' x 14 weeks = 23,33 hours Assignment: 2 x 60' x 14 weeks = 28 hours Independent study: 2 x 60' x 14 weeks = 28 hours Laboratory practice Laboratory session: 1 x 100' x 14 weeks = 23,33 hours Independent study: 1 x 70' x 14 weeks = 16 hours Examination Midterm Examination: 3 x 50' x 1 weeks = 2,5 hours Final Examination: 3 x 50' x 1 weeks = 2.5 hours	
Credit points	4.8	
Required and recommended prerequisite for joining the modul	Preservation and Emerging Processing Techniques in Food Processing	
Module objectives/intended learning outcomes	Combining cognitive, psychomotor and affective in designing and modeling food processing plant designs and explaining them economically-technically.	

Content	1. Definition and Scope of Factory Design 2. Factory Design Process 3. Project Feasibility Study Framework 4. Product Analysis and Processing 5. Process Scale-Up 6. Process Design Optimization 7. Material and Equipment Selection 8. Determination of Factory Location
Examination forms	Form Examination: • Excellent/A (80-100): The anatomy of the paper is in accordance with the established format, written with the right language rules, with an easy-to-read layout, consistent in the presentation of pictures, graphs and tables, and free from elements of plagiarism, and inspires readers. • Very Good/B (69-79): The anatomy of the paper is in accordance with the established format, written in the correct language rules, with an easy-to-read layout, consistent in the presentation of images, graphs and tables, and free from elements of plagiarism. • Good/C (60-68): The anatomy of the paper is in accordance with the established format, written with proper language conventions, with a layout that is not good, consistent in presenting pictures, graphs and tables, and free from elements of plagiarism. • Fair/D (50-59): The anatomy of the paper is in accordance with the established format, written in the correct language rules
Study and examination requirements	Minimum attendance requirement 80% from total lecture Assessment is carried out based on written examinations, assessment/evaluation of the learning process and performance with the following components: Final Examination: 30% Midterm Examination: 30%

	Lab Work: 25% Structured Assignment: 10% Quiz: 5%
Reading list	Main: 1. Peters, M. S., Timmerhaus, K. D., & West, R. E. (2026). Plant Design and Economics for Chemical Engineers (5th ed.). McGraw-Hill. 2. Towler, G., & Sinnott, R. (2021). Chemical Engineering Design (3rd ed.). Butterworth-Heinemann–Elsevier. 3. Singh, R. P., Heldman, D. R., & Erdogdu, F. (2024). Introduction to Food Engineering (6th ed.). Academic Press–Elsevier. Additional: 1. Wignjosoebroto S., Tata Letak Pabrik dan Pemindahan Bahan, Guna Widya, 2003 2. Berk, Z. (2018). Food Process Engineering and Technology (3rd ed.). Academic Press–Elsevier. 3. Heldman, D. R., Lund, D. B., & Sabliov, C. M. (Eds.). (2019). Handbook of Food Engineering (3rd ed.). CRC Press

Module Handbook Food Technology Program Study

	PADJADJARAN UNIVERSITY FACULTY OF AGRO-INDUSTRIAL TECHNOLOGY FOOD TECHNOLOGY STUDY PROGRAM	COURSE CODE: N10B183129
Module designation	Preservation and Emerging Processing Techniques in Food Processing	
Semester(s) in which the module is taught	5	
Person responsible for the module	1. Dr. Siti Nurhasanah S.TP., M. Si. 2. Bambang Nurhadi, STP., M.Sc., Ph.D 3. Robi Andoyo S.TP., M.Sc., Ph.D	
Language	Indonesian and English	
Relation to curriculum	Elective Courses	
Teaching methods	1. Face Interactive learning 2. Project based learning 3. Discussion	
Workload	Total workload: 119 hours Class Lecture: 2 x 50' x 14 weeks = 23,33 hours Assignment: 2 x 60' x 14 weeks = 28 hours Independent study: 2 x 60' x 14 weeks = 28 hours Laboratory practice Laboratory session: 1 x 100' x 14 weeks = 23,33 hours Independent study: 1 x 70' x 14 weeks = 16 hours Examination Midterm Examination: 3 x 50' x 1 weeks = 2,5 hours Final Examination: 3 x 50' x 1 weeks = 2.5 hours	
Credit points	4.8	
Required and recommended prerequisite for joining the modul	Heat Transfer and Thermal Process	
Module objectives/intended learning outcomes	Students can understand and understand the principles and mechanisms of conversion and separation of food ingredients and can analyze appropriate techniques in food processing applications.	

Content	1. Drying 2. Evaporation 3. Refrigeration 4. Freezing 5. Microwave 6. High Pressure Processing 7. Pulse Electric Field 8. Irradiation 9. Combined Hurdles 10. Determination of shelf life by the Arrhenius method 11. Determination of shelf life of the pumpkin method
Examination forms	Form Examination: • Excellent/A (80-100): The anatomy of the paper is in accordance with the established format, written with the right language rules, with an easy-to-read layout, consistent in the presentation of pictures, graphs and tables, and free from elements of plagiarism, and inspires readers. • Very Good/B (69-79): The anatomy of the paper is in accordance with the established format, written in the correct language rules, with an easy-to-read layout, consistent in the presentation of images, graphs and tables, and free from elements of plagiarism. • Good/C (60-68): The anatomy of the paper is in accordance with the established format, written with proper language conventions, with a layout that is not good, consistent in presenting pictures, graphs and tables, and free from elements of plagiarism. • Fair/D (50-59): The anatomy of the paper is in accordance with the established format, written in the correct language rules
Study and examination requirements	Minimum attendance requirement 80% from total lecture Assessment is carried out based on written

	examinations, assessment/evaluation of the learning process and performance with the following components: Final Examination: 30% Midterm Examination: 30% Lab Work: 25% Structured Assignment: 10% Quiz: 5%
Reading list	Main: 1. Fellows, PJ 2000. Food Processing Technology. Principles and Practice. CRC Press, Boca Raton. 2. Singh, R. P., Heldman, D. R., & Erdogdu, F. (2024). Introduction to Food Engineering (6th ed.). Academic Press–Elsevier. 3. Berk, Z. (2018). Food Process Engineering and Technology (3rd ed.). Academic Press–Elsevier. 4. Smith. Introduction to Food Process Engineering. Second edition. Springer. London 5. Robertson. 2003. Food Packaging: Principles and Practice. CRC Press. USA Additional: 1. Prakash, A., & Kuila, A. (Eds.). (2024). Nonthermal Food Processing, Safety, and Preservation. Wiley 2. Barbosa-Cánovas, G. V., Tapia, M. S., & Cano, M. P. (Eds.). (2020). Novel Food Processing Technologies (2nd ed.). CRC Press.

Module Handbook Food Technology Program Study

	PADJADJARAN UNIVERSITY FACULTY OF AGRO-INDUSTRIAL TECHNOLOGY FOOD TECHNOLOGY STUDY PROGRAM	COURSE CODE: N10B181209
Module designation	Principles of Food Process Engineering	
Semester(s) in which the module is taught	2	
Person responsible for the module	1. Robi Andoyo, S.TP., M.Sc., Ph.D, 2. Dr. Siti Nurhasanah S.TP., M.Si 3. Bambang Nurhadi S.TP., M.Sc., Ph.D,	
Language	Indonesian and English	
Relation to curriculum	Compulsory Courses	
Teaching methods	1. Interactive learning 2. Practice 3. Presentation 4. Project based learning 5. Discussion	
Workload	Total workload: 119 hours Class Lecture: 2 x 50' x 14 weeks = 23,33 hours Assignment: 2 x 60' x 14 weeks = 28 hours Independent study: 2 x 60' x 14 weeks = 28 hours Laboratory practice Laboratory session: 1 x 100' x 14 weeks = 23,33 hours Independent study: 1 x 70' x 14 weeks = 16 hours Examination Midterm Examination: 3 x 50' x 1 weeks = 2,5 hours Final Examination: 3 x 50' x 1 weeks = 2.5 hours	
Credit points	4.8	
Required and recommended prerequisite for joining the modul	-	
Module objectives/intended learning outcomes	- Students are able mastering the basics of food processing techniques, - Students are able to use mass balance and	

	reaction in analyzing food processing - Students are able to explain transport processes and unit operations in the food/agricultural product industry, both theoretically and practically - Students are able to present papers related to mass transfer in food materials and practice determining mass transfer and completing calculations for related problems
Content	1. The Role of Operational Units in Food Processing 2. Math Review 3. Units and Dimensions 4. Mass balance 5. Energy Balance 6. Fluid Foodstuff Transport 7. Transferring the Mass of Food Ingredients
Examination forms	Form Examination: • Excellent/A (80-100): The anatomy of the paper is in accordance with the established format, written with the right language rules, with an easy-to-read layout, consistent in the presentation of pictures, graphs and tables, and free from elements of plagiarism, and inspires readers. • Very Good/B (69-79): The anatomy of the paper is in accordance with the established format, written in the correct language rules, with an easy-to-read layout, consistent in the presentation of images, graphs and tables, and free from elements of plagiarism. • Good/C (60-68): The anatomy of the paper is in accordance with the established format, written with proper language conventions, with a layout that is not good, consistent in presenting pictures, graphs and tables, and free from elements of plagiarism. • Fair/D (50-59): The anatomy of the paper is in accordance with the established format, written in the correct language rules

Study and examination requirements	Minimum attendance requirement 80% from total lecture Assessment is carried out based on written examinations, assessment/evaluation of the learning process and performance with the following components: Final Examination: 30% Midterm Examination: 30% Lab Work: 25% Structured Assignment: 10% Quiz: 5%
Reading list	Main: 1. Geankoplis, C. J., Hersel, A. A., & Lepek, D. H. (2018). Transport Processes and Separation Process Principles (Includes Unit Operations) (5th ed.). Pearson. 2. Crittenden, J. C., Harriott, P., Smith, J. C., & McCabe, W. L. (2023). McCabe, Smith & Harriott's Unit Operations of Chemical Engineering (8th ed.). McGraw-Hill. 3. Singh, R. P., Heldman, D. R., & Erdogdu, F. (2024). Introduction to Food Engineering (6th ed.). Academic Press–Elsevier. 4. Toledo, "Fundamentals of Food Process Engineering", 3th Ed, Springer, 2007
	Additional: Singh and Heldman, "Introduction to Food Engineering", 4th Ed, Elsevier, USA, 2009

Module Handbook Food Technology Study Program

	PADJADJARAN UNIVERSITY FACULTY OF AGRO-INDUSTRIAL TECHNOLOGY FOOD TECHNOLOGY STUDY PROGRAM	COURSE CODE: N10B181206
Module designation	Biology	
Semester(s) in which the module is taught	1	
Person responsible for the module	1. Dr. Gemilang Lara Utama, S.P., M.Si. 2. Tri Yuliana, S.Si., M.Si., Ph.D 3. Dr. Tita Rialita	
Language	Indonesian and English	
Relation to curriculum	Compulsory Course	
Teaching methods	1. Interactive Learning 2. Cooperative Learning 3. Problem-Based Learning 4. Focus Group Discussion	
Workload	Credits : 3 (3-0) Total workload: 119 hours Class Lecture: 3x 50' x 14 weeks = 35 hours Assignment: 3 x 60' x 14 weeks = 42 hours Independent study: 3 x 60' x 14 weeks = 42 hours Examination Midterm Examination: 3 x 50' x 1 weeks = 2.5 hours Final Examination: 3 x 50' x 1 weeks = 2.5 hours	
Credit points	4.8 ECTS	
Required and recommended prerequisite for joining the modul	-	
Module objectives/intended learning outcomes	1. Students are able to understand and explain the characteristics of living organisms, the role of biology in agriculture and the food industry, plants as biological machines and the concept of plant production (C2) 2. Students are able to understand DNA, RNA and Chromosomes (C2) 3. Students are able to understand plant cells and the function of cell organelles (C2)	

	4. Students are able to explain the meaning of the process of cell division, cell cycle, mitosis (C2) 5. Students are able to demonstrate sexual (generative) and asexual (vegetative) reproduction of plants and applications of plant biotechnology (C3) 6. Students are able to show the meaning of plant hormones (phytohormones), types of plant hormones, the function and work of plant hormones (C3) 7. Students are able to show responses to light, responses to stimuli other than light, responses to herbivores and pathogens (C3) 8. Students are able to show transport mechanisms in plants, absorption of water and minerals by roots, transport of xylem fluid and translocation of phloem fluid (C3) 9. Students are able to show the relationship between plant nutritional needs, the role of soil in plant nutrition, nutritional adaptation (symbiosis of plants and soil microbes, plant parasitism and predation) (C4) 10. Students are able to differentiate between photosynthesis in nature and the photosynthesis pathway (C5)
Content	1. Biology Concepts 2. DNA, RNA, and Chromosomes 3. Cells: Plant Cell Structure and Function of Cell Organelles 4. Cell Division: Cell Cycle, Mitosis 5. Plant Reproduction: Asexual Reproduction, Sexual Reproduction 6. Hormones: Definition of Plant Hormones, Types of Plant Hormones, Functions and Work of Plant Hormones 7. Photosynthesis: Photosynthesis in Nature and the Photosynthesis Pathway 8. Nutrition: Plant Nutritional Needs, The Role of Soil in Plant Nutrition, Nutritional Adaptation (Symbiosis of Plants and Soil Microbes, Parasitism, and Predation by Plants) 9. Transportation: Transport mechanisms in plants, absorption of water and minerals by roots

	10. Plant Response: Response to Light, Response to Stimulus Other than Light, Response to Herbivores and Pathogen
Examination forms	Form Examination: Presentation and Written Paper Assignment Paper rubric: • Excellent/A (80-100): The anatomy of the paper is in accordance with the established format, written with the right language rules, with an easy-to-read layout, consistent in the presentation of pictures, graphs and tables, and free from elements of plagiarism, and inspires readers. • Very Good/B (69-79): The anatomy of the paper is in accordance with the established format, written in the correct language rules, with an easy-to-read layout, consistent in the presentation of images, graphs and tables, and free from elements of plagiarism. • Good/C (60-68): The anatomy of the paper is in accordance with the established format, written with proper language conventions, with a layout that is not good, consistent in presenting pictures, graphs and tables, and free from elements of plagiarism. • Fair/D (50-59): The anatomy of the paper is in accordance with the established format, written in the correct language rules, with a layout that is not good, not yet consistent in the presentation of picture, graphs and tables, but free from elements of plagiarism. • Poor/E (<50) : Failed to fulfill the requirement
Study and examination requirements	Minimum attendance requirement 80% from total lecture Assessment is carried out based on written examinations, assessment/evaluation of the learning process and performance with the following components: Final Examination: 35% Midterm Examination: 35% Structured Assignment: 20% Quiz: 10% Study and Examination Requirement Students must attend 15 minutes before the class starts. Students must switch off all electronic devices. Students must inform the lecturer if they will not attend the class due to sickness, etc. Students must submit all class assignments

	before the deadline. Students must attend the exam to get final grade
Reading list	1. Campbell, N.S.J dan Reece, 2002, Biology, Jilid 1 dan jilid 2, 6th edition, Benjamin Cumming Publication. Co.Inc, San Francisco. 2. Campbell, N.S.J dan Reece, 1997, Biology Concept & Connections , Benjamin Cumming Publication. Co.Inc, San Francisco. 3. Mader Sylvia S, 2001, Biology, 7th edition, Mc Graw Hill, New York. 4. Levetin, Estelle dan McMahon, Karen,1999, Plants and Society, 2nd edition, McGraw Hill, New York 5. Hopkins W.G dan Huner N.A, 2004, Introduction to Plant Physiology, 3rd Edition, John Wiley & Sons, Inc., New Jersey



**PADJADJARAN UNIVERSITY
FACULTY OF AGRO-INDUSTRIAL
TECHNOLOGY
FOOD TECHNOLOGY STUDY
PROGRAM**

**COURSE CODE:
N10B181206**

Module designation	Basic Microbiology
Semester(s) in which the module is taught	2
Person responsible for the module	1. Dr. Gilang Lara Utama, S.P., M.Si. 2. Tri Yuliana, S.Si., M.Si., Ph.D 3. Dr. Tita Rialita
Language	Indonesian and English
Relation to curriculum	Compulsory Course
Teaching methods	1. Interactive Learning 2. Discovery Learning 3. Collaborative Learning 4. Problem-Based Learning 5. Focus Group Discussion 6. Project Based Learning
Workload	Credits : 3 (2-1) Total workload: 119 hours Class Lecture: 2 x 50' x 14 weeks = 23,33 hours Assignment: 2 x 60' x 14 weeks = 28 hours Independent study: 2 x 60' x 14 weeks = 28 hours Laboratory practice Laboratory session: 1 x 100' x 14 weeks = 23,33 hours Independent study: 1 x 70' x 14 weeks = 16 hours Examination Midterm Examination: 3 x 50' x 1 weeks = 2,5 hours Final Examination: 3 x 50' x 1 weeks = 2.5 hours
Credit points	4.8 ECTS
Required and recommended prerequisite for joining the modul	Biology
Module objectives/intended learning outcomes	Students are able to: 1. Explain the structure and function of microorganism cells 2. Describe the metabolism of microorganisms in general 3. Interpret microorganisms molecularly, the control and growth microorganisms

