



Faculty of
Veterinary Medicine

MODULE HANDBOOK

BACHELOR OF _____
VETERINARY MEDICINE

2024

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Faculty of
Veterinary Medicine

1st SEMESTER



MODULE 1

Course Name	Basic Genetics and Cell Biology
Code	PKH61104
Semester	1
Study Program	Bachelor of Veterinary Medicine
Person Responsible for this Module	Dr. Dyah Kinasih Wuragil, S.Si., MP., M.Sc
Language	Indonesian
Type of Course (Compulsory/Elective)	Compulsory
Learning Forms/Teaching Format	1. Discussion 2. Lecture 3. Case Study 4. Small Group Discussion
Workload	100 minutes of lecture study 120 minutes of case study 120 minutes of self-study
ECTS	3.4
Credit Units	1 SKS = 1 system credit unit (SCU) equal to 45 hours according to SNPT 2023 Indonesian total study load (SCU) bachelor degree (4 years) = 144 SCU x 45 hours = 6480 hours ECTS for Bachelor's degree 4 years = 240 ECTS (1 ECTS = 25-30 hours) = 6000 – 7200 hours Conversion from SCU → ECTS = 6480 / 240 = 27 hours Based on that, we use 27 hours of study load for 1 ECTS → 1 SCU = 45 hours /27 hours = 1,7 ECTS 2 SCU = 2 x 1,7 ECTS = 3,4 ECTS





Prerequisite Courses	-
Module Objectives/Intended Learning Outcomes	<ol style="list-style-type: none">1. Students understand the macromolecules that make up cells, and the organelles that compose cells, and biological processes.2. Students understand the cell cycle, cell division, and the role of the cell cycle in maintaining homeostasis.3. Students understand cell communication and its role in gene expression.4. Students understand the basics of genetics, genes, genomes, and the principles of inheritance.5. Students understand the theory of probability, linked genes, and crossing over, along with examples in veterinary medicine.6. Students understand genetic disorders and abnormalities, chromosomes, and diseases caused by genetic factors.7. Students understand domestication, breeding, and the formation of livestock breeds.
Module Descriptions	<p>This course covers discussions on proteins as one of the macromolecules composing cells, biological processes including intracellular receptors and cell surface receptors, the initiation of intracellular signaling, signal amplification, and transport systems including both active and passive transport. The course on cell biology also covers cell cycle, mitosis, karyokinesis, cytokinesis, meiosis, the basics of gene expression, the structure and function of plasmids in genetic engineering processes, and the principles of engineering recombinant products in the pharmaceutical industry.</p>
Learning Contents	<ol style="list-style-type: none">1. Introduction2. Cell and Membrane3. Types and Functions of Organelles4. Cell Cycle5. Gene Expression6. Cell Communication7. Case Study Presentation8. Cell Genetics9. Fundamentals of Genetics10. Probability11. Population Genetics12. Linked Genes and Crossing Over13. Domestication





	14. Case Study Presentation
Evaluation Form /Assessment	<ol style="list-style-type: none">1. Case Study 50%2. Quiz 10%3. Midterm Exam 15%4. Final Exam 15%5. Activity score 10%
Study and examination requirements	<ol style="list-style-type: none">1. This course requires 80% attendance in the lecture class
Reading List/Book References	<ol style="list-style-type: none">1. Campbell, N.A., J.B. Reece dan L.G. Mitchell, 2002, <i>Biology</i>, Penerbit Erlangga, Jakarta2. Karp, G. 1999. <i>Cell and molecular biology: Concept and experiments</i>. 2nd Ed. John Wiley and Sons, Inc. Canada. Chapter 83. Susan Elrod. 2007. <i>Schaum's Outline: Genetika</i>. Penerbit: Erlangga4. Ciptadi, G. dkk. 2019. <i>Genetika dan Pemuliaan : Peternakan-Veteriner</i>, Penerbit UB Press





MODULE 2

Module Name	Animal Husbandry
Code	PKH61105
Semester	1
Study Program	Bachelor of Veterinary Medicine
Person responsible for the module	drh. Dodik Prasetyo, M.Vet
Language	Indonesian
Type of Course (Compulsory/Elective)	Compulsory
Learning Forms/Teaching format	1. Discussion 2. Lecture 3. Case Study
Workload	100 minutes of lecture class 100 minutes of case study 120 minutes of self study
ECTS	3.4
Credit Units	1 SKS = 1 system credit unit (SCU) equal to 45 hours according to SNPT 2023 Indonesian total study load (SCU) bachelor degree (4 years) = 144 SCU x 45 hours = 6480 hours ECTS for Bachelor's degree 4 years = 240 ECTS (1 ECTS = 25-30 hours) = 6000 – 7200 hours Conversion from SCU → ECTS = $6480 / 240 = 27$ hours Based on that, we use 27 hours of study load for 1 ECTS → 1 SCU = 45 hours / 27 hours = 1,7 ECTS 2 SCU = 2 x 1,7 ECTS = 3,4 ECTS
Prerequisite Courses	-





Module Objectives/Intended Learning Outcomes	<ol style="list-style-type: none">1. Students are capable of knowing and understanding the characteristics of various types of livestock (food commodities).2. Students are capable of knowing and understanding the processes of maintaining various types of livestock enterprises.3. Students are capable of remembering legislation related to livestock farming and animal health.4. Students are capable of knowing and understanding the development of livestock enterprises and the advancements in livestock technology in the current Industry 4.0 era.
Module Descriptions	<p>This course explains the characteristics of various types of livestock (domestication processes, breeds of livestock, typical characteristics, physiological performance, and potential productivity of livestock). It enables students to understand and comprehend management practices (selection of breeding stock, husbandry practices, feeding, facilities, housing, reproductive and production patterns, as well as animal health). Additionally, it covers an understanding of the advancements in livestock technology in the Industry 4.0 era to keep up with the times.</p>
Learning Contents	<ol style="list-style-type: none">1. Lecture Contract, Explanation of Course Syllabus (RPS) for Introduction to Animal Science, and Lecture Introduction to Animal Husbandry.2. Regulations on livestock and animal health, as well as the development of the livestock industry in the 4.0 era, and information on structured assignments.3. Characteristics of laying hens.4. Husbandry practices for laying hens.5. Characteristics of rabbits and husbandry practices for rabbits.6. Characteristics of broiler chickens.7. Husbandry practices for broiler chickens.8. Characteristics of goats and sheep and husbandry practices for goats and sheep.9. Characteristics of dairy cattle.





	<p>10. Husbandry practices for dairy cattle.</p> <p>11. Characteristics of beef cattle.</p> <p>12. Husbandry practices for beef cattle.</p> <p>13. Fisheries Aquaculture.</p> <p>14. Characteristics of pigs and husbandry practices for pigs.</p>
Evaluation Form /Assessment	<p>1. Case Study: 20%</p> <p>2. Quiz: 20%</p> <p>3. Midterm Exam: 25%</p> <p>4. Final Exam: 25%</p> <p>5. Activity Score: 10%</p>
Study and examination requirements	<p>This course requires 80% attendance in the lecture class</p>
Reading list/Book References	<p>1. Undang – Undang Republik Indonesia No 41 Tahun 2014 tentang Peternakan dan Kesehatan Hewan</p> <p>2. Blount, W.P. (2013). <i>Intensive Livestock Farming</i>. London : Elsevier</p> <p>3. Roger W, Blowley. (2017). <i>Veterinary Book for Dairy Farmer 5th Edition</i>. United Kingdom : Old Pond Publishing Ltd</p> <p>6. Astiti, Ni Made Ayu Gemuh Rasa. 2018. <i>Pengantar Ilmu Peternakan</i>. Bali : Penerbit Universitas Warmadewa</p> <p>7. A.S. Sudarmono dan Y. Bambang. 2016. <i>Panduan Beternak Sapi Potong</i>. Jakarta : Penebar Swadaya</p> <p>8. B. Sarwono. 2011. <i>Beternak Kambing Unggul</i>. Jakarta : Penebar Swadaya</p> <p>9. Ardana, Ida Bagus dan Putra, DK Harya. 2016. <i>Ternak Babi</i>. Bali : Udayana University Press</p> <p>10. M. Ghufran dan H. Kordi K. 2019. <i>Budidaya Perairan edisi kedua</i>. Jakarta : Gramedia Press</p> <p>11. B, Sarwono. 2016. <i>Beternak Kelinci Unggul</i>. Jakarta : Penebar Swadaya</p>





MODULE 3

Module Name	Ethology
Code	PKH61107
Semester	1
Study Program	Bachelor of Veterinary Medicine
Person Responsible For This Module	drh. Nofan Rickyawan, M.Sc.
Language	Indonesian
Type of Course (Compulsory/Elective)	Compulsory
Learning Forms/Teaching Format	1. Discussion 2. Lecture 3. Case Study 4. Small Group Discussion
Workload	50 minutes of lecture class 60 minutes of case study 60 minutes of self-study
ECTS	1.7
Credit Units	1 SKS = 1 system credit unit (SCU) equal to 45 hours according to SNPT 2023 Indonesian total study load (SCU) bachelor degree (4 years) = 144 SCU x 45 hours = 6480 hours ECTS for Bachelor's degree 4 years = 240 ECTS (1 ECTS = 25-30 hours) = 6000 – 7200 hours Conversion from SCU → ECTS = 6480 / 240 = 27 hours Based on that, we use 27 hours of study load for 1 ECTS → 1 SCU = 45 hours /27 hours = 1,7 ECTS
Prerequisite Courses	-





Module Objectives/Intended Learning Outcomes	<ol style="list-style-type: none">1. Understanding and comprehending ethology2. Understanding and comprehending behavioral development and influencing factors3. Understanding and comprehending ethology in various animal species such as dogs, cats, cattle, sheep and goats, pigs, horses, domestic poultry, rodents, reptiles, and fish.4. Students are capable of working in groups, communicating effectively, and expressing opinions in oral and written form5. Students are capable of performing great academic ethics and morals
Module Descriptions	The course studies various aspects of animal behavior, both individual and group behaviors occurring naturally or as adaptation processes influenced by factors that can alter behavior. It also explores the role and function of ethology in the field of veterinary medicine.
Learning Contents	<ol style="list-style-type: none">1. Introduction to ethology and the development of behavior and influencing factors (internal and external)2. Ethology in the world of veterinary medicine and ethogram3. Ethology of reptiles4. Ethology of cats5. Ethology of cattle6. Ethology of goats and sheep7. Ethology of pigs8. Ethology of domestic poultry9. Ethology of dogs10. Ethology of horses11. Ethology of rodents12. Ethology of fish13. Case studies in animal ethology14. Prevention, modification, manipulation, and therapy of animal behavioral abnormalities
Evaluation Form /Assessment	<ol style="list-style-type: none">1. Case Study 50%2. Midterm Exam 15%3. Final Exam 15%4. Quiz 10%5. Activity score 10%





Study and examination requirements	This course requires 80% attendance in the lecture class
Reading list/Book References	<ol style="list-style-type: none">1. An Introduction to Animal Behaviour 6th Edition2. Domestic Animal Behaviour for Veterinarian and Animal Scientist 6th Edition3. Canine and Feline Behaviour for Veterinary Technicians and Nurses4. Canine Behavior, Insights and Answers, 2nd Edition5. Feline Behaviour and Welfare6. Ruminants Anatomy, Behaviour and Disease (Animal Science, Issues and Professions)7. Advance in Pig Welfare8. Equine Behavioral Medicine9. Equine Behaviour10. Laboratory Animal Husbandry: Ethology, Welfare and Experimental Variable11. Rabbit Behaviour and Care12. Exotic Pet Behaviour: Birds, Reptiles and Small Mammals13. Fish Behaviour 1 and 2





MODULE 4

Module Name	Veterinary Histology 1 (Cytology and Basic Tissues)
Code	PKH61111
Semester	1
Study Program	Bachelor of Veterinary Medicine
Person responsible for the module	drh. Fajar Shodiq Permata, M. Biotech
Language	Indonesian
Type of Course (Compulsory/Elective)	Compulsory
Learning Forms/Teaching Format	<ol style="list-style-type: none">1. Discussion2. Lecture3. Project Based Learning4. Case Study5. Laboratory Work6. Small Group Discussion
Workload	100 minutes of lecture class 120 minutes of case study 120 minutes of self-study
ECTS	3.4
Credit Units	<p>1 SKS = 1 system credit unit (SCU) equal to 45 hours according to SNPT 2023</p> <p>Indonesian total study load (SCU) bachelor degree (4 years) = 144 SCU x 45 hours = 6480 hours</p> <p>ECTS for Bachelor's degree 4 years = 240 ECTS (1 ECTS = 25-30 hours) = 6000 – 7200 hours</p> <p>Conversion from SCU → ECTS = 6480 / 240 = 27 hours</p> <p>Based on that, we use 27 hours of study load for 1 ECTS →</p> <p>1 SCU = 45 hours / 27 hours = 1,7 ECTS</p>





	2 SCU = 2 x 1,7 ECTS = 3,4 ECTS
Prerequisite Courses	-
Module Objectives/Intended Learning Outcomes	<ol style="list-style-type: none">1. Students are able to understand the basic structure of cells, both intracellular and extracellular, and the four basic tissues along with their differentiation.2. Students are able to understand the proper use of a microscope.3. Students are able to observe various types of basic tissues and their differentiation.4. Students are able to complete assignments accurately and on time.5. Students are able to understand histology textbooks.6. Student are able to appreciate the greatness of the Almighty in living creatures.7. Student are capable of working with peers.
Module Descriptions	<p>The course covers the structure of cells, intracellular and extracellular conditions, and the 4 basic tissues: epithelial tissue, connective tissue, muscle tissue, and nervous tissue. Additionally, there is an explanation of the differentiation within connective tissue, specifically blood tissue, cartilage tissue, and bone tissue. The course also includes practical sessions focusing on basic tissues such as simple and complex epithelium, connective tissue proper, blood cells, cartilage, bone, muscle, and nerve tissues. The course and practical sessions are structured with a 1:1 credit hour ratio.</p>
Learning Contents	<ol style="list-style-type: none">1. Introduction2. Basic Cell Structure3. Organelles4. Simple and Glandular Epithelium5. Complex Epithelium6. Connective and Adipose Tissues7. Mesenchymal Cells and Cell Differentiation8. Cartilage9. Bone Tissue





	<ol style="list-style-type: none">10. Smooth Muscle and Cardiac Muscle11. Skeletal Muscle12. Nerve Cells and Nerve Fibers13. Intracartilaginous and Intramembranous Osteogenesis14. Case Studies
Evaluation Form /Assessment	<ol style="list-style-type: none">1. Case Study: 40%2. Quiz: 10%3. Midterm Exam: 25%4. Final Exam: 25%
Study and Examination Requirements	<ol style="list-style-type: none">1. This course requires 80% attendance in the lecture class2. This course requires 100% attendance in laboratory practicals
Reading List/Book References	<ol style="list-style-type: none">1. William J. Banks, 1993, <i>Applied of Veterinary Histology, 3rd ed.</i>, Mosby Inc2. Junquiera, L.C., and Carneiro, J., 2005, <i>Basic Histology: Text and Atlas, 11th ed.</i>, Lange Inc3. Aughey, E., and Fredric L., F., 2001, <i>Comparative Veterinary Histology with Clinical Correlates</i>, Manson Publishing Ltd.4. Bacha, W.J., and Linda, M.B., 2012, <i>Color Atlas of Veterinary Histology, 3rd ed.</i>, Wiley Inc.5. Gente, F., <i>et al</i>, 2009, <i>Atlas of Fish Histology</i>, Science Publishers





MODULE 5

Module Name	Veterinary Anatomy 1
Code	PKH61112
Semester	1
Study Program	Bachelor of Veterinary Medicine
Person Responsible for This Module	Dr. drh. Handayu Untari
Language	Indonesian
Type of Course (Compulsory/Elective)	Compulsory
Learning Forms/Teaching Format	<ol style="list-style-type: none">1. Discussion2. Lecture3. Project Based Learning4. Case Study5. Laboratory Work6. Small Group Discussion
Workload	150 minutes of lecture class 180 minutes of case study 180 minutes of self-study
ECTS	5.1
Credit Units	<p>1 SKS = 1 system credit unit (SCU) equal to 45 hours according to SNPT 2023</p> <p>Indonesian total study load (SCU) bachelor degree (4 years) = 144 SCU x 45 hours = 6480 hours</p> <p>ECTS for Bachelor's degree 4 years = 240 ECTS (1 ECTS = 25-30 hours) = 6000 – 7200 hours</p> <p>Conversion from SCU → ECTS = $6480 / 240 = 27$ hours</p> <p>Based on that, we use 27 hours of study load for 1 ECTS →</p> <p>1 SCU = 45 hours / 27 hours = 1,7 ECTS</p>





	3 SCU = 3 x 1,7 ECTS = 5.1 ECTS
Prerequisite Courses	-
Module Objectives/Intended Learning Outcomes	<ol style="list-style-type: none">1. Students are able to understand the anatomical structure of bones, able to describe their formations and functions.2. Students are able to understand the anatomy of the nervous system, its divisions, locations, and sequences.3. Students are able to understand the anatomy of the heart, its divisions, blood vessel channels, and parts.4. Students are capable of distinguishing between the anatomy of arteries and veins, explaining the sequential flow of arteries and veins, and the organs supplied with blood.5. Students are able to understand the anatomy of sensory organs, including hearing, smell, taste, touch, and vision.6. Students are capable of working in groups, communicating effectively, and expressing opinions verbally and in writing.7. Students are capable of demonstrating good academic ethics and morals.
Module Descriptions	The course Veterinary Anatomy 1 (Osteology, Neurology, Angiology, and Sensory Organs) is a mandatory course for students of the Faculty of Veterinary Medicine. This course covers the structure of bones (osteology), the anatomy of the nervous system (neurology), the circulatory system (angiology), and the anatomy of sensory organs in animals.
Learning Contents	<ol style="list-style-type: none">1. Introduction and Case Study Explanation2. Introduction to Veterinary Anatomy: veterinary terminology, syndesmology, structure & types of bones3. Case Study I4. Ossa Cranii I5. Ossa Cranii II, Ossa Vertebrae, and Costae6. Case Study II7. Ossa Extremitas Cranialis8. Ossa Extremitas Caudalis9. Case Study III10. Circulatory System (Heart, Aorta, Arteries)11. Central and Peripheral Nervous System12. Sense Organs I Hearing and Vision13. Sense Organs II Taste and Touch





	14. Case Study IV
Evaluation Form /Assessment	<ol style="list-style-type: none">1. Case Study 50%2. Midterm Exam 15%3. Final Exam 15%4. Quiz 12%5. Activity score 8%
Study and Examination Requirements	<ol style="list-style-type: none">1. This course requires 80% attendance in the lecture class2. This course requires 100% attendance in laboratory practicals
Reading List/Book References	<ol style="list-style-type: none">1. Konig, H.E and Liebich H-G., 2004, <i>Veterinary Anatomy of Domestic Animals, Textbook and Colour Atlas</i>, Schattauer GmbH, Holderlinstrabe, D-70174 Stuttgart, Germany2. Sisson, S., and Grossman, J.D., 1953, <i>The Anatomy of The Domestic Animals, 4th ed.</i>, W.B. Saunders Company: Philadelphia3. Popesko, P. 1978. <i>Atlas of Topographical Anatomy of The Domestic Animals (2 ed)</i>. W B Saunders Company: Philadelphia





MODULE 6

Module Name	Veterinary Embryology
Code	PKH61113
Semester	1
Study Program	Bachelor of Veterinary Medicine
Person responsible for the module	drh. Gretania Residiwati, M.Si., Ph. D
Language	Indonesian
Type of Course (Compulsory/Elective)	Compulsory
Learning Forms/Teaching format	<ol style="list-style-type: none">1. Discussion2. Lecture3. Project Based Learning4. Case Study5. Laboratory Work6. Small Group Discussion
Workload	150 minutes of lecture class 180 minutes of case study 180 minutes of self study
ECTS	5.1
Credit Units	<p>1 SKS = 1 system credit unit (SCU) equal to 45 hours according to SNPT 2023</p> <p>Indonesian total study load (SCU) bachelor degree (4 years) = 144 SCU x 45 hours = 6480 hours</p> <p>ECTS for Bachelor's degree 4 years = 240 ECTS (1 ECTS = 25-30 hours) = 6000 – 7200 hours</p> <p>Conversion from SCU → ECTS = 6480 / 240 = 27 hours</p> <p>Based on that, we use 27 hours of study load for 1 ECTS →</p> <p>1 SCU = 45 hours / 27 hours = 1,7 ECTS</p>





	3 SCU = 3 x 1,7 ECTS = 5.1 ECTS
Prerequisite Courses	-
Module Objectives/Intended Learning Outcomes	<ol style="list-style-type: none">1. Students are able to explain the theory of embryological development, the processes of gametogenesis (spermatogenesis and oogenesis), and the cycles occurring in the female genitalia.2. Students are able to detail the processes of fertilization, types of cleavage, and the development of the zygote in mammals, birds, and amphibians.3. Students are able to explain the processes of implantation and the development of extraembryonic membranes (amnion, chorion, and allantois), as well as the umbilical cord and various types of placentas.4. Students are able to explain the organogenesis and development of various organ systems in the body.5. Students are capable of interpreting pseudopregnancy, ectopic pregnancy, multiple gestations, and other abnormal developments related to teratogenesis and congenital malformations.6. Students are capable of taking responsibility for seeking knowledge by explaining various developments from gametogenesis to organogenesis and embryological biotechnology within a group and then analyzing them to produce a report.
Module Descriptions	The course explains the processes of fertilization, zygote formation, implantation, placentation, abnormalities of pregnancy, embryo development, and abnormalities of embryo development (congenital malformations).
Learning Contents	<ol style="list-style-type: none">1. Introduction and Explanation of Case Study2. Male Gamete Cells and Spermatogenesis3. Female Gamete Cells and Oogenesis4. Fertilization, Types of Eggs, Types of Cleavage5. Zygote Development in Mammals, Birds, and Amphibians6. Progress Case Study I7. Processes of Implantation and Placentation, and Various Types of Placentas8. Development of the Heart and Blood Vessels9. Development of the Nervous System, Skin, and Epidermal Tissues10. Development of the Sensory System





	<ol style="list-style-type: none">11. Development of the Musculoskeletal System12. Development of the Oral Cavity and Respiratory System13. Progress Case Study II14. Development of the Digestive System15. Guest Lecture: Embryology Biotechnology16. Case Study Presentation
Evaluation Form /Assessment	<ol style="list-style-type: none">1. Case Study: 20%2. Quiz: 20%3. Midterm Exam: 25%4. Final Exam: 25%5. Activity Score 10%6. PBL: 50%7. Laboratory Work: 50%
Study and examination requirements	<ol style="list-style-type: none">1. This course requires 80% attendance in the lecture class2. This course requires 100% attendance in laboratory practicals
Reading list/Book References	<ol style="list-style-type: none">1. McGeady, T.A., Quin, P.J., FitzPatrick, E.S., Ryan, M.T., Kilroy, D., and Lonergan, P. 2017. <i>Veterinary Embryology</i>. Wiley Blackwell. United Kingdom2. Hyttel P., Sinowatz F and Vejlsted M. 2010. <i>Essentials of Domestic Animal Embryology</i>. Elsevier Academic Press3. Fletcher, T.F and Alvin F. Weber. 2009. <i>Veterinary Developmental Anatomy</i> (Veterinary Embryology Class Notes)4. Pratiwi, H., Aulia F., Herawati. 2019. <i>Embriologi Hewan</i>. UB Press.5. Slack., J.W. 2006. <i>From Egg to Embryo. Second edition</i>. Cambridge University Press: New York.6. Bellairs R and Osmond M. 2005. <i>The Atlas of Chick Development</i>. Elsevier Academic Press7. Gordon I. 2003. <i>Laboratory Production of Cattle Embryo. Second Edition</i>. CABI Publishing





MODULE 7

Module Name	Veterinary Biochemistry 1
Code	PKH61116
Semester	1
Study Program	Bachelor of Veterinary Medicine
Person Responsible For This Module	Dr. Dyah Kinasih Wuragil, S.Si., MP., M.Sc
Language	Indonesian
Type of Course (Compulsory/Elective)	Compulsory
Learning Forms/Teaching format	<ol style="list-style-type: none">1. Discussion2. Lecture3. Project Based Learning4. Case Study5. Laboratory Work6. Small Group Discussion
Workload	150 minutes of lecture class 180 minutes of case study 180 minutes of self-study
ECTS	5.1
Credit Units	<p>1 SKS = 1 system credit unit (SCU) equal to 45 hours according to SNPT 2023</p> <p>Indonesian total study load (SCU) bachelor degree (4 years) = 144 SCU x 45 hours = 6480 hours</p> <p>ECTS for Bachelor's degree 4 years = 240 ECTS (1 ECTS = 25-30 hours) = 6000 – 7200 hours</p> <p>Conversion from SCU → ECTS = 6480 / 240 = 27 hours</p> <p>Based on that, we use 27 hours of study load for 1 ECTS →</p> <p>1 SCU = 45 hours / 27 hours = 1,7 ECTS</p>





	3 SCU = 3 x 1,7 ECTS = 5.1 ECTS
Prerequisite Courses	-
Module Objectives/Intended Learning Outcomes	<ol style="list-style-type: none">1. Students are able to understand and explain the principles of biochemistry and the roles of subcellular organelles2. Students are able to understand and explain the definition and classification of chemical structures and properties and the roles of carbohydrates, lipids, proteins, and nucleic acids in living cells3. Students are able to accurately explain the principles of biochemistry along with their related chemical structures4. Students are able to understand and explain carbohydrate, lipid, and protein digestion and metabolism5. Students are able to understand histology textbooks6. Students are able to understand and explain the processes of bioenergetics in living cells7. Students are able to understand the processes of electron transport chains and oxidative phosphorylation
Module Descriptions	The course discusses the material in Veterinary Biochemistry 1, which explores biomolecular components (carbohydrates, proteins, lipids, and nucleic acids) in living organisms, as well as the chemical reactions occurring within them. This course covers biochemical terminology, principles, and basic information on the chemical structure and properties of cellular components, their structure-function relationships, interrelationships of metabolic pathways (carbohydrates, proteins, lipids, nucleic acids, vitamins, minerals, and enzymes), biochemical reactions, and the evaluation of biochemical data.
Learning Contents	<ol style="list-style-type: none">1. Introduction2. Principles of biochemistry: chemical elements of life, roles, subcellular organelles3. Carbohydrates4. Lipids5. Nucleic acids6. Proteins7. Case Study 18. Enzymes9. Carbohydrate metabolism10. Lipid metabolism11. Protein metabolism





	<ol style="list-style-type: none">12. Metabolic relationships13. Metabolic disorders14. Case Study 2
Evaluation Form /Assessment	<ol style="list-style-type: none">1. Case Study 50%2. Quiz 10%3. Midterm Exam 15%4. Final Exam 15%5. Activity score 10%
Study and examination requirements	<ol style="list-style-type: none">1. This course requires 80% attendance in the lecture class2. This course requires 100% attendance in laboratory practicals
Reading List/Book References	<ol style="list-style-type: none">1. Lehninger, Principles of Biochemistry, Worth Pub, Inc, New York2. Voet D and J.G. Voet, 2000, <i>Biochemistry</i>, John Willey and Sons, New York.3. Vance, J.E., and D.E. Vance, 2008, <i>Biochemistry of Lipids, Lipoproteins and Membranes: 5th Edition</i>, Elsevier, Amsterdam4. Metzler, D.E., 2008, <i>Biochemistry: The Chemical Reactions of Living Cells; 2nd Edition</i>, Elsevier, USA5. Hames, B.D., and N.M. Hooper, 2005, <i>Instant Notes: Biochemistry 2nd Edition</i>, BIOS Scientific Publisher Limited, Oxford Pendukung6. Koolman, J., and Roehm, K.H., and Second, E.D. 2005. <i>Color Atlas Biochemistry</i>. Thieme. Stuttgart. New York7. Berg, J.M., J.L. Tymoczko., and L. Stryer., 2006, <i>Biochemistry</i>, 5th Edition, W.H. Freeman and Company, USA.8. Smith, C., A.D.Marks., and M. Lieberman, 2005, <i>Mark's Basic Medical Biochemistry: A Clinical Approach, 2nd Edition</i>, Lippincott Williams and Wilkin, UK





MODULE 8

Module Name	Religion - Islam
Code	MPK4007
Semester	1
Study Program	Bachelor of Veterinary Medicine
Person Responsible For This Module	
Language	Indonesian
Type of Course (Compulsory/Elective)	Compulsory
Learning Forms/Teaching Format	1. Discussion 2. Lecture 3. Case Study 4. Small Group Discussion
Workload	100 minutes of lecture class 120 minutes of case study 120 minutes of self-study
ECTS	3.4
Credit Units	1 SKS = 1 system credit unit (SCU) equal to 45 hours according to SNPT 2023 Indonesian total study load (SCU) bachelor degree (4 years) = 144 SCU x 45 hours = 6480 hours ECTS for Bachelor's degree 4 years = 240 ECTS (1 ECTS = 25-30 hours) = 6000 – 7200 hours Conversion from SCU → ECTS = $6480 / 240 = 27$ hours Based on that, we use 27 hours of study load for 1 ECTS → $1 \text{ SCU} = 45 \text{ hours} / 27 \text{ hours} = 1,7 \text{ ECTS}$ $2 \text{ SCU} = 2 \times 1,7 \text{ ECTS} = 3,4 \text{ ECTS}$





Prerequisite Courses	-
Module Objectives/Intended Learning Outcomes	<ol style="list-style-type: none">1. Believing in and being devout to Allah SWT2. Guiding students to possess noble character (honesty, trustworthiness, hard work, responsibility, and discipline)3. Guiding students to develop accurate and critical thinking in understanding various current issues from an Islamic perspective.4. Respecting the rights of individuals and groups by allowing freedom of expression with responsibility.5. Capable of applying noble character in daily life, both on campus, within the family, and in society.6. Capable of building harmonious and respectful relationships amidst diversity.
Module Descriptions	<p>The course Islamic Studies is a Personality Development Course (PDC) that examines Islamic teachings as a source of values and guidelines that guide students in the development of Islamic professions and personalities. After completing the Islamic Studies course, students will be nurtured in faith and piety, knowledgeable and possessing noble character, and will use Islamic teachings as a basis for thinking and behavior in professional development.</p>
Learning Contents	<ol style="list-style-type: none">1. Introduction: The Importance of Islam in Higher Education2. Integration of Faith, Islam, and Ihsan in Shaping the Complete Human Being3. Implementation of the Islamic Creed in Achieving Happiness in this World and the Hereafter4. Islam as a Mercy to All Creation5. The Role of the Mosque in Building Human Civilization6. Islamic Law in the Context of Indonesia7. Ethics and Modern Issues8. Islam and the Challenge of Radicalism9. Qur'anic Paradigm in Facing the Development of Modern Science and Technology10. Corruption and Its Prevention from an Islamic Perspective11. Islamic Economic System and Administration12. 12. Politics and Patriotism in the Islamic Perspective
Evaluation Form /Assessment	<ol style="list-style-type: none">1. Case Study2. Midterm Exam





	3. Final Exam
Study and examination requirements	This course requires 80% attendance in the lecture class.
Reading List/Book References	<ol style="list-style-type: none">1. Thohir Luth, et al. Buku Ajar Pendidikan Agama Islam, PMPK UB, 20192. Direktorat Belmawa Dikti, Buku Ajar MKWU Pendidikan Agama Islam, Ditjen Belmawa, 2016.3. Thohir Luth, et al. Buku Daras Pendidikan Agama Islam, Malang, Brawijaya University, 2012.





