Module designation	Animal Products Bioprocess
Semester(s) in which the module is taught	Odd Semester
Person responsible for the module	Dr. Ir. Jamhari, S.Pt., M.Agr.Sc., IPM., ASEAN Eng. Prof. Ir. Ambar Pertiwiningrum, S.Pt., M.Si., Ph.D., IPM. Prof. Dr. Ir. Nurliyani, S.Pt., M.S., IPM. Prof. Ir. Yuny Erwanto, S,Pt., MP., Ph.D, IPM Ir. Nanung Agus Fitriyanto, S.Pt., M.Sc., Ph.D., IPM.
Language	Bahasa and English
Relation to curriculum	Study Program's Compulsory
Teaching methods	Classical lecture and discussion
Workload (incl. contact hours, self-study hours)	Total workload: 119 hours Contact hours: - Lecture: 35 hours - Academic activity: 42 hours Private study: 42 hours
Credit points	3/0
Required and recommended prerequisites for joining the module	None
Module objectives/intended learning outcomes	Course Outcomes (CO): 1. Able to identify microbes and enzymes for the animal products processing 2. Able to know the characteristics of animal products and understand the analysis of bioprocess results. Expected Learning Outcomes: - Mastery in Sciences: 1. Able to master the livestock production science, animal nutrition and fed science, animal products technology, and the livestock social economics in relation to food security and environment. (CO1, CO2) - Special skills: 1. Able to solve problems and anticipate issues in the development of animal science and industry. (CO1, CO2)
Content	Livestock products, both food products and its waste require processing and handling technology to produce quality livestock products and livestock waste which does not interfere to environment. This course discusses the utilization of microbes and enzymes as well as bioprocess engineering in the processing of livestock products. This course supports other related courses, such as Meat Processing and Industry, Advanced Milk Science and Technology, Advanced Egg Science and Technology, and Livestock Waste Treatment Technology.

<table>
<tr><td rowspan="11">Exams and assessment formats</td><td colspan="2">Assessment Components</td><td>Course Components (CO)</td><td colspan="2">Percentage (%)</td></tr>
<tr><td colspan="2">1. Midterm exam (written test, take home exam, paper assignment)</td><td>CO1 & CO2</td><td colspan="2">30</td></tr>
<tr><td colspan="2">2. Final exam (written test, take home exam, paper assignment)</td><td>CO1 & CO2</td><td colspan="2">30</td></tr>
<tr><td colspan="2">3. Short quizzes</td><td>CO1 & CO2</td><td colspan="2">10</td></tr>
<tr><td colspan="2">4. Presentation</td><td>CO1 & CO2</td><td colspan="2">10</td></tr>
<tr><td colspan="2">5. Take-home written assignments (paper)</td><td>CO1 & CO2</td><td colspan="2">20</td></tr>
<tr><td colspan="5">Grade and Score</td></tr>
<tr><td>Grade</td><td>Score</td><td>Grade</td><td colspan="2">Score</td></tr>
<tr><td>A</td><td>≥80</td><td>C+</td><td colspan="2">45-49,9</td></tr>
<tr><td>A-</td><td>75-79,9</td><td>C</td><td colspan="2">40-44,9</td></tr>
<tr><td>A/B</td><td>70-74,9</td><td>C-</td><td colspan="2">35-39,9</td></tr>
<tr><td>B+</td><td>65-69,9</td><td>C/D</td><td colspan="2">30-34,9</td></tr>
<tr><td>B</td><td>60-64,9</td><td>D+</td><td colspan="2">25-29,9</td></tr>
<tr><td>B-</td><td>55-59,9</td><td>D</td><td colspan="2">20-24,9</td></tr>
<tr><td>B/C</td><td>50-54,9</td><td>E</td><td colspan="2">0-19,9</td></tr>
<tr><td>Study and examination requirements</td><td colspan="5">The final grade in the module is composed of 30% performance on midterm exam, 30% final exam, 10% quiz, 10% presentation, 20% take-home written assignments (paper). Students must have a final grade of 70% or higher to pass</td></tr>
<tr><td>Reading list</td><td colspan="5">- Sarfaraz K, Niazi, Justin, L. Brown, 2017. Fundamentals of Modern Bioprocessing. CRC Press.
- Palmel, T., 1991. Understanding Enzyme. 3rd ed. Ellis Horwood Limited, Market Cross House, Cooper Street, Chichester, West Sussex, PO19 IEB, England.
- Price N.C., and L. Stevens, 1989. Fundamentals of Enzymology. 2nd ed. Oxford University Press, New York.</td></tr>
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