	Distinguish the diversity of microbes (prokaryotes, eukaryotes, archaea)
Content	1. Contract and Introduction (Microorganisms and microbiology) 2. Microbial cell structure and function 3. Microbial metabolism 4. Molecular microbiology 5. Microorganism growth and control 6. Structure and bacterial genome 7. Microbial diversity (bacteria,eukaryotes, archaea)
Examination forms	Form Examination: Presentation and Written Paper Assignment Paper rubric: • Excellent/A (80-100): The anatomy of the paper is in accordance with the established format, written with the right language rules, with an easy-to-read layout, consistent in the presentation of pictures, graphs and tables, and free from elements of plagiarism, and inspires readers. • Very Good/B (69-79): The anatomy of the paper is in accordance with the established format, written in the correct language rules, with an easy-to-read layout, consistent in the presentation of images, graphs and tables, and free from elements of plagiarism. • Good/C (60-68): The anatomy of the paper is in accordance with the established format, written with proper language conventions, with a layout that is not good, consistent in presenting pictures, graphs and tables, and free from elements of plagiarism. • Fair/D (50-59): The anatomy of the paper is in accordance with the established format, written in the correct language rules, with a layout that is not good, not yet consistent in the presentation of picture, graphs and tables, buty free from elements of plagiarism. • Poor/E (<50) : Failed to fulfill the requirements

Study and examination requirements	Minimum attendance requirement 80% from total lecture Assessment is carried out based on written examinations, assessment/evaluation of the learning process and performance with the following components: Final Examination: 30% Midterm Examination: 30% Lab Work: 25% Structured Assignment: 10% Quiz: 5% Study and Examination Requirement Students must attend 15 minutes before the class starts. Students must switch off all electronic devices. Students must inform the lecturer if they will not attend the class due to sickness, etc. Students must submit all class assignments before the deadline. Students must attend the exam to get final grade
Reading list	1. Michael T., Madigan, John M. Martinko, Kelly S. Bender, Daniel H. Buckley, David A. Stahl-Brock Biology of Microorganisms-Benjamin Cummings. 2014. Broock Biology of Microorganisms. United States of America. 2. Fardiaz, S. 1989. <i>Food Microbiology</i>. Department of Food Technology and Nutrition. Fateta. IPB. Bogor. 3. Robert, T.A., and Skinner, F.A. 1983. <i>Food Microbiology</i>. Academic Press, INC. London



**PADJADJARAN UNIVERSITY
FACULTY OF AGRO-INDUSTRIAL
TECHNOLOGY
FOOD TECHNOLOGY STUDY
PROGRAM**

**COURSE CODE:
N10B182117**

Module designation	Food Microbiology
Semester(s) in which the module is taught	3
Person responsible for the module	1.Dr.Ir.Sumanti Debby.Moody.,MS 2.Dr.Gemilang Lara Utama., SPT, M.MIL 3.In-In Hanidah., STP, M.Si
Language	Indonesian and English
Relation to curriculum	Compulsory Course
Teaching methods	1. Interactive Learning 2. Discovery Learning 3. Collaborative Learning
Workload	Credits : 3 (2-1) Total workload: 119 hours Class Lecture: 2 x 50' x 14 weeks = 23,33 hours Assignment: 2 x 60' x 14 weeks = 28 hours Independent study: 2 x 60' x 14 weeks = 28 hours Laboratory practice Laboratory session: 1 x 100' x 14 weeks = 23,33 hours Independent study: 1 x 70' x 14 weeks = 16 hours Examination Midterm Examination: 3 x 50' x 1 weeks = 2,5 hours Final Examination: 3 x 50' x 1 weeks = 2.5 hours
Credit points	4.8 ECTS
Required and recommended prerequisite for joining the modul	Biology and Basic Microbiology
Module objectives/intended learning outcomes	Students are able to: 1. Distinguish the types of microorganisms. 2. Explain and show how the microscope works, types and uses. 3. Relate the factors that influence the growth of microorganisms. 4. Relate the types of microorganisms to food spoilage 5. Distinguish the role of beneficial and harmful microorganisms in food, so they can choose

	the right method to control microorganisms in food. 6. Select the right method to control microorganisms in food 7. Able to relate methods and formulate the application of controlling microorganisms in foodstuffs.
Content	1. Learning contract and introduction 2. Introduction to the tools used in microbiological analysis 3. Types of microorganisms (bacteria, molds, yeasts) in food. 4. Microorganism Growth Curve and the factors that influence it 5. Beneficial and harmful microorganisms in food 6. Antimicrobials in food 7. Food spoilage by microorganisms 8. Control of microorganisms in food
Examination forms	Form Examination: Presentation and Written Paper Assignment Paper rubric: • Excellent/A (80-100): The anatomy of the paper is in accordance with the established format, written with the right language rules, with an easy-to-read layout, consistent in the presentation of pictures, graphs and tables, and free from elements of plagiarism, and inspires readers. • Very Good/B (69-79): The anatomy of the paper is in accordance with the established format, written in the correct language rules, with an easy-to-read layout, consistent in the presentation of images, graphs and tables, and free from elements of plagiarism. • Good/C (60-68): The anatomy of the paper is in accordance with the established format, written with proper language conventions, with a layout that is not good, consistent in presenting pictures, graphs and tables, and free from elements of plagiarism. • Fair/D (50-59): The anatomy of the paper is in accordance with the established format, written in the correct language rules, with a layout that is not good, not yet consistent in the presentation of picture, graphs and tables, buty free from elements of plagiarism. • Poor/E (<50) : Failed to fulfill the requirement

Study and examination requirements	Minimum attendance requirement 80% from total lecture Assessment is carried out based on written examinations, assessment/evaluation of the learning process and performance with the following components: Final Examination: 30% Midterm Examination: 30% Lab Work: 25% Structured Assignment: 10% Quiz: 5% Study and Examination Requirement Students must attend 15 minutes before the class starts. Students must switch off all electronic devices. Students must inform the lecturer if they will not attend the class due to sickness, etc. Students must submit all class assignments before the deadline. Students must attend the exam to get final grade
Reading list	1. Een,S., Sumanti,D. M., dan Hanidah, I. 2016. Mikrobiologi Pangan, Bahan Ajar.Jurusan Teknologi Industri Pangan. FTIP. UNPAD. Bandung. 2. Frazier, W.C and D.C Weshoff. 1988. Food Microbiology. Mc Graw Hill Book Company. New York. 3. Jay,J.M. 1986. Modern Food microbiology. 3 d .ed . Van NostrandReinhold. Company. New York. 4. Fardiaz, S.1989. Mikrobiologi Pangan. Jurusan Teknologi Pangan dan Gizi.Fateta. IPB. Bogor.



**PADJADJARAN UNIVERSITY
FACULTY OF AGRO-INDUSTRIAL
TECHNOLOGY
FOOD TECHNOLOGY STUDY
PROGRAM**

**COURSE CODE:
N10B182220**

Module designation	Food Waste Handling
Semester(s) in which the module is taught	4
Person responsible for the module	1. Dr.Gemilang Lara Utama., SPT, M.MIL 2. In-In Hanidah., STP, M.Si
Language	Indonesian and English
Relation to curriculum	Compulsory Course
Teaching methods	1. Interactive Learning 2. Self-directed Learning 3. Collaborative Learning 4. Discovery Learning 5. Project Based Learning 6. Focus Group Discussion
Workload	Credits : 3 (2-1) Total workload: 119 hours Class Lecture: 2 x 50' x 14 weeks = 23,33 hours Assignment: 2 x 60' x 14 weeks = 28 hours Independent study: 2 x 60' x 14 weeks = 28 hours Laboratory practice Laboratory session: 1 x 100' x 14 weeks = 23,33 hours Independent study: 1 x 70' x 14 weeks = 16 hours Examination Midterm Examination: 3 x 50' x 1 weeks = 2,5 hours Final Examination: 3 x 50' x 1 weeks = 2.5 hours
Credit points	4.8 ECTS
Required and recommended prerequisite for joining the modul	Food Microbiology
Module objectives/intended learning outcomes	Students are able to: 1. Understand the laws and regulations of food industry management 2. Demonstrate the characteristics of food industrial waste

	- Analyze the role of biota such as molds, bacteria, algae, protozoa, rotifers, crustaceans in handling food waste - Analyse and distinguish between chemical and physical handling of food industrial waste - Able to analyze the role of microorganisms in handling food industrial waste based on various types of waste
Content	- Able to understand the laws and regulations and the implications of their application - Analyze the role of biota such as molds, bacteria, algae, protozoa, rotifers, crustaceans in handling food waste - Able to characterize the types of food industrial waste and design possible analysis and handling of waste that can be done - Able to explain and demonstrate the characteristics of food industrial waste, distinguishing between chemical and physical depositional handling. - Able to compare various methods of reducing nitrogen content - Able to analyze the role of microorganisms in handling food industrial waste based on various types of waste
Examination forms	Form Examination: Presentation and Written Paper Assignment Paper rubric: - Excellent/A (80-100): The anatomy of the paper is in accordance with the established format, written with the right language rules, with an easy-to-read layout, consistent in the presentation of pictures, graphs and tables, and free from elements of plagiarism, and inspires readers. - Very Good/B (69-79): The anatomy of the paper is in accordance with the established format, written in the correct language rules, with an easy-to-read layout, consistent in the presentation of images, graphs and tables, and free from elements of plagiarism. - Good/C (60-68): The anatomy of the paper is in accordance with the established format, written with proper language conventions, with a layout that is not good, consistent in presenting pictures, graphs and tables, and free from elements of plagiarism. - Fair/D (50-59): The anatomy of the paper is in

	accordance with the established format, written in the correct language rules, with a layout that is not good, not yet consistent in the presentation of picture, graphs and tables, buty free from elements of plagiarism. • Poor/E (<50) : Failed to fulfill the requirements
Study and examination requirements	Minimum attendance requirement 80% from total lecture Assessment is carried out based on written examinations, assessment/evaluation of the learning process and performance with the following components: Final Examination: 30% Midterm Examination: 30% Lab Work: 25% Structured Assignment: 10% Quiz: 5% Study and Examination Requirement Students must attend 15 minutes before the class starts. Students must switch off all electronic devices. Students must inform the lecturer if they will not attend the class due to sickness, etc. Students must submit all class assignments before the deadline. Students must attend the exam to get final grade
Reading list	1. Managing food industry waste, Zall, 2004, Blackwell Publishing 2. Waste management for the food industries, Steve L. Taylor, 2008, Elsevier 3. Waste treatment in the food processing industry, Wang et al., 2005, CRC Press 4. Utilization of by-products and treatment of waste in the food industry, Oropoulou and Russ, 2007, Springer 5. Handbook of waste management and co-product recovery in food processing V.1, Keith Waldron, 2007, CRC Press



**PADJADJARAN UNIVERSITY
FACULTY OF AGRO-INDUSTRIAL
TECHNOLOGY
FOOD TECHNOLOGY STUDY
PROGRAM**

**COURSE CODE:
N10B182223**

Module designation	Food Fermentation Technology
Semester(s) in which the module is taught	4
Person responsible for the module	1.Dr.Ir.Sumanti Debby.Moody.,MS 2.Indira Lanti Kayaputri, S.Pt., M.Si
Language	Indonesian and English
Relation to curriculum	Compulsory Course
Teaching methods	1. Interactive Learning 2. Collaborative Learning 3. Discovery Learning 4. Focus Group Discussion
Workload	Credits : 3 (2-1) Total workload: 119 hours Class Lecture: 2 x 50' x 14 weeks = 23,33 hours Assignment: 2 x 60' x 14 weeks = 28 hours Independent study: 2 x 60' x 14 weeks = 28 hours Laboratory practice Laboratory session: 1 x 100' x 14 weeks = 23,33 hours Independent study: 1 x 70' x 14 weeks = 16 hours Examination Midterm Examination: 3 x 50' x 1 weeks = 2,5 hours Final Examination: 3 x 50' x 1 weeks = 2.5 hours
Credit points	4.8 ECTS
Required and recommended prerequisite for joining the modul	Food Microbiology
Module objectives/intended learning outcomes	Students are able to: 1. Explain the meaning and stages of the fermentation process 2. Describe the fermentation substrate 3. Explain the role of bioreactor 4. Demonstrate the criteria for microorganisms and fermentation cultures 5. Distinguish the microbial metabolism 6. Analyze and selecting a strain development

	7. Relate the fermentation kinetics 8. Formulate and set the fermentation scale duplication
Content	1. Introduction (contract) and explanation of fermentation technology 2. Explain the meaning and stages of the fermentation process 3. Describe the fermentation substrate 4. Explain the role of bioreactor 5. Shows the criteria of microorganisms and fermentation cultures 6. Differentiate microbial metabolism 7. Selecting a strain development 8. Linking fermentation kinetics 9. Set the fermentation scale duplication
Examination forms	Form Examination: Presentation and Written Paper Assignment Paper rubric: • Excellent/A (80-100): The anatomy of the paper is in accordance with the established format, written with the right language rules, with an easy-to-read layout, consistent in the presentation of pictures, graphs and tables, and free from elements of plagiarism, and inspires readers. • Very Good/B (69-79): The anatomy of the paper is in accordance with the established format, written in the correct language rules, with an easy-to-read layout, consistent in the presentation of images, graphs and tables, and free from elements of plagiarism. • Good/C (60-68): The anatomy of the paper is in accordance with the established format, written with proper language conventions, with a layout that is not good, consistent in presenting pictures, graphs and tables, and free from elements of plagiarism. • Fair/D (50-59): The anatomy of the paper is in accordance with the established format, written in the correct language rules, with a layout that is not good, not yet consistent in the presentation of picture, graphs and tables, but free from elements of plagiarism. • Poor/E (<50) : Failed to fulfill the requirements

Study and examination requirements	Minimum attendance requirement 80% from total lecture Assessment is carried out based on written examinations, assessment/evaluation of the learning process and performance with the following components: Final Examination: 30% Midterm Examination: 30% Lab Work: 25% Structured Assignment: 10% Quiz: 5% Study and Examination Requirement Students must attend 15 minutes before the class starts. Students must switch off all electronic devices. Students must inform the lecturer if they will not attend the class due to sickness, etc. Students must submit all class assignments before the deadline. Students must attend the exam to get final grade
Reading list	1. Standbury, P.F. and A. Whitaker. 2014. <i>Principles of Fermentation Technology</i>. Pergamon Press, Toronto. 2. Judoamidojo.M, A.A.Darwis, E.G.Said. 1990. <i>Teknologi Fermentasi</i>. PAU Bioteknologi. IPB. Bogor. 3. Rahman,A.1989. <i>Pengantar Teknologi Fermentasi</i>.PAU Pangan dan Gizi IPB.Bogor



**PADJADJARAN UNIVERSITY
FACULTY OF AGRO-INDUSTRIAL
TECHNOLOGY
FOOD TECHNOLOGY STUDY
PROGRAM**

**COURSE CODE:
N10B183128**

Module designation	Sanitation and Food Safety
Semester(s) in which the module is taught	5
Person responsible for the module	1. Dr. Sumanti Debby Moody, MS 2. Tri Yuliana, S.Si., M.Si., Ph.D 3. Dr. Souvia Rahimah, S.TP., M.Si
Language	Indonesian and English
Relation to curriculum	Compulsory Course
Teaching methods	1. Interactive Learning 2. Small Group Discussion 3. Cooperative Learning 4. Problem Based Learning 5. Focus Group Discussion
Workload	Credits : 3 (2-1) Total workload: 119 hours Class Lecture: 2 x 50' x 14 weeks = 23,33 hours Assignment: 2 x 60' x 14 weeks = 28 hours Independent study: 2 x 60' x 14 weeks = 28 hours Laboratory practice Laboratory session: 1 x 100' x 14 weeks = 23,33 hours Independent study: 1 x 70' x 14 weeks = 16 hours Examination Midterm Examination: 3 x 50' x 1 weeks = 2,5 hours Final Examination: 3 x 50' x 1 weeks = 2.5 hours
Credit points	4.8 ECTS
Required and recommended prerequisite for joining the modul	Food Microbiology
Module objectives/intended learning outcomes	After completing this course with topics in sanitation and food safety, students will be able to: - Understand the scope of sanitation (C2) - Classify the types of contaminants in food and the factors that cause poisonings (C2)