MODULE 9

Module Name	Religion-Catholic
Code	MPK60002
Semester	1
Study Program	Bachelor of Veterinary Medicine
Person responsible for the module	Donatus Maria Triman Andi Wibowo, Ph.D
Language	Indonesian
Type of Course (Compulsory/Elective)	Compulsory
Learning Forms/Teaching format	1. Discussion 2. Lecture 3. Case Study 4. Small Group Discussion
Workload	100 minutes of lecture class 120 minutes of case study 120 minutes of self study
ECTS	3.4
Credit Units	1 SKS = 1 system credit unit (SCU) equal to 45 hours according to SNPT 2023 Indonesian total study load (SCU) bachelor degree (4 years) = 144 SCU x 45 hours = 6480 hours ECTS for Bachelor's degree 4 years = 240 ECTS (1 ECTS = 25-30 hours) = 6000 – 7200 hours Conversion from SCU → ECTS = 6480 / 240 = 27 hours Based on that, we use 27 hours of study load for 1 ECTS → 1 SCU = 45 hours /27 hours = 1,7 ECTS 2 SCU = 2 x 1,7 ECTS = 3,4 ECTS





Prerequisite Courses	-
Module Objectives/Intended Learning Outcomes	<ol style="list-style-type: none">1. Motivating students to be more faithful and devoted to God Almighty2. Guiding students to have Christian character through understanding, internalizing, and implementing the teachings of Catholic faith and morals.3. Guiding students to develop correct and critical thinking and reasoning in understanding various actual problems from a religious perspective.4. Respect the rights of individuals and groups by providing the freedom to express opinions responsibly.5. Capable of implementing Christian morals and character in everyday life, both on campus, in the family, and in society.6. Capable of building harmonious relationships and mutual respect in diversity.7. Capable of making the class an ethical and innovative learning community.8. Guiding students in understanding, exploring, reflecting, and expressing the history of their Catholic faith based on their own personal uniqueness.9. Training students to be able to practice apologetics or take responsibility for their faith by responding and behaving in a Catholic way.
Module Descriptions	The Catholic Religious Education Course is a Personality Development Course (PDC) that discusses the important points of Catholic faith and moral teachings with the aim that students will be able to maturely internalize and apply them in their personal lives, church lives, and social lives, as well as be able to respond to problems. actual problems of the time rationally, critically, and dynamically according to the teachings and example of Jesus Christ.
Learning Contents	<ol style="list-style-type: none">1. Introduction and learning road map2. Catholicism3. Human Dignity as Imago Dei4. Conscience5. Sin and Repentance6. Jesus Christ7. The Law of Love





	<ol style="list-style-type: none">8. Death and Eternal Life9. The Nature of the Church10. Church Hierarchy11. Eucharist12. Catholic Marriage13. Lay Apostolate14. Relations with Other Religions
Evaluation Form /Assessment	<ol style="list-style-type: none">1. Case Study: 20%2. Quiz: 20%3. Midterm Exam: 25%4. Final Exam: 25%5. Activity Score 10%
Study and examination requirements	This course requires 80% attendance in the lecture class
Reading list/Book References	<ol style="list-style-type: none">1. Alkitab, Lembaga Alkitab Indonesia, 2014; atau secara online https://www.imankatolik.or.id/alkitab.php atau https://alkitab.sabda.org/verse.php?book=Kej&chapter=1&verse=2 atau https://www.sabda.org/sabdaweb/home/ atau http://ekaristi.org/bible/2. Katekismus Gereja Katolik, Penerbit Nusa Indah, Ende, 2014; atau secara online https://www.imankatolik.or.id/katekismus.php atau http://www.ekaristi.org/kat/ atau http://www.vatican.va/archive/ccc/index_it.htm3. Kompendium Katekismus Gereja Katolik, Penerbit Kanisius, Yogyakarta, 2015 atau secara online http://www.vatican.va/archive/ccc/index_it.htm (bahasa indonesia)4. Kompendium Ajaran Sosial Gereja, Penerbit Ledalero, Maumere, 2013; atau secara online http://www.vatican.va/roman_curia/pontifical_councils/justpeace/documents/rc_pc_justpeace_doc_20060526_compendio-dott-soc_id.html5. Youcat Indonesia – Katekismus Populer, Penerbit Kanisius, Yogyakarta. 2012 (terjemahan dari Youcat Deutsch, Jugendkatechismus der Katholischen Kirche, Pattloch Verlag BmbH & Co, KG, Munich 2010)6. Dokumen Konsili Vatikan II, Penerbit Obor, Jakarta, 2013: atau secara online http://ekaristi.org/vat_ii/ atau http://www.katolisitas.org/category/dokumen-gereja/vatikan-ii/7. Kitab Hukum Kanonik (Codex Iuris Canonici, KWI, Jakarta, 2009 atau secara online https://www.imankatolik.or.id/khk.php





	<p>atau https://komkat-kwi.org/2014/04/11/kitab-hukum-kanonik/ atau http://www.ekaristi.org/khk/index.php</p> <p>8. Direktorat Jenderal Pembelajaran dan Kemahasiswaan Kementerian Riset, Teknologi, dan Pendidikan Tinggi Republik Indonesia, <i>Pendidikan Agama Katolik untuk Perguruan Tinggi</i>, 2016 atau https://www.google.com/search?client=firefox-b-d&q=luk.staff.ugm.ac.id+%E2%80%BA+atur+%E2%80%BA+mku+%E2%80%BA+5-PendidikanAgamaKatolik (download)</p> <p>9. Komisi Kateketik KWI, <i>Kurikulum Pendidikan Agama Katolik di Perguruan Tinggi Umum</i>, Jakarta, 2011</p> <p>10. <i>New Catholic Encyclopedia</i>, Thomson-Gale, The Catholic University of America, USA, 2003 (15 Volume)</p> <p>11. New Advent Encyclopedia https://www.newadvent.org/cathen/c.htm</p> <p>12. Paus Benediktus XVI, Deklarasi Dominus Iesus, secara online dalam bahasa Inggris: https://www.vatican.va/roman_curia/congregations/cfaith/documents/rc_con_cfaith_doc_20000806_dominus-iesus_en.html</p> <p>13. Paus Yohanes Paulus II, Ensiklik Evangelium Vitae secara online dalam bahasa Indonesia: https://www.carmelia.net/index.php/artikel/tanya-jawab-iman/72-ajaran-moral-yohanes-paulus-ii-dalam-evangelium-vitae-jangan-membunuh atau secara online dalam bahasa Inggris: http://www.vatican.va/content/john-paul-ii/en/encyclicals/documents/hf_jp-ii_enc_25031995_evangelium-vitae.html</p> <p>14. Paus Paulus VI, Ensiklik Humanae Vitae, secara online dalam bahasa Inggris: http://www.vatican.va/content/paul-vi/en/encyclicals/documents/hf_p-vi_enc_25071968_humanae-vitae.html</p> <p>15. Paus Yohanes Paulus II, Ensiklik Splendor Veritatis, secara online dalam bahasa Inggris: http://www.vatican.va/content/john-paul-ii/en/encyclicals/documents/hf_jp-ii_enc_06081993_veritatis-splendor.html</p> <p>16. Paus Benediktus XVI, Diskursus di Universitas La Sapienza Roma tentang hubungan Ilmu Pengetahuan dan Kebenaran, 17 Januari 2008 (Lecture by The Holy Father Benedict XVI at the University of Rome "La Sapienza") secara online dalam bahasa Inggris: https://www.vatican.va/content/benedict-xvi/en/speeches/2008/january/documents/hf_ben-xvi_spe_20080117_la-sapienza.html</p> <p>17. Paus Fransiskus, Seruan Apostolik. <i>Evangelii Gaudium</i>. <i>Sull'annuncio del Vangelo nel Mondo Attuale</i>. 24 November 2013, secara online dalam bahasa Inggris: https://www.vatican.va/content/francesco/en/apost_exhortations/d</p>
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	<p>ocuments/papa-francesco esortazione-ap 20131124 evangelii-gaudium.html</p> <p>18. Paus Fransiskus, Seruan Apostolik Gaudete et Exultate. Sulla Chiamata alla Santità nel Mondo Contemporaneo, 19 Maret 2018, Secara online dalam bahasa Inggris: https://www.vatican.va/content/francesco/en/apost_exhortations/documents/papa-francesco_esortazione-ap_20180319_gaudete-et-exultate.html</p> <p>19. Paus Fransiskus, Ensiklik Fratelli Tutti. Sulla Fraternità e l'amicizia sociale, 3 Oktober 2020, secara online dalam bahasa Inggris: https://www.vatican.va/content/francesco/en/encyclicals/document_s/papa-francesco_20201003_enciclica-fratelli-tutti.html</p> <p>20. Pontifical Council for Inter-religious Dialogue, Dialogue and Proclamation. Reflection and Orientations on Interreligious Dialogue and the Proclamation of the Gospel of Jesus Christ. https://www.vatican.va/roman_curia/pontifical_councils/interelg/documents/rc_pc_interelg_doc_19051991_dialogue-and-proclamatio_en.html</p> <p>21. Algernon D. Black, <i>Etika – Bertanya dan Mencari Jawaban</i>, Yayasan Cipta Loka Caraka, Jakarta, 1990.</p> <p>22. D.M.T. Andi Wibowo, Ph.D., <i>Amorosophia - Panduan Cinta</i>, Iphils, Malang, 2016.</p> <p>23. David L. Baker, <i>Il Decalogo. Vivere come popolo di Dio</i>, Editrice Queriniana, 2019, Brescia.</p> <p>24. Denis O. Lamoureux, <i>Evolutionary Creation: Moving beyond the Evolution versus Creation Debate</i>, Christian Higher Education, 9:28–48, University of Alberta, Canada, <i>Taylor & Francis Group</i>, 2010.</p> <p>25. Dominic Robinson, <i>Understanding the “Imago Dei”. The thought of Barth, von Balthasar and Moltmann</i>, Ashgate Publishing Limited, Farnhard Surrey, England, 2011.</p> <p>26. Dr. Franz von Magnis, <i>Etika Umum – Masalah-Masalah Pokok Filsafat Moral</i>, Yogyakarta, Kanisius, 1975.</p> <p>27. Dr. H. Pidyarto Gunawan, <i>Umat Bertanya, Rm. Pid Menjawab</i>, Vol. 1-VII, Kanisius, Yogyakarta</p> <p>28. Dr. Kess Maas, SVD, <i>Teologi Moral Tobat</i>, Nusa Indah, Ende, 2013</p> <p>29. Dr. Kess Maas, SVD., <i>Teologi Moral Tobat</i>, Penerbit Nusa Indah, Ende, 2013</p> <p>30. Dr. P. Go dan Suharto S.H., <i>Kawin Campur</i>, Analekta KJeuskupan Malang, Keuskupan Malang, Malang, 1987.</p> <p>31. Dr. P. Go, O.Carm., <i>Hidup dan Kesehatan</i>, STFT Widya Sasana, Malang, 1984</p> <p>32. Dr. P. Go, O.Carm., <i>Hukum Perkawinan Gereja Katolik – Teks dan Komentari</i>, Dioma, Malang, 2005.</p>
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	<p>33. Dr. P. Go, O.Carm., Seksualitas dan Perkawinan, STFT Widya Sasana, Malang, 1985</p> <p>34. Dr. P. Go, O.Carm., Teologi Moral Dasar, Dioma, Malang, 2007.</p> <p>35. Edward Collins Vacek, S.J., Love, Human and Divine : The Heart of Christian Ethics Moral Traditions & Moral Arguments, Georgetown University Press, Washington DC, 1994.</p> <p>36. Gerald Nyenhuis and James P. Eckman, Ética cristiana: un enfoque bíblico-teológico, Logoi, Inc., Miami, Florida, 2002.</p> <p>37. Gerhard Lohfink, Per chi vale il discorso della montagna? Contributi per un'etica cristiana (Wem gilt die Bergpredigt? Beiträge zu einer christlichen Ethik, Editrice Queriniana, Brescia, 1990.</p> <p>38. Hans Küng, Credo. The Apostle's Creed Explained for Today (Credo. Das Apostolische Glaubensbekenntnis. Zeitgeist erklärt), SCM Press Ltd., London, 2002.</p> <p>39. Ian A. MacFarland, In Adam's Fall. A Meditation on the Christian Doctrine on Original Sin, Wiley-Blackwell, West Sussex, UK, 2010.</p> <p>40. J. I. Packer, Keeping the Ten Commandments, Crossway Books, Wheaton, Illinois, USA, 2007.</p> <p>41. Joseph Cardinal Ratzinger, On Conscience, The National Catholic Bioethics Center and Ignatius Press, San Francisco, 2007</p> <p>42. Joseph Klausner, Jesus of Nazareth: His Life, Times, and Teaching by Joseph Klausner, The Macmillan Company, New York, 1926.</p> <p>43. Joseph Ratzinger, <i>Eschatology. Death and Eternal Life</i>, The Catholic University of America Press, Washington, D.C., 1988.</p> <p>44. Jürgen Moltmann, <i>The Way of Jesus Christ. Christology in Messianic Dimensions (Der Weg Jesu Christi: Christologie in messianischen Dimensionen)</i>, SCM Press, London, 1999.</p> <p>45. Karl Rahner, Foundations of Christian Faith. An Introduction to the Idea of Christianity, Crossroad, New York, 2004</p> <p>46. Karl Rahner, The Content of Faith. <i>The Best of Karl Rahner's Theological Writings (Rechenschaft des Glaubens. Karl Rahner-Lesebuch)</i>, Crossroad, New York, 2000.</p> <p>47. Karl-Heinz Peschke SVD., <i>Etika Kristiani – Jilid I: Pendasaran Teologi Moral</i>, Penerbit Ledalero, Maumere, 2003</p> <p>48. Karl-Heinz Peschke SVD., <i>Etika Kristiani – Jilid II: Kewajiban Moral dalam Hidup Keagamaan</i>, Penerbit Ledalero, Maumere, 2003</p> <p>49. Louis Leahy, <i>Siapakah Manusia?</i>, Yogyakarta, Kanisius, 2001.</p> <p>50. Mark Hitchcock, <i>55 Answers to Questions about Life after Death</i>, Multnomah Books, Colorado, 2005.</p> <p>51. Michele Schmaus, <i>Dogmatica Cattolica: I Sacramenti (Katholische Dogmatik)</i>, Marietti, Torino, 1966.</p> <p>52. Paham Perkawinan menurut Kitab Hukum Kanonik 1983, secara online http://yesaya.indocell.net/id814.htm</p> <p>53. Pakaian liturgis peralatan misa dan kudus http://yesaya.indocell.net/id1014.htm</p>
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MODULE 10

Module Name	Religion-Christian
Code	MPK60003
Semester	1
Study Program	Bachelor of Veterinary Medicine
Person responsible for the module	
Language	Indonesian
Type of Course (Compulsory/Elective)	Compulsory
Learning Forms/Teaching format	1. Discussion 2. Lecture 3. Case Study
Workload	100 minutes of lecture class 120 minutes of case study 120 minutes of self study
ECTS	3.4
Credit Units	1 SKS = 1 system credit unit (SCU) equal to 45 hours according to SNPT 2023 Indonesian total study load (SCU) bachelor degree (4 years) = 144 SCU x 45 hours = 6480 hours ECTS for Bachelor's degree 4 years = 240 ECTS (1 ECTS = 25-30 hours) = 6000 – 7200 hours Conversion from SCU → ECTS = $6480 / 240 = 27$ hours Based on that, we use 27 hours of study load for 1 ECTS → $1 \text{ SCU} = 45 \text{ hours} / 27 \text{ hours} = 1,7 \text{ ECTS}$ $2 \text{ SCU} = 2 \times 1,7 \text{ ECTS} = 3,4 \text{ ECTS}$
Prerequisite Courses	-





Module Objectives/Intended Learning Outcomes	<ol style="list-style-type: none">1. Motivating students to have faith and devotion to Jesus Christ.2. Guiding students to embody love (obedience, honesty, hard work, responsibility, and discipline).3. Guiding students to develop correct and critical thinking in understanding various current issues from a Christian perspective.4. Respecting the rights of individuals and groups by providing freedom of expression with responsibility.5. Capable of applying the qualities of love in daily life, both on campus, in the family, and in the community.6. Capable of building harmonious and respectful relationships in diversity.7. Guiding students to experience the transformation of Christian life values that can solidify their personalities as "Christian intellectuals".
Module Descriptions	<p>The Christian Religion Course is a Personality Development Course (PDC) that studies the Protestant Christian Religious Education course in college is a Personality Development Course for Protestant Christian Students. The personality of students will be solid if students are able to live according to the teachings of their religion. Therefore, the Protestant Christian Religion Course determines the direction of the personality of every Protestant Christian student in college. Christian students studying Protestant Christian Religious Education will know God correctly and precisely and they will open their hearts and accept Him as their Lord and Savior, and become helpers, leaders, teachers and those who convince of truth and error. With togetherness with our God, we will be able to experience the "Transformation of Christian life values that can strengthen personality". As a "Christian Intellectual" who is able to realize religious values according to the faith and truth of God's Word in the life he lives as a Protestant Christian Student</p>
Learning Contents	<ol style="list-style-type: none">1. Introduction: The Urgency of Christianity in Higher Education2. Proper Theology3. Humans as God's Creation4. Sin/Hamartiology5. Christian Ethics and Morality6. Science & Technology7. Law8. Interfaith Harmony9. Politics





	<p>10. Christian Leadership 11. Church/Ecclesiology Corruption Deradicalization of Radicalism</p>
Evaluation Form /Assessment	<p>1. Case Study 2. Midterm Exam 3. Final Exam</p>
Study and examination requirements	<p>1. This course requires 80% attendance in the lecture class</p>
Reading list/Book References	<p>1. Alkitab, Lembaga Alkitab Indonesia, 2014; Alkitab Online https://alkitab.sabda.org/home.php 2. Moral & Etika Kristen (R.C. Sproul, J. Verquill) 3. Kamus Alkitab (Howard M. Gering) 4. Ensiklopedi Alkitab (J.D Douglas) 5. A practical guide to Christian Belief (Kevin J. Conner) 6. The Doctrine of the Trinity, (Dr. H.L. Willnington) 7. Pelajaran Dasar tentang Allah, SAB 8. _____, Salvation (Westcheter: Corssway Bokks, 1982). 9. _____ Baum, Gregory, Religion and Alienation: A Theological Reading of Sociology (New York: Paulist book, 1975) 10. _____, Religion and Science : Historical and Contemporary Issues (San Fransisco : Herper, 1997). 11. _____, Religion and Science : Historical and Contemporary Issues (San Fransisco : Herper, 1997). 12. Abdulrazig, Syeh Ali, Agama, Demokrasi dan Transformasi Sosial, LKPSM NU DIY, Yogyakarta, 1986. 13. Abdulrazig, Syeh Ali, Agama, Demokrasi dan Transformasi Sosial, LKPSM NU DIY, Yogyakarta, 1986. 14. Allah dan Nama-Nya, SAB 15. Andrew J Dubrin. Leadership, (Jakarta, Prenada Media, 2005) 16. Apeldorn, Pengantar Ilmu Politik, Pradnya Paramita, Jakarta, 1983. 17. Argumen ini disebut juga “argumen keberadaan”. Bersifat deduktif dan a priori: argumentasi ini diawali dengan suatu asumsi dan kemudian berusaha untuk membuktikan asumsi itu. 18. Argumen ini juga disebut dengan “argumen dari desain,” juga bersifat induktif dan a posteriori. 19. Barbour, Ian Ethics in an Age of Technology (San Francisco: Harper, 1993) 20. Barent, J., Pengantar Ilmu Politik, Erlangga, Jakarta</p>





	<p>21. Baum, Gregory, Religion and Alienation: A Theological Reading of Sociology (New York: Paulist book, 1975)</p> <p>22. Bentuk present participle dari kata kerja eimi.</p> <p>23. Boland, B.J & Niftrik, Dogmatika Masa Kini, (Jakarta: BPK gunung mulia, 1980)</p> <p>24. BPK Gunung Mulia, 1989), Bab I-IV-IX</p> <p>25. Brotsudarmo RM. Etika Kristen Perguruan Tinggi. (Jogya, Andi)</p> <p>26. Brownlee, M.m Tugas Manusia Dalam Dunia Milik Tuhan, BPK Gunung Mulia, Jakarta, 1987.</p> <p>27. Budiarjo, Miriam, Pengantar Ilmu Politik, UT Karanika, Jakarta 1986</p> <p>28. Budiman R.L., D. Min., Pelayanan Lintas Budaya dan Kontekstual</p> <p>29. Darmaputera, Eka, Etika Sederhana Untuk Semua Perkenalan Pertama (Jakarta:</p> <p>30. Dibincangkan?" dlm. Jurnal Waskita, Vol. 1, No. 1, April, 2004.</p> <p>31. Doktrin Alkitab, Dr. William Menzies & Dr. Stenley M. Horton</p> <p>32. Eka, Darmaputera, Pancasila Identitas Modernitas, BPK Gunung Mulia, Jakarta. 1987.</p> <p>33. Enns, The Moody hand book</p> <p>34. Ensiklopedi Alkitab Masa Kini, Jilid I, (A – L), OMF, 1998.</p> <p>35. Gary Yulk, Kepemimpinan Dalam Organisasi, (Jakarta, Gramedia 2005) 290</p> <p>36. Gibson, Ivancvich, Donnely, Oraganisasi, (Jakarta: Binarupa Aksara, 1997)</p> <p>37. Gottfried-Osei Mensaah Dikai pemimpin yang menjadi pelayan, (Jakarta, Yayasan Komunikasi Bina Kasih) 72-84.</p> <p>38. Henry & Richard Blackaby, Kepemimpinan Rohani (Batam, Gospel Press, 2005)</p> <p>39. Hicks, Gullet, Organisasi Teori dan Tingkah Laku, (Jakarta: Bumi Aksara 1996)</p> <p>40. Ikatan Alumni Lemhanas, Sistem Ideologi Pancasila dalam Rangka Wawasan Nusantara dan Ketahanan Nasional, Seminar IKAL 1990, Jakarta 14 – 15 – 16 November 1990.</p> <p>41. Ismail, Andar, Selamat Berkembang (Jakarta: BPK Gunung Mulia, 2003).</p> <p>42. J. Oswald Sanders, Kepemimpinan Rohani, (Gospel Press , Batam, 2003)</p> <p>43. Jhon C Maxwell , Mengembangkan Kepemimpinan Di Dalam Diri Anda, (Jakarta, Binarupa Aksara, 1995)</p> <p>44. John Stott, ISU-ISU GLOBAL Menantang Kepemimpinan Kristiani Penilaian Atas</p> <p>45. John W Gardner, On Leadership, (New York : The Free Press, 1990)</p> <p>46. Kartono, Pemimpin dan Kepemimpinan, (Jakarta :Rajawali, 1985)</p>
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53. Krisdayanto, Kepemimpinan Dalam Masyarakat Adat, (Artikel 2005)
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MODULE 11

Module Name	Religion-Hindu
Code	MPK60004
Semester	1
Study Program	Bachelor of Veterinary Medicine
Person responsible for the module	-
Language	Indonesian
Type of Course (Compulsory/Elective)	Compulsory
Learning Forms/Teaching format	<ol style="list-style-type: none">1. Discussion2. Lecture3. Project Based Learning4. Case Study5. Laboratory Work6. Small Group Discussion
Workload	100 minutes of lecture class 120 minutes of case study 120 minutes of self study
ECTS	3.4
Credit Units	<p>1 SKS = 1 system credit unit (SCU) equal to 45 hours according to SNPT 2023</p> <p>Indonesian total study load (SCU) bachelor degree (4 years) = 144 SCU x 45 hours = 6480 hours</p> <p>ECTS for Bachelor's degree 4 years = 240 ECTS (1 ECTS = 25-30 hours) = 6000 – 7200 hours</p> <p>Conversion from SCU → ECTS = 6480 / 240 = 27 hours</p> <p>Based on that, we use 27 hours of study load for 1 ECTS →</p> <p>1 SCU = 45 hours / 27 hours = 1,7 ECTS</p>





	2 SCU = 2 x 1,7 ECTS = 3,4 ECTS
Prerequisite Courses	-
Module Objectives/Intended Learning Outcomes	<ol style="list-style-type: none">1. Have faith in God Almighty and be able to implement a religious attitude in students through understanding, appreciating, and practicing the values of Hindu teachings.2. Guiding students to have a Satya attitude (honesty, hard work, responsibility, and discipline)3. Guiding students to develop correct and critical thinking and reasoning in understanding various actual problems from a Hindu perspective.4. Respect the rights of individuals and groups by providing the freedom to express opinions responsibly.5. Capable of applying the Satya attitude in everyday life, both on campus, in the family, and in the community.6. Capable of building harmonious relationships and mutual respect in diversity.
Module Descriptions	The Hindu Religion Course is a Personality Development Course (PDC), which examines Hindu teachings as a source of values and guidelines that guide students in developing their Hindu profession and personality. After taking the Hindu Religion course, students can develop their faith and Sraddha, gain knowledge, have noble character, and use Hindu teachings as a basis for thinking and behaving in professional development.
Learning Contents	<ol style="list-style-type: none">1. Aims and Functions of Hindu Religion Courses2. History of Hinduism3. Hindu Theology4. Vedas and Hindu Literature5. The importance of leadership teachings in Hinduism as an antidote to strengthening the values of the Republic of Indonesia6. Religious art in Hinduism7. Values of harmony in Hinduism as a form of anti-corruption, collusion, and nepotism8. Religious Moderation in the Hindu View as an Antidote to Anti-Radicalism in the Life of the Nation and State9. The Tri Jnana Sandhi teachings are in accordance with Hindu concepts.





	10. The Manggala Ceremony is in accordance with the Tri-Manggalaning Ceremony concept
Evaluation Form /Assessment	<ol style="list-style-type: none">1. Case Study2. Midterm Exam3. Final Exam
Study and examination requirements	This course requires 80% attendance.
Reading list/Book References	<ol style="list-style-type: none">1. Sudiarta, I Ketut. <i>Buku Ajar Pendidikan Agama Hindu</i>, PMPK UB, 20212. Direktorat Belmawa Dikti, <i>Buku Ajar MKWU Pendidikan Agama Hindu</i>, Ditjen Belmawa, 2016.





