

Module designation	Muscle Biology
Semester(s) in which the module is taught	Odd semester
Person responsible for the module	Dr. Ir. Chusnul Hanim, M.Si., IPM. Prof. Dr. Ir. Lies Mira Yusiati, SU., IPU. Prof. Ir. Zaenal Bachrudin, M.Sc., Ph.D., IPU. Dr. Ir. Asih Kurniawati, S.Pt., M.Si., IPM. Muhlisin, S.Pt., M.Agr., Ph.D.
Language	Bahasa and English
Relation to curriculum	Specialization's Elective
Teaching methods	Classical lecture and discussion
Workload (incl. contact hours, self-study hours)	Total workload: 79 hours Contact hours: - Lecture: 23 hours - Academic activity: 28 hours Private study: 28 hours
Credit points	2/0
Required and recommended prerequisites for joining the module	None
Module objectives/intended learning outcomes	<p>Course Outcomes:</p> <ol style="list-style-type: none"> 1. Able to identify and formulate the characteristics of muscle biology, basic science principles of muscle biology, physically, biochemically, physiologically, microbiologically, macro and micro structure of muscles. 2. Able to know, evaluate and synthesize the science of muscle biology. 3. Able to apply and develop and synthesize muscle biology information. <p>Expected Learning Outcomes:</p> <ul style="list-style-type: none"> - Mastery in Sciences: <ol style="list-style-type: none"> 1. Able to master the current animal science and its application theory. (CO1, CO2, CO3) 2. 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: <ol style="list-style-type: none"> 1. Able to make innovation in the animal husbandry based on the development of science and technology. (CO3)
Content	The science of muscle biology supports in the field of animal science, especially the technology for processing quality livestock food products so that they do not interfere with the health of the consumers and the environment. This course discusses muscle properties physically, biochemically, physiologically, including metabolism, changes in quantity and quality in macro and microstructure of muscle. This course will support other related courses, that is advanced meat science and technology and the livestock product processing industry.

Exams and assessment formats	Assessment Components	Course Outcomes (CO)		Percentage (%)
	1. Midterm exam (written test, take home exam, paper assignment)	CO1, CO2, & CO3		35
	2. Final exam (written test, take home exam, paper assignment)	CO2 & CO3		35
	3. Presentation	CO1, CO2, & CO3		20
	4. Discussion	CO1, CO2, & CO3		10
	Grade and Score			
	Grade	Score	Grade	Score
	A	≥80	C+	45-49,9
	A-	75-79,9	C	40-44,9
	A/B	70-74,9	C-	35-39,9
	B+	65-69,9	C/D	30-34,9
	B	60-64,9	D+	25-29,9
	B-	55-59,9	D	20-24,9
B/C	50-54,9	E	0-19,9	
Study and examination requirements	The final grade in the module is composed of 35% performance on Midterm exam, 35% final exam, 20% presentation, and 10% discussion. Students must have a final grade of 70% or higher to pass			
Reading list	<ul style="list-style-type: none"> - Aberle, E.D., J. C. Forrest, D. E. Gerrard, E. D. Mills, H. B. Hedrick, M. D. Judge, and R. A. Merkel, 2001. Principals Of Meat Science. 2nd ed. Kendall/Hunt Publ., Co., Dubuque, Iowa. - Bouton, P. E. and P. V. Harris, 1972. The Effect Of Cooking Temperature and Time On Some Mechanical Properties Of Meat. J. Food Sci., 97 : 140-144. - Bouton, P. E. and P. V. Harris, 1981. Changes In The Tenderness Of Meat Cooked At 50-65°C. J. Food Sci., 46 : 475-478. - Bouton, P. E., P. V. Harris, and W. R. Shorthose, 1971. Effect Of Ultimate pH upon The Water Holding Capacity and Tenderness Of Mutton. J. Food Sci., 36 : 435-439. - Bouton, P. E., P. V. Harris, and W. R. Shorthose, 1975. Changes In Shear Parameters Of Meat Associated With Structural Changes Produced By Aging, Cooking, and Myofibrillar Contraction . J. Food Sci., 40 : 1092-1095. - Bouton, P. E., P. V. Harris, and W. R. Shorthose, 1976. Factors Influencing Cooking Losses From Meat. J. Food Sci., 41 : 1122-1126. - Gregory, G. N. and T. Grandin, 1998. Animal Welfare and Meat Science. CAB Publishing, CAB International, Wailingford, UK. - Judge, M. D., E. D. Aberle, J. C. Forrest, H. B. Hedrick, and R. A. Merkel, 1989. Principal Of Meat Science. 2nd ed. Kendall/Hunt Publ., Co., Dubuque, Iowa. 			

	<ul style="list-style-type: none">- National Livestock and Meat Board, 1973. Meat Evaluation Handbook, Chicago, Illinois.- Soeparno, 2005. Ilmu Dan Teknologi Daging. Cetakan Ke-4. Gadjah Mada University Press, Yogyakarta.- Swatland, H. J., 1984. Structure And Development Of Meat Animals. Prentice-Hall Inc., Englewood Cliffs, New Jersey.- Warris, P. D., 2001. Meat Science. An Intoductory Text. CAB Publ, New York.
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