	- Demonstrate the types of poisoning cause by non-microorganism factors , types of infection microorganisms and intoxication microorganisms (C3) - Implement chemical cleaning materials and sanitizers (C3) - Organize a diagram of the stages of sanitation (C4) - Design food safety control techniques in the production process based on the components of GMP and SSOP (C5)
Content	- General description and scope of sanitation - Types of contaminants in food (microorganisms and non-microorganisms), factors that caused food poisoning - Types of microorganisms that cause infection and intoxication - Sanitation stages - Chemical cleaning agents and sanitizers - Food safety control techniques in the production process - Food safety control system of GMP, SSOP, and HACCP - Food industry sanitation planning
Examination forms	Form Examination: Presentation and Written Paper Assignment Paper rubric: • Excellent/A (80-100): The anatomy of the paper is in accordance with the established format, written with the right language rules, with an easy-to-read layout, consistent in the presentation of pictures, graphs and tables, and free from elements of plagiarism, and inspires readers. • Very Good/B (69-79): The anatomy of the paper is in accordance with the established format, written in the correct language rules, with an easy-to-read layout, consistent in the presentation of images, graphs and tables, and free from elements of plagiarism. • Good/C (60-68): The anatomy of the paper is in accordance with the established format, written with proper language conventions, with a layout that is not good, consistent in presenting pictures, graphs and tables, and free from elements of plagiarism. • Fair/D (50-59): The anatomy of the paper is in

	accordance with the established format, written in the correct language rules, with a layout that is not good, not yet consistent in the presentation of picture, graphs and tables, but free from elements of plagiarism. • Poor/E (<50) : Failed to fulfill the requirements
Study and examination requirements	Minimum attendance requirement 80% from total lecture Assessment is carried out based on written examinations, assessment/evaluation of the learning process and performance with the following components: Final Examination: 30% Midterm Examination: 30% Lab Work: 25% Structured Assignment: 10% Quiz: 5% Study and Examination Requirement Students must attend 15 minutes before the class starts. Students must switch off all electronic devices. Students must inform the lecturer if they will not attend the class due to sickness, etc. Students must submit all class assignments before the deadline. Students must attend the exam to get final grade
Reading list	1. Marriot, N.G. 1985. Principles of Food Sanitation. An CIVI Book, Published by van Nostrand Reinhold Company. New York. 2. Winarno, F.G dan B.S. Laksmi. 1974. Dasar Pengawetan, Sanitasi dan Keracunan. Fateta. IPB. Bogor. 3. Winarno, F.G. 2002. GMP Cara Pengolahan Pangan Yang Baik. M-Brio Press. Bogor. 4. Fardiaz, S. 1996. Prinsip HACCP dalam Industri Pangan. Diktat. IPB. Bogor. 5. Sofiah, B. D. Dan E. Sukarminah. 2008. Bahan Ajar Sanitasi dan Keamanan Pangan. Jurusan Teknologi Industri Pertanian. Universitas Padjadjaran 6. Widjaja, B.K. Higiene dan Sanitasi Perusahaan. 1992. C.V. Sinar Harapan



**PADJADJARAN UNIVERSITY
FACULTY OF AGRO-INDUSTRIAL
TECHNOLOGY
FOOD TECHNOLOGY STUDY
PROGRAM**

**COURSE CODE:
N10B183128**

Module designation	Quality Control, HACCP and Food Regulation
Semester(s) in which the module is taught	6
Person responsible for the module	1. Dr. Ir. Debby M. Sumanti, MS. 2. In-In Hanidah, S.TP., M.Sc. 3. Dr. Mahani
Language	Indonesian and English
Relation to curriculum	Compulsory Course
Teaching methods	1. Interactive Learning 2. Small Group Discussion 3. Cooperative Learning 4. Project Based Learning 5. Focus Group Discussion
Workload	Credits : 4 (3-1) Total workload: 158,67 hours Class Lecture: 3 x 50' x 14 weeks = 35 hours Assignment: 3 x 60' x 14 weeks = 42 hours Independent study: 3 x 60' x 14 weeks = 42 hours Laboratory practice Laboratory session: 1 x 100' x 14 weeks = 23,33 hours Independent study: 1 x 70' x 14 weeks = 16 hours Examination Midterm Examination: 4 x 50' x 1 weeks = 3.33 hours Final Examination: 4 x 50' x 1 weeks = 3.33 hours
Credit points	6.4 ECTS
Required and recommended prerequisite for joining the modul	Statistics

Module objectives/intended learning outcomes	After completing lectures with topics in Quality Control and Food Law, students will be able to: 1. Understand the meaning of quality and food quality classification correctly. 2. Understand the aspects of defects in commodities, pollution, and counterfeiting correctly. 3. Demonstrates appropriate subjective and objective assessment of food quality. 4. Demonstrate quality control in the food industry and take into account the use of statistics in food quality control. 5. Comparing food quality based on graphs and sampling appropriately. 6. Analyse and linking quality assurance and food legislation appropriately. 7. Demonstrate and adjusting food quality control with National Quality standardization correctly and halal based on MUI. 8. Describe the quality standards of various food products, both raw materials, and processed materials. 9. Determine CCP in one production system 10. Design and plan quality control in a food industry
Content	1. Study contract 2. Definition of quality 3. Characteristics of food quality 4. Food quality classification 5. Food Safety (Chemical, physical, biological, and microbiological aspects) 6. The relationship between the quality control department and the R&D, production, and marketing divisions in a food industry 7. Food Safety Control System (GMP, SSOP, GLP) 8. Application of HACCP in the Food Industry 9. Domestic Food Regulations (PIRT, HALAL, MD, ML, SNI) and Overseas 10. Sampling technique 11. Frequency table preparation 12. Variable control chart and its development 13. Quality Standardization 14. Quality Assurance and Food Legislation 15. Quality Standards of Some Food Products 16. Quality control in various food industries
Examination forms	Form Examination: Presentation and Written Paper Assignment Paper rubric: • Excellent/A (80-100): The anatomy of the paper is in accordance with the established

	format, written with the right language rules, with an easy-to-read layout, consistent in the presentation of pictures, graphs and tables, and free from elements of plagiarism, and inspires readers. • Very Good/B (69-79): The anatomy of the paper is in accordance with the established format, written in the correct language rules, with an easy-to-read layout, consistent in the presentation of images, graphs and tables, and free from elements of plagiarism. • Good/C (60-68): The anatomy of the paper is in accordance with the established format, written with proper language conventions, with a layout that is not good, consistent in presenting pictures, graphs and tables, and free from elements of plagiarism. • Fair/D (50-59): The anatomy of the paper is in accordance with the established format, written in the correct language rules, with a layout that is not good, not yet consistent in the presentation of picture, graphs and tables, buty free from elements of plagiarism. • Poor/E (<50) : Failed to fulfill the requirements
Study and examination requirements	Minimum attendance requirement 80% from total lecture Assessment is carried out based on written examinations, assessment/evaluation of the learning process and performance with the following components: Final Examination: 30% Midterm Examination: 30% Practice: 25% Structured Assignment: 10% Quiz: 5% Study and Examination Requirement Students must attend 15 minutes before the class starts. Students must switch off all electronic devices. Students must inform the lecturer if they will not attend the class due to sickness, etc. Students must submit all class assignments before the deadline. Students must attend the exam to get final grade

Reading list	1. Amihud Kramer, Bernard A. Twig. 1970. Quality Control for the Food Industry. The AVI Publishing Company, Westpost - Connecticut. 2. Soewarno T. Soekarno. 1990. Basics of Food Quality Supervision and Standardization. IPB Press, Bogor. 3. Moch. Arfah. 1985. Food Quality Control. 4. Montgomery, Douglas C. 1990. Introduction to Statistical Quality. John Wiley & Sons. Ic.
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**PADJADJARAN UNIVERSITY
FACULTY OF AGRO-INDUSTRIAL
TECHNOLOGY
FOOD TECHNOLOGY STUDY
PROGRAM**

**COURSE CODE:
N10B183130**

Module designation	Fermentation Technology of Foods and Beverages
Semester(s) in which the module is taught	5
Person responsible for the module	1. In-In Hanidah, STP., M.Si. 2. Dr. Ir. Debby M. Sumanti, M.S.
Language	Indonesian and English
Relation to curriculum	Elective Course
Teaching methods	1. Discovery Learning 2. Brainstorming 3. Interactive Learning 4. Collaborative Learning 5. Cooperative Learning 6. Small Group Discussion 7. Problem-Based Learning 8. Project-Based Learning
Workload	Credits : 3 (3-0) Total workload: 119 hours Class Lecture: 3x 50' x 14 weeks = 35 hours Assignment: 3 x 60' x 14 weeks = 42 hours Independent study: 3 x 60' x 14 weeks = 42 hours Examination Midterm Examination: 3 x 50' x 1 weeks = 2.5 hours Final Examination: 3 x 50' x 1 weeks = 2.5 hours
Credit points	4.8 ECTS
Required and recommended prerequisite for joining the modul	Food Microbiology, Fermentation Technology
Module objectives/intended learning outcomes	After completing the course with the topics of Food and Beverage Fermentation Technology students can: 1. Students understand the definition of fermentation and the factors that influence fermentation. 2. Students can explain the classification of fermentation. 3. Students can describe the changes during fermentation.

	4. Students can distinguish the stages of the fermentation process. 5. Students can compare/distinguish fermentation made from carbohydrates, proteins, and fats such as: vegetable fermentation, grain fermentation, milk fermentation, meat and fish fermentation, and alcoholic beverage fermentation.
Content	1. Study contract 2. Introduction and Definition of Fermentation 3. Factors Affecting Fermentation 4. Fermentation Classification 5. The Role of Microorganisms and Enzymes in the Fermentation Process 6. Fermented Beans 7. Fermented Vegetables 8. Milk Fermentation 9. Fermented Cereals and Sweet Potatoes 10. Symbiotic: Probiotics and Prebiotics 11. Fermented Fruits 12. Fermented Alcoholic Beverages 13. Fish Fermentation 14. Meat Fermentation 15. Food and Beverage Fermentation of Food Waste Raw Materials
Examination forms	Form Examination: Presentation and Written Paper Assignment Paper rubric: • Excellent/A (80-100): The anatomy of the paper is in accordance with the established format, written with the right language rules, with an easy-to-read layout, consistent in the presentation of pictures, graphs and tables, and free from elements of plagiarism, and inspires readers. • Very Good/B (69-79): The anatomy of the paper is in accordance with the established format, written in the correct language rules, with an easy-to-read layout, consistent in the presentation of images, graphs and tables, and free from elements of plagiarism. • Good/C (60-68): The anatomy of the paper is in accordance with the established format, written with proper language conventions, with a layout that is not good, consistent in presenting pictures, graphs and tables, and free from elements of plagiarism. • Fair/D (50-59): The anatomy of the paper is in accordance with the established format, written

	in the correct language rules, with a layout that is not good, not yet consistent in the presentation of picture, graphs and tables, but free from elements of plagiarism. • Poor/E (<50) : Failed to fulfill the requirements
Study and examination requirements	Minimum attendance requirement 80% from total lecture Assessment is carried out based on written examinations, assessment/evaluation of the learning process and performance with the following components: Final Examination: 35% Midterm Examination: 35% Structured Assignment: 20% Quiz: 10% Study and Examination Requirement Students must attend 15 minutes before the class starts. Students must switch off all electronic devices. Students must inform the lecturer if they will not attend the class due to sickness, etc. Students must submit all class assignments before the deadline. Students must attend the exam to get final grade
Reading list	1. Martin R. Adams and Maurice O. Moss. 2008. Food Microbiology. 3rd Edition. The Royal Society of Chemistry Publishing. UK. 2. Lahtinen, Sampo., Artur C., Ouwehand. Seppo Salminen, Atte Von Wright. 2012 Lactid Acid Bacteria. Fourth Edition. CRC Press. 3. Cho, Susan Sungsoo and E. Terry. 2010. Handbook of Prebiotics and Probiotics Ingredients. CRC Press. Francis. 4. Hutkins, Robert W. 2006. Microbiology and Technology of Fermented Foods. IFT Book Communications Committee. Blackwell Publishing.



**PADJADJARAN UNIVERSITY
FACULTY OF AGRO-INDUSTRIAL
TECHNOLOGY
FOOD TECHNOLOGY STUDY
PROGRAM**

**COURSE CODE:
N10B183131**

Module designation	Food Biotechnology
Semester(s) in which the module is taught	5
Person responsible for the module	1. Tri Yuliana, S.Si, M.Si, Ph. D 2. Dr. Tita Rialita, S.Si., M.Si 3. Dr. Gilang Lara Utama, SP, M.Si
Language	Indonesian and English
Relation to curriculum	Elective Course
Teaching methods	1. Interactive Learning 2. Cooperative Learning 3. Problem-Based Learning 4. Focus Group Discussion 5. Project-Based Learning
Workload	Credits : 3 (3-0) Total workload: 119 hours Class Lecture: 3x 50' x 14 weeks = 35 hours Assignment: 3 x 60' x 14 weeks = 42 hours Independent study: 3 x 60' x 14 weeks = 42 hours Examination Midterm Examination: 3 x 50' x 1 weeks = 2.5 hours Final Examination: 3 x 50' x 1 weeks = 2.5 hours
Credit points	4.8 ECTS
Required and recommended prerequisite for joining the modul	Biology
Module objectives/intended learning outcomes	1. Demonstrate the newest application and the development of food biotechnology and agricultural 2. Analysis of molecular biotechnology, the process of gene mutation and gene transfer 3. Analysis the products of genetically modified food 4. Evaluate the metagenomic method and applications 5. Evaluate the production process and

	application of food biotechnology products
Content	1. Newest Development of food biotechnology 2. Explain molecular biotechnology 3. Gene mutation and transfer 4. Metagenomic Method and Applications 5. Fermented organic products and processes in food biotechnology 6. Genetically modified food products 7. Probiotics for functional food applications 8. The production process and benefits of lactic acid 9. The production of SCO (Single Cell Oil)
Examination forms	Form Examination: Presentation and Written Paper Assignment Paper rubric: • Excellent/A (80-100): The anatomy of the paper is in accordance with the established format, written with the right language rules, with an easy-to-read layout, consistent in the presentation of pictures, graphs and tables, and free from elements of plagiarism, and inspires readers. • Very Good/B (69-79): The anatomy of the paper is in accordance with the established format, written in the correct language rules, with an easy-to-read layout, consistent in the presentation of images, graphs and tables, and free from elements of plagiarism. • Good/C (60-68): The anatomy of the paper is in accordance with the established format, written with proper language conventions, with a layout that is not good, consistent in presenting pictures, graphs and tables, and free from elements of plagiarism. • Fair/D (50-59): The anatomy of the paper is in accordance with the established format, written in the correct language rules, with a layout that is not good, not yet consistent in the presentation of picture, graphs and tables, but free from elements of plagiarism. • Poor/E (<50) : Failed to fulfill the requirements

Study and examination requirements	Minimum attendance requirement 80% from total lecture Assessment is carried out based on written examinations, assessment/evaluation of the learning process and performance with the following components: Final Examination: 35% Midterm Examination: 35% Structured Assignment: 20% Quiz: 10% Study and Examination Requirement Students must attend 15 minutes before the class starts. Students must switch off all electronic devices. Students must inform the lecturer if they will not attend the class due to sickness, etc. Students must submit all class assignments before the deadline. Students must attend the exam to get final grade
Reading list	1. Ray, R., 2016. Advances in Food Biotechnology 2. Sofiah, BD, T. Rialita. 2008. Food Biotechnology Teaching Materials. Department of Food Industry Technology. Faculty of Agricultural Industrial Technology. Padjadjaran University. 3. Crueger, W., & A. Crueger. 1984. Biotechnology: A Textbook of Industrial Microbiology. Sinauer Asso. Ins., Madison 4. Demain, AL and NA Solomon. 1986. Manual of Industrial Microbiology and Biotechnology. American Society for Microbiology. Washington DC 5. Prave, P., U. Faust W. Sittig and DA Sukatsch. 1987. Fundamentals of Biotechnology. VCH Verlagsgesellsch. Weinheim



**PADJADJARAN UNIVERSITY
FACULTY OF AGRO-INDUSTRIAL
TECHNOLOGY
FOOD TECHNOLOGY STUDY
PROGRAM**

**COURSE CODE:
N10B183131**

Module designation	Microbial and Enzyme Technology
Semester(s) in which the module is taught	5
Person responsible for the module	1. Tri Yuliana, S.Si, M.Si, Ph. D 2. Dr. Tita Rialita, S.Si.,M.Si 3. Bambang Nurhadi, Ph.D
Language	Indonesian and English
Relation to curriculum	Elective Course
Teaching methods	1. Interactive Learning 2. Focus Group Discussion 3. Project-Based Learning 4. Practicum
Workload	Credits : 3 (3-0) Total workload: 119 hours Class Lecture: 3x 50' x 14 weeks = 35 hours Assignment: 3 x 60' x 14 weeks = 42 hours Independent study: 3 x 60' x 14 weeks = 42 hours Examination Midterm Examination: 3 x 50' x 1 weeks = 2.5 hours Final Examination: 3 x 50' x 1 weeks = 2.5 hours
Credit points	4.8 ECTS
Required and recommended prerequisite for joining the modul	Food Microbiology
Module objectives/intended learning outcomes	After completing lectures with topics in Enzyme and Microbial Technology, students will be able to: 1. Understand the role of enzyme in food processing, different types of enzymes. 2. Explain enzyme production from genetic modification. 3. Differentiate the use of enzymes based on the food matrix. 4. Explain and demonstrate the role of enzymes in food product. 5. Analyze and design the application enzymes in food industry.