MODULE 12

Module Name	Religion-Buddhist
Code	MPK60009
Semester	1
Study Program	Bachelor of Veterinary Medicine
Person responsible for the module	
Language	Indonesian
Type of Course (Compulsory/Elective)	Compulsory
Learning Forms/Teaching format	1. Discussion 2. Lecture 3. Case Study
Workload	100 minutes of lecture class 120 minutes of case study 120 minutes of self study
ECTS	3.4
Credit Units	1 SKS = 1 system credit unit (SCU) equal to 45 hours according to SNPT 2023 Indonesian total study load (SCU) bachelor degree (4 years) = 144 SCU x 45 hours = 6480 hours ECTS for Bachelor's degree 4 years = 240 ECTS (1 ECTS = 25-30 hours) = 6000 – 7200 hours Conversion from SCU → ECTS = $6480 / 240 = 27$ hours Based on that, we use 27 hours of study load for 1 ECTS → 1 SCU = 45 hours / 27 hours = 1,7 ECTS 2 SCU = 2 x 1,7 ECTS = 3,4 ECTS
Prerequisite Courses	-





Module Objectives/Intended Learning Outcomes	<ol style="list-style-type: none">1. Students are able to demonstrate attitudes reflecting the noble values of Buddhism.2. Students are able to implement the relationship between the Pali Scriptures and their commentaries and sub-commentaries.3. Students are capable of analyzing and correlating Buddhist universal laws with life phenomena.4. Students are able to gradually implement moral training in their daily lives.5. Students are able to demonstrate mutual respect towards all beings in general and humans in particular.6. Students are able to correlate STEM (science, technology, engineering, and mathematics) and Buddhist values.7. Students are able to apply Buddhist values in cultural and political contexts.8. Students are able to transform negative and unwise thinking through self-awareness in meditation practice.
Module Descriptions	Buddhist Religious Education competency aims to master the abilities of critical thinking, rational and dynamic attitudes, broad perspectives as Buddhist humans, intellectuals, and guide students as models of Buddhist religious intellectuals to become scientists with personalities that uphold humanity
Learning Contents	<ol style="list-style-type: none">1. Classification of the Sacred Scriptures of Tripitaka2. The Meaning and Purpose of Human Life: A Source of Buddhist Teachings The Role of the Universal Buddhist Law in Daily Life3. The meaning of one divinity Values and Norms of Morality (Sila) as Pathways and Patterns of Life4. Harmony of Science and Technology in Life5. Concepts of Buddha Society and Constructions of Interreligious Attitudes6. Dynamics of Culture and Politics in the National Context of Indonesia Meditation to Form a Pure Internal Human Character
Evaluation Form /Assessment	<ol style="list-style-type: none">1. Case Study2. Midterm Exam





	3. Final Exam
Study and examination requirements	This course requires 80% attendance
Reading list/Book References	<ol style="list-style-type: none">1. Ditjen Belmawa Kemenristek RI; Buku Ajar Mata Kuliah Wajib Umum Pendidikan Agama Buddha. 20162. Lay, U. Ko; Guide to Tipitaka. Vipassana Research Inst., 19953. Sayadaw, Mahasi; Khotbah tentang Sallekha Sutta. Yayasan Satipatthana Indonesia, 20164. Bodhi, Bhikkhu; Tipitaka tematik : sabda Buddha dalam kitab suci Pali. Ehipassiko. 2009





MODULE 13

Module Name	Pancasila
Code	MPK4008
Semester	2
Study Program	Bachelor of Veterinary Medicine
Person Responsible For This Module	
Language	Indonesian
Type of Course (Compulsory/Elective)	Compulsory
Learning Forms/Teaching format	1. Discussion 2. Lecture 3. Case Study 4. Small Group Discussion
Workload	100 minutes of face to face learning 120 minutes of case study 120 minutes of self study
ECTS	3.4
Credit Units	1 SKS = 1 system credit unit (SCU) equal to 45 hours according to SNPT 2023 Indonesian total study load (SCU) bachelor degree (4 years) = 144 SCU x 45 hours = 6480 hours ECTS for Bachelor's degree 4 years = 240 ECTS (1 ECTS = 25-30 hours) = 6000 – 7200 hours Conversion from SCU → ECTS = $6480 / 240 = 27$ hours Based on that, we use 27 hours of study load for 1 ECTS → $1 \text{ SCU} = 45 \text{ hours} / 27 \text{ hours} = 1,7 \text{ ECTS}$ $2 \text{ SCU} = 2 \times 1,7 \text{ ECTS} = 3,4 \text{ ECTS}$





Prerequisite Courses	-
Module Objectives/Intended Learning Outcomes	<ol style="list-style-type: none">1. Analyzing, comparing, and reflecting on the important functions and positions of Pancasila in the nation's history.2. Capable of analyzing the philosophical essence of Pancasila principles and using them as an analytical tool for national issues.3. Demonstrating a positive attitude and love for Indonesia's national ideology by applying Pancasila values in academic settings.4. Capable of understanding, identifying, and justifying analyses of laws and policies that are idealistic, practical, and pragmatic based on Pancasila.5. Building awareness of critical and innovative thinking in the development of science and technology based on Pancasila values.
Module Descriptions	<p>The Pancasila Course is a compulsory national course categorized under the cluster of personality development courses with a credit weight of 2 Credit Units. This course is essential due to several backgrounds:</p> <ol style="list-style-type: none">1. Historical : As a nation that values history, the life of the nation and state is never detached from the values instilled by the founding fathers.2. Cultural : As a nation rooted in cultural values, we must have a strong cultural foundation to ensure the nation's identity does not disappear over time.3. Juridical : The statutes of Universitas Brawijaya emphasize the need to preserve Pancasila values.4. Global Era : Various world ideologies influencing our lives can affect our perspectives on national life and statehood, even threatening national unity. Hence, a philosophical foundation of the state is necessary.
Learning Contents	<ol style="list-style-type: none">1. Introduction to Pancasila Education2. Pancasila in Historical Studies : Pre-independence era, old order era, new order era, reform era3. Pancasila as a Philosophical System : Understanding Pancasila Philosophy, Essence of Pancasila Principles, Perspectives of Pancasila Philosophers, Actualization of Pancasila Philosophy4. Pancasila as an Ideology : Definition and meaning of ideology, Pancasila and world ideologies, Pancasila and religion





	<ol style="list-style-type: none">5. Pancasila as the State Foundation : Definition and position of Pancasila as the State Foundation, Relationship between Pancasila and the Preamble of the 1945 Constitution, Elaboration of Pancasila in the articles of the 1945 Constitution, Implementation of Pancasila in state policy-making in the fields of Politics, Economy, Socio-Cultural, and Defense and Security6. Pancasila as an Ethical System : Definition of ethics, Pancasila ethics, Ethical values of Pancasila (Belief in the One and Only God, Humanity, Unity, Democracy, and Justice), Pancasila as a solution to national issues.7. Pancasila as the Basis for Value Development in Science : The value of belief in God as the basis for scientific development, The value of humanity as the basis for scientific development, The value of unity as the basis for scientific development, The value of democracy as the basis for scientific development, The value of justice as the basis for scientific development
Evaluation Form /Assessment	<ol style="list-style-type: none">1. Case Study2. Midterm Exam3. Final Exam
Study and examination requirements	<ol style="list-style-type: none">1. This course requires 80% attendance in the lecture class
Reading list/Book References	<ol style="list-style-type: none">1. Tim Dosen Pancasila MPK UB, 2019, <i>Buku Ajar Pendidikan Pancasila</i>2. <i>Buku Pendidikan Pancasila</i>, Dikti3. Kaelan, 2009, <i>Filsafat Pancasila: Pandangan Hidup Bangsa Indonesia</i>, Paradigma, Yogyakarta4. Hariyono, 2014, <i>Ideologi Pancasila, Roh Progresif Nasionalisme Indonesia</i>, Malang: Intrans5. Kaelan, 2013, <i>Negara Kebangsaan Pancasila</i>, Yogyakarta: Paradigma6. Yudi Latief, 2011, <i>Negara Paripurna: Historisitas, Rasionalitas, dan Aktualitas Pancasila</i>, Jakarta: Gramedia7. Yudi Latief, 2014. <i>Mata Air Keteladanan: Pancasila dalam Perbuatan</i>, Bandung: Mizan





Faculty of
Veterinary Medicine

2nd SEMESTER



MODULE 14

Module Name	Veterinary Anatomi 2 (Anatomy Topography)
Code	PKH62211
Semester	2
Study Program	Bachelor of Veterinary Medicine (S1)
Person Responsible For This Module	Dr. drh. Handayu Untari
Language	Indonesian
Type of Course (Compulsory/Elective)	Compulsory
Learning Forms/Teaching format	<ol style="list-style-type: none">1. Discussion2. Lecture3. Project Based Learning4. Case Study5. Laboratory Work6. Small Group Discussion
Workload	150 minutes of lecture class 180 minutes of case study 180 minutes of self study
ECTS	5.1
Credit Units	<p>1 SKS = 1 system credit unit (SCU) equal to 45 hours according to SNPT 2023</p> <p>Indonesian total study load (SCU) bachelor degree (4 years) = 144 SCU x 45 hours = 6480 hours</p> <p>ECTS for Bachelor's degree 4 years = 240 ECTS (1 ECTS = 25-30 hours) = 6000 – 7200 hours</p> <p>Conversion from SCU → ECTS = $6480 / 240 = 27$ hours</p> <p>Based on that, we use 27 hours of study load for 1 ECTS →</p> <p>1 SCU = 45 hours / 27 hours = 1,7 ECTS</p>





	3 SCU = 3 x 1,7 ECTS = 5.1 ECTS
Prerequisite Courses	<ol style="list-style-type: none">1. Veterinary Anatomy 1 (PKH61112)2. Embriologi Veteriner (PKH61113)
Module Objectives/Intended Learning Outcomes	<ol style="list-style-type: none">1. Able to explain the role of anatomy in diagnosing diseases and medical interventions in the veterinary world.2. Able to understand veterinary anatomical terminology related to the anatomical topography of healthy animals in cranial and caudal extremities, head, neck, abdomen, and thorax regions, including muscles, organs, blood vessels, and the nervous system.3. Able to demonstrate and explain the positions of anatomical terms directly on animal cadavers.4. Able to work in groups, communicate effectively, and express opinions verbally and in writing.5. Able to demonstrate good academic ethics and morals.
Module Descriptions	The course that studies topographic anatomy for the regions of the head, neck, thorax, abdomen, cranial extremities, and caudal extremities in small ruminants (sheep/goats).
Learning Contents	<ol style="list-style-type: none">1. Introduction (course contract and case study assignment presentation)2. Veterinary Anatomy Terminology3. Cranial Extremity Lateral Region4. Cranial Extremity Medial Region5. Caudal Extremity Medial Region6. Caudal Extremity Lateral Region7. Head Region8. Integration Lecture (Sharing research results from faculty)9. Neck Region10. Abdomen Region 111. Abdomen Region 212. Thorax Region13. Review of Veterinary Anatomy Lecture 214. Case Study Presentation
Evaluation Form /Assessment	<ol style="list-style-type: none">1. Case Study 18%2. Project Based Method 16%3. Midterm Exam 15%4. Final Exam 15%5. Activity Score 8%





	<ol style="list-style-type: none">6. Quiz 10%7. Laboratory Work 18%
Study and examination requirements	<ol style="list-style-type: none">1. This course requires 80% of attendance in the lecture class2. This course requires 100% of attendance in the laboratory practical
Reading list/Book References	<ol style="list-style-type: none">1. Konig, H.E and Liebich H-G., 2004, <i>Veterinary Anatomy of Domestic Animals, Textbook and Colour Atlas</i>, Schattauer GmbH, Holderlinstrabe, D-70174 Stuttgart, Germany2. Sisson, S., and Grossman, J.D., 1953, <i>The Anatomy of The Domestic Animals, 4th ed.</i>, W.B. Saunders Company: Philadelphia3. Popesko, P. 1978. <i>Atlas Of Topographical Anatomy of The Domestic Animals (2 ed.)</i>. W B Saunders Company: Philadelphia4. Wardhana, A.W, 2017. <i>Atlas Anatomi Unggas</i>. UB Press. Indonesia5. Pratiwi H., Firmawati A., Herawati H., <i>Embriologi Hewan</i>. Ub Press. Indonesia





MODULE 15

Module Name	Veterinary Physiology 1
Code	PKH62212
Semester	2
Study Program	Bachelor of Veterinary Medicine
Person Responsible For This Module	drh. Galuh Chandra Agustina, M.Si
Language	Indonesian
Type of Course (Compulsory/Elective)	Compulsory
Learning Forms/Teaching format	<ol style="list-style-type: none">1. Discussion2. Lecture3. Project Based Learning4. Case Study5. Laboratory Work6. Small Group Discussion
Workload	150 minutes of lecture class 180 minutes of case study 180 minutes of self study
ECTS	5.1
Credit Units	<p>1 SKS = 1 system credit unit (SCU) equal to 45 hours according to SNPT 2023</p> <p>Indonesian total study load (SCU) bachelor degree (4 years) = 144 SCU x 45 hours = 6480 hours</p> <p>ECTS for Bachelor's degree 4 years = 240 ECTS (1 ECTS = 25-30 hours) = 6000 – 7200 hours</p> <p>Conversion from SCU → ECTS = 6480 / 240 = 27 hours</p> <p>Based on that, we use 27 hours of study load for 1 ECTS →</p> <p>1 SCU = 45 hours /27 hours = 1,7 ECTS</p>





	3 SCU = 3 x 1,7 ECTS = 5.1 ECTS
Prerequisite Courses	<ol style="list-style-type: none">1. Ethology (PKH61107)2. Veterinary Anatomy 1 (PKH61112)3. Veterinary Biochemistry 1 (PKH61116)
Module Objectives/Intended Learning Outcomes	<ol style="list-style-type: none">1. Explaining the basic concepts of physiology and the mechanisms of cell, organ, and organ system homeostasis.2. Explaining the functions and mechanisms of organ systems in supporting the normal physiology of living organisms and the feedback control mechanisms to maintain homeostasis.3. Students are able to differentiate the physiological mechanisms of various organ systems in mammals and non-mammals.4. Students are able to conduct and analyze various physiological experiments in groups, which are then compiled into an independent report.
Module Descriptions	This course provides basic knowledge about the physiological components and functions of the body in maintaining homeostasis and discusses the feedback control systems to prevent pathological conditions. Topics include : cell physiology, organ and organ system concepts in maintaining homeostasis, understanding the functions, mechanisms, and regulation of the nervous system, muscular system, skeletal system, sensory system, endocrine metabolic system, body fluid physiology, and thermoregulation.
Learning Contents	<ol style="list-style-type: none">1. Overview and medical terminology2. Cell physiology3. Organs and organ systems, and homeostasis concepts4. Nervous system5. Muscular system6. Muscle contraction and skeletal system7. Minerals, bones, joints8. Sensory system9. Endocrine System I (introduction)10. Endocrine System II (endocrine metabolism)11. Endocrine System III (endocrine metabolism)12. Body fluid physiology13. Animal thermoregulation14. Case presentations





Evaluation Form /Assessment	<ol style="list-style-type: none">1. Activity Score 5%2. Quizzes 20%3. Case Study 25%4. Midterm Exam 25%5. Final Exam 25%
Study and examination requirements	<ol style="list-style-type: none">1. This course requires 80% attendance in the lecture class2. This course requires 100% attendance in the laboratory practical.
Reading list/Book References	<ol style="list-style-type: none">1. Guyton, AC and J E Hall.2011. <i>Textbook of Medical Physiology</i>.12th ed.W B Saunders, USA.2. Swenson,MJ. 2004. <i>Dukes Physiology of Domestic Animals 5th ed.</i> Cornell Univ Pr. New York, USA3. Frandson RD, Wilke WL, Fais AD. 2009. <i>Anatomy and Physiology of Farm Animals</i>. 7th edition. Colorado : Wiley-Blackwell.4. Cunningham, J.G. 2013. <i>Textbook of Veterinary Physiology</i>. Ed ke-5 Philadelphia: W.B. Saunders Company.5. Ganong W F. (2005). <i>Review of Medical Physiology (22 ed.)</i>. San Francisco: McGraw-Hill Companies, Inc6. Reece WO. 2006. <i>Functional Anatomy and Physiology of Domestic Animals</i>. 3rd edition. Iowa : Blackwell Publishing





MODULE 16

Module Name	Veterinary Biochemistry 2 (Transport System and Signal Transduction)
Code	PKH62203
Semester	2
Study Program	Bachelor of Veterinary Medicine
Person Responsible For This Module	Dr. Dyah Kinasih Wuragil, S.Si., MP., M.Sc
Language	Indonesian
Type of Course (Compulsory/Elective)	Compulsory
Learning Forms/Teaching Format	<ol style="list-style-type: none">1. Discussion2. Lecture3. Project Based Learning4. Case Study5. Laboratory Work6. Small Group Discussion
Workload	100 minutes of lecture class 120 minutes of case study 120 minutes of self-study
ECTS	3.4
Credit Units	<p>1 SKS = 1 system credit unit (SCU) equal to 45 hours according to SNPT 2023</p> <p>Indonesian total study load (SCU) bachelor degree (4 years) = 144 SCU x 45 hours = 6480 hours</p> <p>ECTS for Bachelor's degree 4 years = 240 ECTS (1 ECTS = 25-30 hours) = 6000 – 7200 hours</p> <p>Conversion from SCU → ECTS = 6480 / 240 = 27 hours</p> <p>Based on that, we use 27 hours of study load for 1 ECTS →</p>





	<p>1 SCU = 45 hours /27 hours = 1,7 ECTS</p> <p>2 SCU = 2 x 1,7 ECTS = 3,4 ECTS</p>
Prerequisite Courses	<ol style="list-style-type: none">1. Veterinary Biochemistry 1 (PKH61104)
Module Objectives/Intended Learning Outcomes	<ol style="list-style-type: none">1. Students are able to understand the structure and function of the components that make up biological membranes.2. Students are able to understand the mechanism of intercellular communication facilitated by membranes.3. Students are able to understand the mechanisms of molecular/ion transport through symport, uniport, and antiport, as well as active transport, passive transport, facilitated transport, and transport through ligand-receptor interactions.4. Students are able to understand the mechanism of signal transduction in artificial biological membranes and its applications in the veterinary field.
Module Descriptions	<p>Veterinary Biochemistry 2nd studies the components, properties, and functions of individual biological membranes. This material is provided to equip students with knowledge and understanding of the structure, function, and biosynthesis of biological membranes for metabolite transport (traffic through membranes, such as hormones, ions, and biomolecules) and intercellular communication through membranes. For intellectual thinking skills competency, students are expected to use the provided material to analyze the causes of problems or phenomena occurring from individual data and information. They are also expected to present and argue correctly, both orally and in writing, about matters related to biological membranes and to distinguish between different transport systems through membranes.</p>
Learning Contents	<ol style="list-style-type: none">1. Syllabus Explanation/Overview2. Membrane components and lipid bilayer and membrane permeability3. Lipid structure, lipid asymmetry, and glycolipids as membrane components and membrane fusion4. Membrane fluidity and active and passive transport5. Facilitated transport and symport, uniport, and antiport6. Definition of osmosis and diffusion and tonicity: isotonic, hypotonic, and hypertonic7. Chemicals for Biomedical Material





	<ol style="list-style-type: none">8. Outer mitochondrial membrane, intermembrane space, inner mitochondrial membrane, and mitochondrial matrix9. The role of mitochondria in "Major Oxidative Pathways"10. Three-dimensional structure of integral membrane protein glycoprotein and lipid-protein interactions11. Gated ion channels12. Glycosylation function and signal transduction pathways, biochemical signal transduction pathways, cell communication, and protein kinase C13. G protein and MAP signal transduction14. Case Study 2
Evaluation Form /Assessment	<ol style="list-style-type: none">1. Case Study 50%2. Quiz 10%3. Activity Score 10%4. Midterm and Final Exam 30%
Study and examination requirements	<ol style="list-style-type: none">1. This course requires 80% of attendance in the lecture class
Reading List/Book References	<ol style="list-style-type: none">1. Lehninger, <i>Principles of Biochemistry</i>, Worth Pub, Inc, New York2. Voet D and J.G. Voet, 2000, <i>Biochemistry</i>, John Willey and Sons, New York.3. Vance, J.E., and D.E. Vance, 2008, <i>Biochemistry of Lipids, Lipoproteins and Membranes</i>: 5th Edition, Elsevier, Amsterdam4. Metzler, D.E., 2008, <i>Biochemistry: The Chemical Reactions of Living Cells</i>; 2nd Edition, Elsevier, USA





MODULE 17

Module Name	System and Comparative Histology (Veterinary Histology 2)
Code	PKH62215
Semester	2
Study Program	Bachelor of Veterinary Medicine
Person Responsible For This Module	Dr. drh. Handayu Untari
Language	Indonesian
Type of Course (Compulsory/Elective)	Compulsory
Learning Forms/Teaching format	<ol style="list-style-type: none">1. Discussion2. Lecture3. Project Based Learning4. Case Study5. Laboratory Work6. Small Group Discussion
Workload	150 minutes of lecture class 180 minutes of case study 180 minutes of self study
ECTS	5.1
Credit Units	<p>1 SKS = 1 system credit unit (SCU) equal to 45 hours according to SNPT 2023</p> <p>Indonesian total study load (SCU) bachelor degree (4 years) = 144 SCU x 45 hours = 6480 hours</p> <p>ECTS for Bachelor's degree 4 years = 240 ECTS (1 ECTS = 25-30 hours) = 6000 – 7200 hours</p> <p>Conversion from SCU → ECTS = 6480 / 240 = 27 hours</p> <p>Based on that, we use 27 hours of study load for 1 ECTS →</p>





	<p>1 SCU = 45 hours /27 hours = 1,7 ECTS</p> <p>3 SCU = 3 x 1,7 ECTS = 5.1 ECTS</p>
Prerequisite Courses	<ol style="list-style-type: none">1. Veterinary Histology 1 (PKH61111)2. Veterinary Anatomy 1 (PKH61112)
Module Objectives/Intended Learning Outcomes	<ol style="list-style-type: none">1. Students are able to identify the tissue structures in organs within each system and compare them across different classes of animals (mammals, avians, reptiles, and fish).2. Students are able to demonstrate various tissue structures of organs per system and compare them across different animal classes.3. Students are able to complete assignments accurately and on time.4. Students are able to understand histology textbooks.5. Students are able to appreciate the greatness of God in living creatures.6. Students are capable to collaborate with peers.
Module Descriptions	<p>This course explains tissue structures in each organ system of various animals based on their class (comparative). The organ systems covered include the digestive system and accessory organs, cardiovascular system, lymphatic system, respiratory system, nervous system, integumentary system, endocrine system, male and female reproductive systems, and urinary system, comparing mammals, avians, reptiles, and fish. The course consists of 2:1 credits for lectures and practicums.</p>
Learning Contents	<ol style="list-style-type: none">1. Introduction and the role of histology in veterinary competence, as well as medical terminology2. Histology of tubular organs and massive organs3. Hematopoiesis and interspecies comparison4. Histology of the nervous system and interspecies comparison5. Histology of the lymphatic system and interspecies comparison [Integration]6. Histology of the cardiovascular system and interspecies comparison7. Histology of the respiratory system and interspecies comparison8. Histology of the digestive system I (digestive tract) and interspecies comparison





	<ol style="list-style-type: none">9. Histology of the digestive system II (digestive accessories) and interspecies comparison10. Histology of the urinary system and interspecies comparison11. Histology of the endocrine system and interspecies comparison12. Histology of the male reproductive system and interspecies comparison13. Histology of the female reproductive system and interspecies comparison14. Histology of the sensory system and interspecies comparison
Evaluation Form /Assessment	<ol style="list-style-type: none">1. Final Laboratory Exam-1 : 8%2. Final Laboratory Exam-2 : 8%3. Project Based Method : 17%4. Midterm Exam : 17%5. Final Exam : 17%6. Case Study : 33%
Study and examination requirements	<ol style="list-style-type: none">1. This course requires 80% attendance in the lecture class2. This course requires 100% attendance in the laboratory practical
Reading list/Book References	<ol style="list-style-type: none">1. William J. Banks, 1993, <i>Applied of Veterinary Histology</i>, 3rd ed., Mosby Inc2. Junqueira, L.C., and Carneiro, J., 2005, <i>Basic Histology: Text and Atlas</i>, 11th ed., Lange Inc3. Aughey, E., and Fredric L., F., 2001, <i>Comparative Veterinary Histology with Clinical Correlates</i>, Manson Publishing Ltd4. Bacha, W.J., and Linda, M.B., 2012, <i>Color Atlas of Veterinary Histology</i>, 3rd ed., Wiley Inc.5. Gente, F., et al, 2009, <i>Atlas of Fish Histology</i>, Science Publishers





MODULE 18

Module Name	Veterinary Microbiology 1 (Bacterial and mycotic)
Code	PKH62214
Semester	2
Study Program	Bachelor of Veterinary Medicine
Person Responsible For This Module	Dr. Siti Kurniawati, drh., M.Ked.Trop.
Language	Indonesian
Type of Course (Compulsory/Elective)	Compulsory
Learning Forms/Teaching Format	<ol style="list-style-type: none">1. Discussion2. Lecture3. Project Based Learning4. Case Study5. Laboratory Work6. Small Group Discussion
Workload	150 minutes of lecture class 180 minutes of case study 180 minutes of self-study
ECTS	5.1
Credit Units	<p>1 SKS = 1 system credit unit (SCU) equal to 45 hours according to SNPT 2023</p> <p>Indonesian total study load (SCU) bachelor degree (4 years) = 144 SCU x 45 hours = 6480 hours</p> <p>ECTS for Bachelor's degree 4 years = 240 ECTS (1 ECTS = 25-30 hours) = 6000 – 7200 hours</p> <p>Conversion from SCU → ECTS = 6480 / 240 = 27 hours</p> <p>Based on that, we use 27 hours of study load for 1 ECTS →</p> <p>1 SCU = 45 hours / 27 hours = 1,7 ECTS</p>





	3 SCU = 3 x 1,7 ECTS = 5.1 ECTS
Prerequisite Courses	<ol style="list-style-type: none">1. Veterinary Histology 1 (PKH 61111)2. Basic Genetics and Cell Biology (PKH61104)
Module Objectives/Intended Learning Outcomes	<ol style="list-style-type: none">1. Students are able to explain the taxonomy of various bacteria and fungi, and point out simple determinations based on morphology.2. Students are able to identify microbes (bacteria and fungi) from aspects of metabolism, genetics, and growth characteristics.3. Students are able to explain the pathogenesis of infectious diseases caused by bacteria and fungi in general.4. Students are able to recognize beneficial fungi and those that cause disease.5. Students are able to enroll and describe methods for controlling microorganisms.6. Students are able to enroll in antimicrobial drugs.
Module Descriptions	Explaining the history of the development of microbes (bacteria and fungi) and their applications in the veterinary field, covering the basics of life (morphology, growth, metabolism, genetics, pathogenesis, as well as control methods and types of treatments), and conducting, interpreting, analyzing results, and drawing conclusions from practical exercises on the isolation and identification of bacteria and fungi.
Learning Contents	<ol style="list-style-type: none">1. Introduction and Microscope Introduction2. Isolated Colony and Motility3. Gram-Positive Cocci Bacteria4. Identification and Discussion of Gram-Positive Cocci Bacteria5. Enterobacteriaceae6. Identification and Discussion of Enterobacteriaceae7. Anaerobic Bacteria8. Identification and Discussion of Anaerobic Bacteria9. Identification of Spore-Forming Bacteria10. Identification of Fungi11. Antibiotic Sensitivity Test12. Water Examination13. Identification and Discussion of Water Examination14. Base Project
Evaluation Form /Assessment	<ol style="list-style-type: none">1. Case Study2. Project Based Method





	<ol style="list-style-type: none">3. Midterm Exam4. Final Exam
Study and examination requirements	<ol style="list-style-type: none">1. This course requires 80% of attendance in the lecture class2. This course requires 100% of attendance in the laboratory practical
Reading List/Book References	<ol style="list-style-type: none">1. Hogg, S. 2005. <i>Essential Microbiology</i>. John Wiley and Sons, Ltd.2. Kumar, S. 2012. <i>Textbook of Microbiology</i>. Jaypee Brothers Medical Publishers.3. Talaro K.P., and Arthur, T. 2002. <i>Foundations in Microbiology</i>. 4th ed. The McGraw–Hill Companies.4. Sri Murwani. 2015. <i>Dasar-dasar Mikrobiologi Veteriner</i>. UB Press





MODULE 19

Module Name	Basic Animal Nutrition
Code	PKH62116
Semester	2
Study Program	Bachelor of Veterinary Medicine
Person Responsible For This Module	drh. Dodik Prasetyo, M.Vet
Language	Indonesian
Type of Course (Compulsory/Elective)	Compulsory
Learning Forms/Teaching format	<ol style="list-style-type: none">1. Discussion2. Lecture3. Project Based Learning4. Case Study5. Laboratory Work6. Small Group Discussion
Workload	100 minutes of lecture class 120 minutes of case study 120 minutes of self study
ECTS	3.4
Credit Units	<p>1 SKS = 1 system credit unit (SCU) equal to 45 hours according to SNPT 2023</p> <p>Indonesian total study load (SCU) bachelor degree (4 years) = 144 SCU x 45 hours = 6480 hours</p> <p>ECTS for Bachelor's degree 4 years = 240 ECTS (1 ECTS = 25-30 hours) = 6000 – 7200 hours</p> <p>Conversion from SCU → ECTS = 6480 / 240 = 27 hours</p> <p>Based on that, we use 27 hours of study load for 1 ECTS →</p> <p>1 SCU = 45 hours /27 hours = 1,7 ECTS</p>





	2 SCU = 2 x 1,7 ECTS = 3,4 ECTS
Prerequisite Courses	<ol style="list-style-type: none">1. Ethology (PKH61107)2. Animal Husbandry (PKH61105)
Module Objectives/Intended Learning Outcomes	<ol style="list-style-type: none">1. Students are able to position oneself as a prospective veterinary graduate in addressing the importance of nutrition for animal life.2. Students are able to understand different types of feed ingredients (raw materials) and feeds for various animals and their uses for the growth and development of animals.3. Students are able to complete assignments correctly and on time.4. Students are able to understand the digestive characteristics of various animals, determine appropriate feeding standards, and formulate animal rations/feed.
Module Descriptions	This course explains various types of feed ingredients (raw materials) and feeds, highlighting their nutritional values and uses for the growth and development of animals (including ruminants, non-ruminants, pets, exotic animals, and aquatic animals). Understanding the digestive characteristics of animals allows for the formulation of appropriate nutrition to meet their dietary needs.
Learning Contents	<ol style="list-style-type: none">1. Introduction to Basic Animal Nutrition (Course Outline and Contract Explanation)2. Standard feed for cats3. Importance of carbohydrates, fats, and proteins in feed4. Standard feed for dogs5. Introduction to flour-based feed ingredients6. Ration formulation for ruminants7. Introduction to grain-based feed ingredients8. Standard feed for aquatic animals9. Introduction to forage feed ingredients10. Utilization of agricultural waste for livestock feed11. Importance of feed additives and supplements, and integration of lecturer research results12. Ration formulation for non-ruminant livestock (poultry)13. Importance of vitamins, minerals, fiber in feed, and water requirements14. Case Study (Problem-Based Learning) on Animal Nutrition
Evaluation Form /Assessment	<ol style="list-style-type: none">1. Activity Score 5%2. Quiz 5%





	<ol style="list-style-type: none">3. Case Study 10%4. Midterm Exam 15%5. Final Exam 20%
Study and examination requirements	<ol style="list-style-type: none">1. This course requires 80% attendance in the lecture class2. This course requires 100% attendance in the laboratory practical
Reading list/Book References	<ol style="list-style-type: none">1. <i>Nutritive Value of Commonly Available Feed and Fodders in India</i>. Animal Nutrition Group. By Amitra Patel. 20122. <i>Canine and Feline Nutrition</i>. Elsevier. United States. 20113. <i>BSAVA Manual of Exotic Pets Fourth Edition</i>. British Small Animal Veterinary Association. United Kingdom. 20024. <i>Membuat Pakan Fermentasi</i>. Kaleka. Yogyakarta. 2019





