



Course Module
Department of Animal Science
Faculty of Animal Science
Universitas Brawijaya

Module name	Instrumentation and Analysis Techniques Laboratory
Module level	Undergraduate Program
Code	PEF60002
Subtitle	-
Courses	-
Semester(s)	2
Person responsible for the module	
Lecturer	<ol style="list-style-type: none"> 1. Hartutik, Prof. Dr. Ir., MP. IPU. ASEAN Eng 2. Siti Chuzaemi, Prof. Dr. Ir., MS. IPU. ASEAN Eng 3. Marjuki, Dr. Ir., M.Sc 4. Puguh Surjowardojo, Dr. Ir. MS 5. Tri Eko Susilorini, Dr. Ir. MS. IPM. ASEAN Eng 6. Muharliem, Dr. Ir. MP 7. Manik Eirry Sawitri, Dr. Ir. MS. 8. Khotibul Umam A., Dr. S.Pt., Msi 9. Siti Nurul Kamaliyah, Dr. Ir. MP. 10. Abdul Manab, Dr. S.Pt., MP 11. Dedes Amertaningtyas, Dr. S.Pt., MP. 12. Aswah Ridhowi, S.Pt., M.Sc 13. Aulia Puspita A.Y., S.Pt. MP., M.Sc 14. Firmansyah Tri Saputra, S.Pt., M.Sc 15. Wike Andre Septian, S.Pt., M.Si 16. Poespitasari Hazanah Ndaru, S.Pt. MP
Language	Indonesian and English
Relation to curriculum	Compulsory/ Elective
Type of teaching, contact hours	Contact hours and class size separately for each teaching method: course, structured assignment, practical etc.
Workload	Course: 90.67 hours/semester Practical: 42.50 hours/semester
Credit points	3 (2-1) SKS/5.10 (3.40-1.70) ECTS
Requirements according to the examination regulation	-
Recommended prerequisites	-
Module	ILO-3: Developing awareness of Animal welfare and halal issue

objectives/intended learning outcomes	ILO-6: Proficient in biology, physiology, animal nutrition, breeding, farm management, and implementation in Animal Science ILO-7: Capability to perform an independent, standardized, measurable, effective, efficient and sustainable work
	Objectives: This discourse discusses work regulations in the laboratory, work safety in the laboratory (from chemicals and work procedures), and implementing good and safe work standards (SOP, Standard Operational Procedure) in the laboratory in practical activities and Good Laboratory Practice (GLP).
	Knowledge: Students are able to identify, explain the functions and work procedures of laboratory equipment.
	Skills: cognitive- able to understand and explain laboratory analysis techniques in the field of animal science. Physicomotoric- able to explain and implement laboratory safety and security.
	Competences: Students are able to implement laboratory safety and security in the field of animal science.
Content	Courses: <ol style="list-style-type: none"> 1. Introduction 2. Work safety and security in the laboratory 3. Introduction of equipment (functions and work procedures) in the laboratory 4. Introduction to chemicals, chemical codes, and how to handle them 5. The sampling procedure in the analysis 6. The analysis procedure of proximate and calorimeter bomb 7. Digestibility Analysis Procedure 8. Analytical Equipment (Microscope and Haemocytometer) 9. Analytical Equipment (Spectrophotometer) 10. Analytical Equipment (Chromatography) 11. Electrophoresis Procedure 12. Amino acid analysis 13. Reliability 14. Procedure for analysis of meat, milk, and eggs
Study and examination requirements and forms of examination	<ol style="list-style-type: none"> 1. Midterm exam 2. Final term exam 3. Practical 4. Structured Assignments 5. Quiz <p>How to score:</p> <ul style="list-style-type: none"> - Midterm exam 30% - Final exam 30% - Practical 30% - Structured assignments 5% - Quiz 5% <p>A : 80 < Final Score ≤ 100 B+ : 75 < Final Score ≤ 80</p>

	<p>B : $69 < \text{Final Score} \leq 75$ C+ : $60 < \text{Final Score} \leq 69$ C : $55 < \text{Final Score} \leq 60$ D : $50 < \text{Final Score} \leq 55$ D+ : $44 < \text{Final Score} \leq 50$ E : $0 < \text{Final Score} \leq 44$</p>
Media employed	Projector and screen, Zoom application, Google Classroom, e-book, WA Group
Reading list	Hartutik. 2012. Metode Analisis Mutu Pakan. UB PRESS