Content	1. Study contract + introduction 2. Enzymes encapsulation and its application in food processing 3. Enzymes in starch modification 4. Enzymes in protein modification 5. Enzymes in bread, pasta, and noodle products 6. Enzymes in dairy product processing 7. Enzymes in fruit processing and extraction genetic modification of microorganisms for enzyme production
Examination forms	Form Examination: Presentation and Written Paper Assignment Paper rubric: • Excellent/A (80-100): The anatomy of the paper is in accordance with the established format, written with the right language rules, with an easy-to-read layout, consistent in the presentation of pictures, graphs and tables, and free from elements of plagiarism, and inspires readers. • Very Good/B (69-79): The anatomy of the paper is in accordance with the established format, written in the correct language rules, with an easy-to-read layout, consistent in the presentation of images, graphs and tables, and free from elements of plagiarism. • Good/C (60-68): The anatomy of the paper is in accordance with the established format, written with proper language conventions, with a layout that is not good, consistent in presenting pictures, graphs and tables, and free from elements of plagiarism. • Fair/D (50-59): The anatomy of the paper is in accordance with the established format, written in the correct language rules, with a layout that is not good, not yet consistent in the presentation of picture, graphs and tables, but free from elements of plagiarism. • Poor/E (<50) : Failed to fulfill the requirements

Study and examination requirements	Minimum attendance requirement 80% from total lecture Assessment is carried out based on written examinations, assessment/evaluation of the learning process and performance with the following components: Final Examination: 35% Midterm Examination: 35% Structured Assignment: 20% Quiz: 10% Study and Examination Requirement Students must attend 15 minutes before the class starts. Students must switch off all electronic devices. Students must inform the lecturer if they will not attend the class due to sickness, etc. Students must submit all class assignments before the deadline. Students must attend the exam to get final grade
Reading list	1. Enzymes in Food Technology. 2002. R.J. Whitehurst and B.A. Law (eds). CRC Press. Sheffield. 2. Microbial Enzyme Technology in Food Applications. R.C.Ray and C.M. Ronsell (eds). 2017. CRC Press. Boca Raton.



**PADJADJARAN UNIVERSITY
FACULTY OF AGRO-INDUSTRIAL
TECHNOLOGY
FOOD TECHNOLOGY STUDY
PROGRAM**

**COURSE CODE:
N10B183131**

Module designation	Environmental Biotechnology
Semester(s) in which the module is taught	6
Person responsible for the module	1. Tri Yuliana, S.Si, M.Si, Ph. D 2. Dr. Gemilang Lara Utama S., S.Pt.,MIL
Language	Indonesian and English
Relation to curriculum	Elective Course
Teaching methods	1. Interactive Learning 2. Self-Directed Learning 3. Collaborative Learning 4. Discovery Learning 5. Focus Group Discussion 5. Project-Based Learning
Workload	Credits : 3 (3-0) Total workload: 119 hours Class Lecture: 3x 50' x 14 weeks = 35 hours Assignment: 3 x 60' x 14 weeks = 42 hours Independent study: 3 x 60' x 14 weeks = 42 hours Examination Midterm Examination: 3 x 50' x 1 weeks = 2.5 hours Final Examination: 3 x 50' x 1 weeks = 2.5 hours
Credit points	4.8 ECTS
Required and recommended prerequisite for joining the modul	Food Microbiology, Food Waste Handling
Module objectives/intended learning outcomes	Students are able to identify, analyze, formulate and design the use of food industry by-products with an environmentally friendly and sustainable approach

Content	1. Get to know the characteristics of food industry by-products and their potential utilization 2. Able to understand microbiological approaches in the use of food industry by-products 3. Analyze the extent of the role of microorganisms such as mold, bacteria and yeast in the use of by-products in the food industry 4. Able to characterize the types of food industry by-products and determine the microbiological approach that can be used to produce enzymes 5. Able to explain and demonstrate the properties of food industry by-products and design microbiological approaches that can be used to produce bioactive peptides 6. Able to compare various types of by-products and choose the appropriate microbiological approach to produce functional metabolites 7. Able to design a microbiological approach that is environmentally friendly and sustainable so as to support improving the status of the food industry in relation to global issues
Examination forms	Form Examination: Presentation and Written Paper Assignment Paper rubric: • Excellent/A (80-100): The anatomy of the paper is in accordance with the established format, written with the right language rules, with an easy-to-read layout, consistent in the presentation of pictures, graphs and tables, and free from elements of plagiarism, and inspires readers. • Very Good/B (69-79): The anatomy of the paper is in accordance with the established format, written in the correct language rules, with an easy-to-read layout, consistent in the presentation of images, graphs and tables, and free from elements of plagiarism. • Good/C (60-68): The anatomy of the paper is

	in accordance with the established format, written with proper language conventions, with a layout that is not good, consistent in presenting pictures, graphs and tables, and free from elements of plagiarism. • Fair/D (50-59): The anatomy of the paper is in accordance with the established format, written in the correct language rules, with a layout that is not good, not yet consistent in the presentation of picture, graphs and tables, but free from elements of plagiarism. • Poor/E (<50) : Failed to fulfill the requirements
Study and examination requirements	Minimum attendance requirement 80% from total lecture Assessment is carried out based on written examinations, assessment/evaluation of the learning process and performance with the following components: Final Examination: 35% Midterm Examination: 35% Structured Assignment: 20% Quiz: 10% Study and Examination Requirement Students must attend 15 minutes before the class starts. Students must switch off all electronic devices. Students must inform the lecturer if they will not attend the class due to sickness, etc. Students must submit all class assignments before the deadline. Students must attend the exam to get final grade
Reading list	1. Utilization of by-products and treatment of waste in the food industry, Oropoulou and Russ, 2007, Springer 2. Handbook of waste management and co-product recovery in food processing V.1, Keith Waldron, 2007, CRC Press 3. Waste treatment in the food processing industry, Wang et al., 2005, CRC Press 4. Waste management for the food industries, Steve L. Taylor, 2008, Elsevier 5. Managing food industry waste, Zall, 2004, Blackwell Publishing

Module Handbook Food Technology Program

	PADJADJARAN UNIVERSITY FACULTY OF AGRO-INDUSTRIAL TECHNOLOGY FOOD TECHNOLOGY STUDY PROGRAM	COURSE CODE: N10B183240
Module designation	Food Packaging and Storage	
Semester(s) In which the module is taught	6	
Person responsible for the module	1. Dr. Souvia Rahimah, S.T.P., M.Sc 2. Dr. Heni Radiani Arifin, S.T.P., M.P. 3. Dr. Rossi Indarto, S.T.P., M.P. 4. Dr. Herlina Marta, STP., M.Si.	
Language	Indonesian and English	
Relation to curriculum	Compulsory course	
Teaching methods	1. Lecture, 2. Discussion, 3. Exploration	
Workload	Total workload: 119 hours Class Lecture: 2 x 50' x 14 weeks = 23,33 hours Assignment: 2 x 60' x 14 weeks = 28 hours Independent study: 2 x 60' x 14 weeks = 28 hours Laboratory practice Laboratory session: 1 x 100' x 14 weeks = 23,33 hours Independent study: 1 x 70' x 14 weeks = 16 hours Examination Midterm Examination: 3 x 50' x 1 weeks = 2,5 hours Final Examination: 3 x 50' x 1 weeks = 2.5 hours	
Credit points	4.8 ECTS	
Required and recommended prerequisite for joining the modul	Principle of Food Technology and Food Processing Technology	
Module objectives/intended learning outcomes	1. Students are able to understand the basic concepts of food packaging. 2. Students are able to explain food packaging materials and the factors that influence them. 3. Students are able to understand graphic design labeling and shelf-life on food packaging. 4. Students are able to analyze the suitability of packaging for various food products. 5. Students are able to analyze the technical and microbiological aspects of food storage. 6. Students are able to determine and design food packaging according to standards and its function.	

Content	1. Study Contract and General Explanation 2. Introduction 3. Packaging Development 4. Glass Packaging 5. Metal Packaging 6. Aluminum Packaging 7. Plastic Packaging 8. Paper and carton packaging 9. Composite Packaging 10. Migration of packaged substances 11. Smart Packaging 12. Labeling 13. Open Shelf-Life Dating 14. Graphic Design on Food Packaging 15. Packaging of Some Foodstuffs 16. Packaging of Some Foodstuffs
Examination forms	Form Examination: Presentation and Written paper, Practice ● Excellent/A (80-100): The anatomy of the paper is in accordance with the established format, written with the right language rules, with an easy-to-read layout, consistent in the presentation of pictures, graphs and tables, and free from elements of plagiarism, and inspires readers. ● Very Good/B (69-79): The anatomy of the paper is in accordance with the established format, written in the correct language rules, with an easy-to-read layout, consistent in the presentation of images, graphs and tables, and free from elements of plagiarism. ● Good/C (60-68): The anatomy of the paper is in accordance with the established format, written with proper language conventions, with a layout that is not good, consistent in presenting pictures, graphs and tables, and free from elements of plagiarism. Fair/D (50-59): The anatomy of the paper is in accordance with the established format, written in the correct language rules, with a
Study and examination requirements	Minimum attendance requirement 80% from total lecture Assessment is carried out based on written examinations, assessment/evaluation of the learning process and performance with the following components: Final Examination: 30% Midterm Examination: 30% Lab Work: 25% Structured Assignment: 10% Quiz: 5%

Reading list	1. Hendrasty, H. K. (2021). Pengemasan dan penyimpanan bahan pangan (<i>Edisi ke-2</i>). Graha Ilmu. 2. Syarief, R., dkk. (2023). Pengemasan pangan (<i>Edisi ke-3</i>). Universitas Terbuka. 3. Saha, N. C., Ghosh, A. K., Garg, M., & Dey Sadhu, S. (2022). Food packaging: Materials, techniques and environmental issues. Springer. 4. Coles, R., McDowel, D., and M.J. Kirwan. 2003. Food Packaging Technology. Blackwell Publishing and CRC Press, Boca Raton, FL. 5. Ahvenainen, R. 2003. Novel Food Packaging Technique. CRC Press, Boca Raton, FL 6. Blanchfield.R., 2000. Food Labelling. Woodhead Publishing Limited,Cambridge,England
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Module Handbook Food Technology Program

	PADJADJARAN UNIVERSITY FACULTY OF AGRO-INDUSTRIAL TECHNOLOGY FOOD TECHNOLOGY STUDY PROGRAM	COURSE CODE: N10B183243
Module designation	New Product Development	
Semester(s) In which the module is taught	6	
Person responsible for the module	1. Souvia Rahimah, 2. Dr. Heni Radiani Arifin, ST.TP., M.P 3. Dr. In In Hanidah 4. Dr. Aldila Din Pangawikan, STP., M.Sc	
Language	Indonesian and English	
Relation to curriculum	Elective course	
Teaching methods	1. Interactive learning 2. Collaborative learning 3. Discovery learning 4. Focus group discussion	
Workload	Total workload: 119 hours Class Lecture: 2 x 50' x 14 weeks = 23,33 hours Assignment: 2 x 60' x 14 weeks = 28 hours Independent study: 2 x 60' x 14 weeks = 28 hours Laboratory practice Laboratory session: 1 x 100' x 14 weeks = 23,33 hours Independent study: 1 x 70' x 14 weeks = 16 hours Examination Midterm Examination: 3 x 50' x 1 weeks = 2,5 hours Final Examination: 3 x 50' x 1 weeks = 2.5 hours	
Credit points	4.8 ECTS	
Required and recommended prerequisite for joining the modul	Principle of Food Technology and Food Processing Technology	
Module objectives/intended learning outcomes	1. Understand the interrelationship of food science with other disciplines related to new product development. 2. Able to work independently and in a team, build adaptive networks, and be responsible for completing work by supervising and evaluating new product development. 3. Able to apply logical, critical, systematic, and innovative thinking to make sound decisions based on data and information in the context of scientific and technological development in new product development. 4. Able to communicate effectively, both verbally and in writing, within the scientific community and the general public in new product development. 5. Able to produce safe and high-quality food products	

	on an industrial scale through the integrated application of food science and technology principles, including those with other scientific disciplines in new product development.
Content	1. Introduction 2. Fundamentals and important aspects of new product development 3. Strategic planning in new product development 4. New Product Classification 5. Stages of New Product Development 6. Factors influencing product launch 7. Product life cycle 8. Consumer behavior in the acceptance of new products 9. programming (mathematical method) 10. Linear programming (graphic method) 11. The simplex method as a calculation procedure 12. Product Launch 6. Product Evaluation
Examination forms	Form Examination: Presentation and Written paper, Practice ● Excellent/A (80-100): The anatomy of the paper is in accordance with the established format, written with the right language rules, with an easy-to-read layout, consistent in the presentation of pictures, graphs and tables, and free from elements of plagiarism, and inspires readers. ● Very Good/B (69-79): The anatomy of the paper is in accordance with the established format, written in the correct language rules, with an easy-to-read layout, consistent in the presentation of images, graphs and tables, and free from elements of plagiarism. ● Good/C (60-68): The anatomy of the paper is in accordance with the established format, written with proper language conventions, with a layout that is not good, consistent in presenting pictures, graphs and tables, and free from elements of plagiarism. 13. Fair/D (50-59): The anatomy of the paper is in accordance with the established format, written in the correct language rules, with a

Study and examination requirements	Minimum attendance requirement 80% from total lecture Assessment is carried out based on written examinations, assessment/evaluation of the learning process and performance with the following components: Final Examination: 30% Midterm Examination: 30% Lab Work: 25% Structured Assignment: 10% Quiz: 5%
Reading list	1. Toschka, H. Y. (2025). New food product development: Global strategies and practices for successful innovation. CRC Press. 2. Pathania, S., & Tiwari, B. K. (Eds.). (2021). Food formulation: Novel ingredients and processing techniques. John Wiley & Son 3. Brody, A. L. J. B. Lord (ed). 2000. Developing New Product for a Changing Marketplace, Technomic Publishing Co. Inc. Lancaster. Basel. 4. Earle, M., Earle, R., & A. Anderson. 2001. Food Product Development. Woodhead Publishing, Cambridge. 5. Winger, R & G. Wall. 2006. Food product innovation. FAO, Rome. 6. Supranto, I. 1983. Linear programming. Lembaga Penerbit Fakultas Ekonomi Universitas Indonesia. Jakarta.

Module Handbook Fisheries Program

	PADJADJARAN UNIVERSITY FACULTY OF AGRO-INDUSTRIAL TECHNOLOGY FOOD TECHNOLOGY STUDY PROGRAM	COURSE CODE: N10B183134
Module designation	Processing Technology of Bread and Cake	
Semester(s) In which the module is taught	6	
Person responsible for the module	1. Dr. Rossi Indiarto, STP., MP. 2. Heni Radiani, STP, MP., 3. Vira Putri Yarlina, STP., MSi.	
Language	Indonesian and English	
Relation to curriculum	Elective course	
Teaching methods	1. Lecture 2. Class discussion 3. Assignments 4. Video 5. Reference exploration	
Workload	Total workload: 119 hours Class Lecture: 2 x 50' x 14 weeks = 23,33 hours Assignment: 2 x 60' x 14 weeks = 28 hours Independent study: 2 x 60' x 14 weeks = 28 hours Laboratory practice Laboratory session: 1 x 100' x 14 weeks = 23,33 hours Independent study: 1 x 70' x 14 weeks = 16 hours Examination Midterm Examination: 3 x 50' x 1 weeks = 2,5 hours Final Examination: 3 x 50' x 1 weeks = 2.5 hours	
Credit points	4.8 ECTS	
Required and recommended prerequisite for joining the modul	-	
Module objectives/intended learning outcomes	1. Students are able to explain the basic principles of food science that support food processing technology. 2. Students are able to master the principles of food processing technology based on local and imported ingredients. 3. Students are able to apply food technology	

	principles to produce safe and high-quality food products. - Students are able to analyze and solve food technology problems based on data and information. - Students are able to effectively communicate the results of their scientific thinking and work in writing and orally.
Content	- Principles of baking technology - Main and supporting ingredients in baking technology - Bakery dough process - Yeast bread technology - Quick bread technology - Bread baking process - Traditional cake processing technology - Cake and cookies processing technology - Pie and pastry processing technology - Practicum 1: Introduction to baking materials - Practicum 2: Yeastbread technology - Practicum 3: Quickbread technology
Examination forms	Form Examination: Presentation and Written paper, Practice - Excellent/A (80-100): The anatomy of the paper is in accordance with the established format, written with the right language rules, with an easy-to-read layout, consistent in the presentation of pictures, graphs and tables, and free from elements of plagiarism, and inspires readers. - Very Good/B (69-79): The anatomy of the paper is in accordance with the established format, written in the correct language rules, with an easy-to-read layout, consistent in the presentation of images, graphs and tables, and free from elements of plagiarism. - Good/C (60-68): The anatomy of the paper is in accordance with the established format, written with proper language conventions, with a layout that is not good, consistent in presenting pictures, graphs and tables, and free from elements of plagiarism. 12. Fair/D (50-59): The anatomy of the paper is in accordance with the established format, written in the correct language rules, with a
Study and examination requirements	Minimum attendance requirement 80% from total lecture Assessment is carried out based on written examinations, assessment/evaluation of the learning process and performance with the following components: Final Examination: 30%