MODULE 20

Module Name	Indonesian Language
Code	MPK60007
Semester	2
Study Program	Bachelor of Veterinary Medicine
Person Responsible For This Module	Prima Zulvarina, S.S., M.Pd
Language	Indonesian
Type of Course (Compulsory/Elective)	Compulsory
Learning Forms/Teaching Format	1. Discussion 2. Lecture 3. Case Study 4. Small Group Discussion
Workload	100 minutes of lecture class 120 minutes of case study 120 minutes of self-study
ECTS	3.4
Credit Units	1 SKS = 1 system credit unit (SCU) equal to 45 hours according to SNPT 2023 Indonesian total study load (SCU) bachelor degree (4 years) = 144 SCU x 45 hours = 6480 hours ECTS for Bachelor's degree 4 years = 240 ECTS (1 ECTS = 25-30 hours) = 6000 – 7200 hours Conversion from SCU → ECTS = 6480 / 240 = 27 hours Based on that, we use 27 hours of study load for 1 ECTS → 1 SCU = 45 hours /27 hours = 1,7 ECTS 2 SCU = 2 x 1,7 ECTS = 3,4 ECTS





Prerequisite Courses	-
Module Objectives/Intended Learning Outcomes	<ol style="list-style-type: none">1. Students are able to demonstrate a positive attitude and pride in using the Indonesian language.2. Students are able to understand language varieties and choose and apply the appropriate variety of Indonesian in scientific forums.3. Students are able to explain the varieties, types, principles, and systematic writing of scientific and popular works, and critically read texts relevant to their field of study by analyzing and synthesizing main ideas in scientific and popular discourse.4. Students are able to use proper spelling and diction in composing sentences and paragraphs in scientific and popular writing.5. Students are able to write and edit scientific or popular works systematically, logically, empirically, and verifiably according to writing and spelling rules.6. Students are able to develop speaking skills in various forums, both scientific and semi-scientific.
Module Descriptions	<p>"Bahasa Indonesia" is a course in Personality Development aimed at instilling fundamental values of patriotism through the national language. Specifically, mastering good and correct Indonesian language usage in academic writing across various fields of study serves as a means for developing science and technology (IPTEKS) skills that students must acquire. The substance of this course is directed toward systematic and logical learning of spoken and written Indonesian through activities such as listening, reading, writing, and academic speaking. Technically, the course equips students with skills to explore ideas (content thoughts), write logically and systematically (organizational thoughts), adopt styles suitable for academic and popular writing (style thoughts), and produce academic and popular writings in their respective fields of study (purpose thoughts). Additionally, students are introduced to academic writing conventions in Indonesian, integrated with efforts to growth a mindset based on scientific paradigms.</p>
Learning Contents	<ol style="list-style-type: none">1. History of the Indonesian Language2. Varieties of the Indonesian Language3. Academic and Non-Academic Works4. Spelling, Diction, Sentences, and Paragraphs in Academic Writing5. Writing Quotations





Evaluation Form /Assessment	<ol style="list-style-type: none">1. Case Study 50%2. Midterm Exam 20%3. Final Exam 20%4. Quiz 10%
Study and examination requirements	<ol style="list-style-type: none">1. This course requires 80% attendance in the lecture class
Reading List/Book References	<ol style="list-style-type: none">1. Zulvarina, Prima, dkk. 2021. <i>Buku Ajar Bahasa Indonesia: Edisi Revisi</i>. Oase Publishing: Malang2. Andarwulan, Trisna. Dkk. 2019. <i>Kreatif Berbahasa Indonesia: Acuan Pembelajaran Bahasa Indonesia Ilmiah di Perguruan Tinggi</i>. Bandung: Rosda Karya3. Dikti, 2016. <i>Bahasa Indonesia Untuk Perguruan Tinggi</i>. Kemendikbud4. Saryono, Djoko. dkk. 2023. <i>Seri Terampil Menulis Bahasa Indonesia: Sinonim</i>. Bumi Aksara: Jawa Timur5. Suyanto, Edi. 2015. <i>Membina, Memelihara, dan Menggunakan Bahasa Indonesia Secara Benar</i>. Yogyakarta: Graha Ilmu6. Chaer, Abdul dan Agustina, Leoni. 2010. <i>Sosiolinguistik: Perkenalan Awal</i>. Jakarta: Rineka Cipta7. Damono, Iqbal Aji. 2023. <i>Berbahasa dengan Logis dan Gembira</i>. Yogyakarta: Diva Press8. Ejaan Yang Disempurnakan 5th edition9. KBBI 5th edition





MODULE 21

Module Name	Citizenships
Code	MPK60006
Semester	2
Study Program	Bachelor of Veterinary Medicine
Person Responsible For This Module	Galieh Damayanti, S.H., M.H.
Language	Indonesian
Type of Course (Compulsory/Elective)	Compulsory
Learning Forms/Teaching format	1. Discussion 2. Lecture 3. Case Study 4. Small Group Discussion
Workload	100 minutes of lecture class 120 minutes of case study 120 minutes of self study
ECTS	3.4
Credit Units	1 SKS = 1 system credit unit (SCU) equal to 45 hours according to SNPT 2023 Indonesian total study load (SCU) bachelor degree (4 years) = 144 SCU x 45 hours = 6480 hours ECTS for Bachelor's degree 4 years = 240 ECTS (1 ECTS = 25-30 hours) = 6000 – 7200 hours Conversion from SCU → ECTS = $6480 / 240 = 27$ hours Based on that, we use 27 hours of study load for 1 ECTS → 1 SCU = 45 hours / 27 hours = 1,7 ECTS 2 SCU = 2 x 1,7 ECTS = 3,4 ECTS
Prerequisite Courses	-





Module Objectives/Intended Learning Outcomes	<ol style="list-style-type: none">1. Students are able to elucidate the concept of the Unitary State of the Republic of Indonesia, identify, and recognize the uniqueness of the Indonesian Legal State based on the values of Pancasila.2. Understanding the supremacy of the constitution and the uniqueness of the 1945 Constitution of the Republic of Indonesia based on the values of Pancasila, and distinguishing between constitutional and unconstitutional behaviors in national life.3. Students are able to understand, identify, and maintain the nation's identity from popular culture in the globalization era.4. Students are able to build awareness and believe in the importance of involvement or participation in Pancasila democracy practices.5. Students are able to study Pancasila as the philosophical foundation of Human Rights in Indonesia, and compromise between rights and obligations in national life.6. Students are able to understand Indonesia's geopolitics and geostrategy and classify the potential of natural resources and human resources diversity in regional autonomy concepts.
Module Descriptions	Citizenship Course is a compulsory national course included in the Mandatory Curriculum Course (MKWK) cluster with a weight of 2 credits. This course plays a role in consolidating student orientations related to national insight and spirit, patriotism, democracy, legal awareness, appreciation of diversity, and participation in nation and state building based on Pancasila.
Learning Contents	<ol style="list-style-type: none">1. State and Citizens2. Constitution and 1945 Constitution of the Republic of Indonesia National Identity3. Democracy4. Human Rights5. Geopolitics6. Geostrategy7. Project
Evaluation Form /Assessment	<ol style="list-style-type: none">1. Midterm Exam 20%2. Final Exam 20%3. Quizzes 10%4. Casestudy 50%





Study and examination requirements	1. This course requires 80% attendance in the lecture class
Reading list/Book References	<ol style="list-style-type: none">1. Tim Dosen Kewarganegaraan MPK UB, 2019, Buku Ajar Pendidikan Kewarganegaraan.2. Kementrian Riset, Teknologi dan Pendidikan Tinggi, 2016, Pendidikan Kewarganegaraan untuk perguruan Tinggi.3. Peraturan Perundang-undangan (UUD NRI Tahun 1945; UU Kewarganegaraan; UU HAM; dll)4. Jimly Assiddiqie, 2010. <i>Konstitusi dan Konstitusionalisme Indonesia</i>. Jakarta: Sinar Grafika.5. Jimly Assiddiqie, 2014. <i>Pengantar Ilmu Hukum Tata Negara</i>. Jakarta: PT Raja Grafindo Persada.6. Mahfud MD, 2010. <i>Politik Hukum Indonesia</i>, jakarta: Rajawali Press.7. Muhammad Erwin, 2010. <i>Pendidikan Kewarganegaraan Republik Indonesia</i>. Bandung: Refika Aditama.8. Kaelan, 2013. <i>Negara Kebangsaan Indonesia</i>, Yogyakarta: Paradigma.9. Yudi Latief, 2011. <i>Negara Paripurna: Historitas, Rasionalitas, dan Aktualitas Pancasila</i>. Jakarta: Gramedia.10. Yudo Latief, 2014. <i>Mata Air Keteladanan: Pancasila dalam Perbuatan</i>, Bandung: Mizan.11. Suseno, Magnis, 2003. <i>Etika Politik, Prinsip-prinsip Moral Dasar Kenegaraan Modern</i>, Jakarta: Gramedia.





MODULE 22

Module Name	Pet Animal Health Management
Code	PKH62221
Semester	2
Study Program	Bachelor of Veterinary Medicine
Person Responsible For This Module	Drh. Nofan Rickyawan, M.Sc.
Language	Indonesian
Type of Course (Compulsory/Elective)	Elective
Learning Forms/Teaching Format	1. Discussion 2. Lecture 3. Case Study 4. Small Group Discussion
Workload	100 minutes of lecture class 120 minutes of case study 120 minutes of self-study
ECTS	3.4
Credit Units	1 SKS = 1 system credit unit (SCU) equal to 45 hours according to SNPT 2023 Indonesian total study load (SCU) bachelor degree (4 years) = 144 SCU x 45 hours = 6480 hours ECTS for Bachelor's degree 4 years = 240 ECTS (1 ECTS = 25-30 hours) = 6000 – 7200 hours Conversion from SCU → ECTS = $6480 / 240 = 27$ hours Based on that, we use 27 hours of study load for 1 ECTS → $1 \text{ SCU} = 45 \text{ hours} / 27 \text{ hours} = 1,7 \text{ ECTS}$ $2 \text{ SCU} = 2 \times 1,7 \text{ ECTS} = 3,4 \text{ ECTS}$





Prerequisite Courses	<ol style="list-style-type: none">1. Ethology (PKH61107)2. Veterinary Anatomy 1 (PKH61311)
Module Objectives/Intended Learning Outcomes	<ol style="list-style-type: none">1. Students are able to understand the taxonomy and classification of the anatomy, physiology, reproduction, and behavior of companion animals.2. Able to understand the management of care, housing, and feeding of companion animals.3. Able to understand various types of diseases and their prevention procedures.
Module Descriptions	The course explains the anatomy, physiology, reproduction, behavior, management of care, housing, feeding, and types of diseases of companion animals. It also explains how to choose companion animals correctly based on species, breed, maintenance goals, selection of good breeding stock, suitable housing, and feeding, as well as routine health care (grooming, vaccination, deworming).
Learning Contents	<ol style="list-style-type: none">1. Introduction to Pet Health Management2. Dog Health Management3. Health Management of Non-Parrot Birds4. Health Management of Parrot Birds5. Rabbit Health Management6. Sugar Glider Health Management7. Cat Health Management8. Ferret Health Management9. Civet Health Management10. Turtle Health Management11. Rodent Health Management12. Enrichment13. Health Management of Snakes and Lizards14. Case Study
Evaluation Form /Assessment	<ol style="list-style-type: none">1. Case Study2. Project Based Method3. Midterm Exam4. Final Exam
Study and examination requirements	<ol style="list-style-type: none">1. This course requires 80% of attendance in the lecture class





Reading List/Book
References

1. Dog Owner's Home Veterinary Handbook, 4th Edition
2. Cat Owner's Home Veterinary Handbook, 3rd Edition
3. BSAVA Manual of Rodents and Ferrets, 2011
4. *Dog's Fact The Pet Parents A-Z Home Care Encyclopedia*, by Amy Shojay
5. *Lagomorphs: Pika, Rabbits, and Hares of The World*, Andrew T. Smith, Charlotte H. Johnston, Paulo C. Alves, Klaus Hackländer





Faculty of
Veterinary Medicine

3rd SEMESTER



MODULE 23

Module Name	Veterinary Microbiology 2 (Veterinary Virology)
Code	PKH61305
Semester	3
Study Program	Bachelor of Veterinary Medicine
Person Responsible For This Module	drh. Fidi Nur Aini, M.Si
Language	Indonesian
Type of Course (Compulsory/Elective)	Compulsory
Learning Forms/Teaching Format	1. Discussion 2. Lecture 3. Case Study 4. Small Group Discussion
Workload	50 minutes of lecture study 60 minutes of case study 60 minutes of self-study
ECTS	1.7
Credit Units	1 SKS = 1 system credit unit (SCU) equal to 45 hours according to SNPT 2023 Indonesian total study load (SCU) bachelor degree (4 years) = 144 SCU x 45 hours = 6480 hours ECTS for Bachelor's degree 4 years = 240 ECTS (1 ECTS = 25-30 hours) = 6000 – 7200 hours Conversion from SCU → ECTS = 6480 / 240 = 27 hours Based on that, we use 27 hours of study load for 1 ECTS → 1 SCU = 45 hours /27 hours = 1,7 ECTS
Prerequisite Courses	1. Veterinary Microbiology 1 (PKH62214) 2. Veterinary Biochemistry 2 (PKH62203)





Module Objectives/Intended Learning Outcomes	<ol style="list-style-type: none">1. Able to mention and understand the classification of viruses that affect animals, explain virus replication, techniques for virus isolation and identification, antiviral drugs, and analyze viral drug resistance.2. Skilled in understanding the contents of textbooks (Skills).3. Capable of effectively communicating about viruses (Skills).4. Takes responsibility for seeking knowledge (Attitude).
Module Descriptions	<ol style="list-style-type: none">1. Able to explain the history of Virus Development and Biotechnology.2. Able to explain DNA and RNA Virus Replication as well as bacteriophage.3. Able to mention and explain Taxonomy, Classification, and Characterization of DNA and RNA Viruses in animals.4. Able to mention and explain Taxonomy, Classification, and Characterization of Oncogenic Viruses in animals.5. Able to explain Virus Isolation, Culture, and Identification methods.
Learning Contents	<ol style="list-style-type: none">1. Introduction2. History of Virus Development and Biotechnology3. General Taxonomy of Veterinary Pathogen Viruses or Zoonotic Viruses4. DNA Viruses5. RNA Viruses6. DNA and RNA Virus Replication7. Quiz8. Virus Isolation and Identification9. Sample Collection Techniques and Diagnosis10. Oncogenic Viruses11. Antiviral Drugs, Vaccines, Prophylaxis12. Integration of Research Results13. Case Study 114. Case Study 2
Evaluation Form /Assessment	<ol style="list-style-type: none">1. Case Study 50%2. Midterm Exam 25%3. Final Exam 25%
Study and examination requirements	<ol style="list-style-type: none">1. This course requires 80% of attendance in the lecture class





Reading List/Book
References

1. *Fenner's Veterinary Virology (2011). 4th ed.* Edited by N. James MacLachlan and Edward J. Dubovi. Elsevier Publishing
2. Tortora G. J. et al., 2013. *Microbiology: An Introduction*. The Benjamin Publishing Company
3. Murwani, S. *Mikrobiologi Veteriner*. 2015. UB Press
4. Jawetz, Malnick, and Adelberg's. *Medical Microbiology*. Lange. 26 Ed. McGraw Hill Medicine
5. Hogg, S. 2005. *Essential Microbiology*. Willey





MODULE 24

Module Name	Veterinary Reproductive Physiology
Code	PKH61307
Semester	3
Study Program	Bachelor of Veterinary Medicine
Person Responsible For This Module	drh. Yudit Oktanella, M.Si
Language	Indonesian
Type of Course (Compulsory/Elective)	Compulsory
Learning Forms/Teaching format	1. Discussion 2. Lecture 3. Case Study 4. Small Group Discussion
Workload	50 minutes of face to face learning 60 minutes of case study 60 minutes of self study
ECTS	3.4
Credit Units	1 SKS = 1 system credit unit (SCU) equal to 45 hours according to SNPT 2023 Indonesian total study load (SCU) bachelor degree (4 years) = 144 SCU x 45 hours = 6480 hours ECTS for Bachelor's degree 4 years = 240 ECTS (1 ECTS = 25-30 hours) = 6000 – 7200 hours Conversion from SCU → ECTS = 6480 / 240 = 27 hours Based on that, we use 27 hours of study load for 1 ECTS → 1 SCU = 45 hours /27 hours = 1,7 ECTS 2 SCU = 2 x 1,7 ECTS = 3,4 ECTS
Prerequisite Courses	1.Veterinary Anatomy 2 (PKH62211)





	2.Veterinary Physiology 1 (PKH62212)
Module Objectives/Intended Learning Outcomes	<ol style="list-style-type: none">1. Understanding the anatomical structure of reproduction and reproductive physiology in male and female animals (pets, livestock, birds, exotic animals, and wildlife) in various reproductive phases of these animals.2. Understanding the concepts of reproductive endocrinology in male and female animals in various reproductive phases of various animals.3. Understanding to distinguish the anatomical structures of reproduction in male and female animals (pets, livestock, birds, exotic animals, and wildlife).4. Capable of explaining well, correctly, and precisely about the concepts of animal reproductive physiology and reproductive endocrinology
Module Descriptions	<p>The course explains the anatomy, physiology of male and female animal reproduction and discusses reproductive endocrinology in male and female animals of various species (pets, livestock, birds, exotic animals, and wildlife). This course will discuss the anatomical structure and physiology of male and female animal reproduction, oogenesis and spermatogenesis, puberty in male and female animals, estrus cycles/phases, ejaculation process, ovulation process, fertilization process, pregnancy physiology, parturition physiology and uterine involution, lactation physiology and mammogenesis, and discuss endocrinology in male and female animals through the approach of feedback mechanisms, functions, and roles of reproductive hormones in the male and female reproductive systems, the role of endocrinology in pregnancy, childbirth, lactation, and its feedback mechanisms.</p>
Learning Contents	<ol style="list-style-type: none">1. Lecture contract: Socialization of syllabus, lecture contract, role of Veterinary Reproductive Physiology and Endocrinology in veterinary medicine, medical terminology related to Veterinary Reproductive Physiology and Endocrinology, and Explanation of Case Studies2. Anatomy and Physiology of Male Animal Reproduction in Livestock, Pets, and Birds3. Anatomy and Physiology of Female Animal Reproduction in Livestock





	<ol style="list-style-type: none">4. Anatomy and Physiology of Female Animal Reproduction in Pets, Birds, and Exotic Animals5. Puberty and Estrus Cycles in Livestock and Hormonal Roles during Puberty6. Puberty and Estrus Cycles in Pets, Birds, and Hormonal Roles during Puberty7. Mechanisms/Processes of Ovulation and Fertilization, Pregnancy Physiology, and Hormonal Roles during ovulation and pregnancy8. Physiology of Parturition and Hormonal Roles during parturition, postpartum, and uterine involution9. Lactation Physiology and Mammogenesis and Hormonal Roles in mammogenesis and lactation formation and their feedback systems10. Endocrinology I: Basic concepts of hormones, receptors, chemical composition, properties, and regulation of hormones from the perspective of precursor substances11. Endocrinology II: Hormones as chemical substances in the regulation of physiological activity and Classification of hormones based on the organ formation, gland structure, and function in physiological systems12. Reproductive Endocrinology: Adenohypophysis (Anterior Hypothalamo-hypophysis System as concept of adenohypophysis pathways, hormone mechanism and regulation of Feed back system mechanisms; adenohypophysis as hormone producer, types of hormones, location, and function)13. Reproductive Endocrinology: Neurohypophysis (Posterior Hypothalamo-hypophysis System as concept of neuropathways hormone mechanism and regulation of Feed back system mechanisms; neurohypophysis as hormone producer, types of hormones, location, and function)14. Hormones produced by testicular glands and accessory glands as producers of male reproductive hormones, types of male reproductive hormones and their functions and their relationship with ejaculation mechanisms and hormones produced15. Ovarian glands as producers of female reproductive hormones, types of female reproductive hormones and their functions in processes ranging from puberty to lactation
Evaluation Form /Assessment	<ol style="list-style-type: none">1. Final Exam 25%2. Midterm Exam 25%3. Case Study 20%





	<ol style="list-style-type: none">4. Quiz 20%5. Activity Score /discipline /attitude 10%
Study and examination requirements	This course requires 80% of attendance in the lecture class
Reading list/Book References	<ol style="list-style-type: none">1. Reproductive Endocrinology and Biology (E. Edwar Bittar, 1998)2. Physiology of Reproduction, 3rd Edition (Neill Knobil and Neill's, 2006)3. Clinical Canine and Feline Reproduction Evidence Based Answers, 1st Edition (Margaret V. Root Kustritz, 2010)4. Comparative Reproductive Biology, 1st Edition (Heide Schatten, 2007)5. Equine Reproductive Physiology, Breeding and Study Management, 2nd Edition (M. C. G. Davies Morel, 2003)6. Arthur's Veterinary Reproduction 8th Edition (David E. Noakes, 2001)7. Fisiologi Reproduksi, Mozes Toelihere, 19878. Fisiologi Reproduksi Ternak, Ismudiono dkk., Airlangga Press, 20009. Fisiologi Ternak, Nuryadi, UB press, 2004





MODULE 25

Module Name	Veterinary Anatomy 3 (Anatomy Comparatives)
Code	PKH61311
Semester	3
Study Program	Bachelor of Veterinary Medicine
Person Responsible For This Module	Dr. drh. Handayu Untari
Language	Indonesian
Type of Course (Compulsory/Elective)	Compulsory
Learning Forms/Teaching Format	<ol style="list-style-type: none">1. Discussion2. Lecture3. Project Based Learning4. Case Study5. Laboratory Work6. Small Group Discussion
Workload	150 minutes of lecture class 180 minutes of case study 180 minutes of self-study
ECTS	5.1
Credit Units	<p>1 SKS = 1 system credit unit (SCU) equal to 45 hours according to SNPT 2023</p> <p>Indonesian total study load (SCU) bachelor degree (4 years) = 144 SCU x 45 hours = 6480 hours</p> <p>ECTS for Bachelor's degree 4 years = 240 ECTS (1 ECTS = 25-30 hours) = 6000 – 7200 hours</p> <p>Conversion from SCU → ECTS = $6480 / 240 = 27$ hours</p> <p>Based on that, we use 27 hours of study load for 1 ECTS →</p> <p>1 SCU = 45 hours / 27 hours = 1,7 ECTS</p>





	3 SCU = 3 x 1,7 ECTS = 5.1 ECTS
Prerequisite Courses	<ol style="list-style-type: none">1. Veterinary Anatomy 2 (PKH62211)2. Veterinary Histology 2 (PKH62215)
Module Objectives/Intended Learning Outcomes	<ol style="list-style-type: none">1. Able to understand the comparison of normal musculoskeletal structure and form in various animal species as a basis for laboratory examinations such as X-rays and ultrasound (USG).2. Able to understand the anatomy of the central and peripheral nervous systems (neurology) in various animal species.3. Able to understand the anatomy of the circulatory system and determine the location of blood vessels in relation to blood sampling, intravenous injection, and procedures related to other blood vessels.4. Able to understand the comparative anatomy of organ systems (respiratory, digestive, urogenital, lymphatic) in various animal species.5. Able to work in groups, communicate effectively, and express opinions orally and in writing.6. Able to demonstrate good academic ethics and morals.
Module Descriptions	The course explains the comparative anatomy of horses, carnivores, pigs, fish, rodents, birds, and reptiles.
Learning Contents	<ol style="list-style-type: none">1. Introduction Lecture on Course Contracts and Case Study Explanation2. Carnivore Anatomy (dogs and cats)3. Case Study I4. Anatomy of Rats and Mice5. Guest Lecture on Fish Anatomy 16. Guest Lecture on Fish Anatomy 27. Case Study II8. Avian Anatomy9. Rabbit Anatomy10. Anatomy of Pigs and Horses11. Case Study III12. Reptile Anatomy 1 (Squamata and Sphenodontia)13. Reptile Anatomy 2 (Testudines)14. Case Study





Evaluation Form /Assessment	<ol style="list-style-type: none">1. Case Study 50%2. Quiz 12%3. Midterm Exam 15%4. Final Exam 15%5. Activity Score 8%
Study and examination requirements	<ol style="list-style-type: none">1. This course requires 80% of attendance in the lecture class2. Students must have 100% attendance out of total meetings for laboratory work
Reading List/Book References	<ol style="list-style-type: none">1. König, H.E and Liebich H-G., 2004, Veterinary Anatomy of Domestic Animals, Textbook and Colour Atlas, Schattauer GmbH, Hölderlinstraße, D-70174 Stuttgart, Germany2. Sisson, S., and Grossman, J.D., 1953, The Anatomy of The Domestic Animals, 4th ed., W.B. Saunders Company: Philadelphia3. Popesko, P. 1978. Atlas of Topographical Anatomy of The Domestic Animals (2 ed.). W B Saunders Company: Philadelphia4. Wardhana, A.W, 2017. Atlas Anatomi Unggas. UB Press. Indonesia5. Pratiwi H., Firmawati A., Herawati H., Embriologi Hewan. UB Press. Indonesia





MODULE 26

Module Name	Veterinary Physiology 2
Code	PKH61312
Semester	3
Study Program	Bachelor of Veterinary Medicine
Person Responsible For This Module	drh. Galuh Chandra Agustina, MSi
Language	Indonesian
Type of Course (Compulsory/Elective)	Compulsory
Learning Forms/Teaching format	<ol style="list-style-type: none">1. Discussion2. Lecture3. Project Based Learning4. Case Study5. Laboratory Work6. Small Group Discussion
Workload	150 minutes of face to face learning 180 minutes of case study 180 minutes of self study
ECTS	5.1
Credit Units	<p>1 SKS = 1 system credit unit (SCU) equal to 45 hours according to SNPT 2023</p> <p>Indonesian total study load (SCU) bachelor degree (4 years) = 144 SCU x 45 hours = 6480 hours</p> <p>ECTS for Bachelor's degree 4 years = 240 ECTS (1 ECTS = 25-30 hours) = 6000 – 7200 hours</p> <p>Conversion from SCU → ECTS = $6480 / 240 = 27$ hours</p> <p>Based on that, we use 27 hours of study load for 1 ECTS →</p> <p>1 SCU = 45 hours / 27 hours = 1,7 ECTS</p>





	3 SCU = 3 x 1,7 ECTS = 5.1 ECTS
Prerequisite Courses	<ol style="list-style-type: none">1. Veterinary Physiology 1 (PKH62212)2. Veterinary Biochemistry 2 (PKH62203)
Module Objectives/Intended Learning Outcomes	<ol style="list-style-type: none">1. Student able to master veterinary sciences conceptually (Affective)2. Student able to conclude the condition of healthy and sick animals through physiological descriptions to support animal disease diagnosis (Psychomotor)3. Student able to distinguish the physiological mechanisms of various organ systems in mammals and non-mammals4. Possesses leadership skills, able to communicate, work independently as well as in groups5. Student able to academically justify the arrangement of conceptual designs independently or in group work under guidance6. Has high ethics and morals, independent spirit, responsible, leadership-oriented, and able to communicate for veterinary medical purposes both verbally and in writing
Module Descriptions	This course is a continuation of the Basic Physiology course which further describes how the physiological mechanisms of body organ systems work and illustrate how organ systems integrate to sustain animal life. The main topics of this course include the gastrointestinal system, digestion process, absorption and metabolism of nutrients, respiratory system, blood and hematopoiesis mechanism, heart physiology, circulatory system, lymphatic circulation system, uropoietic system, and integumentary system.
Learning Contents	<ol style="list-style-type: none">1. Overview and Medical Terminology2. Digestive System3. Digestion and Nutrient Absorption4. Nutrition and Metabolism5. Mammalian Respiratory System6. Non-Mammalian Respiratory System7. Blood, Coagulation, and Hematopoiesis8. Heart Physiology9. Circulatory System10. Lymphatic Circulatory System11. Integument System12. Mammalian Uropoietic System13. Non-Mammalian Uropoietic System14. Body Acid-Base Homeostasis





Evaluation Form /Assessment	<ol style="list-style-type: none">1. Case Study 50%2. Midterm Exam 25%3. Final Exam 25%
Study and examination requirements	<p>This course requires 80% attendance in the lecture class</p> <ol style="list-style-type: none">1. This course requires 100% of attendance in the laboratory practical
Reading list/Book References	<ol style="list-style-type: none">1. Guyton, AC and J E Hall.2011. <i>Texbook of Medical Physiology</i>.12th ed.W B Saunders, USA.2. Swenson,MJ. 2004. <i>Dukes Physiology of Domestic Animals</i> 5th ed. Cornell Univ Pr. New York, USA3. Frandson RD, Wilke WL, Fais AD. 2009. <i>Anatomy and Physiology of Farm Animals</i>. 7th edition. Colorado : Wiley-Blackwell.4. Cunningham, J.G. 2013. <i>Text book of Veterinary Physiology</i>. Ed ke-5 Philadelphia: W.B. Saunders Company.5. Ganong W F. (2005). <i>Review of Medical Physiology (22 ed.)</i>. San Francisco: McGraw-Hill Companies, Inc6. Reece WO. 2006. <i>Functional Anatomy and Physiology of Domestic Animals</i>. 3rd edition. Iowa : Blackwell Publishing





MODULE 27

Module Name	Veterinary Basic Pathology
Code	PKH61313
Semester	3
Study Program	Bachelor of Veterinary Medicine
Person Responsible For This Module	drh. Andreas Bandang Hardian, MVSc.
Language	Indonesian
Type of Course (Compulsory/Elective)	Compulsory
Learning Forms/Teaching Format	<ol style="list-style-type: none">1. Discussion2. Lecture3. Project Based Learning4. Case Study5. Laboratory Work6. Small Group Discussion
Workload	150 minutes of lecture class 180 minutes of case study 180 minutes of self-study
ECTS	5.1
Credit Units	<p>1 SKS = 1 system credit unit (SCU) equal to 45 hours according to SNPT 2023</p> <p>Indonesian total study load (SCU) bachelor degree (4 years) = 144 SCU x 45 hours = 6480 hours</p> <p>ECTS for Bachelor's degree 4 years = 240 ECTS (1 ECTS = 25-30 hours) = 6000 – 7200 hours</p> <p>Conversion from SCU → ECTS = $6480 / 240 = 27$ hours</p> <p>Based on that, we use 27 hours of study load for 1 ECTS →</p> <p>1 SCU = 45 hours / 27 hours = 1,7 ECTS</p>





	3 SCU = 3 x 1,7 ECTS = 5.1 ECTS
Prerequisite Courses	<ol style="list-style-type: none">1. Veterinary Histology 2 (PKH62215)2. Veterinary Biochemistry 2 (PKH62203)
Module Objectives/Intended Learning Outcomes	<ol style="list-style-type: none">1. Able to explain the concept of anatomical pathology and its application in disease diagnosis in veterinary medicine (QUIZ).2. Able to define and differentiate the concept of general pathology, including the description of lesion morphology, pathological changes, morphological diagnosis/anatomical pathology, and disease names (TEAM BASE PROJECT).3. Able to explain and identify various types of general pathological changes and their pathogenesis in infectious and non-infectious cases: metabolic disorders, cellular adaptation, cellular degeneration, cell death, circulatory disorders, inflammation, and neoplasia (MID-TERM/FINAL QUIZ/EXAM).4. Able to identify and explain basic pathological changes in tissues at macroscopic and microscopic levels (PRACTICUM).5. Able to describe characteristic features (pathognomonic) of common pathology in a case of animal disease (CASE STUDY).6. Capable and proficient in demonstrating the correct and effective use of a microscope (DISCIPLINE).
Module Descriptions	<p>The basic pathology course is a mandatory subject for students at the Faculty of Veterinary Medicine. This course covers knowledge of various forms of abnormal structural changes in organs, tissues, and cells within the body. Topics include various changes found in animal organs or tissues, such as disease causes, circulatory disorders, cellular metabolic disorders, inflammation, tumors/cancer, and environmentally induced diseases. Specifically, this learning aims to equip students for advanced courses such as Systemic Pathology and Necropsy.</p>
Learning Contents	<ol style="list-style-type: none">1. Introduction to Basic Pathology2. Cellular Metabolic Disorders3. Cellular Adaptation4. Cell Death5. Blood Circulation Disorders6. Basics of Neoplasia: Nomenclature & Description7. Comparative Oncology8. Inflammation: Morphology and Histopathology





	<ol style="list-style-type: none">9. Pathological Features in Infectious Cases10. Immunopathology11. Pathological Anatomy Features Due to Viral Infections in Animals12. Discussion/Tutorial
Evaluation Form /Assessment	<ol style="list-style-type: none">1. Case Study2. Project Based Method3. Midterm Exam4. Final Exam
Study and examination requirements	<ol style="list-style-type: none">1. This course requires 80% of attendance in the lecture class2. Students must have 100% attendance out of total meetings for laboratory work
Reading List/Book References	<ol style="list-style-type: none">1. Zachary JF, Pathologic Basis of Veterinary Disease, 6th ed., Mosby Elsevier, 2017.2. Robbins & Kumar. 2007. Buku Ajar: Patologi I dan 2. Edisi 7. EGC, Alih Bahasa: Staf pengajar Laboratorium Patologi Anatomi Fakultas Kedokteran Universitas Airlangga3. Van Dijk JE, Gruys E, dan Mouwen JMVM, Color Atlas of Veterinary Pathology, 2nd ed., Saunders Elsevier, 2007.4. Bacha Jr WJ, Bacha LM. Color atlas of veterinary histology. John Wiley & Sons, 2012.5. Banks WJ. Applied veterinary histology. Mosby-Year Book, Inc, 1993.6. Dyce KM, Sack WO, Wensing CJK. Textbook of veterinary anatomy- eBook. Elsevier Health Sciences, 2009.7. Klein BG. Cunningham's Textbook of Veterinary Physiology-E-Book. Elsevier Health Sciences, 2013.





MODULE 28

Module Name	Veterinary Immunology
Code	PKH61314
Semester	3
Study Program	Bachelor of Veterinary Medicine
Person Responsible For This Module	drh. Fidi Nur Aini E.P.D, M.Si.
Language	Indonesian
Type of Course (Compulsory/Elective)	Compulsory
Learning Forms/Teaching format	<ol style="list-style-type: none">1. Discussion2. Lecture3. Project Based Learning4. Case Study5. Laboratory Work6. Small Group Discussion
Workload	150 minutes of face to face learning 180 minutes of case study 180 minutes of self study
ECTS	5.1
Credit Units	<p>1 SKS = 1 system credit unit (SCU) equal to 45 hours according to SNPT 2023</p> <p>Indonesian total study load (SCU) bachelor degree (4 years) = 144 SCU x 45 hours = 6480 hours</p> <p>ECTS for Bachelor's degree 4 years = 240 ECTS (1 ECTS = 25-30 hours) = 6000 – 7200 hours</p> <p>Conversion from SCU → ECTS = 6480 / 240 = 27 hours</p> <p>Based on that, we use 27 hours of study load for 1 ECTS →</p> <p>1 SCU = 45 hours / 27 hours = 1,7 ECTS</p>





	3 SCU = 3 x 1,7 ECTS = 5.1 ECTS
Prerequisite Courses	<ol style="list-style-type: none">1. Microbiology 1 (PKH62214)2. Veterinary Histology 2 (PKH62215)
Module Objectives/Intended Learning Outcomes	<ol style="list-style-type: none">1. Understanding immune responses, lymphocytes, and lymphoid organs, lymphocyte maturation, activation, and regulation2. Understanding to comprehending concepts related to MHC, antigen processing and presentation to lymphocytes, cytokines, and complement3. Explaining how microbes evade immune responses, immunity against microbes and parasites, immune tolerance, autoimmunity, immunodeficiency, oncogenic diseases, immunological mechanisms, wound healing, and hypersensitivity4. Explaining with a clear and coherent explanation regarding vaccines, vaccination, immunotherapy, rapid testing (rapid test) based on immunological principles, serological tests, macrophage collection, phagocytic ability, ELISA testing, immunoblotting, immunohistochemistry, and flow cytometry
Module Descriptions	The course Veterinary Immunology discusses the immune system, including types of cytokines and complements, antigen-antibody reactions to infectious and non-infectious diseases, immunological diseases, and their applications in clinical practice, vaccines, and vaccination
Learning Contents	<ol style="list-style-type: none">1. Introduction, the role of immunology in veterinary medicine2. Immune response in the body: innate and adaptive3. Antigens and antibodies4. Immune cells and lymphoid organs, lymphocyte maturation, activation, and regulation5. MHC, antigen processing and presentation mechanisms to lymphocytes6. Microbial components in evading immune responses7. Cytokines and complement8. Immune tolerance and immune privilege reactions9. Vaccines and vaccination10. Immunology in oncogenic diseases11. Autoimmune reactions and hypersensitivity in the body12. Immunological mechanisms in wound healing





Evaluation Form /Assessment	<ol style="list-style-type: none">1. Midterm Exam 25%2. Final Exam 25%3. Case Study 50%
Study and examination requirements	<ol style="list-style-type: none">1. This course requires 80% of attendance in the lecture class2. This course requires 100% of attendance in the laboratory practical
Reading list/Book References	<ol style="list-style-type: none">1. Abbas, A.K., Andrew, H.L., Shiv, P. 2018. <i>Cellular and Molecular Immunology 9th Edition</i>. Elsevier.2. Buku Petunjuk Praktikum Imunologi Veteriner FKH UB.3. Owen, J.A., Jenni, P., Sharon, A.S. 2009. <i>Kuby Immunology 7th Edition</i>. W.H. Freeman and Company.4. Tizard, I.R. 2018. <i>Veterinary Immunology 10th Edition</i>. St. Louis, Missouri: Elsevier.5. Burmester, G-R., Antonio, P. 2003. <i>Color Atlas of Immunology</i>.6. Day, M.J., Ronald, D.S. 2014. <i>Veterinary Immunology – Principles and Practice 2nd Edition</i>. CRC Press Taylor & Francis Group.7. Rich, R.R., Thomas, A.F., William, T.S., Harry, W.S., Anthony, J.F., Cornelia, M.W. 2019. <i>Clinical Immunology:Principles and Practice</i>. Elsevier.





MODULE 29

Module Name	Veterinary Parasitology
Code	PKH61316
Semester	3
Study Program	Bachelor of Veterinary Medicine
Person Responsible For This Module	drh. Reza Yesica, M.Sc
Language	Indonesian
Type of Course (Compulsory/Elective)	Compulsory
Learning Forms/Teaching Format	<ol style="list-style-type: none">1. Discussion2. Lecture3. Project Based Learning4. Case Study5. Laboratory Work6. Small Group Discussion
Workload	150 minutes of lecture class 180 minutes of case study 180 minutes of self-study
ECTS	5.1
Credit Units	<p>1 SKS = 1 system credit unit (SCU) equal to 45 hours according to SNPT 2023</p> <p>Indonesian total study load (SCU) bachelor degree (4 years) = 144 SCU x 45 hours = 6480 hours</p> <p>ECTS for Bachelor's degree 4 years = 240 ECTS (1 ECTS = 25-30 hours) = 6000 – 7200 hours</p> <p>Conversion from SCU → ECTS = $6480 / 240 = 27$ hours</p> <p>Based on that, we use 27 hours of study load for 1 ECTS →</p> <p>1 SCU = 45 hours / 27 hours = 1,7 ECTS</p>





	3 SCU = 3 x 1,7 ECTS = 5.1 ECTS
Prerequisite Courses	<ol style="list-style-type: none">1. Veterinary Physiology 1 (PKH62212)2. Veterinary Microbiology 1 (PKH62214)
Module Objectives/Intended Learning Outcomes	<ol style="list-style-type: none">1. Able to explain the basics of parasitology, parasitic terminology, and parasitism.2. Able to explain taxonomy and morphology, classification, and basic determination of various types of parasitic worms, protozoa, and arthropods.3. Able to explain, understand, and relate their role as agents of disease in animals and humans.4. Able to explain, understand, and identify parasites in animals.5. Able to take responsibility in acquiring knowledge by independently or collaboratively explaining various types of parasites in animals, then analyzing and compiling them into reports.
Module Descriptions	The discussion covers taxonomy and morphology, classification, and basic determination of various types of helminths, protozoa, and ectoparasites. The description includes classification, morphology, habitat and life cycle, behavior, significance, and their role as agents of disease in animals and humans. To support the lectures, practical parasitology sessions are conducted where students are expected to perform and apply techniques for parasite identification and examination effectively.
Learning Contents	<ol style="list-style-type: none">1. Introduction, Basics of Parasitology2. Morphological identification, classification, and basic determination of Trematoda3. Morphological identification, classification, and basic determination of Cestoda4. Morphological identification, classification, and basic determination of Nematoda5. Morphological identification, classification, and basic determination of Ectoparasites (flies and mosquitoes)6. Morphological identification, classification, and basic determination of Ectoparasites (lice and fleas)7. Morphological identification, classification, and basic determination of Ectoparasites (ticks and mites)8. Morphological identification, classification, and basic determination of Blood Protozoa (Sarcodina and Ciliata)





	<ol style="list-style-type: none">9. Morphological identification, classification, and basic determination of Luminal Protozoa (Flagellata)10. Morphological identification, classification, and basic determination of Luminal Protozoa (Apicomplexa)11. Identification of Environmental Parasites and Zoonoses
Evaluation Form /Assessment	<ol style="list-style-type: none">1. Case Study 50%2. Midterm Exam 25%3. Final Exam 25%
Study and examination requirements	<ol style="list-style-type: none">1. This course requires 80% of attendance in the lecture class2. This course requires 100% of attendance in the laboratory practical
Reading List/Book References	<ol style="list-style-type: none">1. Taylor, M. A., Coop, R. L., & Wall, R. L. (2007). <i>Parasites of the Integument</i>. In <i>Veterinary Parasitology</i>.2. Mehlhron, H. 2012. <i>Animal Parasites_ Diagnosis, Treatment, Prevention</i>-Springer International Publishing.3. Anne M Zajac and Gary A Conboy. (2007). <i>Veterinary Clinical Parasitology, 7th ed. In The Canadian Veterinary Journal. La Revue Vétérinaire Canadienne (Vol. 48, Issue 2)</i>.4. Hendrix, C. M., & Robinson, E. (2011). <i>Diagnostic Parasitology for Veterinary Technicians, 4th Edition</i>. https://www.elsevier.com/books/diagnostic-parasitology-for-veterinary-technicians/Hendrix/978-0-323-07761-35. Urquhart, G.M., Armour, J., Duncan, J.L., Dunn, A.M., Jenning, F.M. 2001. <i>Veterinary Parasitology</i>. Second Edition. Blackwell Publishing.6. Foreyt, W. J. 2001. <i>Veterinary Parasitology Reference Manual 5th Edition</i>. Blackwell Publishing. Iowa.7. Beugnet, F., Lénaïg, H., Jacques, G. (2018). <i>Textbook of clinical parasitology in dogs and cats</i>. Boehringer Ingelheim.8. Chiodini, P.L, Moody A.H., Manser D.W. 2001. <i>Atlas of Medical Helminthology and Protozoology 4th edition</i>. London. Churchill Livingstone.





MODULE 30

Module Name	Veterinary Communication and Leadership
Code	PKH61321
Semester	3
Study Program	Bachelor of Veterinary Medicine
Person Responsible For This Module	drh. Indah Amalia Amri, M.Si
Language	Indonesian
Type of Course (Compulsory/Elective)	Elective
Learning Forms/Teaching format	1. Discussion 2. Lecture 3. Project Based Learning
Workload	50 minutes of face to face learning 60 minutes of case study 60 minutes of self study
ECTS	1.7
Credit Units	1 SKS = 1 system credit unit (SCU) equal to 45 hours according to SNPT 2023 Indonesian total study load (SCU) bachelor degree (4 years) = 144 SCU x 45 hours = 6480 hours ECTS for Bachelor's degree 4 years = 240 ECTS (1 ECTS = 25-30 hours) = 6000 – 7200 hours Conversion from SCU → ECTS = 6480 / 240 = 27 hours Based on that, we use 27 hours of study load for 1 ECTS → 1 SCU = 45 hours /27 hours = 1,7 ECTS
Prerequisite Courses	-
Module Objectives/Intended Learning Outcomes	1. Understanding the theory of personal and community communication techniques





	<ol style="list-style-type: none">2. Understanding the aspects of veterinary leadership and the role of veterinarians in society3. Student able to communicate effectively both personally and within the community4. Student able to demonstrate leadership commitment as a prospective veterinarian5. Student able to complete tasks on time and accurately6. Understanding individual and societal characteristics7. Student able to appreciate the greatness of the Almighty and collaborate with colleagues
Module Descriptions	<p>The course explains and trains students on effective communication techniques in veterinary health, both personally with clients and broadly within the community. The course also covers leadership aspects for veterinary doctors, emphasizing prioritizing the interests of clients and the community in the field of animal health.</p>
Learning Contents	<ol style="list-style-type: none">1. Lecture Contract and Introduction to Communication2. Forms and Models of Communication3. Characterful Veterinary Leadership4. Communication in Decision Making5. Organizational Communication6. Communication in Building Team Work and Networking7. Conflict Management8. Role of Veterinarians in Society9. Communication and Veterinary Medicine (Client Communication)10. Stress Management11. Leadership Motivation12. Mass Communication in Case of Disease/Outbreak13. Tasks and Promotion of Veterinary Health14. Tasks and Promotion of Veterinary Health
Evaluation Form /Assessment	<ol style="list-style-type: none">1. Midterm Exam 25%2. Final Exam 25%3. Case Study 10%4. Quiz 10%5. Activity Score / discipline / attitude 10%
Study and examination requirements	<p>This course requires 80% of attendance in the lecture class</p>





Reading list/Book References	<ol style="list-style-type: none"><li data-bbox="566 304 1390 376">1. Saleh, Akh Muwafik. 2016. Komunikasi Dalam Kepemimpinan Organisasi. Universitas Brawijaya Press (UB Press)<li data-bbox="566 398 1390 470">2. Harahap, Reni Agustina, 2019. Komunikasi Kesehatan. Prenamedia Grup<li data-bbox="566 492 1390 564">3. Wijaya, Agus, N.Purnomolastu, A.J Tjahjoanggoro. 2015. Kepemimpinan Berkarakter. Brilian International





MODULE 31

Module Name	English
Code	UBU60004
Semester	3
Study Program	Bachelor of Veterinary Medicine
Person Responsible For This Module	Alifa Camila Fadillah, S.S., M.Li
Language	Indonesian
Type of Course (Compulsory/Elective)	Compulsory
Learning Forms/Teaching Format	1. Discussion 2. Lecture 3. Case Study 4. Small Group Discussion
Workload	100 minutes of lecture class 120 minutes of case study 120 minutes of self-study
ECTS	3.4
Credit Units	1 SKS = 1 system credit unit (SCU) equal to 45 hours according to SNPT 2023 Indonesian total study load (SCU) bachelor degree (4 years) = 144 SCU x 45 hours = 6480 hours ECTS for Bachelor's degree 4 years = 240 ECTS (1 ECTS = 25-30 hours) = 6000 – 7200 hours Conversion from SCU → ECTS = 6480 / 240 = 27 hours Based on that, we use 27 hours of study load for 1 ECTS → 1 SCU = 45 hours / 27 hours = 1,7 ECTS 2 SCU = 2 x 1,7 ECTS = 3,4 ECTS





Prerequisite Courses	-
Module Objectives/Intended Learning Outcomes	<ol style="list-style-type: none">1. Able to write sentences using the following tenses: simple past, simple present, and present perfect.2. Able to identify active and passive sentences and distinguish between active and passive sentences.3. CPMK-3: Able to write procedural texts from diagrams using the simple present tense, passive voice, and conjunctions.4. Able to read data graphs with references from scientific articles published in reputable international journals.5. Able to write comparison and contrast texts.
Module Descriptions	This course is in English for academic purposes. It is aimed at developing students' English language skills specific to the subject contents or field of study with emphasis on communicative language use in academic contexts. The topic areas cover reading, speaking, and writing with some necessary linguistic explanations needed to support the skills development.
Learning Contents	<ol style="list-style-type: none">1. Introduction to Veterinary (Reading, Vocabulary, Simple Past and Present Perfect)2. Diseases in Animal (Reading, Vocabulary, Simple Present, Sentence Types, Introduction to Paragraph and the Organization)3. Cloning Process (Reading, Process Paragraph, Verb, and Collocation, Active and Passive Voice)4. Wildlife Population Graph (Reading Graph, Comparative and Superlative, Comparison, and Contrast, Letter and Application)5. Bradycardia versus Tachycardia (Reading, Vocabulary, Comparison and Contrast Essay)6. Introduction to Plagiarism (Plagiarism and anti-plagiarism methods, Citation and Referencing)
Evaluation Form /Assessment	<ol style="list-style-type: none">1. Case Study 15%2. Midterm Exam 25%3. Final Exam 25%4. Quiz 15%5. Attitude score 10%
Study and examination requirements	<ol style="list-style-type: none">1. This course requires 80% of attendance in the lecture class





Reading List/Book
References

1. An English Class Handbook for Veterinary Medicine by ESP Team
2. van Gelderen, E. 2010. *An Introduction to the Grammar of English Revised Edition*. Amsterdam: John Benjamins.
3. Bailey, S. 2003. *Academic writing - a practical guide for students*. New York: RoutledgeFalmer.
4. Langan, J. 2009. *Exploring writing*. New York: McGraw-Hill.





Faculty of
Veterinary Medicine

4th SEMESTER



MODULE 32

Module Name	Veterinary Parasitic Disease
Code	PKH62411
Semester	4
Study Program	Bachelor of Veterinary Medicine
Person Responsible For This Module	Drh. Reza Yesica
Language	Indonesian
Type of Course (Compulsory/Elective)	Compulsory
Learning Forms/Teaching format	1. Discussion 2. Lecture 3. Case Study 4. Small Group Discussion
Workload	150 minutes of face to face learning 180 minutes of case study 180 minutes of self study
ECTS	5.1
Credit Units	1 SKS = 1 system credit unit (SCU) equal to 45 hours according to SNPT 2023 Indonesian total study load (SCU) bachelor degree (4 years) = 144 SCU x 45 hours = 6480 hours ECTS for Bachelor's degree 4 years = 240 ECTS (1 ECTS = 25-30 hours) = 6000 – 7200 hours Conversion from SCU → ECTS = 6480 / 240 = 27 hours Based on that, we use 27 hours of study load for 1 ECTS → 1 SCU = 45 hours /27 hours = 1,7 ECTS





	3 SCU = 3 x 1,7 ECTS = 5.1 ECTS
Prerequisite Courses	1. Veterinary Parasitology (PKH4304)
Module Objectives/Intended Learning Outcomes	<ol style="list-style-type: none">1. Explaining the infectious agents, epidemiology, modes of transmission, clinical symptoms, pathological changes, immunity, diagnosis, prognosis, control and prevention, and appropriate therapy for Helminthiasis.2. Explaining the infectious agents, epidemiology, modes of transmission, clinical symptoms, pathological changes, immunity, diagnosis, prognosis, control and prevention, and appropriate therapy for Ectoparasites.3. Explaining the infectious agents, epidemiology, modes of transmission, clinical symptoms, pathological changes, immunity, diagnosis, prognosis, control and prevention, and appropriate therapy for Protozoa.4. Student able to take responsibility for acquiring knowledge by independently or in groups explaining various sample examinations, then analyzing and compiling them into reports.
Module Descriptions	Discusses the understanding of parasitic disease science, including infectious agents, epidemiology, modes of transmission, clinical symptoms, pathological changes, immunity, diagnosis, prognosis, control and prevention, and appropriate therapy. In addition, this is reinforced with parasitology practicums, where students are expected to become proficient in identifying and applying accurate and precise parasitic examination techniques.
Learning Contents	<ol style="list-style-type: none">1. Introductory Lecture and Basics of Parasitic Diseases2. Helminthiasis (Trematoda)3. Helminthiasis (Cestoda I)4. Helminthiasis (Cestoda II)5. Helminthiasis (Nematoda I)6. Helminthiasis (Nematoda II)7. Helminthiasis (Nematoda III)





	<ol style="list-style-type: none">8. Ectoparasite Diseases 2 (Lice and Fleas)9. Ectoparasite Diseases 3 (Ticks and Mites)10. Blood Protozoan Diseases11. Gastrointestinal Protozoan Diseases12. Tissue Protozoan Diseases13. Case Study and Presentation
Evaluation Form /Assessment	<ol style="list-style-type: none">1. Case Study 50%2. Midterm Exam 25%3. Final Exam 25 %
Study and examination requirements	<ol style="list-style-type: none">1. This course requires 80% of attendance in the lecture class2. This course requires 100% of attendance in the laboratory practical
Reading list/Book References	<ol style="list-style-type: none">1. Chiodini, P.L, Moody A.H., Manser D.W. 2001. <i>Atlas of Medical Helminthology and Protozoology 4th edition</i>. London. Churchill Livingstone.2. Dunn, A. M. 1978. <i>Veterinary Helminthology</i>. Second Ed. William Heinemann Medical Books.3. Levine, N. D. 1990. <i>Parasitologi Veteriner</i>. Gadjah Mada University Press. Yogyakarta.4. Levine, N.D. 1995. <i>Protozoologi Veteriner. Penerjemah Soeprpto Soekardono</i>. Gadjah Mada University Press.5. Soulsby, E.J.L. 1982. <i>Helminth, Arthropods and Protozoa of Domestic Animals</i>. 7thEd. Bailliere Tyndall. W.B. Saunders. London.6. Urquhart, G.M., Armour, J., Duncan, J.L., Dunn, A.M., Jennings, F.M. 2001. <i>Veterinary Parasitology</i>. Second Edition. Blackwell Publishing.7. Foreyt, W. J. 2001. <i>Veterinary Parasitology Reference Manual 5th Edition</i>. Blackwell Publishing. Iowa.





	<ol style="list-style-type: none">8. Hendrix, C. M., and Robinson, E. 2011. <i>Diagnostic Parasitology for Veterinary Technicians, 4th Edition</i>.9. Beugnet, F., Lénaïg, H., Jacques, G. (2018). <i>Textbook of clinical parasitology in dogs and cats</i>. Boehringer Ingelheim.10. Taylor, M. A., Coop, R. L., & Wall, R. L. (2007). <i>Parasites of the Integument. In Veterinary parasitology</i>.
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MODULE 33

Module Name	Veterinary Infectious Disease (Bacterial and Mycotic)
Code	PKH62404
Semester	4
Study Program	Bachelor of Veterinary Medicine
Person Responsible For This Module	drh. Fidi Nur Aini EPD, M.Si
Language	Indonesian
Type of Course (Compulsory/Elective)	Compulsory
Learning Forms/Teaching format	1. Discussion 2. Lecture 3. Case Study 4. Small Group Discussion
Workload	100 minutes of face to face learning 120 minutes of case study 120 minutes of self study
ECTS	3.4
Credit Units	1 SKS = 1 system credit unit (SCU) equal to 45 hours according to SNPT 2023 Indonesian total study load (SCU) bachelor degree (4 years) = 144 SCU x 45 hours = 6480 hours ECTS for Bachelor's degree 4 years = 240 ECTS (1 ECTS = 25-30 hours) = 6000 – 7200 hours Conversion from SCU → ECTS = $6480 / 240 = 27$ hours Based on that, we use 27 hours of study load for 1 ECTS → $1 \text{ SCU} = 45 \text{ hours} / 27 \text{ hours} = 1,7 \text{ ECTS}$ $2 \text{ SCU} = 2 \times 1,7 \text{ ECTS} = 3,4 \text{ ECTS}$





Prerequisite Courses	<ol style="list-style-type: none">1. Veterinary Microbiology 1 (PKH62214)2. Veterinary Immunology (PKH61314)
Module Objectives/Intended Learning Outcomes	<ol style="list-style-type: none">1. Understanding infectious diseases caused by bacteria and fungi.2. Understanding diseases caused by bacteria and fungi affecting animals (large livestock, poultry, fish, and wildlife).3. Understanding methods of sample collection and laboratory sample examination, as well as prevention and control measures.4. Able to explain and analyze infectious diseases caused by bacteria and fungi affecting animals, including etiology and characteristics, transmission and pathogenesis, symptoms, anatomical pathology, and differential diagnosis.
Module Descriptions	<p>The course covers infectious diseases caused by bacteria and fungi affecting animals (large livestock, poultry, fish, and wildlife), including etiology and characteristics, transmission and pathogenesis, symptoms, anatomical pathology, differential diagnosis, laboratory sample collection and examination, as well as prevention and control measures.</p>
Learning Contents	<ol style="list-style-type: none">1. Introduction and Foot Root Disease2. Pathogenic Mycology3. Bacterial Diseases in Fish and Shrimp4. Fungal Diseases in Fish and Shrimp5. Non-tuberculosis Mycobacteria Infections (NTM) (<i>Mycobacterium avium</i> Complex, <i>Mycobacterium fortuitum</i>, <i>Mycobacterium xenopi</i>, <i>Mycobacterium intracellulare</i>)6. Mycobacterium tuberculosis Complex (MTBC) Infections (<i>Mycobacterium bovis</i>, <i>Mycobacterium tuberculosis</i>)7. Anthrax, Clostridiosis, Leptospirosis, Pseudomonas8. Integration of Courses with Research and Community Service9. Enterobacteriaceae Digestive System Infections: Colibacillosis, Salmonellosis10. Non-Enterobacteriaceae Digestive System Bacteria: <i>Campylobacter jejuni</i>, <i>Campylobacter coli</i>11. Cocci Bacterial Infections (<i>Staphylococcus</i> sp, <i>Streptococcus</i> sp), Rickettsiosis, and Chlamydiosis12. Reproductive System Bacteria (<i>Brucellosis</i>, <i>Campylobacter fetus</i>)13. Bacteria Causing Respiratory System Diseases (<i>Mycoplasma gallinarum</i>, <i>Haemophilus</i> sp, <i>Pasteurella</i> sp)





	14. Case Study, Presentation, and Discussion
Evaluation Form /Assessment	<ol style="list-style-type: none">1. Case Study 50%2. Midterm Exam 25%3. Final Exam 25%
Study and examination requirements	<ol style="list-style-type: none">1. This course requires 80% of attendance in the lecture class
Reading list/Book References	<ol style="list-style-type: none">1. Dahliatul Qosimah dkk. 2017. Buku penyakit bakterial pada hewan besar dan unggas. UB Press2. Gillespie et al., 2000. Medical Microbiology and Infection at Glance. Blackwell Science, Inc.3. Hirsh and Zee. 1999. Microbiology Veteriner. Blackwell Science, Inc





MODULE 34

Module Name	Veterinary Viral Disease
Code	PKH62408
Semester	4
Study Program	Bachelor of Veterinary Medicine
Person Responsible For This Module	drh. Fidi Nur Aini E. P. D., M.Si
Language	Indonesian
Type of Course (Compulsory/Elective)	Compulsory
Learning Forms/Teaching format	1. Discussion 2. Lecture 3. Case Study 4. Small Group Discussion
Workload	100 minutes of face to face learning 120 minutes of case study 120 minutes of self study
ECTS	3.4
Credit Units	1 SKS = 1 system credit unit (SCU) equal to 45 hours according to SNPT 2023 Indonesian total study load (SCU) bachelor degree (4 years) = 144 SCU x 45 hours = 6480 hours ECTS for Bachelor's degree 4 years = 240 ECTS (1 ECTS = 25-30 hours) = 6000 – 7200 hours Conversion from SCU → ECTS = 6480 / 240 = 27 hours Based on that, we use 27 hours of study load for 1 ECTS → 1 SCU = 45 hours /27 hours = 1,7 ECTS





	2 SCU = 2 x 1,7 ECTS = 3,4 ECTS
Prerequisite Courses	1. Microbiology Veterinary 2 (Viral) (PKH 4404)
Module Objectives/Intended Learning Outcomes	<ol style="list-style-type: none">1. Students are able to mention and understand the causing agents, pathogenesis, transmission, clinical symptoms, diagnosis confirmation, prevention, and treatment of diseases in large livestock, poultry, pets, and aquatic animals caused by viruses.2. Explaining the stages of diagnosis confirmation and differential diagnosis of diseases.3. Explaining and understanding the stages of virus isolation and identification for laboratory examination.4. Students have to take responsibility in seeking knowledge (attitude).
Module Descriptions	This course explains the causing agents, pathogenesis, transmission, clinical symptoms, anatomical and laboratory pathology examination, differential diagnosis, prevention, and treatment of viral diseases in poultry (AI, ND, IB, IBD, ILT, Marek's Disease, IBH, SHS, EDS, and Fowl Pox); large animals (BSE, PMK, Rinderpest, Equine Encephalitis, Jembrana Disease, Hog Cholera, Scrapie, Enzootic Bovine Leukosis, IBR-IPV, Nipah Disease, Hendra Disease, Yellow Fever, Orf, Japanese B Encephalitis, and Blue Tongue); pets (Distemper, Rabies, Parvovirus, CAV 1, Canine Herpesvirus, Canine Coronavirus, Feline Viral Rhinotracheitis, Feline Calicivirus); and aquatic animals.
Learning Contents	<ol style="list-style-type: none">1. Introduction2. Viral Diseases in Pet Animals I (Hepatitis/ CAV 1, Canine Herpes Virus, Canine Coronavirus, Feline Viral Rhinotracheitis, Feline Calicivirus)3. Viral Diseases in Pet Animals II (Distemper, Rabies, Parvovirus, Feline Immunodeficiency Virus, Feline Leukemia Virus)4. Aquatic Animal Diseases (Viral Hemorrhagic Septicemia, Infectious Pancreatic Necrosis, Spring Viremia of Carp, Infectious Salmon Anemia, Koi Herpesvirus)5. Viral Diseases in Poultry I (Swollen Head Syndrome, Egg Drop Syndrome, Fowl Pox)6. Viral Diseases in Poultry II (Infectious Bursal Disease, Infectious Laryngotracheitis, Marek's Disease, Inclusion Body Hepatitis)





	<ol style="list-style-type: none">7. Viral Diseases in Poultry III (Avian Influenza, Newcastle Disease, Infectious Bronchitis)8. Quiz9. Viral Diseases in Large Animals I (Orf, Japanese Encephalitis, Blue Tongue, Rinderpest)10. Viral Diseases in Large Animals II (Scrapie, Enzootic Bovine Leukosis, Infectious Bovine Rhinotracheitis, Infectious Pustular Vulvovaginitis) Viral Diseases in Large Animals III (Nipah Disease, Hendra Disease, Yellow Fever, Lumpy Skin Disease)11. Viral Diseases in Large Animals IV (Equine Encephalitis, Jembrana, Hog Cholera, Bovine Spongiform Encephalopathy, PMK)12. Case Study Presentation and Discussion
Evaluation Form /Assessment	<ol style="list-style-type: none">1. Evaluation (Activity, Quiz, Task) 50%2. Midterm Exam 25%3. Final Exam 25%
Study and examination requirements	<ol style="list-style-type: none">1. This course requires 80% of attendance in the lecture class
Reading list/Book References	<ol style="list-style-type: none">1. Carter, J.B., Saunders, V.A. 2007. <i>Virology Principles and Applications</i>. John Wiley & Sons, Ltd.2. MacLachlan, N.J., Dubovi, E.J. 2010. <i>Fenner's Veterinary Virology 4th Edition</i>. Academic Press Elsevier, London.3. McVey, D.S., Kennedy, M., Chengappa, M.M. 2004. <i>Veterinary Microbiology 3rd Edition</i>. Wiley-Blackwell.4. Murphy, F.A., Gibbs, E.P.J., Horzinek, M.C., Studdert, M.J. 1999. <i>Veterinary Virology 3rd Edition</i>. Academic Press.5. Qosimah, D., Murwani, S and Amri, I.A. 2017. <i>Buku Penyakit Viral Pada Unggas</i>. UB Press.6. Quinn, P.J., Markey, B.K., Carter, M.E., Donnelly, W.J., Leonard, F.C. 2001. <i>Veterinary Microbiology and Microbial Disease</i>. Blackwell Science.7. Zuckerman, A.J., Banatvala, J.E., Schoub, B.D., Griffiths, P.D., Mortimer, P. 2009. <i>Principles and Practice of Clinical Virology 6th Edition</i>. Wiley-Blackwell.8. Swayne, D.E. <i>Disease of Poultry 13th Edition</i>. Wiley-Blackwell.