	Midterm Examination: 30% Lab Work: 25% Structured Assignment: 10% 13. Quiz: 5%
Reading list	1. Gisslen, W. (2022). <i>Professional baking</i> (8th ed.). John Wiley & Sons. 2. Marleen,S.Herudiyanto dan Saripah Hudaya,. 2009. Teknologi Pengolahan Roti Dan Kue. Widya Padjadjaran, Jakarta. 3. Lange, M.dan Bogasari Baking Centre. 2004. Roti.Teori dan Resep Internasional. PT. Gaya Favorit Press, Jakarta 4. Cauvain, S. P. (2023). <i>Baking problems solved</i> (2nd ed.). Woodhead Publishing/Elsevier. 5. Reputable International Journal 6. Food Review magazine

Module Handbook Food Technology Program

	PADJADJARAN UNIVERSITY FACULTY OF AGRO-INDUSTRIAL TECHNOLOGY FOOD TECHNOLOGY STUDY PROGRAM	COURSE CODE: N10B183136
Module designation	Processing Technology of Chocolate and Confectionary	
Semester(s) In which the module is taught	6	
Person responsible for the module	1. Dr. Rossi Indarto, STP., MP. 2. Dr. Aldila Din Pangawikan, STP., M.Sc. 3. Vira Putri Yarlina, STP., MS	
Language	Indonesian and English	
Relation to curriculum	Elective course	
Teaching methods	1. Lecturer 2. Small Group Discussion 3. Exploration 4. Practice	
Workload	Total workload: 119 hours Class Lecture: 2 x 50' x 14 weeks = 23,33 hours Assignment: 2 x 60' x 14 weeks = 28 hours Independent study: 2 x 60' x 14 weeks = 28 hours Laboratory practice Laboratory session: 1 x 100' x 14 weeks = 23,33 hours Independent study: 1 x 70' x 14 weeks = 16 hours Examination Midterm Examination: 3 x 50' x 1 weeks = 2,5 hours Final Examination: 3 x 50' x 1 weeks = 2.5 hours	
Credit points	4.8 ECTS	
Required and recommended prerequisite for joining the modul	Food Processing Technology	
Module objectives/intended learning outcomes	1. Students are able to explain the principles of food processing technology, particularly chocolate and confectionery products, scientifically and systematically. 2. Students are able to analyze raw materials and chocolate and confectionery processing technology accurately and effectively. 3. Students are able to apply and evaluate various processing techniques, including printing and coating chocolate and confectionery products. 4. Students are able to analyze packaging storage systems and the health implications of consuming	

	confectionery products. 5. Students are able to convey research results and innovative confectionery products, both orally and in writing, in a scientific and communicative manner.
Content	1. History/development of chocolate and confectionery 2. Ingredients for making confectionery 3. Confectionery processing methods 4. Confectionery printing 5. Manufacture of types of confectionery and edible coating 6. Chocolate and chocolate confectionery processing 7. Chocolate coating 8. The processing method of chocolate-coated chocolate bar and confectionery products 9. Chocolate and confectionery packaging and storage Problems related to confectionery consumption
Examination forms	Form Examination: Presentation and Written paper, Practice ● Excellent/A (80-100): The anatomy of the paper is in accordance with the established format, written with the right language rules, with an easy-to-read layout, consistent in the presentation of pictures, graphs and tables, and free from elements of plagiarism, and inspires readers. ● Very Good/B (69-79): The anatomy of the paper is in accordance with the established format, written in the correct language rules, with an easy-to-read layout, consistent in the presentation of images, graphs and tables, and free from elements of plagiarism. ● Good/C (60-68): The anatomy of the paper is in accordance with the established format, written with proper language conventions, with a layout that is not good, consistent in presenting pictures, graphs and tables, and free from elements of plagiarism. 10. Fair/D (50-59): The anatomy of the paper is in accordance with the established format, written in the correct language rules, with a
Study and examination requirements	Minimum attendance requirement 80% from total lecture Assessment is carried out based on written examinations, assessment/evaluation of the learning process and performance with the following components: Final Examination: 30% Midterm Examination: 30% Lab Work: 25% Structured Assignment: 10% 11. Quiz: 5%

Reading list	1. Hartel, R. W., von Elbe, J. H., & Hofberger, R. (2018). <i>Confectionery science and technology</i>. Springer. 2. Hartel, R. W., von Elbe, J. H., & Hofberger, R. (2018). <i>Confectionery Science and Technology</i>. 3. Beckett, S. T. (2018). <i>The Science of Chocolate</i>. 4. Wang, H., & Xu, Y. (2023). <i>Handbook of Bakery and Confectionery Technology</i>. 5. Afoakwa, E. 2010. <i>Chocolate Science and Technology</i>, Wiley Blackwell, Ames, Iowa. 6. Tjahjadi, C., S. Rahimah., dan H. Marta. 2008. <i>Teknologi Pengolahan Cokelat dan Kembang Gula</i>. Jurusan Teknologi Industri Pangan, Fakultas Teknologi Industri Pertanian, UNPAD, Jatinangor.
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Module Handbook Fisheries Program

	PADJADJARAN UNIVERSITY FACULTY OF AGRO-INDUSTRIAL TECHNOLOGY FOOD TECHNOLOGY STUDY PROGRAM	COURSE CODE: N10B183251
Module designation	Processing Technology of Coffee, Tea, and Cocoa	
Semester(s) In which the module is taught	6	
Person responsible for the module	1. Dr.Ir. .Mohamad Djali, MS., 2. Dr. Rossi Indarto, STP, MP., 3. Dr.Heni Radiani Arifin, STP, M.P.	
Language	Indonesian and English	
Relation to curriculum	Elective course	
Teaching methods	1. Lecturer 2. Small Group Discussion 3. Interactive learning 4. Discovery Learning 5. Project base learning 6. Presentation of Observations	
Workload	Total workload: 119 hours Class Lecture: 2 x 50' x 14 weeks = 23,33 hours Assignment: 2 x 60' x 14 weeks = 28 hours Independent study: 2 x 60' x 14 weeks = 28 hours Laboratory practice Laboratory session: 1 x 100' x 14 weeks = 23,33 hours Independent study: 1 x 70' x 14 weeks = 16 hours Examination Midterm Examination: 3 x 50' x 1 weeks = 2,5 hours Final Examination: 3 x 50' x 1 weeks = 2.5 hours	
Credit points	4.8 ECTS	
Required and recommended prerequisite for joining the modul	Processing Technology of Coffee, Tea, and Cocoa	

Module objectives/intended learning outcomes	1. Able to master and explain the principles of coffee, tea, and cocoa processing science and technology. 2. Able to apply logical, critical, systematic, and innovative thinking in describing the chemical components and their roles in coffee, tea, and cocoa final products. 3. Able to communicate effectively both verbally and in writing within the community, analyzing the harvesting, post-harvest, packaging, and processing of coffee, tea, and cocoa commodities. 4. Able to work independently and in a team to evaluate changes that occur at each stage of the coffee, tea, and cocoa processing process. 5. Able to plan and be skilled in processing various types of products derived from coffee, tea, and cocoa to produce safe and high-quality products.
Content	1. Introduction (Definition of spices, history, role, and potential of spices) and explanation of the learning contract 2. Components, functional properties, and quality of spices 3. Harvesting, post-harvest handling types of spices 4. Spice seed processing technology (Pepper, cardamom) 5. Spice processing technology of flower and fruit parts (Clove and vanilla) 6. Tuber spices (Onions) 7. Presentation of 1st group assignment 9. Processing Technology of root part spices (ginger/turmeric/kencur) 10. Processing technology of stem spices (cinnamon) 11. Advanced processing technology of stem spices

	(sappan wood, mesoyi wood) 11. 12. Leaf part spice processing technology (mint leaves, basil, moringa) 13. Application of spices in seasoning processing 14. Spice extraction and encapsulation process 15. Presentation of 2nd group assignment
Examination forms	Form Examination: Presentation and Written paper, Practice ● Excellent/A (80-100): The anatomy of the paper is in accordance with the established format, written with the right language rules, with an easy-to-read layout, consistent in the presentation of pictures, graphs and tables, and free from elements of plagiarism, and inspires readers. ● Very Good/B (69-79): The anatomy of the paper is in accordance with the established format, written in the correct language rules, with an easy-to-read layout, consistent in the presentation of images, graphs and tables, and free from elements of plagiarism. ● Good/C (60-68): The anatomy of the paper is in accordance with the established format, written with proper language conventions, with a layout that is not good, consistent in presenting pictures, graphs and tables, and free from elements of plagiarism. ● Fair/D (50-59): The anatomy of the paper is in accordance with the established format, written in the correct language rules, with a
Study and examination requirements	Minimum attendance requirement 80% from total lecture Assessment is carried out based on written examinations, assessment/evaluation of the learning process and performance with the following components: Final Examination: 30% Midterm Examination: 30% Lab Work: 25% Structured Assignment: 10% Quiz: 5%
Reading list	1. Hii & Borém (2019) – <i>Drying and Roasting of Cocoa and Coffee</i> 2. Putri, S. K., Gunawan, M. I. F., Faradiani, A. R., & Kurniati, D. (2025). <i>Teknologi kopi, teh, dan kakao</i>. Tidar Press.

	Publisher. 3. Sunyoto, M. 2017. Amazing Tea. Bitread Publishing. 4. Beckett (2018). <i>The Science of Chocolate</i>. 5. Mazumder, R. K. (2022). Tea manufacturing technology and engineering. BlueRose Publishers.
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Module Handbook Food Technology Program

	PADJADJARAN UNIVERSITY FACULTY OF AGRO-INDUSTRIAL TECHNOLOGY FOOD TECHNOLOGY STUDY PROGRAM	COURSE CODE: N10B183252
Module designation	Processing Technology of Eggs and Milk	
Semester(s) In which the module is taught	6	
Person responsible for the module	1. Dr. Souvia Rahimah, STP., M.Sc., 2. Vira Putri, STP., Msi, 3. Dr. Aldila Din Pangawikan, STP., M.Sc	
Language	Indonesian and English	
Relation to curriculum	Elective course	
Teaching methods	1. Lecturer 2. Small Group Discussion 3. Reference Exploration 4. Assignments 5. Video	
	Total workload: 119 hours Class Lecture: 2 x 50' x 14 weeks = 23,33 hours Assignment: 2 x 60' x 14 weeks = 28 hours Independent study: 2 x 60' x 14 weeks = 28 hours Laboratory practice Laboratory session: 1 x 100' x 14 weeks = 23,33 hours Independent study: 1 x 70' x 14 weeks = 16 hours Examination Midterm Examination: 3 x 50' x 1 weeks = 2,5 hours Final Examination: 3 x 50' x 1 weeks = 2.5 hours	
Credit points	4.8 ECTS	
Required and recommended prerequisite for joining the modul	Food Processing Technology	
Module objectives/intended learning outcomes	1. Able to work independently and in a team, build an adaptive work network, and be responsible for completing work by supervising and evaluating the Milk and Egg Processing Technology course. 2. Able to apply logical, critical, systematic, and innovative thinking to make appropriate decisions based on data and information in the context of developing science and technology in the field of milk and egg processing technology. 3. Able to communicate effectively, both verbally and in writing, within the scientific community and the	

	general public. 4. Able to master the principles of Milk and Egg Processing science and technology. 5. Able to produce safe and high-quality milk and egg-based food products on an industrial scale through the integrated application of milk and egg processing science and technology principles, including those from other scientific disciplines.
Content	1. Explanation of the Lecture Contract 2. Egg Overview 3. Identify Egg Quality 4. Egg Microbiology 5. Handling Fresh Eggs 6. Egg Product Processing 7. Introduction of Milk Processing Technology 8. Main Characteristics of Milk 9. Main Components of Milk 10. Milk Colloidal Particles 11. Physical Properties of Milk 12. Milk Microbiology 13. Handling Fresh Milk 14. Dairy Processing 15. Dairy Products Processing 16. Practicum 1: Introduction to Eggs 17. Practicum 2. Introduction to Milk 18. Practicum 3. Milk Processing 19. Practicum 4. Project and Project Presentation: Egg 6. and Milk
Examination forms	Form Examination: Presentation and Written paper, Practice ● Excellent/A (80-100): The anatomy of the paper is in accordance with the established format, written with the right language rules, with an easy-to-read layout, consistent in the presentation of pictures, graphs and tables, and free from elements of plagiarism, and inspires readers. ● Very Good/B (69-79): The anatomy of the paper is in accordance with the established format, written in the correct language rules, with an easy-to-read layout, consistent in the presentation of images, graphs and tables, and free from elements of plagiarism. ● Good/C (60-68): The anatomy of the paper is in accordance with the established format, written with proper language conventions, with a layout that is not good, consistent in presenting pictures, graphs and tables, and free from elements of plagiarism. 11. Fair/D (50-59): The anatomy of the paper is in accordance with the established format, written in the correct language rules, with a

Study and examination requirements	Minimum attendance requirement 80% from total lecture Assessment is carried out based on written examinations, assessment/evaluation of the learning process and performance with the following components: Final Examination: 30% Midterm Examination: 30% Lab Work: 25% Structured Assignment: 10% Quiz: 5%
Reading list	1. Cruz, A. G. da, Pimentel, T. C., Esmerino, E. A., & Verruck, S. (Eds.). (2024). Dairy foods processing. Humana Press. 2. Chavan, R. S., & Goyal, M. R. (Eds.). (2018). Technological interventions in dairy science: Innovative approaches in processing, preservation, and analysis of milk products. Apple Academic Press. 3. Sukarminah, E., T. Rialita, 2008. Bahan Ajar Teknologi Pengolahan Susu dan Telur. Fakultas Teknologi Industri Pertanian UNPAD. Bandung. 4. Stadelman, W. J., & Cotterill, O. J. (2019). Egg science and technology (5th ed.). CRC Press. 5. Mine, Y., Li-Chan, E., & Jiang, B. (Eds.). (2018). Egg innovations and strategies for improvements. Academic Press.

Module Handbook Food Technology Program

	PADJADJARAN UNIVERSITY FACULTY OF AGRO-INDUSTRIAL TECHNOLOGY FOOD TECHNOLOGY STUDY PROGRAM	COURSE CODE: N10B183250
Module designation	Processing Technology of Fat and Oil	
Semester(s) In which the module is taught	6	
Person responsible for the module	1. Dr. Aldila Din Pangawikan, S.TP., M.Sc. 2. Heni Radiani Arifin, STP, MP 3. Dr. Edy Subroto, S.TP., M.Si.	
Language	Indonesian and English	
Relation to curriculum	Elective course	
Teaching methods	1. Lecturer 2. Small Group Discussion 3. Reference Exploration 4. Assignments	
Workload	Total workload: 119 hours Class Lecture: 2 x 50' x 14 weeks = 23,33 hours Assigment: 2 x 60' x 14 weeks = 28 hours Independent study: 2 x 60' x 14 weeks = 28 hours Laboratory practice Laboratory session: 1 x 100' x 14 weeks = 23,33 hours Independent study: 1 x 70' x 14 weeks = 16 hours Examination Midterm Examination: 3 x 50' x 1 weeks = 2,5 hours Final Examination: 3 x 50' x 1 weeks = 2.5 hours	
Credit points	4.8 ECTS	
Required and recommended prerequisite for joining the modul	Food Processing Technology	
Module objectives/intended learning outcomes	1. Knowledge and understanding of basic scientific principles that support expertise in the food sector in its application to Fat and Oil Processing Technology. 2. Able to apply logical, critical, systematic, and innovative thinking in making appropriate decisions based on data and information in the context of developing science and technology in the field of Fat and Oil Processing Technology. 3. Able to master the principles of food science and technology, including food chemistry and analysis, food microbiology, food safety, food regulations, food engineering and processing, food biochemistry, nutrition and health, and applied food science, particularly in Fat and Oil Processing and Technology. 4. Able to produce safe and high-quality food products on an industrial scale through the integrated	

	application of food science and technology principles, including those from other scientific disciplines in the Fat and Oil Processing Technology course. 5. Able to formulate the impact of the implementation or development of food science and technology from a socio-cultural, legal, religious, and environmental perspective in the Fat and Oil Processing Technology course.
Content	1. Explanation of course competencies, methods and strategies, assessment, assessment criteria, SAP, rules, and student grouping. 2. Introduction (Understanding Fats & Oils, Role, and Use of Fats & Oils). 3. Classification of fats, sources of fats and oils 4. Physical Properties of Fats and Oils. 5. Chemical Properties of Fats and Oils. 6. Mechanical and Wet Oil Extraction. 7. Chemically and Enzymatically Crude Oil Extraction. 8. Crude Oil Purification. 9. Quality and Damage of Fats and Oils. 10. Processed Products Based on fats and oils. 11. Practice I: Wet and Enzymatically Making/Extraction of Oil 12. Practice II: Crude Oil Purification 13. Practice III: Making Fat/Oil Based Products (Mayonaes and Salad Dressing) 6. Practice IV: Making Fat/Oil Based Products (Margarine and White Butter)
Examination forms	Form Examination: Presentation and Written paper, Practice ● Excellent/A (80-100): The anatomy of the paper is in accordance with the established format, written with the right language rules, with an easy-to-read layout, consistent in the presentation of pictures, graphs and tables, and free from elements of plagiarism, and inspires readers. ● Very Good/B (69-79): The anatomy of the paper is in accordance with the established format, written in the correct language rules, with an easy-to-read layout, consistent in the presentation of images, graphs and tables, and free from elements of plagiarism. ● Good/C (60-68): The anatomy of the paper is in accordance with the established format, written with proper language conventions, with a layout that is not good, consistent in presenting pictures, graphs and tables, and free from elements of plagiarism. 14. Fair/D (50-59): The anatomy of the paper is in accordance with the established format, written in

	the correct language rules, with a
Study and examination requirements	Minimum attendance requirement 80% from total lecture Assessment is carried out based on written examinations, assessment/evaluation of the learning process and performance with the following components: Final Examination: 30% Midterm Examination: 30% Lab Work: 25% Structured Assignment: 10% Quiz: 5%
Reading list	1. Galanakis, C. M. (Ed.). (2020). Lipids and edible oils: Properties, processing and applications. Academic Press. 2. Gunstone, F. D., & Padley, F. B. (2018). Lipid technologies and applications. Routledge. 3. Ketaren, S. 1992. Pengantar Teknologi Minyak Dan Lemak Pangan. UI-Press Jakarta. 4. Dhull, S. B., Punia, S., & Sandhu, K. S. (2020). Essential fatty acids: Sources, processing effects, and health benefits. CRC Press. 5. Marangoni, A. G., & Wesdorp, L. H. (2023). Structure and properties of fat crystal networks. CRC Press.

Module Handbook Fisheries Program

	PADJADJARAN UNIVERSITY FACULTY OF AGRO-INDUSTRIAL TECHNOLOGY FOOD TECHNOLOGY STUDY PROGRAM		COURSE CODE: N10B183251
Module designation	Processing Technology of Spices		
Semester(s) In which the module is taught	6		
Person responsible for the module	1. Dr.Ir.Mohamad Djali, MS., 2. Dr. Rossi Indiarito, STP, MP., 3. Dr.Heni Radiani Arifin, STP, M.P.		
Language	Indonesian and English		
Relation to curriculum	Elective course		
Teaching methods	1. Lecturer 2. Small Group Discussion 3. Interactive learning 4. Discovery Learning 5. Project base learning 6. Presentation of Observations		
Workload	Total workload: 119 hours Class Lecture: 2 x 50' x 14 weeks = 23,33 hours Assignment: 2 x 60' x 14 weeks = 28 hours Independent study: 2 x 60' x 14 weeks = 28 hours Laboratory practice Laboratory session: 1 x 100' x 14 weeks = 23,33 hours Independent study: 1 x 70' x 14 weeks = 16 hours Examination Midterm Examination: 3 x 50' x 1 weeks = 2,5 hours Final Examination: 3 x 50' x 1 weeks = 2.5 hours		
Credit points	4.8 ECTS		
Required and recommended prerequisite for joining the modul	Processing Technology of Coffee, Tea, and Cocoa		

Module objectives/intended learning outcomes	1. Able to correctly explain and master the principles of spice science and technology. 2. Able to apply logical, critical, systematic, and innovative thinking to accurately illustrate the industrial tree concept of various types of spices. 3. Able to work independently and in teams to analyze the influence of spice characteristics and processing factors on processed spice products. 4. Able to communicate effectively within the community to evaluate the principles of both traditional and modern spice processing technology in various processed spice products. 5. Able to create spices in various food product formulations to produce spice-based products that are safe, high-quality, and accepted on an industrial scale.
Content	1. Introduction (Definition of spices, history, role, and potential of spices) and explanation of the learning contract 2. Components, functional properties, and quality of spices 3. Harvesting, post-harvest handling types of spices 4. Spice seed processing technology (Pepper, cardamom) 5. Spice processing technology of flower and fruit parts (Clove and vanilla) 6. Tuber spices (Onions) 7. Presentation of 1st group assignment 8. Processing Technology of root part spices (ginger/turmeric/kencur) 9. Processing technology of stem spices (cinnamon) 10. Advanced processing technology of stem spices (sappan wood, mesoyi wood) 11. Leaf part spice processing technology (mint leaves, basil, moringa) 12. Application of spices in seasoning processing 13. Spice extraction and encapsulation process 14. Presentation of 2nd group assignment

Examination forms	Form Examination: Presentation and Written paper, Practice ● Excellent/A (80-100): The anatomy of the paper is in accordance with the established format, written with the right language rules, with an easy-to-read layout, consistent in the presentation of pictures, graphs and tables, and free from elements of plagiarism, and inspires readers. ● Very Good/B (69-79): The anatomy of the paper is in accordance with the established format, written in the correct language rules, with an easy-to-read layout, consistent in the presentation of images, graphs and tables, and free from elements of plagiarism. ● Good/C (60-68): The anatomy of the paper is in accordance with the established format, written with proper language conventions, with a layout that is not good, consistent in presenting pictures, graphs and tables, and free from elements of plagiarism. ● Fair/D (50-59): The anatomy of the paper is in accordance with the established format, written in the correct language rules, with a
Study and examination requirements	Minimum attendance requirement 80% from total lecture Assessment is carried out based on written examinations, assessment/evaluation of the learning process and performance with the following components: Final Examination: 30% Midterm Examination: 30% Lab Work: 25% Structured Assignment: 10% Quiz: 5%
Reading list	1. Hossain, M. B., Brunton, N. P., & Rai, D. K. (Eds.). (2020). Herbs, spices and medicinal plants: Processing, health benefits and safety. John Wiley & Sons. 2. Ahmad, R. S. (Ed.). (2021). Herbs and spices: New processing technologies. IntechOpen. 3. Peter, K.V., (2001), "Handbook of Herbs and Spices" Vol.1, CRC Press, Boca Raton Boston, New York Washington DC. 4. Herudiyanto, M dan Indiarto Rosi,(2007).Teknologi Rempah, Widya Padjadjaran. Bandung 5. Sunyoto, M.(2016). Buku Ajar Teknologi Pengolahan Rempah. Unpad Press 6. Marleen Sunyoto, Heni Radiani Arifin, dan Dian Kurniati (2019). Rempah Yang Mendunia (Dari Indonesia yang Menjadi Primadona Dunia). Bitread Press, Bandung.

Module Handbook Food Technology Program

	PADJADJARAN UNIVERSITY FACULTY OF AGRO-INDUSTRIAL TECHNOLOGY FOOD TECHNOLOGY STUDY PROGRAM	COURSE CODE: N10B183126
Module designation	Sensory Evaluation	
Semester(s) In which the module is taught	6	
Person responsible for the module	1. Dr. Souvia Rohimah, STP.,M.Sc. 2. Dr. Rossi Indiarto, STP., MP. 3. Dr. Aldila Din Pangawikan, STP. M.Sc.	
Language	Indonesian and English	
Relation to curriculum	Compulsory course	
Teaching methods	1. Collaborative learning 2. Discovery learning 3. Interactive learning. 4. Focus group discusion	
Workload	Total workload: 119 hours Class Lecture: 2 x 50' x 14 weeks = 23,33 hours Assigment: 2 x 60' x 14 weeks = 28 hours Independent study: 2 x 60' x 14 weeks = 28 hours Laboratory practice Laboratory session: 1 x 100' x 14 weeks = 23,33 hours Independent study: 1 x 70' x 14 weeks = 16 hours Examination Midterm Examination: 3 x 50' x 1 weeks = 2,5 hours Final Examination: 3 x 50' x 1 weeks = 2.5 hours	
Credit points	4.8 ECTS	
Required and recommended prerequisite for joining the modul	Principle of Food Technology and Food Processing Technology	
Module objectives/intended learning outcomes	1. Students are able to explain the relationship between food sensory attributes and food quality and safety through a scientific approach. 2. 2. Students are able to work collaboratively in teams to conduct sensory evaluations, from panelist selection to test implementation to reporting results. 3. Students are able to analyze and make decisions based on sensory test results using appropriate statistical methods. 4. Students are able to prepare reports and present sensory evaluation results scientifically and communicatively.	

Content	5. Practice 2: Threshold and single stimulus test and acceptance test 6. Practice 3: Comparison test and descriptive tes
Examination forms	Form Examination: Presentation and Written paper, Practice ● Excellent/A (80-100): The anatomy of the paper is in accordance with the established format, written with the right language rules, with an easy-to-read layout, consistent in the presentation of pictures, graphs and tables, and free from elements of plagiarism, and inspires readers. ● Very Good/B (69-79): The anatomy of the paper is in accordance with the established format, written in the correct language rules, with an easy-to-read layout, consistent in the presentation of images, graphs and tables, and free from elements of plagiarism. ● Good/C (60-68): The anatomy of the paper is in accordance with the established format, written with proper language conventions, with a layout that is not good, consistent in presenting pictures, graphs and tables, and free from elements of plagiarism. 1. Fair/D (50-59): The anatomy of the paper is in accordance with the established format, written in the correct language rules, with a
Study and examination requirements	Minimum attendance requirement 80% from total lecture Assessment is carried out based on written examinations, assessment/evaluation of the learning process and performance with the following components: Final Examination: 30% Midterm Examination: 30% Lab Work: 25% Structured Assignment: 10% 2. Quiz: 5%
Reading list	1. Stone, H., Bleibaum, R. N., & Thomas, H. A. (2020). Sensory evaluation practices (5th ed.). Academic Press. 2. Lawless, H. T., & Heymann, H. (2019). Sensory evaluation of food: Principles and practices (3rd ed.). Springer. 3. David, W., & David, F. (2020). Analisis sensori lanjut untuk industri pangan dengan R: Preference mapping dan survival analysis. Universitas Bakrie Press. 4. Ahda, Adil Basuki. 1998. Mutu Pangan, Pengukuran, dan Pengendaliannya. IPB. Bogor. 5. Bambang Kartika, dkk. 1988. Pedoman Uji Inderawi Bahan Pangan. Penerbit: PAU Pangan dan Gizi. Universitas Gajah mada. Yogyakarta.

	6. Soekarto, Hubeis. 2000. Metodologi Penilaian Organoleptik. Penerbit IPB. Bogor.
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Module Handbook Food Technology Program

	PADJADJARAN UNIVERSITY FACULTY OF AGRO-INDUSTRIAL TECHNOLOGY FOOD TECHNOLOGY STUDY PROGRAM	COURSE CODE: N10B182222
Module designation	Food Processing Technology	
Semester(s) in which the module is taught	4	
Person responsible for the module	1. Prof. Mohammad Djali, 2. Dr. Herlina Marta, STP., M.Si. 3. Dr. Rossi Indiarto, STP., MP. 4. Dr. Vira Putri Yarlina, STP., M.Si.	
Language	Indonesian/English	
Relation to curriculum	Compulsary Course	
Teaching methods	1. Student Centre Learning 2. Small Group Discussion 3. Problem-Based Learning 4. Project-Based Learning	
Workload	Total workload: 158,67 hours Class Lecture: 3 x 50' x 14 weeks = 35 hours Assigment: 3 x 60' x 14 weeks = 42 hours Independent study: 3 x 60' x 14 weeks = 42 hours Laboratory practice Laboratory session: 1 x 100' x 14 weeks = 23,33 hours Independent study: 1 x 70' x 14 weeks = 16 hours Examination Midterm Examination: 4 x 50' x 1 weeks = 3.33 hours Final Examination: 4 x 50' x 1 weeks = 3.33 hours	
Credit points	6.4 ECTS	
Required and recommended prerequisite for joining the modul	Principles of Food Technology	
Module objectives/intended learning outcomes	1. Students are able to work independently and in teams to develop and implement food processing technology and build networks with the food industry, supervising and evaluating food processes and products. 2. Students are able to apply logical, critical, systematic, and innovative thinking to analyze and solve problems in the field of food processing technology based on accurate scientific data and information. 3. Students are able to communicate effectively, both verbally and in writing, to explain the principles, methods, and results of the	

	application of food processing technology to the scientific community and the general public. - Students are able to master the principles of food science and technology related to food processing. - They are able to produce safe and high-quality food products on an industrial scale through the integrated application of food science and technology principles, including those from other disciplines within the Food Processing Technology course.
Content	- The scope of Food Processing Technology, its application, and the problems that exist in food processing and their impact in Indonesia. - Classification of food processing technology (physical, chemical, microbiological, enzymatic, and sensory), thermal and non-thermal. - The processes that occur at each stage of food processing. - Food spoilage, causative factors, and prevention methods - Process and unit process in food processing - Application of processing technology in society.
Examination forms	Form Examination: Presentation and Written Paper Assignment - Excellent/A (80-100): The anatomy of the paper is in accordance with the established format, written with the right language rules, with an easy-to-read layout, consistent in the presentation of pictures, graphs and tables, and free from elements of plagiarism, and inspires readers. - Very Good/B (69-79): The anatomy of the paper is in accordance with the established format, written in the correct language rules, with an easy-to-read layout, consistent in the presentation of images, graphs
	and tables, and free from elements of plagiarism. - Good/C (60-68): The anatomy of the paper is in accordance with the established format, written with proper language conventions, with a layout that is not good, consistent in presenting pictures, graphs and tables, and free from elements of plagiarism. - Fair/D (50-59): The anatomy of the paper is in accordance with the established format, written in the correct language rules, with a layout that is not good, not yet consistent in the presentation of picture, graphs and tables, but free from elements of plagiarism. - Poor/E (<50): Failed to fulfill the requirement

Study and examination requirements	Minimum attendance requirement 80% from total lecture Assessment is carried out based on written examinations, assessment/evaluation of the learning process and performance with the following components: Final Examination: 30% Midterm Examination: 30% Lab Work: 25% Structured Assignment: 15% Study and Examination Requirement • Students must attend 15 minutes before the class starts. • Students must switch off all electronic devices. • Students must inform the lecturer if they will not attend the class due to sickness, etc. • Students must submit all class assignments before the deadline. Students must attend the exam to get final grade
Reading list	1. Fellows, P. J. (2022). Food processing technology: Principles and practice (5th ed.). Woodhead Publishing, Elsevier. 2. Sunyoto.M, 2017. Teknologi Pengolahan Pangan Aplikasi dan Penerapannya. Unpad Press. 3. Clark, S., Jung, S., & Lamsal, B. (Eds.). (2019). Food processing: Principles and applications (2nd ed.). Wiley. 4. Brown. A. 2000. Understanding Food Principles and Preparation. University of Hawaii

Module Handbook Food Technology Program

	PADJADJARAN UNIVERSITY FACULTY OF AGRO-INDUSTRIAL TECHNOLOGY FOOD TECHNOLOGY STUDY PROGRAM	COURSE CODE: N10B183137
Module designation	Halal Food Product	
Semester(s) in which the module is taught	5	
Person responsible for the module	1. Dr. Souvia Rahimah, STP., M.Si. 2. Tri Yuliana, S.Si., M.Si. 3. Dr. Aldi Din Pangawikan, STP., M.Sc.	
Language	Indonesian/English	
Relation to curriculum	Elective Course	
Teaching methods	1. Student Centre Learning 2. Small Group Discussion 3. Problem-Based Learning 4. Project-Based Learning	
Workload	Total workload: 119 hours Class Lecture: 3x 50' x 14 weeks = 35 hours Assignment: 3 x 60' x 14 weeks = 42 hours Independent study: 3 x 60' x 14 weeks = 42 hours Examination Midterm Examination: 3 x 50' x 1 weeks = 2.5 hours Final Examination: 3 x 50' x 1 weeks = 2.5 hours	
Credit points	4.8 ECTS	
Required and recommended prerequisite for joining the modul	-	
Module objectives/intended learning outcomes	1. Understand the interrelationship between food science and other related disciplines in the halal product process. 2. Able to work independently and in a team, build adaptive work networks, and be responsible for completing work by supervising and evaluating the halal product process. 3. Able to apply logical, critical, systematic, and innovative thinking to make appropriate decisions based on data and information in the context of developing science and	

	technology for halal product processes. 4. Able to communicate effectively, both verbally and in writing, within the scientific community and the general public regarding halal product processes. 5. Able to produce safe and high-quality food products on an industrial scale through the integrated application of food science and technology principles, including those related to other scientific disciplines in the halal product process.
Content	1. Introduction 2. Basic Islamic Law on Halal Food and Synchronization of Halal with Government Regulations 3. Halal Value, Supply Chain and Legal Basis of Sharia Economics 4. Management System and Implementation of Halal Assurance 5. Bureaucratic system and food certification institutions and SJPH 6. Laboratory Techniques and Identification of Halal Food 7. Product Halal Risk Category and List of Non-Critical Materials (Halal Positive List) 8. Halal Food Production Process (PPH) 9. Identification of Pig Products and their derivatives 10. Critical Point of Halal Animal and Vegetable Products 11. Critical Point of Halal Fermentation Products and Biotechnology 12. Critical Point of Halal Product Processing of Ready-to-eat Products and Preserved Products (Food Additives, Flavor) 13. Critical Point of Halal Non-Food Products: Medicine, Cosmetics, Fashion