	9. Tabbu, C.R. 2000. <i>Penyakit Ayam dan Penanggulangannya: Penyakit Bakterial, Mikal, dan Viral</i> . Penerbit Kanisius. Jurnal-jurnal nasional dan internasion
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MODULE 35

Module Name	Veterinary Systemic Pathology
Code	PKH62412
Semester	4
Study Program	Bachelor of Veterinary Medicine
Person Responsible For This Module	drh. Andreas Bandang Hardian, MVSc.
Language	Indonesian
Type of Course (Compulsory/Elective)	Compulsory
Learning Forms/Teaching Format	<ol style="list-style-type: none">1. Discussion2. Lecture3. Project Based Learning4. Case Study5. Laboratory Work6. Small Group Discussion
Workload	150 minutes of lecture class 180 minutes of case study 180 minutes of self-study
ECTS	5.1
Credit Units	<p>1 SKS = 1 system credit unit (SCU) equal to 45 hours according to SNPT 2023</p> <p>Indonesian total study load (SCU) bachelor degree (4 years) = 144 SCU x 45 hours = 6480 hours</p> <p>ECTS for Bachelor's degree 4 years = 240 ECTS (1 ECTS = 25-30 hours) = 6000 – 7200 hours</p> <p>Conversion from SCU → ECTS = 6480 / 240 = 27 hours</p> <p>Based on that, we use 27 hours of study load for 1 ECTS →</p> <p>1 SCU = 45 hours / 27 hours = 1,7 ECTS</p>





	3 SCU = 3 x 1,7 ECTS = 5.1 ECTS
Prerequisite Courses	<ol style="list-style-type: none">1. Veterinary Basic Pathology (PKH61313)2. Veterinary Immunology (PKH61314)
Module Objectives/Intended Learning Outcomes	<ol style="list-style-type: none">1. Students can search for and identify various pathological changes both macroscopically and microscopically.2. Students are capable of analyzing, comparing, and drawing conclusions based on specific pathological changes in the cardiovascular, respiratory, digestive, urinary, nervous, lymphatic, musculoskeletal, integumentary, reproductive, and endocrine systems in domestic animals.3. Students can explain and demonstrate macroscopic and microscopic pathological changes in organ systems in fish and reptiles.4. Students can explain and describe the pathogenesis of a disease, demonstrating the manifestation of anatomical pathological changes.5. Students can determine a morphological diagnosis based on anatomical pathological changes.
Module Descriptions	This course focuses on the application of various necropsy techniques as an initial step to determine morphological diagnosis and study specific pathological changes in the entire organ system comprehensively. This course invites students to master and apply the anatomical pathology approach to explain the pathogenesis of a disease.
Learning Contents	<ol style="list-style-type: none">1. Overview introduction to systemic pathology and course schedule2. Macroscopic and Microscopic Pathological Changes in the Cardiovascular System in Mammals and Birds3. Macroscopic and Microscopic Pathological Changes in the Respiratory System in Mammals and Birds4. Macroscopic and Microscopic Pathological Changes in the Digestive System in Mammals and Birds5. Macroscopic and Microscopic Pathological Changes in the Urinary System in Mammals and Birds6. Macroscopic and Microscopic Pathological Changes in the Nervous System in Mammals and Birds7. Macroscopic and Microscopic Pathological Changes in the Lymphatic System in Mammals and Birds





	<ol style="list-style-type: none">8. Macroscopic and Microscopic Pathological Changes in the Musculoskeletal System in Mammals and Birds9. Macroscopic and Microscopic Pathological Changes in the Integumentary System in Mammals and Birds10. Macroscopic and Microscopic Pathological Changes in the Reproductive System in Mammals and Birds11. Macroscopic and Microscopic Pathological Changes in the Endocrine System in Mammals and Birds12. Macroscopic and Microscopic Pathological Changes in Organ Systems in Fish13. Macroscopic and Microscopic Pathological Changes in Organ Systems in Reptiles14. Case Study Presentation/Integration of Faculty Research
Evaluation Form /Assessment	<ol style="list-style-type: none">1. Case Study 20%2. Midterm Exam 25%3. Final Exam 25%4. Quiz 20%5. Activity score 10%
Study and examination requirements	<ol style="list-style-type: none">1. This course requires 80% of attendance in the lecture class2. This course requires 100% of attendance in the laboratory practical
Reading List/Book References	<ol style="list-style-type: none">1. McDonough SP, Southard T. Necropsy Guide for Dogs, Cats, and Small Mammals. John Wiley & Sons, 2016.2. Majó N, Dolz R. Atlas of Avian Necropsy. Servet, 2011.3. Zachary JF, Pathologic Basis of Veterinary Disease, 4th ed., Mosby Elsevier, 2017.4. Roberts RJ. Fish pathology. John Wiley & Sons, 2012.5. Van Dijk JE, Gruys E, dan Mouwen JMVM, Color Atlas of Veterinary Pathology, 2nd ed., Saunders Elsevier, 2007.6. Bacha Jr WJ, Bacha LM. Color atlas of veterinary histology. John Wiley & Sons, 2012.7. Banks WJ. Applied veterinary histology. Mosby-Year Book, Inc, 1993.8. Dyce KM, Sack WO, Wensing CJG. Textbook of veterinary anatomy- eBook. Elsevier Health Sciences, 2009.9. Klein BG. Cunningham's Textbook of Veterinary Physiology-E-Book. Elsevier Health Sciences, 2013.





MODULE 36

Module Name	Veterinary Pharmacology 1
Code	PKH62405
Semester	4
Study Program	Bachelor of Veterinary Medicine
Person Responsible For This Module	drh. Aldila Noviatry, M.Biomed
Language	Indonesian
Type of Course (Compulsory/Elective)	Compulsory
Learning Forms/Teaching format	1. Discussion 2. Lecture 3. Case Study
Workload	100 minutes of face to face learning 100 minutes of case study 120 minutes of self study
ECTS	3.4
Credit Units	1 SKS = 1 system credit unit (SCU) equal to 45 hours according to SNPT 2023 Indonesian total study load (SCU) bachelor degree (4 years) = 144 SCU x 45 hours = 6480 hours ECTS for Bachelor's degree 4 years = 240 ECTS (1 ECTS = 25-30 hours) = 6000 – 7200 hours Conversion from SCU → ECTS = 6480 / 240 = 27 hours Based on that, we use 27 hours of study load for 1 ECTS → 1 SCU = 45 hours / 27 hours = 1,7 ECTS 2 SCU = 2 x 1,7 ECTS = 3,4 ECTS
Prerequisite Courses	-





Module Objectives/Intended Learning Outcomes	<ol style="list-style-type: none">1. Students are able to master and explain the basic concepts of pharmacology, pharmacokinetics, pharmacodynamics, drug interactions, and drug antagonists.2. Students are able to master and explain the classification and types of drugs, as well as their mechanisms of action, pharmacokinetic and pharmacodynamic profiles, indications, contraindications, interactions, and side effects.3. Explaining the principles of drug selection and administration, and determining therapy based on drug class, mechanism of action, pharmacokinetic and pharmacodynamic profiles, indications, contraindications, interactions, and side effects.4. Students are able to complete tasks independently or in groups correctly according to instructions and finish them on time.5. Has high ethics, morals, and academic responsibility, as well as the ability to communicate and express opinions effectively in both oral and written forms.
Module Descriptions	This course explains the basic principles of pharmacology, drug classifications and types, pharmacokinetics, pharmacodynamics, indications, contraindications, drug interactions, and side effects.
Learning Contents	<ol style="list-style-type: none">1. Introduction to Veterinary Pharmacology and Pharmacokinetics2. Pharmacodynamics3. Drug Interactions and Antagonists4. Drugs affecting reproductive hormones and growth promoters5. Integumentary system drugs6. Sensory system drugs (eye and ear)7. Drugs affecting hormones (adenohypophysis, thyroid, antithyroid, parathyroid, calcitonin)8. Biological response modifiers (Immunomodulators)9. Antibacterial and antifungal drugs10. Antiprotozoal drugs11. Antineoplastic and antiviral drugs12. Anthelmintic and ectoparasitic drugs13. Drugs affecting autacoid systems14. Case Study
Evaluation Form /Assessment	<ol style="list-style-type: none">1. Midterm Exam 25%2. Final Exam 25%3. Quiz 20%4. Case Study 20%





	5. Activity score/ discipline 10%
Study and examination requirements	1. This course requires 80% of attendance in the lecture class
Reading list/Book References	<ol style="list-style-type: none">1. Veterinary Pharmacology and Therapeutics2. Small Animal Clinical Pharmacology and Therapeutics3. Handbook of Veterinary Pharmacology4. Lippincott's Illustrated Reviews – Pharmacology5. Plumbs Veterinary Drug Handbook6. Papich Handbook of Veterinary Drugs





MODULE 37

Module Name	Veterinary Public Health and One Health
Code	PKH62403
Semester	4
Study Program	Bachelor of Veterinary Medicine
Person Responsible For This Module	drh. Citra Sari, M. Si
Language	Indonesian
Type of Course (Compulsory/Elective)	Compulsory
Learning Forms/Teaching Format	1. Discussion 2. Lecture 3. Case Study 4. Small Group Discussion
Workload	100 minutes of lecture class 120 minutes of case study 120 minutes of self-study
ECTS	3.4
Credit Units	1 SKS = 1 system credit unit (SCU) equal to 45 hours according to SNPT 2023 Indonesian total study load (SCU) bachelor degree (4 years) = 144 SCU x 45 hours = 6480 hours ECTS for Bachelor's degree 4 years = 240 ECTS (1 ECTS = 25-30 hours) = 6000 – 7200 hours Conversion from SCU → ECTS = 6480 / 240 = 27 hours Based on that, we use 27 hours of study load for 1 ECTS → 1 SCU = 45 hours /27 hours = 1,7 ECTS 2 SCU = 2 x 1,7 ECTS = 3,4 ECTS





Prerequisite Courses	<ol style="list-style-type: none">1. Veterinary Microbiology 1 (PKH62214)2. Veterinary Microbiology 2 (PKH61305)3. Veterinary Parasitology (PKH61316)
Module Objectives/Intended Learning Outcomes	<ol style="list-style-type: none">1. Able to grasp the concept and explain general principles of public health and apply healthy principles.2. Able to explain the role of veterinarians in public health and understand One Health in ensuring and improving public health directly or indirectly related to work.3. Able to complete module assignments correctly according to instructions and on time.4. Able to work collaboratively in teams, emphasizing individual responsibility in group work & Able to demonstrate high self-discipline by being punctual for lectures.
Module Descriptions	Discussing basic knowledge of public health, community nutrition, healthy behaviors, environmental sanitation, and factors influencing public health. Discussing environments that support public health and quality of life to maintain community health. Knowledge of environmental sanitation, air and water, and their relationship with public health. Discussing the concept of One Health and the role of veterinarians in public health.
Learning Contents	<ol style="list-style-type: none">1. Course contract, introduction to veterinary public health and One Health2. The relationship between personal health and public health, as well as the relationship between veterinary public health and public health in general3. Causes of diseases in the community4. Sources of air pollution and their impacts on health5. Sources of water pollution and their impacts on health6. Healthy homes and healthy markets7. Integration lecture of faculty research or community service8. One Health Meeting 19. One Health Meeting 210. AMR (Antimicrobial Resistance)11. Occupational health and safety (K3)12. Personal hygiene and health protocols13. Biosecurity and biosafety14. PBL (Problem-Based Learning) Case-Based Project





Evaluation Form /Assessment	<ol style="list-style-type: none">1. Case Study 20%2. Quiz 20%3. Activity Score 10%4. Midterm Exam 25%5. Final Exam 25%
Study and examination requirements	<ol style="list-style-type: none">1. This course requires 80% of attendance in the lecture class
Reading list/Book References	<ol style="list-style-type: none">1. Essentials of Milk Hygiene; A Practical Treatise on Dairy and Milk Inspection and the Hygienic Production and Handling of Milk, for Students of Dairying and Sanitarians, by Jensen and C. O. Kindle Edition. 2014.2. Food Science. Meat, Poultry, and Eggs, by Norman N. Potter and Joseph H. Hotchkiss. Ebook Springer.3. Meat Hygiene, by Kavita Marwaha. Ebook Rakuten Overdrive.





MODULE 38

Module Name	Experimental Animal Science
Code	PKH62417
Semester	4
Study Program	Bachelor of Veterinary Medicine
Person Responsible For This Module	drh. Tiara Widyaputri, M.Si
Language	Indonesian
Type of Course (Compulsory/Elective)	Compulsory
Learning Forms/Teaching format	<ol style="list-style-type: none">1. Discussion2. Lecture3. Project Based Learning4. Case Study5. Laboratory Work6. Small Group Discussion
Workload	100 minutes of face to face learning 120 minutes of case study 120 minutes of self study
ECTS	3.4
Credit Units	1 SKS = 1 system credit unit (SCU) equal to 45 hours according to SNPT 2023 Indonesian total study load (SCU) bachelor degree (4 years) = 144 SCU x 45 hours = 6480 hours ECTS for Bachelor's degree 4 years = 240 ECTS (1 ECTS = 25-30 hours) = 6000 – 7200 hours





	<p>Conversion from SCU → ECTS = $6480 / 240 = 27$ hours</p> <p>Based on that, we use 27 hours of study load for 1 ECTS →</p> <p>1 SCU = 45 hours / 27 hours = 1,7 ECTS</p> <p>2 SCU = 2 x 1,7 ECTS = 3,4 ECTS</p>
Prerequisite Courses	-
Module Objectives/Intended Learning Outcomes	<ol style="list-style-type: none">1. Students are able to determine appropriate experimental animals for research.2. Handling and restraining experimental animals and maintaining them properly and correctly.3. Performing anesthesia and euthanasia, as well as collecting specimens from experimental animals with care.4. Students are able to work in groups, communicate effectively, and express opinions orally and in writing.5. Students are able to demonstrate good academic ethics and morals.
Module Descriptions	<p>The course explains the maintenance and use of various experimental animals based on standards and animal welfare, characteristics of different types of experimental animals, handling techniques and blood collection, administration techniques for treatments, tissue sample collection techniques in experimental animals, and the classification of laboratory types based on the pathogens being researched.</p>
Learning Contents	<ol style="list-style-type: none">1. Overview of the course: explanation of Syllabus, Lecture Contract, Basic Terminology of Experimental Animals2. Ethical principles of using experimental animals in research3. Rodent experimental animals: mice and rats4. Mammalian experimental animals: rabbits5. Avian experimental animals: chickens and birds6. Pisces experimental animals: fish & zebrafish





	<ol style="list-style-type: none">7. Large animal experimental animals: goats and cattle8. Introduction to Experimental Animal Maintenance Facilities9. Induction techniques in experimental animals (injection, oral, etc.)10. Sample collection techniques (blood, swab, tissue, feces)11. Anesthesia and euthanasia in experimental animals12. Introduction to Introduction to experimental animal models: metabolic and non-metabolic diseases13. Introduction to experimental animal models: transgenic and KO14. Assignment presentation of literature review paper "Case Study of experimental animal model use"
Evaluation Form /Assessment	<ol style="list-style-type: none">1. Midterm Exam 20%2. Final Exam 20%3. Assignment 15%4. Quiz 15%5. Laboratory work 30%
Study and examination requirements	<ol style="list-style-type: none">1. This course requires 80% of attendance in the lecture class2. This course requires 100% of attendance in the laboratory practical
Reading list/Book References	<ol style="list-style-type: none">1. <i>Pedoman Penggunaan Tikus Sebagai Hewan Uji Laboratorium</i>. Lesmana, R, Geonawan, H., & Dewi, FNA. EGC Press. 2020.2. <i>The laboratory rat</i> / Sharp, Patrick, and Jason S. Villano. CRC press, 20123. <i>Handbook of Laboratory Animal Science</i> / Jann Hau, Steven J. Schapiro, Volume II, Third Edition_ Essential Principles and Practices -CRC Press (2011)4. <i>Management of laboratory animal care and use programs</i> / Suckow, Mark A., Fred A. Douglas, and Robert H. Weichbrod, eds. CRC press, 2001





	5. <i>Restraint and handling of wild and domestic animals</i> / Murray E. Fowler. – 3rd.ed. 2008
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MODULE 39

Module Name	Entrepreneurship
Code	PKH60003
Semester	4
Study Program	Bachelor of Veterinary Medicine
Person Responsible For This Module	drh. Viski Fitri Hendrawan, M.Vet
Language	Indonesian
Type of Course (Compulsory/Elective)	compulsory
Learning Forms/Teaching Format	1. Discussion 2. Lecture 3. Case Study 4. Small Group Discussion
Workload	100 minutes of lecture class 120 minutes of case study 1230 minutes of self-study
ECTS	3.4
Credit Units	1 SKS = 1 system credit unit (SCU) equal to 45 hours according to SNPT 2023 Indonesian total study load (SCU) bachelor degree (4 years) = 144 SCU x 45 hours = 6480 hours ECTS for Bachelor's degree 4 years = 240 ECTS (1 ECTS = 25-30 hours) = 6000 – 7200 hours Conversion from SCU → ECTS = 6480 / 240 = 27 hours Based on that, we use 27 hours of study load for 1 ECTS → 1 SCU = 45 hours /27 hours = 1,7 ECTS 2 SCU = 2 x 1,7 ECTS = 3,4 ECTS





Prerequisite Courses	-
Module Objectives/Intended Learning Outcomes	<ol style="list-style-type: none">1. Able to understand the scope and perspective of entrepreneurship and the meaning of entrepreneurship as an orientation.2. Capable of analyzing and evaluating a business unit.3. Able to think creatively and innovatively, analyze risks, have entrepreneurial motivation, possess marketing insights, leadership knowledge, and leadership skills, and have communication abilities to evaluate the type of entrepreneur that suits interests and capacities.4. Capable of understanding and proficiency in developing a business plan effectively and correctly.
Module Descriptions	Entrepreneurship course is a mandatory course for students of the Faculty of Veterinary Medicine. This course discusses the importance of entrepreneurship as an orientation, the ability to develop business plans, creative and innovative thinking, risk calculation, understanding and motivation, leadership knowledge and skills, and communication skills. The teaching and learning activities consist of lectures amounting to 2 credit scores.
Learning Contents	<ol style="list-style-type: none">1. Entrepreneurship Perspective and KWU RPS Overview2. Motivation in Entrepreneurship3. Types and Process of Becoming an Entrepreneur4. Forms and Purposes of Communication in Entrepreneurship5. The Importance of SWOT Analysis in Entrepreneurship6. Leadership and Courage in Decision-Making7. Micro and Macro Influences in Entrepreneurship8. Intrapreneurship and Organizational Climate9. Business Innovation and Creative Industries10. Marketing Strategies and Negotiation Strategies in Business Transactions11. Stages of Marketing Plan Development and Types of Customers12. Business Financial Feasibility and Market Winning Strategies13. Forms of Business Entities14. Case Study "Preparation of Student Entrepreneur Program Proposal (PMW)"
Evaluation Form /Assessment	<ol style="list-style-type: none">1. Case Study 20%2. Quiz 20%3. Activity score 10%





	<ol style="list-style-type: none">4. Midterm Exam 25%5. Final Exam 25%
Study and examination requirements	<ol style="list-style-type: none">1. This course requires 80% of attendance in the lecture class2. This course requires 100% of attendance in the laboratory practical
Reading List/Book References	<ol style="list-style-type: none">1. Hendro, 2011 Dasar-dasar Kewirausahaan, Panduan bagi mahasiswa untuk Mengenal, memahami dan memasuki Dunia Bisnis.2. Ciputra, Ir. Dr. 2008. Quantum Leap: Bagaimana Entrepreneurship Mengubah Masa Depan Anda dan Masa depan bangsa . Jakarta.3. PT Elex Media Komputindo4. Kiyosaki, R.T. Sharon L. Lechter. 2002. Rich Dad & Poor Dad. Gramedia Pustaka Utama. Jakarta5. Alma, B. 2009. Kewirausahaan Untuk Mahasiswa dan Umum. Alfabeta. Bandung6. Chandra P.E. 2008. Cara Gila Jadi Pengusaha. Elex Media Computindo. Kelompok Gramedia. Jakarta.7. Hendro, Chandra W.W. 2006. Be a Smart and Good Entrepreneur. CLA Publishing. Jakarta8. Irmim S, Suharyo AP. 2004. The Best Personal. Seyma Media. Malang9. 8.Kennedy, J.E, R Darmawan Soemanagara. 2006. Marketing Communication. Bhuana Ilmu Populer. . Kelompok Gramedia. Jakarta.10. Machfoedz, M, Mahmud Machfoedz. 2006. Kewirausahaan, Metode, Manajemen, dan Implementasi. BPFE. Yogyakarta11. Musrofi, M. 2008. Creative Manager, Creative Entrepreneur. Elex Media Computindo. Kelompok Gramedia. Jakarta.12. Overton, R. 2004. Are You An Entrepreneur?. Elex Media Computindo. Kelompok Gramedia. Jakarta.13. Seng, A. W. 2006. Rahasia Bisnis Orang Jepang. Langkah Raksasa Sang Nippon Menguasai Dunia. Hikmah, Mizan Publika. Jakarta14. Seng, A. W. 2007. Rahasia Bisnis Orang Cina Kunci Sukses Menguasai Perdagangan Internasional. Hikmah, Mizan Publika. Jakarta15. Jakarta16. Suharyadi, Arissetyanto Nugroho, Purwanto S.K, Maman Faturohman. 2008. Kewirausahaan Membangun Usaha Sukses Sejak





	<p>17. Usia Muda. Salemba Empat. Jakarta.</p> <p>18. Yahya, H, Baban Sarbana. 2006. Siapa Berani Jadi Entrepreneur. Elex Media Computindo. Kelompok Gramedia. Jakarta.</p>
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MODULE 40

Module Name	Animal Welfare and Veterinary Bioethics
Code	PKH62406
Semester	4
Study Program	Bachelor of Veterinary Medicine
Person Responsible For This Module	drh. Widi Nugroho, Ph.D
Language	Indonesian
Type of Course (Compulsory/Elective)	Compulsory
Learning Forms/Teaching format	1. Discussion 2. Lecture 3. Case Study 4. Small Group Discussion
Workload	100 minutes of face to face learning 120 minutes of case study 120 minutes of self study
ECTS	3.4
Credit Units	1 SKS = 1 system credit unit (SCU) equal to 45 hours according to SNPT 2023 Indonesian total study load (SCU) bachelor degree (4 years) = 144 SCU x 45 hours = 6480 hours ECTS for Bachelor's degree 4 years = 240 ECTS (1 ECTS = 25-30 hours) = 6000 – 7200 hours Conversion from SCU → ECTS = 6480 / 240 = 27 hours Based on that, we use 27 hours of study load for 1 ECTS → 1 SCU = 45 hours /27 hours = 1,7 ECTS 2 SCU = 2 x 1,7 ECTS = 3,4 ECTS





Prerequisite Courses	<ol style="list-style-type: none">1. Veterinary Physiology 1 (PKH62212)2. Veterinary Physiology 2 (PKH61312)3. Veterinary Ethology (PKH61107)
Module Objectives/Intended Learning Outcomes	<ol style="list-style-type: none">1. Students are able to design the implementation of animal welfare and veterinary bioethics in various fields of livestock industry, companion animals, working animals, aquatic animals, and wildlife.2. Proficient in the concepts of animal welfare 5F, 3R, basic concepts of veterinary bioethics, and their application in various fields of livestock industry, companion animals, aquatic animals, wildlife, animal models for educational and research purposes, and in veterinary medical service practices.3. Possesses high ethics and morals, independent spirit, excellence and responsibility, leadership qualities, and capable of communicating orally and in writing with various parties regarding the concepts and application of animal welfare and veterinary bioethics.4. Students are able to collaborate with various parties in designing the implementation of animal welfare and veterinary bioethics.
Module Descriptions	<p>The course "Animal Welfare and Veterinary Bioethics" explores the concept of the five freedoms (5F) and the 3Rs in animal welfare, along with the application of these concepts to various aspects of human activities involving animals. The course also includes the historical development of bioethics as a scientific discipline, major issues in veterinary bioethics, the ethical considerations in using experimental animals, and veterinary bioethics in veterinary medical practice, both in Indonesia and internationally. The lecture and practical session ratio is 2:0 credit hours.</p>
Learning Contents	<ol style="list-style-type: none">1. Course syllabus, principles of animal welfare 5F and their assessment based on animal physiological and behavioral conditions, as well as veterinary professional ethics.2. Application of animal welfare 5F in livestock farming, transportation, and animal markets.3. Application of animal welfare 5F in Slaughterhouses (RPH) for ruminants and pigs.4. Application of animal welfare 5F in poultry industry and Slaughterhouses (RPU).





	<ol style="list-style-type: none">5. Application of animal welfare 5F and 3R in experimental animals and animal models for education.6. Application of animal welfare in working animals and companion animals.7. Licensing and regulations related to animal health and welfare services.8. Application of animal welfare 5F in fisheries and aquatic animals.9. Application of animal welfare in wildlife and conservation.10. Euthanasia and emergency killing.11. History of bioethics as a scientific discipline and important issues in veterinary bioethics.12. Case study13. Case study14. Case study
Evaluation Form /Assessment	<ol style="list-style-type: none">1. Midterm Exam 25%2. Final Exam 25%3. Assignment 25%4. Quiz 15%5. Activity Score 10%
Study and examination requirements	<ol style="list-style-type: none">1. This course requires 80% of attendance in the lecture class
Reading list/Book References	<ol style="list-style-type: none">1. Terrestrial Code Online Access - WOAHA - World Organisation for Animal Health2. Aquatic Code Online Access - WOAHA - World Organisation for Animal Health3. Kimera, Sharadhuli I., and James ED Mlangwa. "Veterinary ethics." Encyclopedia of Global Bioethics(2015): 1-12.4. Terrestrial Code Online Access - WOAHA - World Organisation for Animal Health5. Aquatic Code Online Access - WOAHA - World Organisation for Animal Health6. Kimera, Sharadhuli I., and James ED Mlangwa. "Veterinary ethics." Encyclopedia of Global Bioethics(2015): 1-12.