Examination forms	Form Examination: Presentation and Written Paper Assignment ● Excellent/A (80-100): The anatomy of the paper is in accordance with the established format, written with the right language rules, with an easy-to-read layout, consistent in the presentation of pictures, graphs and tables, and free from elements of plagiarism, and inspires readers. ● Very Good/B (69-79): The anatomy of the paper is in accordance with the established format, written in the correct language rules, with an easy-to-read layout, consistent in the presentation of images, graphs and tables, and free from elements of plagiarism. ● Good/C (60-68): The anatomy of the paper is in accordance with the established format, written with proper language conventions, with a layout that is not good, consistent in presenting pictures, graphs and tables, and free from elements of plagiarism. ● Fair/D (50-59): The anatomy of the paper is in accordance with the established format, written in the correct language rules, with a layout that is not good, not yet consistent in the presentation of picture, graphs and tables, but free from elements of plagiarism. ● Poor/E (<50): Failed to fulfill the requirement
Study and examination requirements	Minimum attendance requirement 80% from total lecture Assessment is carried out based on written examinations, assessment/evaluation of the learning process and performance with the following components: Final Examination: 35% Midterm Examination: 35% Structured Assignment: 30% Study and Examination Requirement ● Students must attend 15 minutes before the class starts. ● Students must switch off all electronic devices. ● Students must inform the lecturer if they will not attend the class due to sickness, etc. ● Students must submit all class assignments before the deadline. Students must attend the exam to get final grade

Reading list	1. YR Al-Teinaz . 2020. The Halal Food Handbook. Editor(s):. Yunes Ramadan Al-Teinaz, Stuart Spear, Ibrahim H. A. 2. Riaz, M. N., & Chaudry, M. M. (2018). Handbook of halal food production. CRC Press. 3. Abd El-Rahim. Wiley Publ., Newyork. 4. Departemen Agama RI. 2009, Himpunan Fatwa Halal Majelis Ulama Indonesia, Direktorat Urusan Agama Islam dan Pembinaan Syariah, Dirjen Bimas Islam, Kementrian Agama RI, Jakarta. 4. Ulama Indonesia, Jakarta: Departemen Agama RI ,2003. 5. Undang-Undang No. 33 Tahun 2014 tentang Jaminan Produk Halal 6. Peraturan Pemerintah No 39 Tahun 2021 tentang Penjelasan Jaminan Produk Halal 7. Undang-Undang Pangan No. 18 Tahun 2012

Module Handbook Food Technology Program

	PADJADJARAN UNIVERSITY FACULTY OF AGRO-INDUSTRIAL TECHNOLOGY FOOD TECHNOLOGY STUDY PROGRAM	COURSE CODE: N10B182115
Module designation	Postharvest Handling of Plant and Animal Products	
Semester(s) in which the module is taught	3	
Person responsible for the module	1. Prof. Dr. Ir. M. Djali, MS. 2. Dr. Herlina Marta, STP, MSi. 3. Dr. Aldila Din Pangawikan, STP, M.Sc. 4. Vira Putri Yarlina, STP, MSi	
Language	Indonesian/English	
Relation to curriculum	Compulsary Course	
Teaching methods	1. Student Centre Learning 2. Small Group Discussion 3. Problem-Based Learning 4. Project-Based Learning	
Workload	Total workload: 158,67 hours Class Lecture: 3 x 50' x 14 weeks = 35 hours Assignment: 3 x 60' x 14 weeks = 42 hours Independent study: 3 x 60' x 14 weeks = 42 hours Laboratory practice Laboratory session: 1 x 100' x 14 weeks = 23,33 hours Independent study: 1 x 70' x 14 weeks = 16 hours Examination Midterm Examination: 4 x 50' x 1 weeks = 3.33 hours Final Examination: 4 x 50' x 1 weeks = 3.33 hours	
Credit points	6.8 ECTS	
Required and recommended prerequisite for joining the modul	-	
Module objectives/intended learning outcomes	1. Able to communicate effectively, both verbally and in writing, to convey information related to activities in the packinghouse, alternative storage and transportation methods, and post-harvest pest and disease control strategies to the scientific community and the general public. 2. Able to work independently and in teams to identify and evaluate the role and scope of post-harvest handling of plant and animal crops, and to build networks with related industries for the supervision and evaluation of post-harvest product quality.	

	3. Able to apply logical, critical, systematic, and innovative thinking in determining harvest criteria and harvesting methods for vegetables, fruits, grains, and tubers based on accurate scientific data and information. 4. Able to master the principles of food science and technology in identifying species of mammals, poultry, and fish commonly consumed by humans and understanding their characteristics in post-harvest handling processes. 5. Able to apply the principles of food science and technology to produce safe and high-quality plant and animal products through proper handling, including the slaughtering process of mammals and poultry, as well as post-cut and post-capture processing techniques.
Content	- Handling of poultry before slaughter - Poultry slaughtering techniques - Handling of fresh poultry meat (cooling, freezing) 5. Fish - Types and classification of fish consumed by humans - How to catch fish - Changes in fish after catching 6. Handling of fresh-caught fish (cooling, freezing, drying, salting, smoking) 7. Vegetables and fruits - General characteristics of vegetables and fruits (physical, chemical, physiological) - Harvesting (Harvest Index, Harvest Method) - Post Harvest Handling (In the Garden, Packing House, Transportation) 8. Grains (cereals and legumes) - Grain Characteristics (Physical, Chemical, Physiological) - Harvesting (Harvest Index, Harvest Method) - Post Harvest Handling (In the Garden, Storage, Transport) 9. Sweet potatoes - Characteristics of Sweet Potatoes (Physical, Chemical,
Examination forms	Form Examination: Presentation and Written Paper Assignment ● Excellent/A (80-100): The anatomy of the paper is in accordance with the established format, written with the right language rules, with an easy-to-read layout, consistent in the presentation of pictures, graphs and tables, and free from elements of plagiarism, and inspires

	readers. ● Very Good/B (69-79): The anatomy of the paper is in accordance with the established format, written in the correct language rules, with an easy-to-read layout, consistent in the presentation of images, graphs and tables, and free from elements of plagiarism. Good/C (60-68): The anatomy of the paper is in accordance with the established format, written with proper language conventions, with a layout that is not good, consistent in presenting pictures, graphs and tables, and free from elements of plagiarism. ● Fair/D (50-59): The anatomy of the paper is in accordance with the established format, written in the correct language rules, with a layout that is not good, not yet consistent in the presentation of picture, graphs and tables, but free from elements of plagiarism. ● Poor/E (<50): Failed to fulfill the requirement
Study and examination requirements	Minimum attendance requirement 80% from total lecture Assessment is carried out based on written examinations, assessment/evaluation of the learning process and performance with the following components: Final Examination: 30% Midterm Examination: 30% Lab Work: 25% Structured Assignment: 15% Study and Examination Requirement ● Students must attend 15 minutes before the class starts. ● Students must switch off all electronic devices. ● Students must inform the lecturer if they will not attend the class due to sickness, etc. ● Students must submit all class assignments before the deadline. Students must attend the exam to get final grade
Reading list	1. Jafari, S. M. (Ed.). (2021). Postharvest and postmortem processing of raw food materials: Unit operations and processing equipment in the food industry. Academic Press. 2. Chauhan, O. P. (Ed.). (2025). Fruits and vegetables technologies: Postharvest processing and packaging. Springer. 3. Thakur, M., & Belwal, T. (Eds.). (2024). Advances in postharvest and analytical technology of horticulture crops. Springer.

	4. Florkowski, W. J., Shewfelt, R. L., Brueckner, B., & Prussia, S. E. (Eds.). (2022). Postharvest handling: A systems approach (4th ed.). Academic Press.4. Horticultural Crops. Kader, 5. Garcia, E. dan D.M. Barrett. 2002. Preservative Treatments for Fresh-Cut Fruits and Vegetables. 6. Tjahjadi, C., H. Marta, dan Y. Cahyana. 2008. Penanganan Pascapanen Sayur, Buah dan Biji-bijian Vol.1. Jurusan Teknologi Industri Pertanian, Fakultas Teknologi Industri Pertanian, Unpad, Bandung.
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Module Handbook Food Technology Program

	PADJADJARAN UNIVERSITY FACULTY OF AGRO-INDUSTRIAL TECHNOLOGY FOOD TECHNOLOGY STUDY PROGRAM	COURSE CODE: N10B181208
Module designation	Principles of Food Technology	
Semester(s) in which the module is taught	2	
Person responsible for the module	1. Ir. Sumanti Debby Moody, M.S.; 2. Prof. Dr. Ir. Mohamad Djali, MS.; 3. Bambang Nurhadi, STP., MSc., PhD; Dr. Fitry 4. Filianty, S.TP., M.Si.;	
Language	Indonesian/English	
Relation to curriculum	Elective Course	
Teaching methods	1. Student Centre Learning 2. Small Group Discussion 3. Problem-Based Learning 4. Project-Based Learning	
Workload	Total workload: 119 hours Class Lecture: 3x 50' x 14 weeks = 35 hours Assignment: 3 x 60' x 14 weeks = 42 hours Independent study: 3 x 60' x 14 weeks = 42 hours Examination Midterm Examination: 3 x 50' x 1 weeks = 2.5 hours Final Examination: 3 x 50' x 1 weeks = 2.5 hours	
Credit points	4.8 ECTS	
Required and recommended prerequisite for joining the modul	Principles of Food Technology	
Module objectives/intended learning outcomes	1. Able to communicate effectively, both verbally and in writing, to convey information related to activities in the packinghouse, alternative storage and transportation methods, and post-harvest pest and disease control strategies to the scientific community and the general public. 2. Able to work independently and in teams to identify and evaluate the role and scope of post-harvest handling of plant and animal crops, and to build networks with related industries for the supervision and evaluation of post-harvest product quality. 3. Able to apply logical, critical, systematic, and innovative thinking in	

	determining harvest criteria and harvesting methods for vegetables, fruits, grains, and tubers based on accurate scientific data and information. 4. Able to master the principles of food science and technology in identifying species of mammals, poultry, and fish commonly consumed by humans and understanding their characteristics in post-harvest handling processes. 5. Able to apply the principles of food science and technology to produce safe and high-quality plant and animal products through proper handling, including the slaughtering process of mammals and poultry, as well as post-cut and post-capture processing techniques.
Content	1. The scope of Food Processing Technology, its application, the existing issues in food processing, and their impact in Indonesia. 2. Classification of food processing process technologies (physical, chemical, microbial/biological, enzymatic, and sensory), thermal and non-thermal. 3. Processes occurring at each stage of food processing. 4. Food spoilage, causative factors, and prevention methods. 5. Processes and process units in food processing. 6. Application of processing technology in society.
Examination forms	Form Examination: Presentation and Written Paper Assignment: ● Excellent/A (80-100): The anatomy of the paper is in accordance with the established format, written with the right language rules, with an easy-to-read layout, consistent in the presentation of pictures, graphs and tables, and free from elements of plagiarism, and inspires readers. ● Very Good/B (69-79): The anatomy of the paper is in accordance with the established format, written in the correct language rules, with an easy-to-read layout, consistent in the presentation of images, graphs and tables, and free from elements of plagiarism. ● Good/C (60-68): The anatomy of the paper is in accordance with the established format, written with proper language conventions, with a layout that is not good, consistent in presenting pictures, graphs and tables, and free from elements of plagiarism. ● Fair/D (50-59): The anatomy of the paper is

	in accordance with the established format, written in the correct language rules, with a layout that is not good, not yet consistent in the presentation of picture, graphs and tables, but free from elements of plagiarism. ● Poor/E (<50): Failed to fulfill the requirement
Study and examination requirements	• Minimum attendance requirement 80% from total lecture Assessment is carried out based on written examinations, assessment/evaluation of the learning process and performance with the following components: Final Examination: 35% Midterm Examination: 35% Structured Assignment: 30% • Study and Examination Requirement Students must attend 15 minutes before the class starts. • Students must switch off all electronic devices. • Students must inform the lecturer if they will not attend the class due to sickness, etc. • Students must submit all class assignments before the deadline. Students must attend the exam to get final grade
Reading list	1. Campbell-Platt, G. (Ed.). (2017). Food science and technology (2nd ed.). Wiley-Blackwell. 2. Fellows, P. J. (2022). Food processing technology: Principles and practice (5th ed.). Woodhead Publishing. 3. Tjahjedi, C. dan H. Marta. 2008. Pengantar Teknologi Pangan. Vol. 1, Vol 2 Jurusan Teknologi Industri Pangan, Fakultas Teknologi Industri Pertanian, UNPAD, Jatinangor. 4. Muchtadi, T dan Sugiyono. 1992. Ilmu Pengetahuan Bahan Pangan. PAU Pangan dan Gizi IPB, Bogor. 5. Rahman, M.S. 1999. Handbook of Food Preservation. Marcel Dekker, Inc, New York. 6. Vaclavik, V. A., & Christian, E. W. (2021). Essentials of food science (5th ed.). Springer.

Module Handbook Food Technology Program

	PADJADJARAN UNIVERSITY FACULTY OF AGRO-INDUSTRIAL TECHNOLOGY FOOD TECHNOLOGY STUDY PROGRAM	COURSE CODE: N10B183253
Module designation	Processing Technology of Cereal Legumes and Tubers	
Semester(s) in which the module is taught	6	
Person responsible for the module	1. Dr. Herlina Marta, STP., M.Si. 2. Dr. Rossi Indarto, STP., MP. 3. Dr. Aldila Din Pangawikan, STP., M.Sc.	
Language	Indonesian/English	
Relation to curriculum	Elective Course	
Teaching methods	1. Student Centre Learning 2. Small Group Discussion 3. Problem-Based Learning 4. Project-Based Learning	
Workload	Total workload: 119 hours Class Lecture: 2 x 50' x 14 weeks = 23,33 hours Assignment: 2 x 60' x 14 weeks = 28 hours Independent study: 2 x 60' x 14 weeks = 28 hours Laboratory practice Laboratory session: 1 x 100' x 14 weeks = 23,33 hours Independent study: 1 x 70' x 14 weeks = 16 hours Examination Midterm Examination: 3 x 50' x 1 weeks = 2,5 hours Final Examination: 3 x 50' x 1 weeks = 2.5 hours	
Credit points	4.8 ECTS	
Required and recommended prerequisite for joining the modul	Principles of Food Technology	
Module objectives/intended learning outcomes	1. Students are able to analyze and formulate the socio-cultural, religious, and environmental impacts of the application of food technology especially Processing Technology of Cereal Legumes and Tubers. 2. Students are able to design and evaluate safe and high-quality industrial-scale in processing Technology of Cereal Legumes and Tubers using an interdisciplinary approach. 3. Students are able to comprehensively explain and apply the basic principles of	

	Technology of Cereal Legumes and Tubers in the processing and quality control of food products. 4. Students are able to apply a logical and analytical approach to data-based decision-making to solve problems in cereal Legumes and Tubers sector. 5. Students are able to explain the basic principles of relevant chemistry, biology, and physics as a basis for understanding processes in cereal Legumes and Tubers technology.
Content	1. Definition of cereals, legumes and tubers 2. Types and structure of cereals, legumes and tubers 3. Characteristics/composition of cereals, legumes and tubers 4. Post-harvest handling of cereals, legumes and tubers 5. Quality Standards of cereals, legumes and tubers and its product 6. Types of processing methods/ technology for cereals, legumes and tubers 7. Starch and flour-based cereals, legumes and tubers 8. Fermentation, Extraction and Extrusion Technology 9. Concentrate and Isolate Technology 10. Implementation of processing technology in industry
Examination forms	Form Examination: Presentation and Written Paper Assignment ● Excellent/A (80-100): The anatomy of the paper is in accordance with the established format, written with the right language rules, with an easy-to-read layout, consistent in the presentation of pictures, graphs and tables, and free from elements of plagiarism, and inspires readers. ● ● Very Good/B (69-79): The anatomy of the paper is in accordance with the established format, written in the correct language rules, with an easy-to-read layout, consistent in the presentation of images, graphs and tables, and free from elements of plagiarism. ● Good/C (60-68): The anatomy of the paper is in accordance with the established format, written with proper language conventions, with a layout that is not good, consistent in presenting pictures, graphs and tables, and free from elements of plagiarism. ● Fair/D (50-59): The anatomy of the paper is in accordance with the established format, written in the correct language rules, with a layout that is not good, not yet consistent in the presentation of picture, graphs and

	tables, buty free from elements of plagiarism. ● Poor/E (<50): Failed to fulfill the requirement
Study and examination requirements	Minimum attendance requirement 80% from total lecture Assessment is carried out based on written examinations, assessment/evaluation of the learning process and performance with the following components: Final Examination: 30% Midterm Examination: 30% Lab Work: 25% Structured Assignment: 15% Study and Examination Requirement ● Students must attend 15 minutes before the class starts. ● Students must switch off all electronic devices. ● Students must inform the lecturer if they will not attend the class due to sickness, etc. ● Students must submit all class assignments before the deadline. Students must attend the exam to get final grade
Reading list	1. Bangar, S. P., Siroha, A. K., & Kumar, M. (Eds.). (2025). Handbook of cereals, pulses, roots, and tubers: Functionality, health benefits, and applications. CRC Press. 2. Sharma, R., Dar, B. N., & Sharma, S. (Eds.). (2023). Cereal processing technologies: Impact on nutritional, functional, and biological properties. CRC Press. 3. Siddiq, M., Uebersax, M. A., & Thavarajah, D. (Eds.). (2021). Dry beans and pulses: Production, processing, and nutrition. Wiley. 4. Nayik, G. A., Tufail, T., Anjum, F. M., & Ansari, M. J. (Eds.). (2024). Cereal grains: Composition, nutritional attributes, and potential applications. CRC Press. 5. Tiwari, B. K., Gowen, A., & McKenna, B. (Eds.). (2019). Pulse foods: Processing, quality and nutraceutical applications (2nd ed.). Academic Press.

Module Handbook Food Technology Program

	PADJADJARAN UNIVERSITY FACULTY OF AGRO-INDUSTRIAL TECHNOLOGY FOOD TECHNOLOGY STUDY PROGRAM	COURSE CODE: N10B183138
Module designation	Processing Technology of Fruits and Vegetables	
Semester(s) in which the module is taught	5	
Person responsible for the module	1. Prof. Dr. Ir. M. Djali, MS. 2. Dr. Sovia Rahimah, STP, M.Sc. 3. Dr. Aldila Din Pangawikan, STP, M.Sc.	
Language	Indonesian/English	
Relation to curriculum	Elective Course	
Teaching methods	1. Student Centre Learning 2. Small Group Discussion 3. Problem-Based Learning 4. Project-Based Learning	
Workload	Total workload: 119 hours Class Lecture: 2 x 50' x 14 weeks = 23,33 hours Assignment: 2 x 60' x 14 weeks = 28 hours Independent study: 2 x 60' x 14 weeks = 28 hours Laboratory practice Laboratory session: 1 x 100' x 14 weeks = 23,33 hours Independent study: 1 x 70' x 14 weeks = 16 hours Examination Midterm Examination: 3 x 50' x 1 weeks = 2,5 hours Final Examination: 3 x 50' x 1 weeks = 2.5 hours	
Credit points	4.8 ECTS	
Required and recommended prerequisite for joining the modul	Principles of Food Technology	
Module objectives/intended learning outcomes	1. Able to work independently and in a team, building an adaptive network and being responsible for completing work by supervising and evaluating Vegetable and Fruit Processing Technology. 2. Able to apply logical, critical, systematic, and innovative thinking in making appropriate decisions based on data and information within the context of developing science and technology in the field of Vegetable and Fruit Processing Technology. 3. Able to communicate effectively both orally and in writing within the scientific community and the general public. 4. Able to master the principles of food science	

	and technology, food chemistry and analysis, food microbiology, food safety, food regulations, food engineering and processing, food biochemistry, nutrition and health, and applied food science in the field of Vegetable and Fruit Processing Technology. 5. Able to produce safe and high-quality food products on an industrial scale through the integrated application of food science and technology principles, including those of other scientific disciplines, particularly in the field of Vegetable and Fruit Processing Technology.
Content	1. General principles, characteristics of vegetables and fruits, and processing methods 2. Microorganisms in vegetable and fruit processing 3. Packaging of canned and frozen food 4. Harvesting, fresh handling after harvest, and storage 5. Pre-treatment of the preparation of materials in the processing of vegetables and fruits 6. Canning and making fruit juice 7. Preservation using high sugar 8. Drying vegetables and fruits 9. Vegetable fermentation and pickle making 10. Frozen food processing 11. Grade and quality standard 12. Quality control 13. Chemical preservatives in vegetable and fruit processing shelf life and product quality
Examination forms	Form Examination: Presentation and Written Paper Assignment Paper rubric: ● Excellent/A (80-100): The anatomy of the paper is in accordance with the established format, written with the right language rules, with an easy-to-read layout, consistent in the presentation of pictures, graphs and tables, and free from elements of plagiarism, and inspires readers. ● Very Good/B (69-79): The anatomy of the paper is in accordance with the established format, written in the correct language rules, with an easy-to-read layout, consistent in the presentation of images, graphs and tables, and free from elements of plagiarism. ● Good/C (60-68): The anatomy of the paper is in accordance with the established format, written with proper language conventions, with a layout that is not good, consistent in presenting pictures, graphs and tables, and free from elements of plagiarism. ● Fair/D (50-59): The anatomy of the paper is in accordance with the established format, written in the correct language rules, with a

	layout that is not good, not yet consistent in the presentation of picture, graphs and tables, but free from elements of plagiarism. ● Poor/E (<50): Failed to fulfill the requirement
Study and examination requirements	Minimum attendance requirement 80% from total lecture Assessment is carried out based on written examinations, assessment/evaluation of the learning process and performance with the following components: Final Examination: 30% Midterm Examination: 30% Lab Work: 25% Study and Examination Requirement ● Students must attend 15 minutes before the class starts. ● Students must switch off all electronic devices. ● Students must inform the lecturer if they will not attend the class due to sickness, etc. ● Students must submit all class assignments before the deadline. Students must attend the exam to get final grade Structured Assignment: 15%
Reading list	1. Chauhan, O. P. (Ed.). (2025). Fruits and vegetables technologies: Postharvest processing and packaging. Springer. 2. Chauhan, O. P. (Ed.). (2025). Fruits and vegetables technologies: Postharvest processing and packaging. Springer. 3. Barman, K., Sharma, S., & Siddiqui, M. W. (Eds.). (2018). Emerging postharvest treatment of fruits and vegetables. Apple Academic Press. 4. Marleen Herudiyanto., 2008. Teknologi Pengolahan Pangan. Widya Padjadjaran. Bandung. Indonesia 5. Tjahyadi C., 2008. Teknologi Pengolahan Sayur dan Buah. Widya Padjadjaran. Bandung. Indonesia 6. Segun Bello. 2018. Fruit and Vegetable Technologies. CreateSpace Independent Publishing Platform.

Module Handbook Food Technology Program

	PADJADJARAN UNIVERSITY FACULTY OF AGRO-INDUSTRIAL TECHNOLOGY FOOD TECHNOLOGY STUDY PROGRAM	COURSE CODE: N10B183249
Module designation	Processing Technology of Meat and Fish	
Semester(s) in which the module is taught	6	
Person responsible for the module	1. Dr. Aldila Din Pangawikan, S.TP., M.Sc. 2. Vira Putri Yarlina, STP, MSi	
Language	Indonesian/English	
Relation to curriculum	Elective Course	
Teaching methods	1. Student Centre Learning 2. Small Group Discussion 3. Problem-Based Learning 4. Project-Based Learning	
Workload	Total workload: 119 hours Class Lecture: 2 x 50' x 14 weeks = 23,33 hours Assignment: 2 x 60' x 14 weeks = 28 hours Independent study: 2 x 60' x 14 weeks = 28 hours Laboratory practice Laboratory session: 1 x 100' x 14 weeks = 23,33 hours Independent study: 1 x 70' x 14 weeks = 16 hours Examination Midterm Examination: 3 x 50' x 1 weeks = 2,5 hours Final Examination: 3 x 50' x 1 weeks = 2.5 hours	
Credit points	4.8 ECTS	
Required and recommended prerequisite for joining the modul	Principles of Food Technology	
Module objectives/intended learning outcomes	1. Able to work independently and in a team, build adaptive networks, and be responsible for completing work by supervising and evaluating Meat and Fish Processing Technology courses. 2. Able to apply logical, critical, systematic, and innovative thinking in making appropriate decisions based on data and information in the context of developing science and technology in the field of Meat and fish. 3. Able to communicate effectively both orally and in writing with the scientific community and the general public. 4. Able to master the principles of food science and technology, chemistry and food analysis, food microbiology, food safety, food regulations, food engineering and	

	processing, food biochemistry, nutrition and health, and applied food science in the field of Meat and Fish Processing Technology. 5. Able to produce safe and high-quality food products on an industrial scale through the integrated application of food science and technology principles, including those from other scientific disciplines, particularly in the field of Meat and Fish Processing Technology. 6. Able to formulate the impact of the implementation or development of food science and technology from a socio-cultural, legal, religious, and environmental perspective.
Content	1. Introduction of Meat (understanding of muscle and meat, conversion of muscle to meat) 2. Chemical and Biochemical Composition of Muscle and Meat 3. Changes in the meat after removing the cut 4. Meat Quality and Factors Affecting It 5. Meat spoilage/rotting 6. Meat Storage and Preservation 7. Meat Products 8. Introduction of Fish (Types of Fish consumed by humans, Fish Production and Consumption in Indonesia) 9. Fish Structure 10. Internal and External Physical Properties of Fish 11. Chemical Composition of Fish and Factors Affecting It 12. Changes in Fish After Release 13. Fish Quality and Factors Affecting It 14. Fish Storage and Preservation Fish Products
Study and examination requirements	Minimum attendance requirement 80% from total lecture Assessment is carried out based on written examinations, assessment/evaluation of the learning process and performance with the following components: Final Examination: 30% Midterm Examination: 30% Lab Work: 25% Structur Study and Examination Requirement • Students must attend 15 minutes before the class starts. • Students must switch off all electronic devices. • Students must inform the lecturer if they will not attend the class due to sickness, etc. • Students must submit all class assignments before the deadline.

	Students must attend the exam to get final graded Assignment: 15%
Reading list	1. Toldrá, F. (Ed.). (2020). Lawrie's meat science (9th ed.). Woodhead Publishing. 2. Soeparno. 1998. Ilmu dan Teknologi Daging. Gadjah Mada University Press. 3. Majumder, R. K., & Balange, A. K. (Eds.). (2023). Advances in fish processing technologies: Preservation, waste utilization, and safety assurance. CRC Press. 4. Selvamuthukumar, M., & Maqsood, S. (Eds.). (2025). Non-thermal processing technologies for the meat, fish, and poultry industries. CRC Press.

Module Handbook Food Technology Program

	PADJADJARAN UNIVERSITY FACULTY OF AGRO-INDUSTRIAL TECHNOLOGY FOOD TECHNOLOGY STUDY PROGRAM	COURSE CODE: N10B183127
Module designation	Starch and Flour Technology	
Semester(s) in which the module is taught	5	
Person responsible for the module	1. Dr. Herlina Marta, STP., M.Si. 2. Heni Radiani Arifin, STP., M.Si.	
Language	Indonesian/English	
Relation to curriculum	Compulsary Course	
Teaching methods	1. Student Centre Learning 2. Small Group Discussion 3. Problem-Based Learning 4. Project-Based Learning	
Workload	Total workload: 119 hours Class Lecture: 2 x 50' x 14 weeks = 23.33 hours Assignment: 2 x 60' x 14 weeks = 28 hours Independent study: 2 x 60' x 14 weeks = 28 hours Laboratory practice Laboratory session: 1 x 100' x 14 weeks = 23.33 hours Independent study: 1 x 70' x 14 weeks = 16 hours Examination Midterm Examination: 3 x 50' x 1 weeks = 2.5 hours Final Examination: 3 x 50' x 1 weeks = 2.5 hours	
Credit points	4.8 ECTS	
Required and recommended prerequisite for joining the modul	Principle of Food Technology	
Module objectives/intended learning outcomes	1. Students are able to explain the basic principles of physical chemistry and biology relevant to the characteristics and processing of starch and flour. 2. Students are able to work in groups or individually in conducting practical work or projects on starch and flour processing and modification responsibly and reflectively. 3. Students are able to prepare reports and effectively present the results of studies or practical work on starch and flour processing technology. 4. Students are able to explain the principles and techniques for characterizing and modifying starch and flour based on local and commercial sources.	

	5. Students are able to design processing processes or innovations for starch and flour-based products that are safe, high-quality, and have industrial potential.
Content	1. Definition and role of starch and flour in food industry 2. Starch and Flour Sources 3. Physical, Chemical, and Functional Properties of Starch and Flour 4. Quality, spoilage and storage of starch and flour 5. Starch Extraction and Flour Production 6. Starch and flour modification (physical, chemical, and enzymatic methods) 7. Starch and flour application in food products
Examination forms	Form Examination: Presentation and Written Paper Assignment ● Excellent/A (80-100): The anatomy of the paper is in accordance with the established format, written with the right language rules, with an easy-to-read layout, consistent in the presentation of pictures, graphs and tables, and free from elements of plagiarism, and inspires readers. ● Very Good/B (69-79): The anatomy of the paper is in accordance with the established format, written in the correct language rules, with an easy-to-read layout, consistent in the presentation of images, graphs and tables, and free from elements of plagiarism. ● Good/C (60-68): The anatomy of the paper is in accordance with the established format, written with proper language conventions, with a layout that is not good, consistent in presenting pictures, graphs and tables, and free from elements of plagiarism. ● Fair/D (50-59): The anatomy of the paper is in accordance with the established format, written in the correct language rules, with a layout that is not good, not yet consistent in the presentation of picture, graphs and tables, buty free from elements of plagiarism. ● Poor/E (<50): Failed to fulfill the requirement

Study and examination requirements	Minimum attendance requirement 80% from total lecture Assessment is carried out based on written examinations, assessment/evaluation of the learning process and performance with the following components: Final Examination: 30% Midterm Examination: 30% Lab Work: 25% Structured Assignment: 15% Study and Examination Requirement • Students must attend 15 minutes before the class starts. • Students must switch off all electronic devices. • Students must inform the lecturer if they will not attend the class due to sickness, etc. • Students must submit all class assignments before the deadline. Students must attend the exam to get final grade
Reading list	1. Nilsson, L. (Ed.). (2024). Starch in food: Structure, function, and applications (3rd ed.). Woodhead Publishing. 2. Wang, S. (Ed.). (2020). Starch structure, functionality and application in foods. Springer. 3. BeMiller, J. and Whistler, R. 2009. Starch Chemistry and Technology. Third edition. Elsevier Inc. Apart. 4. Halley P and Averous L. 2014. Starch Polymers from Genetic Engineering to Green Application. Elsevier. 5. Valencia, G. A., & Ramírez, J. A. (Eds.). (2025). Starch: Progress in food applications. Springer.

Module Handbook Food Technology Program

	PADJADJARAN UNIVERSITY FACULTY OF AGRO-INDUSTRIAL TECHNOLOGY FOOD TECHNOLOGY STUDY PROGRAM		COURSE CODE: N10B181210
Module designation		Statistics	
Semester(s)	in which the module is taught	2	
Person responsible for the module		1. Prof. Dr. Ir. Mohamad Djali, M.S. 2. Dr. Endah Wulandari, S.TP.,M.Si 3. Dr. Elazmanawati Lembong, S.TP., M.Si.	
Language		Indonesian	
Relation to curriculum		Compulsory Courses	
Teaching methods		1. Lecturer 2. Small Group Discussion 3. Problem-Based Learning	
Workload		Total workload: 130 hours Class Lecture: 2 x 50'x 15 weeks = 23 hours Assignment: 1 x 50'x 15 weeks = 24 hours Independent study: 2 x 50'x 15 weeks = 24 hours Examination Midterm Examination: 2 x 50' x 1 weeks = 1.67 hours Final Examination: 2 x 50' x 1 weeks = 1.67 hours	
Credit points		4.53 ECTS	
Required and recommended prerequisite for joining the modul		Mathematics	
Module objectives/intended learning		Students are able to explain, implement and work on the	
Outcomes		Principles of statistical theory, statistics and experimental design as a basis for solving problems in the food industry. Students are able to explain, implement and work on the principles of statistical theory and statistics as well as experimental designs to process research data. Students are able to use research/journal results to determine decisions and make conclusions from the results of the processed data.	

Content	a. The position of this Subject is in the Food Technology Competency curriculum This course is one of the courses to achieve basic competencies in mastering main concepts, theoretical perspectives, empirical findings, and historical trends in food technology on the subject of statistics and experimental design. b. Its role is in contributing to graduate competency: - Provide knowledge of basic statistical concepts and experimental design - Facilitate analytical skills based on statistical theories and experimental designs that have been obtained - Can be used as a basis for research calculations 1. Data and Data Structuring 2. Odds and Odds Distribution 3. Sample and Population 4. Parameter Estimation 5. Hypothesis Testing 6. Regression and Correlation
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Examination forms	Form Examination: Written Test (exam questions regarding calculations from the material that has been given) Assignment Test rubric: Excellent/A: The score of the test is between 80 - 100. Good/B: The score of the test is between 69 - 79. Average/C: The score of the test is between 60 - 68. Poor/D: The score of the test is between 50 - 59. Unsatisfactory/E: The score of the test is below 50
Study and examination requirements	Minimum attendance requirement 80% from total lecture Assessment is carried out based on written examinations, assessment/evaluation of the learning process and performance with the following components: Final Examination: 35% Midterm Examination: 35% Lab Work: 0% Structured Assignment: 20% Quiz: 10% Study and Examination Requirement Students must attend 15 minutes before the class starts. Students must switch off all electronic devices. Students must inform the lecturer if they will not attend the class due to sickness, etc. Students must submit all class assignments before the deadline. Students must attend the exam to get final grade
Reading list	1. Richard A.Johnson, Gouri K.Bhattacharyya, Januari 2019. Statistics Principles and Methods 8th Edition, University of Wisconsin at Madison John Wiley and Sons, Inc 2. Schleining, G., Mannino, S., & Suwannaporn, P. (Eds.). (2024). Statistics in food and biotechnology: From theory to practical applications. Springer. 3. Ronald E. Walpole, 2021. Pengantar Statistika Edisi ke-3.Jakarta : Penerbit PT Gramedia Pustaka 4. Ali Hasmy, 2009. Basic Level Statistik. 5. Budiyo, 2004. Statistika untuk Penelitian. Surakarta : Sebelas Maret University Press 6. Burhan Nurgiyantoro dkk., 2004. Statistik Terapan. Yogyakarta : Gadjah Mada University Press