MODULE 41

Module Name	Ruminant Health Management
Code	PKH62421
Semester	4
Study Program	Bachelor of Veterinary Medicine
Person Responsible For This Module	drh. Galuh Chandra Agustina, M.Si
Language	Indonesian
Type of Course (Compulsory/Elective)	Elective
Learning Forms/Teaching Format	1. Discussion 2. Lecture 3. Case Study 4. Small Group Discussion
Workload	100 minutes of lecture class 120 minutes of case study 120 minutes of self-study
ECTS	3.4
Credit Units	1 SKS = 1 system credit unit (SCU) equal to 45 hours according to SNPT 2023 Indonesian total study load (SCU) bachelor degree (4 years) = 144 SCU x 45 hours = 6480 hours ECTS for Bachelor's degree 4 years = 240 ECTS (1 ECTS = 25-30 hours) = 6000 – 7200 hours Conversion from SCU → ECTS = $6480 / 240 = 27$ hours Based on that, we use 27 hours of study load for 1 ECTS → $1 \text{ SCU} = 45 \text{ hours} / 27 \text{ hours} = 1,7 \text{ ECTS}$ $2 \text{ SCU} = 2 \times 1,7 \text{ ECTS} = 3,4 \text{ ECTS}$





Prerequisite Courses	<ol style="list-style-type: none">1. Ethology (PKH61107)2. Basic Animal Nutrition (PKH62216)3. Animal Husbandry (PKH61105)
Module Objectives/Intended Learning Outcomes	<ol style="list-style-type: none">1. Able to master the concept of health maintenance program planning and disease prevention, product quality, and productive animal behavior, and explain planning, management, and monitoring of livestock business evaluation.2. Able to explain and understand ruminant health management in various aspects, including environment, reproduction, feed, housing, waste, and diseases.3. Capable of completing module assignments correctly according to instructions and on time.4. Able to collaborate in teams, emphasizing individual responsibility in group work & Able to demonstrate high self-discipline by not being late for lectures.
Module Descriptions	<p>This course explains to students the ruminant livestock production system and various efforts to increase production, methods for estimating livestock production outcomes both for meat and milk production, understanding strategic diseases with potential zoonotic implications, as well as health maintenance program planning and disease prevention for product quality. It also covers planning, management, and monitoring of livestock business evaluation.</p>
Learning Contents	<ol style="list-style-type: none">1. Introduction2. Barn Management: Barn Management Administration3. Barn Environmental Management: Good barn location, livestock comfort zone, and surrounding environmental management4. Farm Unit Management: Breeding and commercial farms for both beef and dairy cattle5. Equipment Management: Introduction to production facilities and equipment on the farm unit6. Farm Biosecurity and Biosafety Management: Understanding and implementing biosecurity and biosafety on the farm unit7. Feed Management: Formulating Rations for Beef Cattle8. Feed Management: Formulating Rations for Dairy Cattle9. Ruminant Livestock Diseases: Types of potentially zoonotic diseases (Bacteria and Fungi) and their management and prevention





	<ol style="list-style-type: none">10. Ruminant Livestock Diseases: Types of potentially zoonotic diseases (Parasites and Viruses) and their management and prevention11. Slaughterhouse Management12. Milk Production Management (Milking)13. Livestock Waste Management: Livestock waste management14. Case Study Presentation
Evaluation Form /Assessment	<ol style="list-style-type: none">1. Case Study 20%2. Midterm Exam 25%3. Final Exam 25%4. Quiz 20%5. Activity Score 10%
Study and examination requirements	<ol style="list-style-type: none">1. This course requires 80% of attendance in the lecture class2. This course requires 100% of attendance in the laboratory practical
Reading list/Book References	<ol style="list-style-type: none">1. Dairy Herd Health and Management. 2012. Jos Noordhuizen1. Beef Cattle Management. 2015. William C. Skelley





MODULE 42

Module Name	Non-Ruminant Health Management
Code	PKH62422
Semester	4
Study Program	Bachelor of Veterinary Medicine
Person Responsible For This Module	drh. Dodik Prasetyo, M.Vet
Language	Indonesian
Type of Course (Compulsory/Elective)	Elective
Learning Forms/Teaching format	1. Discussion 2. Lecture 3. Case Study 4. Small Group Discussion
Workload	50 minutes of face to face learning 60 minutes of case study 60 minutes of self study
ECTS	1.7
Credit Units	1 SKS = 1 system credit unit (SCU) equal to 45 hours according to SNPT 2023 Indonesian total study load (SCU) bachelor degree (4 years) = 144 SCU x 45 hours = 6480 hours ECTS for Bachelor's degree 4 years = 240 ECTS (1 ECTS = 25-30 hours) = 6000 – 7200 hours Conversion from SCU → ECTS = 6480 / 240 = 27 hours Based on that, we use 27 hours of study load for 1 ECTS → 1 SCU = 45 hours /27 hours = 1,7 ECTS
Prerequisite Courses	Animal Husbandry (PKH61105)





Module Objectives/Intended Learning Outcomes	<ol style="list-style-type: none">1. Students are able to position oneself as a prospective veterinary medicine graduate in addressing the importance of health management for the sustainability of animal life.2. Understanding health management in the care of domesticated non-ruminant animals, mastered by humans for the growth and development processes of animal life.3. Executing tasks correctly according to instructions and completing them promptly.4. Students are able to possess skills in developing health programs as preventive measures to combat diseases and implementation of vulnerability.
Module Descriptions	<p>This course explains the definition of animal health management, the importance of animal health management, and the development of animal health programs, especially for various types of domesticated non-ruminant animals under human care. It serves as one form of implementation to ensure animal welfare, considering animals as production commodities for human-utilized products and their impact on the environment.</p>
Learning Contents	<ol style="list-style-type: none">1. Course Contract, RPS Overview, and Introductory Lecture2. Management of Swine Livestock Farming3. Maintenance Management of Swine Livestock4. Health Management of Swine Livestock5. Management of Rabbit Livestock Farming6. Maintenance Management of Rabbit Livestock7. Health Management of Rabbit Livestock8. Management of Horse Livestock Farming9. Maintenance Management of Horse Livestock10. Health Management of Horse Livestock11. Management of Poultry Livestock Farming12. Maintenance Management of Poultry Livestock13. Health Management of Poultry Livestock14. Presentation of Project Base from Farm Visit
Evaluation Form /Assessment	<ol style="list-style-type: none">1. Case Study 20%2. Quiz 20%3. Activity Score/discipline/ attitude 10%4. Midterm Exam 25%5. Final Exam 25%





Study and examination requirements	1. This course requires 80% of attendance in the lecture class
Reading list/Book References	<ol style="list-style-type: none">1. Sreekumar, D. 2015. <i>Small Scale Livestock Production</i>. New Delhi : Educationist Press2. Spaulding and Jackie. 2010. <i>Veterinary Guide for Animal Owners</i>. Canada : Skyhorse Publishing3. Kattie Jerams. 2015. <i>Modern Horse Management</i>. Crowood Press Ltd, Ramsbury. ISBN 978 0 908809 64 34. Gaines. 2015. <i>Care For Your Rabbit</i>. London : Harper Collin Publisher5. Michael et al. 2004. <i>Poultry Behaviour and Welfare</i>. London : CABI Publishing6. Buseth and Saunders. 2015. <i>Rabbit Behaviour Health and Care</i>. London : CABI Publishing





MODULE 43

Module Name	Wildlife Health Management
Code	PKH62423
Semester	4
Study Program	Bachelor of Veterinary Medicine
Person Responsible For This Module	drh. Andreas Bandang Hardian, MVSc.
Language	Indonesian
Type of Course (Compulsory/Elective)	Elective
Learning Forms/Teaching Format	1. Discussion 2. Lecture 3. Case Study 4. Small Group Discussion
Workload	100 minutes of lecture class 120 minutes of case study 120 minutes of self-study
ECTS	3.4
Credit Units	1 SKS = 1 system credit unit (SCU) equal to 45 hours according to SNPT 2023 Indonesian total study load (SCU) bachelor degree (4 years) = 144 SCU x 45 hours = 6480 hours ECTS for Bachelor's degree 4 years = 240 ECTS (1 ECTS = 25-30 hours) = 6000 – 7200 hours Conversion from SCU → ECTS = 6480 / 240 = 27 hours Based on that, we use 27 hours of study load for 1 ECTS → 1 SCU = 45 hours / 27 hours = 1,7 ECTS 2 SCU = 2 x 1,7 ECTS = 3,4 ECTS





Prerequisite Courses	<ol style="list-style-type: none">1. Ethology (PKH61107)2. Veterinary Anatomy 3 (PKH61311)3. Basic Animal Nutrition (PKH62216)
Module Objectives/Intended Learning Outcomes	<ol style="list-style-type: none">1. Students can explain the role and position of veterinarians in wildlife conservation efforts in Indonesia, including the laws that regulate it.2. Students can explain the concepts of animal welfare, disease and quarantine management, barn and enclosure management, feed management, and enrichment management within the scope of veterinary medicine.3. Students can explain the concept of health management for endemic wildlife in Indonesia within the scope of veterinary medicine.4. Students can demonstrate the design of health management programs for endemic and exotic wildlife in Indonesia.
Module Descriptions	<p>The Wildlife Medicine course is an elective course for undergraduate students in the Veterinary Medicine program at the Faculty of Veterinary Medicine. This course explores the role of veterinarians as conservation medics, the application of animal welfare principles, management of care, quarantine, and biosafety for wildlife, health management of various wildlife species, management of feed and enrichment, and the use of wildlife as experimental animals.</p>
Learning Contents	<ol style="list-style-type: none">1. Introduction to Conservation Management and Wildlife Health and Course Contract2. Animal Welfare from the Perspective of Veterinary Medicine: Concepts and Assessment3. Disease Management and Quarantine for Wildlife4. Barn and Enclosure Management for Wildlife5. Feed Management and Allometric Scaling for Wildlife6. Enrichment Management and Wildlife Rehabilitation Programs7. Ethics of Maintaining Wildlife for Display, Release, and Research Purposes: Discussion and Critique (enrichment material)8. Health Management of Nonhuman Primates (Orangutans)9. Health Management of Herbivorous Mammals (Elephants)10. Health Management of Carnivorous Mammals (Tigers/Leopards)11. Health Management of Birds (Eagles)12. Health Management of Reptiles and Amphibians





	<ol style="list-style-type: none">13. Health Management of Aquatic Mammals14. Case Study: Management of Exotic Animal Health I15. Case Study: Management of Exotic Animal Health II
Evaluation Form /Assessment	<ol style="list-style-type: none">1. Case Study 20%2. Midterm Exam 25%3. Final Exam 25%4. Quiz 20%5. Activity score 10%
Study and examination requirements	<ol style="list-style-type: none">1. This course requires 80% of attendance in the lecture class
Reading List/Book References	<ol style="list-style-type: none">1. Fowler's Zoo and Wild Animal Medicine Current Therapy, Volume 102. Behavioural Biology of Zoo Animals3. Wildlife Disease Ecology: Linking Theory to Data and Application4. Raptor Medicine, Surgery, and Rehabilitation, 3rd Edition5. Basics of Wildlife Health Care and Management6. Medical Management of Wildlife Species: A Guide for Veterinary Practitioners7. Global Federation of Animal Sanctuaries https://sanctuaryfederation.org/information-publications/8. Association of Zoos & Aquariums https://www.aza.org/9. World Association of Zoos and Aquariums: WAZA https://www.waza.org/publications/10. Infectious Disease Ecology of Wild Birds11. Bird and Reptile Species in Environmental Risk Assessment Strategies12. Wildlife Population Health13. Zoo and Wild Animal Medicine Current Therapy, 6th Edition





MODULE 44

Module Name	Aquatic Animal Health Management
Code	PKH62424
Semester	4
Study Program	Bachelor of Veterinary Medicine
Person Responsible For This Module	drh. Reza Yesica, M.Sc.
Language	Indonesian
Type of Course (Compulsory/Elective)	Elective
Learning Forms/Teaching format	5. Discussion 6. Lecture 7. Case Study 8. Small Group Discussion
Workload	50 minutes of face to face learning 60 minutes of case study 60 minutes of self study
ECTS	1.7
Credit Units	1 SKS = 1 system credit unit (SCU) equal to 45 hours according to SNPT 2023 Indonesian total study load (SCU) bachelor degree (4 years) = 144 SCU x 45 hours = 6480 hours ECTS for Bachelor's degree 4 years = 240 ECTS (1 ECTS = 25-30 hours) = 6000 – 7200 hours Conversion from SCU → ECTS = 6480 / 240 = 27 hours Based on that, we use 27 hours of study load for 1 ECTS → 1 SCU = 45 hours /27 hours = 1,7 ECTS
Prerequisite Courses	-





Module Objectives/Intended Learning Outcomes	<ol style="list-style-type: none">1. Explaining the role of veterinarians in the world of aquatic animals.2. Explaining the anatomy, physiology, habitat, and reproduction of freshwater fish, marine fish, brackish water fish, and estuarine fish.3. Explaining the anatomy, physiology, habitat, and reproduction of aquatic invertebrates and aquatic mammals.4. Explaining infectious and non-infectious diseases in aquatic animals (freshwater fish, marine fish, aquatic invertebrates, aquatic mammals).5. Explaining water management, feeding, quarantine, and biosecurity of aquatic animals.
Module Descriptions	<p>The course of aquatic animal health management is an elective course for undergraduate students in the veterinary medicine program at the Faculty of Veterinary Medicine. This course studies the role of veterinarians as medical professionals in the health of aquatic animals, management of care, quarantine, and biosecurity of aquatic animals, as well as the management of nutrition and related health issues in various types of aquatic animals.</p>
Learning Contents	<ol style="list-style-type: none">1. Overview and role of veterinarians in the aquatic world2. Aquatic Mammals I3. Aquatic Mammals II4. Diseases of Aquatic Mammals5. Aquatic Invertebrates I6. Aquatic Invertebrates II7. Diseases of Aquatic Invertebrates8. Freshwater Fish and their Diseases9. Marine Fish and their Diseases10. Brackish Water Fish and their Diseases11. Management of Feed for Aquatic Animals12. Management of Quarantine and Biosecurity for Aquatic Animals13. Environmental Management of Aquatic Systems14. Case Study
Evaluation Form /Assessment	<ol style="list-style-type: none">4. Midterm Exam 25%5. Final Exam 25%6. Case Study 50%<ol style="list-style-type: none">a. Activity score 10%b. Quiz 20%c. Assignment 20%





Study and examination requirements	3. This course requires 80% of attendance in the lecture class
Reading list/Book References	<ol style="list-style-type: none">1. Fish Medicine Handbook2. BSAVA Manual of Ornamental Fish 2nd Edition3. Fundamentals of Ornamental Fish Health4. Invertebrate Medicine 1st Edition5. Disease in Marine Aquarium Fish6. Ornamental Fishes and Aquatic Invertebrate7. The Physiology of Fishes 4th Edition8. Fish Disease9. Fish Nutrition 3rd Edition10. Fish Pathology 4th Edition11. Manual Techniques in Invertebrate Pathology 2nd Edition12. Fish Disease, Diagnose and Treatment13. Aquatic Ecosystem14. CRC Handbook of Marine Mammals Medicine





MODULE 45

Module Name	Veterinary Biomolecular Technique
Code	PKH62425
Semester	4
Study Program	Bachelor of Veterinary Medicine
Person Responsible For This Module	Dr. Dyah Kinasih Wuragil, S.Si., MP., M.Sc
Language	Indonesian
Type of Course (Compulsory/Elective)	Elective
Learning Forms/Teaching Format	1. Discussion 2. Lecture 3. Case Study 4. Small Group Discussion
Workload	100 minutes of lecture class 120 minutes of case study 120 minutes of self-study
ECTS	3.4
Credit Units	1 SKS = 1 system credit unit (SCU) equal to 45 hours according to SNPT 2023 Indonesian total study load (SCU) bachelor degree (4 years) = 144 SCU x 45 hours = 6480 hours ECTS for Bachelor's degree 4 years = 240 ECTS (1 ECTS = 25-30 hours) = 6000 – 7200 hours Conversion from SCU → ECTS = 6480 / 240 = 27 hours Based on that, we use 27 hours of study load for 1 ECTS → 1 SCU = 45 hours /27 hours = 1,7 ECTS 2 SCU = 2 x 1,7 ECTS = 3,4 ECTS





Prerequisite Courses	<ol style="list-style-type: none">1. Veterinary Biochemistry 1 (PKH61104)2. Veterinary Biochemistry 2 (PKH62203)
Module Objectives/Intended Learning Outcomes	<ol style="list-style-type: none">1. Able to explain the molecular and biochemical structure of cells (including DNA, proteins, and enzymes).2. Able to understand and explain the techniques of DNA and protein isolation and purification.3. Able to understand and explain the basic principles of DNA and protein electrophoresis methods.4. Able to understand and explain DNA hybridization and gene transformation.5. Able to understand and explain the basic principles of spectrophotometry and ELISA methods.6. Able to explain the basic principles and techniques of Immunoblotting and immunohistochemistry.7. Able to understand the principles of bioinformatics analysis and its applications.
Module Descriptions	<p>The Molecular Analysis Techniques course is given to fourth-semester students. The content of Molecular Analysis Techniques includes concepts of cloning, DNA cloning vectors, restriction enzymes, and reagents in biomolecular analysis techniques. It also discusses various techniques, equipment, and data processing in biomolecular analysis, including separation techniques, photometry methods, spectrometry, and electrochemistry. To enhance intellectual thinking skills, students are expected to use the provided material to analyze the causes of problems or phenomena from molecular-level data and information. They are also expected to present and argue clearly and correctly, both orally and in writing, about topics related to veterinary molecular biology. The Molecular Analysis Techniques course is an elective for students in the Veterinary Doctor Education undergraduate program. The learning objectives of the course include enabling students to understand and explain techniques such as gene transformation, nucleic acid purification, DNA restriction digestion analysis, hybridization techniques, DNA microarray, chromatography, electrophoresis, dialysis methods, spectrometry, electrochemistry, and bioinformatics methods.</p>
Learning Contents	<ol style="list-style-type: none">1. Course Overview: Explanation of Syllabus (RPS), Course Contracts, Development of Molecular Analysis Techniques.





	<ol style="list-style-type: none">2. Basic Principles and Techniques of DNA Isolation and Purification.3. Types of PCR RFLP, their principles, and their applications in veterinary medicine.4. Basic Principles and Techniques of DNA Isolation and Purification.5. Cell and Enzyme Immobilization.6. Basic principles of electrophoresis, electrophoresis techniques, and visualization of Protein and DNA electrophoresis.7. Immunoassay Analysis (IHC, Immunoblotting, and ELISA).8. In-situ and ex-situ Molecular Analysis and Introduction to in silico Techniques.9. Applications of Bioinformatics Techniques in biomolecular analysis.10. Principles and Applications of Protein and DNA microarray; and their applications in veterinary medicine.11. Types of chromatography and their principles; and applications of chromatography in veterinary medicine.12. Principles and Applications of Spectrophotometry in Veterinary Medicine.13. Molecular analysis via electrochemistry, molecular binding with test matrices.14. Case Study Discussion (PBL - Problem-Based Learning) of biomolecular analysis techniques in veterinary medicine.
Evaluation Form /Assessment	<ol style="list-style-type: none">1. Case Study 50%2. Quiz 10%3. Midterm and Final Exam 30%4. Activity score 10%
Study and examination requirements	<ol style="list-style-type: none">1. This course requires 80% of attendance in the lecture class
Reading List/Book References	<ol style="list-style-type: none">1. Clarke, D., 2005, Molecular Biology, Elsevier, Inc., California, USA2. Voet D. and Voet JG. 2000. Biochemistry. John Wiley & Sons, Inc., New York3. Viljoen, G.J., L.H. Nel, and J.R Crowther, 2005, "Molecular Diagnostic PCR Handbook", Springer, Dordrecht, The Netherlands.4. Starkey M. P., and Elaswarapu, R. 2001. Genomic Protocols. Humana Press, New Jersey.





	<ol style="list-style-type: none">5. Guisan, J.M., 2006, "Immobilization of enzyme and cells; 2nd Edition, Humna6. Fuller GM and Shields D. 1998. Molecular Basis of Medical Cell Biology. Prentice Hall International, Inc. New York.7. Innis MA, Gelfand DH and Sninsky. 1990. PCR Protocols: A Guide to Methods and Application, Academic Press, Inc. London8. Newton CR and Graham A. 1994. PCR: Introduction to Biotechniques. Bios Scientific Publisher. The UK.9. Wenk, M.R., and A.Z. Fernandes, 2005, " A Manual for Biochemistry Protocol: Manual in Biomedical Researches Volume 3, World Scientific. Singapore.
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Faculty of
Veterinary Medicine

5th SEMESTER



MODULE 47

Module Name	Research Methodology
Code	PKH61509
Semester	5
Study Program	Bachelor of Veterinary Medicine
Person Responsible For This Module	drh. Reza Yesica, M.Sc
Language	Indonesian
Type of Course (Compulsory/Elective)	Compulsory
Learning Forms/Teaching Format	1. Discussion 2. Lecture 3. Case Study 4. Small Group Discussion
Workload	50 minutes of lecture class 60 minutes of case study 60 minutes of self-study
ECTS	1.7
Credit Units	1 SKS = 1 system credit unit (SCU) equal to 45 hours according to SNPT 2023 Indonesian total study load (SCU) bachelor degree (4 years) = 144 SCU x 45 hours = 6480 hours ECTS for Bachelor's degree 4 years = 240 ECTS (1 ECTS = 25-30 hours) = 6000 – 7200 hours Conversion from SCU → ECTS = 6480 / 240 = 27 hours Based on that, we use 27 hours of study load for 1 ECTS → 1 SCU = 45 hours /27 hours = 1,7 ECTS
Prerequisite Courses	-





Module Objectives/Intended Learning Outcomes	<ol style="list-style-type: none">1. Able to explain the basic concepts of research methodology, the objectives, and the benefits of research methodology.2. Able to explain the philosophy of science, fundamentals of knowledge, scientific methods, knowledge structures, and types of research.3. Able to explain the structure of scientific evidence and to formulate research framework concepts and theoretical concepts.4. Able to explain the role of statistics in research, research variables, research designs, data interpretation, and literature review.5. Able to effectively communicate in explaining scientific manuscripts (Skills).6. Able to demonstrate responsibility in seeking knowledge (Attitude).
Module Descriptions	<p>Research methodology is a technique or approach to acquire information and data sources used in research. This information or data can take various forms, such as literature like journals, articles, theses, books, newspapers, and so forth. The scope of this course material focuses more on preparing students to conduct research. The topics covered include philosophical approaches to science, fundamentals of knowledge, scientific methods, the role of statistics, research steps and stages, various research types, and research proposals.</p>
Learning Contents	<ol style="list-style-type: none">1. Socialization of Syllabus (RPS), Course Contract, Role of Research Methodology in the preparation of Scientific Proposals2. Philosophy of Science and Fundamentals of Knowledge3. Scientific Methods4. Knowledge Structure and Types of Research5. Evidence-Based Veterinary Medicine (Structure of Scientific Evidence)6. Research Framework Concepts and Theoretical Concepts7. Role of Statistics in Research Designs / Types of Research and Research Data Analysis8. Variables, Data Collection Instruments, Experimental Laboratory Research Designs9. Variables, Data Collection Instruments, Sampling Techniques, Observational Research Designs10. Interpretation of Data and Analysis of Experimental Laboratory Research Data11. Data Interpretation, Report Preparation, Types of Observational Research / Epidemiological Studies





	<ol style="list-style-type: none">12. Literature Review (Citation, References, Plagiarism, Paraphrasing)13. Clinic for the Preparation and Guidance of Research or Community Service Project (PKM) Proposals14. Preparation of Research or Community Service Project (PKM) Proposals and Simulation of Proposal Presentations
Evaluation Form /Assessment	<ol style="list-style-type: none">1. Case Study 20%2. Quiz 15%3. Activity Score 15%4. Midterm Exam 25%5. Final Exam 25%
Study and examination requirements	<ol style="list-style-type: none">1. This course requires 80% of attendance in the lecture class
Reading List/Book References	<ol style="list-style-type: none">1. C.R. Kothari. <i>Research Methodology: Methods and Techniques. 2nd Edition</i>. New Age International Publishers. 2004.2. Gordon Rugg and Marian Petre. <i>A Gentle Guide to Research Methods</i>. Open University Press. 20073. Catherine Dawson. <i>A Practical Guide to Research Methods</i>. 20074. Jonathan Sarwono. <i>Buku Metode Penelitian Kuantitatif dan Kualitatif</i>. Graha Ilmu. 2006.5. Prabhat Pandey and Meenu Mishra Pandey. <i>Research methodology: tools and techniques</i>. 2015.





MODULE 48

Module Name	Pharmacology of Veterinary 2 (Pharmacodynamics, Pharmacokinetics, and Drug Interactions)
Code	PKH61512
Semester	5
Study Program	Bachelor of Veterinary Medicine
Person Responsible For This Module	drh. Aldila Noviatri, M.Biomed
Language	Indonesian
Type of Course (Compulsory/Elective)	Compulsory
Learning Forms/Teaching format	<ol style="list-style-type: none">1. Discussion2. Lecture3. Project Based Learning4. Case Study5. Laboratory Work6. Small Group Discussion
Workload	150 minutes of face to face learning 180 minutes of case study 180 minutes of self study
ECTS	5.1
Credit Units	<p>1 SKS = 1 system credit unit (SCU) equal to 45 hours according to SNPT 2023</p> <p>Indonesian total study load (SCU) bachelor degree (4 years) = 144 SCU x 45 hours = 6480 hours</p> <p>ECTS for Bachelor's degree 4 years = 240 ECTS (1 ECTS = 25-30 hours) = 6000 – 7200 hours</p> <p>Conversion from SCU → ECTS = 6480 / 240 = 27 hours</p> <p>Based on that, we use 27 hours of study load for 1 ECTS →</p>





	1 SCU = 45 hours /27 hours = 1,7 ECTS 3 SCU = 3 x 1,7 ECTS = 5.1 ECTS
Prerequisite Courses	1. Veterinary Systemic Pathology (PKH62412) 2. Veterinary Parasitic Disease (PKH62411) 3. Veterinary Pharmacology 1 (PKH62405)
Module Objectives/Intended Learning Outcomes	1. Explaining the classification and types of drugs, and being able to explain the mechanism of action, pharmacokinetic profile, pharmacodynamics, indications, contraindications, interactions, and side effects of a drug. 2. Explaining the principles of drug selection and administration, and determining therapy based on the mechanism of action, pharmacokinetic profile, pharmacodynamics, indications, contraindications, interactions, and side effects of a drug. 3. Students are able to complete module assignments correctly according to instructions and finish them on time. 4. Student able to work in a team by prioritizing individual responsibility in completing group work and 5. Students are able to maintain high self-discipline by not being late for classes.
Module Descriptions	This course explains: Basic principles of pharmacology, drug classification and types, pharmacokinetics, pharmacodynamics, indications, contraindications, interactions, and side effects of a drug.
Learning Contents	1. Fluid, electrolyte, and nutrition therapy 2. Drugs acting on the nervous system (sympathetic & parasympathetic) 3. Anesthetic agents 4. Drugs affecting renal function and the urinary system 5. Drugs acting on the cardiovascular system 6. Drugs acting on the respiratory system 7. Drugs acting on the digestive system 8. Anti-inflammatory, analgesic, and antipyretic drugs 9. Animal behavior modifying drugs: Anxiolytics and hypnotics 10. Animal behavior modifying drugs: Antidepressants, anticonvulsants, and others 11. Emergency drugs 12. Supportive therapy with the use of vitamins





	<ol style="list-style-type: none">13. Hemostatic agents and anticoagulants14. Case Study
Evaluation Form /Assessment	<ol style="list-style-type: none">1. Case Study 20%2. Quiz 20%3. Midterm Exam 25%4. Final Exam 25%5. Activity score / discipline / attitude 10%
Study and examination requirements	<ol style="list-style-type: none">1. This course requires 80% of attendance in the lecture class2. This course requires 100% of attendance in the laboratory practical
Reading list/Book References	<ol style="list-style-type: none">1. Goodman Gilman , the pharmacological basis of therapeutic2. Plumbs Veterinary Drug Handbook 7th Edition3. Exotic Animal Formulary 5th4. Saunders Handbook of Veterinary Drugs 3rd Edition5. The Physiological Basis of Veterinary Clinical Pharmacology6. 6. Veterinary Pharmacology and Therapeutics7. Fundamentals of Pharmacology for Veterinary Technicians8. Comparativa and Veterinary Pharmacology





MODULE 49

Module Name	Veterinary Clinical Diagnosis
Code	PKH61511
Semester	5
Study Program	Bachelor of Veterinary Medicine
Person Responsible For This Module	drh. Dodik Prasetyo, M.Vet
Language	Indonesian
Type of Course (Compulsory/Elective)	Compulsory
Learning Forms/Teaching Format	<ol style="list-style-type: none">1. Discussion2. Lecture3. Project Based Learning4. Case Study5. Laboratory Work6. Small Group Discussion
Workload	150 minutes of lecture study 180 minutes of case study 180 minutes of self-study
ECTS	5.1
Credit Units	<p>1 SKS = 1 system credit unit (SCU) equal to 45 hours according to SNPT 2023</p> <p>Indonesian total study load (SCU) bachelor degree (4 years) = 144 SCU x 45 hours = 6480 hours</p> <p>ECTS for Bachelor's degree 4 years = 240 ECTS (1 ECTS = 25-30 hours) = 6000 – 7200 hours</p> <p>Conversion from SCU → ECTS = $6480 / 240 = 27$ hours</p> <p>Based on that, we use 27 hours of study load for 1 ECTS →</p> <p>1 SCU = 45 hours / 27 hours = 1,7 ECTS</p>





	3 SCU = 3 x 1,7 ECTS = 5.1 ECTS
Prerequisite Courses	<ol style="list-style-type: none">1. Veterinary Anatomy 1 (PKH61112)2. Veterinary Anatomy 2 (PKH62211)3. Veterinary Anatomy 3 (PKH61311)
Module Objectives/Intended Learning Outcomes	<ol style="list-style-type: none">1. Able to explain and analyze the procedures for handling and restraining animals during physical examinations.2. Able to explain and analyze the procedures and findings of physical examinations of animals in each region or organ of the animal's body (patient).3. Able to explain and conclude the steps to be taken (medical gold standard) in making a diagnosis.4. Able to explain and analyze the information used in recording the health status of animals.
Module Descriptions	The course explains the procedures for physical examination in various types of animals, conducted per organ system and body region. The explanation begins with general physiology, and history taking (anamnesis), leading to more specific examinations based on initial symptoms, all aimed at supporting competencies in determining the diagnosis of diseases in animals or patients.
Learning Contents	<ol style="list-style-type: none">1. Medical terminology in the field of veterinary clinical diagnosis, Syllabus for Clinical Diagnosis, and Course Contract2. Physical examination, Animal Handling and Restraint, and Selective Subjects3. Principles of physical examination: Integument, Head Neck, and Lymphatics in small animals4. Principles of physical examination: Cardio-respiratory in small animals5. Principles of physical examination: Digestive in small animals6. Principles of physical examination: Urogenital in small animals7. Principles of physical examination: Nervous and Musculoskeletal in small animals8. Principles of physical examination: Urogenital in large animals9. Principles of physical examination: Nervous and Musculoskeletal in large animals10. Principles of Physical Examination and Health in Horses11. Principles of physical examination: Digestive in large animals





	<ol style="list-style-type: none">12. Principles of physical examination: Cardiorespiratory in large animals13. Principles of physical examination and Health in Exotic Animals including reptiles, birds, and aquatic animals14. Case Study (Problem-Based Learning)
Evaluation Form /Assessment	<ol style="list-style-type: none">1. Case Study 10%2. Midterm Exam 20%3. Final Exam 20%4. Quiz 10%5. Activity score 5%6. Pretest and posttest 5%7. Lab report 10%8. Laboratory Final Exam 1 10%9. Laboratory Final Exam 2 10%
Study and examination requirements	<ol style="list-style-type: none">1. This course requires 80% of attendance in the lecture class2. Students must have 100% attendance out of total meetings for laboratory work
Reading List/Book References	<ol style="list-style-type: none">1. A. Rijnberk, F. J Van Sluijs. 2009. <i>Medical History And Physical Examination in Companion Animals 2nd Edition</i>. Elsevier: China2. Widodo S, Sajuthi D, Choliq C, Wijaya A, Wulansari R, Lelana R. P. A. 2011. <i>Diagnostik Klinik Hewan Kecil</i>. IPB Press: Bogor





MODULE 50

Module Name	Veterinary Radiology
Code	PKH61515
Semester	5
Study Program	Bachelor of Veterinary Medicine
Person Responsible For This Module	drh. M. Arfan Lesmana, M.Sc
Language	Indonesian
Type of Course (Compulsory/Elective)	Compulsory
Learning Forms/Teaching format	<ol style="list-style-type: none">1. Discussion2. Lecture3. Project Based Learning4. Case Study5. Laboratory Work6. Small Group Discussion
Workload	150 minutes of face to face learning 180 minutes of case study 180 minutes of self study
ECTS	5.1
Credit Units	<p>1 SKS = 1 system credit unit (SCU) equal to 45 hours according to SNPT 2023</p> <p>Indonesian total study load (SCU) bachelor degree (4 years) = 144 SCU x 45 hours = 6480 hours</p> <p>ECTS for Bachelor's degree 4 years = 240 ECTS (1 ECTS = 25-30 hours) = 6000 – 7200 hours</p> <p>Conversion from SCU → ECTS = 6480 / 240 = 27 hours</p> <p>Based on that, we use 27 hours of study load for 1 ECTS →</p> <p>1 SCU = 45 hours / 27 hours = 1,7 ECTS</p>





	3 SCU = 3 x 1,7 ECTS = 5.1 ECTS
Prerequisite Courses	<ol style="list-style-type: none">1. Veterinary Anatomy 1 (PKH61112)2. Veterinary Anatomy 2 (PKH62211)
Module Objectives/Intended Learning Outcomes	<ol style="list-style-type: none">1. Understanding the basic theory of X-rays, exposure factors, and radiation safety.2. Understanding the reading/interpretation of radiographs in small animals for the respiratory and digestive systems.3. Understanding the basic theory of ultrasonography and its application in veterinary medicine, including pregnancy and VU examinations using ultrasound.4. Understanding the basics of reading/interpretation of radiographs in exotic and large animals.5. Understanding special radiology procedures and conventional film processing.6. Understanding the basics of reading/interpretation of radiographs in small animals for the musculoskeletal, urogenital, and dental systems.
Module Descriptions	The Radiology course is a mandatory subject for veterinary medicine undergraduate students at the Faculty of Veterinary Medicine. This course covers the study of imaging technology such as X-ray machines and ultrasonography for diagnostic purposes, imaging procedures including animal positioning techniques, photography, film processing, evaluation techniques, and interpretation of imaging results for various organs in small, large, and exotic animals.
Learning Contents	<ol style="list-style-type: none">1. Introduction to Veterinary Radiology2. Radiation safety, exposure factors, radiographic quality, and other imaging technologies3. Radiographic evaluation techniques and technical artifacts and errors: Case studies4. Special radiographic procedures5. Dental and oral radiography6. Musculoskeletal radiography7. Thoracic radiography 18. Thoracic radiography 29. Abdominal radiography 110. Abdominal radiography 211. Basics of radiography in large livestock





	<ol style="list-style-type: none">12. Basics of radiography in exotic animals13. Basics of ultrasonography
Evaluation Form /Assessment	<ol style="list-style-type: none">1. Activity Score / discipline / attitude 5%2. Case Study 10%3. Quiz 10%4. Project Based Method and laboratory work 25%5. Midterm Exam 25%6. Final Exam 25%
Study and examination requirements	<ol style="list-style-type: none">1. This course requires 80% of attendance in the lecture class2. This course requires 100% of attendance in the laboratory practical
Reading list/Book References	<ol style="list-style-type: none">1. Veterinary Diagnostic Radiology, 7th ed2. Diagnostic Radiology and Ultrasonography of The Dog and Cat 5th Edition3. An Atlas of Interpretative Radiographic Anatomy of The Dog and Cat 2nd Edition4. Textbook of Veterinary Diagnostic Radiology 6th Edition5. Small Animal Radiographic Techniques and Positioning6. Handbook of Small Animal Radiology and Ultrasonography Technique and Different Diagnoses7. BSAVA Manual of Canine and Feline Radiography and Radiology A Foundation Manual8. BSAVA Canine and Feline Ultrasonography9. Small Animal Diagnostic Ultrasound 2nd Edition10. Diagnostic Ultrasound in Small Animal Practice11. Focus on Ultrasound Techniques for The Small Animal Practitioner12. Handbook of Equine Radiography13. Avian Medicine in Practice 2nd Edition14. Radiology of Bird15. Radiology of Rodents, Rabbit and Ferrets An Atlas Normal Anatomy and Positioning16. Atlas Radiografi Gigi dan Mulut pada anjing dan kucing17. Atlas Radiografi Anjing dan Kucing18. Ultrasonografi pada hewan kecil





MODULE 51

Module Name	Food Hygiene
Code	PKH61513
Semester	5
Study Program	Bachelor of Veterinary Medicine
Person Responsible For This Module	drh. Widi Nugroho, Ph.D
Language	Indonesian
Type of Course (Compulsory/Elective)	Compulsory
Learning Forms/Teaching Format	<ol style="list-style-type: none">1. Discussion2. Lecture3. Project Based Learning4. Case Study5. Laboratory Work6. Small Group Discussion
Workload	150 minutes of lecture study 180 minutes of case study 180 minutes of self-study
ECTS	5.1
Credit Units	<p>1 SKS = 1 system credit unit (SCU) equal to 45 hours according to SNPT 2023</p> <p>Indonesian total study load (SCU) bachelor degree (4 years) = 144 SCU x 45 hours = 6480 hours</p> <p>ECTS for Bachelor's degree 4 years = 240 ECTS (1 ECTS = 25-30 hours) = 6000 – 7200 hours</p> <p>Conversion from SCU → ECTS = $6480 / 240 = 27$ hours</p> <p>Based on that, we use 27 hours of study load for 1 ECTS →</p> <p>1 SCU = 45 hours / 27 hours = 1,7 ECTS</p>





	3 SCU = 3 x 1,7 ECTS = 5.1 ECTS
Prerequisite Courses	1. Veterinary Public Health and One Health (PKH62403)
Module Objectives/Intended Learning Outcomes	<ol style="list-style-type: none">1. Able to design concepts for animal-origin food health to protect, secure, and ensure the health of animals, humans, and the environment through appropriate rejection and prevention of animal diseases and zoonoses based on legislative regulations in the field of animal health management.2. Able to provide alternative designs to solve issues related to the quality and safety of animal-origin food to promote animal, public, and environmental health through promotive and preventive actions.3. Able to academically justify the layout of concepts for enhancing the quality and safety of animal-origin food independently or as part of a group under guidance.
Module Descriptions	<p>The course will provide students with insights into the concepts of food security, food safety, and food defense. It briefly reviews the anatomy, biochemistry, and physiology of meat, milk, and egg synthesis, and discusses the concepts of quality and safety of eggs, meat, and milk throughout the production and distribution chain from farms to consumers (from farm to fork). The course also equips students with knowledge and skills in detecting, designing prevention programs, and controlling biological, physical, and chemical contamination that affect the quality and safety of meat, milk, and eggs within the ASUH framework (Safe, Healthy, Intact, and Halal) based on Indonesian National Standards and Codex. The food hygiene course also enhances students' skills in effective communication and contributes to the development of hygiene and quality of animal-origin food. In the animal-origin food hygiene practicum, students are trained in executing and analyzing the results of laboratory examinations testing the quality and safety of animal-origin food materials (milk, meat, and eggs). This includes organoleptic examination, freshness, composition, physical and chemical contamination, residue and antibiotic resistance testing, and testing for microbial contamination. The practicum also includes visits to abattoirs for cattle, goats, chickens, and pigs to learn practices in animal welfare assurance and meat safety, including observing halal slaughter, antemortem inspections, slaughter processes, post-mortem examinations, and hygienic carcass handling.</p>





Learning Contents	<ol style="list-style-type: none">1. Food security, food safety, and food defense2. Anatomy of the udder and biochemistry of milk synthesis and secretion3. Physical, chemical, and biological properties of milk4. Mastitis, microbiology, quality, and safety of milk5. Anatomy of the reproductive tract of poultry and physiology of egg formation6. Physical, chemical, and biological properties of eggs7. Microbiology, quality, and safety of eggs8. Muscle physiology, biochemistry of muscle-to-meat conversion, quality, and safety of meat9. Ante-mortem and post-mortem inspections at the abattoir10. Hygiene and sanitation in meat and poultry processing plants11. Campaign programs for improving meat health to consumers, distributors, and producers12. Campaign programs for improving milk health for consumers, distributors, and producers13. Campaign programs for improving egg health to consumers, distributors, and producers
Evaluation Form /Assessment	<ol style="list-style-type: none">1. Midterm Exam 15%2. Final Exam 15%3. Laboratory work 20%4. Quiz 25%5. Presentation project video 15%6. Homework project 10%7. Class discussion 5%
Study and examination requirements	<ol style="list-style-type: none">1. This course requires 80% of attendance in the lecture class2. Students must have 100% attendance out of total meetings for laboratory work
Reading List/Book References	<ol style="list-style-type: none">1. <i>Egg Science Technology</i>, 3rd edition, W. J. Stadelmans, 1986, O.J. Colteril AVI Publishing Company Inc.2. <i>Dairy Science and Technology</i>, P. Walstra, 2006, CRC Press.3. <i>Lawrie's Meat Science</i>, 7th edition, R. A. Lawrie, 2006, Woodhead Publishing in Food Science Technology and Nutrition CRC Press.4. Mira Fatmawati dkk, 2020. <i>Kesehatan Masyarakat Veteriner</i>, UB Press





	<ol style="list-style-type: none">5. <i>Essentials of Milk Hygiene; A Practical Treatise on Dairy and Milk Inspection and the Hygienic Production and Handling of Milk</i>, for Students of Dairying and Sanitarians, by Jensen and C. O. Kindle Edition. 2014.6. <i>Food Science. Meat, Poultry, and Eggs</i>, by Norman N. Potter and Joseph H. Hotchkiss. Ebook Springer.7. <i>Meat Hygiene</i>, by Kavita Marwaha. Ebook Rakuten Overdrive
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MODULE 52

Module Name	Zoonoses
Code	PKH61506
Semester	5
Study Program	Bachelor of Veterinary Medicine
Person Responsible For This Module	drh. Widi Nugroho PhD
Language	Indonesian
Type of Course (Compulsory/Elective)	Compulsory
Learning Forms/Teaching format	1. Discussion 2. Lecture 3. Case Study
Workload	100 minutes of face to face learning 120 minutes of case study 120 minutes of self study
ECTS	3.4
Credit Units	1 SKS = 1 system credit unit (SCU) equal to 45 hours according to SNPT 2023 Indonesian total study load (SCU) bachelor degree (4 years) = 144 SCU x 45 hours = 6480 hours ECTS for Bachelor's degree 4 years = 240 ECTS (1 ECTS = 25-30 hours) = 6000 – 7200 hours Conversion from SCU → ECTS = 6480 / 240 = 27 hours Based on that, we use 27 hours of study load for 1 ECTS → 1 SCU = 45 hours / 27 hours = 1,7 ECTS 2 SCU = 2 x 1,7 ECTS = 3,4 ECTS
Prerequisite Courses	1. Veterinary Parasitic Disease (PKH62411) 2. Veterinary Infectious Disease (Bacterial and Mycotic) (PKH62404)





	3. Veterinary Viral Disease (PKH62408)
Module Objectives/Intended Learning Outcomes	<ol style="list-style-type: none">1. Work Ability - Designing animal health concepts to protect, secure, and ensure the health and welfare of animals, humans, and the environment through the rejection, prevention, control, eradication, and treatment of zoonotic diseases accurately based on regulations in the field of animal health.2. Knowledge - Student able to master the concepts of animal health to protect, secure, and ensure public health and the welfare of animals, humans, and the environment.3. Attitude - Student able to academically accountable for the design of concepts independently or in working groups under supervision.4. Supporting Competencies - Students able to establish interdisciplinary cooperation in zoonosis control programs.
Module Descriptions	<p>This course discusses zoonotic diseases caused by viruses, bacteria, and parasites in Indonesia and tropical countries. The course also covers foodborne zoonosis, occupational zoonosis, fish-borne zoonosis, vector-borne zoonosis, and vector control of zoonotic diseases including flies, mosquitoes, and rodents. It also discusses emerging zoonosis, re-emerging zoonosis, and neglected zoonosis that are actually important but overlooked. The learning process includes face-to-face meetings and project-based learning (Project-Based Learning), which involves designing a zoonosis control program.</p>
Learning Contents	<ol style="list-style-type: none">1. Zoonoses and priority zoonoses2. Viral zoonoses in Indonesia and tropical countries3. Bacterial zoonoses in Indonesia and tropical countries4. Parasitic zoonoses in Indonesia and tropical countries5. Foodborne zoonoses and control6. Occupational zoonoses7. Fish-borne zoonoses8. Neglected zoonoses - Brucellosis9. Vector-borne zoonoses and vector control of mosquitoes, flies, and rodents10. Emerging and re-emerging zoonoses11. Wildlife zoonoses
Evaluation Form /Assessment	<ol style="list-style-type: none">1. Midterm Exam 30%2. Final Exam 20%3. Case Study 25%





	<ol style="list-style-type: none">4. Presentation 15%5. Discussion 5%6. Peer 5%
Study and examination requirements	<ol style="list-style-type: none">1. This course requires 80% of attendance in the lecture class
Reading list/Book References	<ol style="list-style-type: none">1. OIE. OIE Terrestrial Animal Health Code, General Disease Information Sheets: Avian Influenza. Paris France. Retrieved from www.oie.int2. PAHO. (2001). <i>ZOOSES AND COMMUNICABLE DISEASES COMMON TO MAN AND ANIMALS</i>. 3rd ed.(Vol. 1). Washington DC: Pan American Health Organization.3. Penyakit Zoonosa Strategis di Indonesia.2018. Padaga dkk, UB Press4. World Health Organization. "Malaria entomology and vector control." (2013).5. Rozendaal, Jan A. Vector control: methods for use by individuals and communities. World Health Organization, 1997.Yuliadi, B., and Indriyani S. Muhidin. "Tikus Jawa Teknik teknik survei di bidang kesehatan." Jakarta: Lembaga Penerbit Badan Penelitian dan Pengembangan Kesehatan (2016).7. Cichon, R., Platt-Samoraj, A., & Uradzinski, J. (2003). Zoonoses. In B. Caballero, L. Trugo, & P. Finglas (Eds.), <i>Encyclopedia of Food Sciences and Nutrition</i> (2nd ed., pp. 6284–6294). Elsevier Science BV.8. Jones, M. E. H., Hubbert, W. T., & Hagstad, H. V. (2000). <i>Zoonoses</i>. Wiley.9. Shakespeare, M. (2009). <i>Zoonoses (2nd ed.)</i>. IL, USA: Pharmaceutical Press.





MODULE 53

Module Name	Veterinary-Artificial Insemination and Reproduction Technology
Code	PKH61514
Semester	5
Study Program	Bachelor of Veterinary Medicine
Person Responsible For This Module	drh. Viski Fitri Hendrawan, M.Vet
Language	Indonesian
Type of Course (Compulsory/Elective)	Compulsory
Learning Forms/Teaching Format	<ol style="list-style-type: none">1. Discussion2. Lecture3. Project Based Learning4. Case Study5. Laboratory Work6. Small Group Discussion
Workload	150 minutes of lecture class 180 minutes of case study 180 minutes of self-study
ECTS	5.1
Credit Units	<p>1 SKS = 1 system credit unit (SCU) equal to 45 hours according to SNPT 2023</p> <p>Indonesian total study load (SCU) bachelor degree (4 years) = 144 SCU x 45 hours = 6480 hours</p> <p>ECTS for Bachelor's degree 4 years = 240 ECTS (1 ECTS = 25-30 hours) = 6000 – 7200 hours</p> <p>Conversion from SCU → ECTS = 6480 / 240 = 27 hours</p> <p>Based on that, we use 27 hours of study load for 1 ECTS →</p> <p>1 SCU = 45 hours / 27 hours = 1,7 ECTS</p>





	3 SCU = 3 x 1,7 ECTS = 5.1 ECTS
Prerequisite Courses	1. Veterinary Reproductive Physiology (PKH61307)
Module Objectives/Intended Learning Outcomes	<ol style="list-style-type: none">1. Able to understand various reproductive technologies and artificial insemination in different animals.2. Able to understand concepts related to reproductive technology and artificial insemination.3. Able to understand and apply various fields of reproductive technology as promotive actions in animal health and breeding.4. Able to understand various reproductive technologies and artificial insemination in different animals.
Module Descriptions	<p>This course explains various applications of animal reproductive technology in both males and females to enhance breeding development, genetic improvement, and reproductive efficiency, thereby increasing the reproductive potential of animals. The topics include: estrus synchronization, multiple ovulation, in vitro fertilization, embryo transfer, embryo cryopreservation, embryo splitting, intracytoplasmic injection, cloning, and semen examination and collection methods, semen dilution, and storage techniques across various species (pet animals, livestock, wild animals), as well as artificial insemination techniques in various species.</p>
Learning Contents	<ol style="list-style-type: none">1. Socialization of Syllabus (RPS), course contract, role of Reproductive Technology and Artificial Insemination in veterinary medicine, medical terminology related to Reproductive Technology and Artificial Insemination2. History of Artificial Insemination and Comparison of Natural and Artificial Breeding, Selection and Maintenance of Superior Males in Ruminants3. Maintenance and Selection of Superior Males4. Techniques of in vitro Maturation and Capacitation as well as In Vitro Fertilization5. Introduction to Techniques of in vitro Maturation and Capacitation as well as In Vitro Fertilization6. Semen Collection Techniques in Ruminants, Pet Animals, and Poultry7. Techniques for Producing Liquid and Frozen Semen8. Artificial Insemination Techniques in Ruminants, Pet Animals, and Poultry





	<ol style="list-style-type: none">9. Evaluation of Artificial Insemination Programs10. Estrus Synchronization and Induction11. Multiple Ovulation (Superovulation)12. Embryo Transfer13. Semen Examination in Ruminants, Pet Animals, and Poultry14. Intracytoplasmic Sperm Injection and Embryo Splitting, Cloning15. Case study
Evaluation Form /Assessment	<ol style="list-style-type: none">1. Case Study 20%2. Midterm Exam 25%3. Final Exam 25%4. Quiz 20%5. Activity score 10%
Study and examination requirements	<ol style="list-style-type: none">1. This course requires 80% of attendance in the lecture class2. This course requires 100% of attendance in the laboratory practical
Reading list/Book References	<ol style="list-style-type: none">1. Bovine reproduction manual (www.kashvet.org)2. Clinical Canine and Feline Reproduction Evidence Based Answers, 1st Edition (Margaret V. Root Kustritz, 2010)3. Comparative Reproductive Biology, 1st Edition (Heide Schatten, 2007)4. Equine Reproductive Physiology, Breeding and Study Management, 2nd Edition (M. C. G. Davies Morel, 2003)5. Laboratory Production of Cattle Embryos, 2nd Edition (I. Gordon, 2003)6. Inseminasi Buatan, Ismudionao dkk., Airlangga Press., 20007. Inseminasi Buatan Pada Kuda, Tuty dkk., IPB Press., 2003





MODULE 54

Module Name	Veterinary Legislation
Code	PKH61507
Semester	5
Study Program	Bachelor of Veterinary Medicine
Person Responsible For This Module	drh. Widi Nugroho, PhD
Language	Indonesian
Type of Course (Compulsory/Elective)	Compulsory
Learning Forms/Teaching format	1. Discussion 2. Lecture 3. Case Study
Workload	50 minutes of face to face learning 60 minutes of case study 60 minutes of self study
ECTS	1.7
Credit Units	1 SKS = 1 system credit unit (SCU) equal to 45 hours according to SNPT 2023 Indonesian total study load (SCU) bachelor degree (4 years) = 144 SCU x 45 hours = 6480 hours ECTS for Bachelor's degree 4 years = 240 ECTS (1 ECTS = 25-30 hours) = 6000 – 7200 hours Conversion from SCU → ECTS = 6480 / 240 = 27 hours Based on that, we use 27 hours of study load for 1 ECTS → 1 SCU = 45 hours / 27 hours = 1,7 ECTS
Prerequisite Courses	Veterinary Public Health (PKH62403)





Module Objectives/Intended Learning Outcomes	<ol style="list-style-type: none">1. Work Ability - Able to design animal health concepts to protect, secure, and ensure the health and welfare of animals, humans, and the environment through the rejection, prevention, control, eradication, and treatment of animal diseases and zoonoses accurately based on regulations in the field of animal health administration.2. Knowledge - Able to master the concepts of animal health legislation to protect, secure, and ensure public health and the welfare of animals, humans, and the environment.3. Attitude - Able to be academically accountable for veterinary legislation analysis documents independently or in working groups under supervision.4. Attitude - Possess high ethics and morals, be independent, excellent, and responsible, have leadership qualities, and be able to communicate for veterinary medical legislation purposes both orally and in writing.
Module Descriptions	The veterinary legislation course discusses the history, structure, and principles underlying regulations related to zoonoses, animal health, animal welfare, and food safety from the international level to the district level
Learning Contents	<ol style="list-style-type: none">1. SPS agreement - Sanitary and Phytosanitary Agreement2. OIE Terrestrial and Non-terrestrial animal health standards - OIE (World Organisation for Animal Health) Terrestrial and Aquatic Animal Health Standards3. FAO/WHO Codex Alimentarius - FAO (Food and Agriculture Organization)/WHO (World Health Organization) Codex Alimentarius4. Law on Animal Health and Livestock5. Cases of outbreaks of Avian Flu (AFS), Lumpy Skin Disease (LSD), and Foot and Mouth Disease (PMK) in Indonesia6. Law on Quarantine for Animals, Fish, and Plants7. Regulations on supervision of veterinary drugs8. Regulations regarding veterinary medical services9. Regional Regulations related to Animal Health, Veterinary Public Health, and fish health
Evaluation Form /Assessment	<ol style="list-style-type: none">1. Case Study 50%2. Quiz 10%3. Midterm Exam 15%4. Final Exam 15%





	5. Activity score / discipline / attitude 10%
Study and examination requirements	1. This course requires 80% of attendance in the lecture class
Reading list/Book References	<p>International Regulation</p> <ul style="list-style-type: none">• SPS agreement• The OIE standard on Terrestrial and non-terrestrial animal <p>Health standards</p> <ul style="list-style-type: none">• FAO/WHO CODEX ALIMENTARIUS <p>Nasional Regulation:</p> <ul style="list-style-type: none">• Undang-Undang No 18 tahun 2009 tentang Peternakan dan Animal Health :• Undang-undang UU No. 41 Tahun 2014 Tentang beberapa perubahan atas UU No. 18 Tahun 2009• Undang-Undang No 16 Tahun 1992 tentang Karantina Animal, Fish, and Plant• Peraturan Menteri Pertanian tentang Pedoman Pelayanan Jasa Medik Veteriner No.02/Permentan/OT.140/1/2010• Peraturan Menteri Pertanian no 14 tahun 2017 tentang Animal Drug Classification• KEPUTUSAN MENTERI PERTANIAN NOMOR 4026/Kpts./OT.140/4/2013 tentang Unit Respon Cepat Penyakit Hewan Menular Strategis





MODULE 55

Module Name	Statistics
Code	PKH61508
Semester	5
Study Program	Bachelor of Veterinary Medicine
Person Responsible For This Module	Achmad Efendi, S.Si, M.Sc, Ph.D
Language	Indonesian
Type of Course (Compulsory/Elective)	compulsory
Learning Forms/Teaching Format	1. Discussion 2. Lecture 3. Case Study 4. Small Group Discussion
Workload	100 minutes of lecture class 120 minutes of case study 120 minutes of self-study
ECTS	3.4
Credit Units	1 SKS = 1 system credit unit (SCU) equal to 45 hours according to SNPT 2023 Indonesian total study load (SCU) bachelor degree (4 years) = 144 SCU x 45 hours = 6480 hours ECTS for Bachelor's degree 4 years = 240 ECTS (1 ECTS = 25-30 hours) = 6000 – 7200 hours Conversion from SCU → ECTS = $6480 / 240 = 27$ hours Based on that, we use 27 hours of study load for 1 ECTS → $1 \text{ SCU} = 45 \text{ hours} / 27 \text{ hours} = 1,7 \text{ ECTS}$ $2 \text{ SCU} = 2 \times 1,7 \text{ ECTS} = 3,4 \text{ ECTS}$





Prerequisite Courses	-
Module Objectives/Intended Learning Outcomes	<ol style="list-style-type: none">1. Students can master basic statistical concepts.2. Students can perform descriptive data analysis.3. Students can apply basic statistics, including various statistical testing techniques.4. Students can process and present quantitative data related to the field of veterinary medicine.
Module Descriptions	<p>Discussing the role of statistics in research, the understanding of parametric and non-parametric statistics, types of statistical data, methods of data collection and presentation, normal distribution, standard distribution, probability, methods, and inferential statistical tests (correlation analysis, t-test, F-Test, ANOVA, Chi-Square, regression analysis).</p> <p>Upon completing this course, students will be able to master basic statistical concepts and apply basic statistics, including various statistical testing techniques, to process and present quantitative data related to the field of veterinary medicine.</p>
Learning Contents	<ol style="list-style-type: none">1. Introduction to Statistics2. Descriptive Statistics for Continuous Data3. Probability and Sampling Distribution 14. Statistics Quiz 15. Probability and Sampling Distribution 26. Hypothesis Testing for 1 Population7. Hypothesis Testing for 2 Populations8. Midterm Exam9. F-Test and ANOVA10. Introduction to RCBD and CRD11. Multiple Comparison Tests (with LSD) and RCBD12. Statistics Quiz 213. Factorial Design14. Simple Linear Correlation and Regression15. Multiple Linear Regression16. Final Exam
Evaluation Form /Assessment	<ol style="list-style-type: none">1. Case Study 1 15%2. Case Study 2 15%3. Case Study 3 15%





	<ol style="list-style-type: none">4. Midterm Exam 25%5. Final Exam 25%6. Activity score 5%
Study and examination requirements	<ol style="list-style-type: none">1. This course requires 80% of attendance in the lecture class
Reading List/Book References	<ol style="list-style-type: none">1. Petrie, A. and Watson, P. 2013. <i>Statistics for Veterinary and Animal Science</i>, 3rd Edition. Wiley-Blackwell2. Efendi, A. dan Pramoedya, H. 2018. <i>Biostatistika dengan R dan MS Excel</i>. UB Press3. Sahu, P.K. 2016. <i>Applied Statistics for Agriculture, Veterinary, Fishery, Dairy, and Allied Fields</i>. Springer





MODULE 56

Module Name	Veterinary Biotechnology and Genetic Engineering
Code	PKH61521
Semester	5
Study Program	Bachelor of Veterinary Medicine
Person Responsible For This Module	Dr. Dyah Kinasih Wuragil PH, S.Si, M.P., M.S.c
Language	Indonesian
Type of Course (Compulsory/Elective)	Elective
Learning Forms/Teaching format	1. Discussion 2. Lecture 3. Case Study
Workload	100 minutes of face to face learning 120 minutes of case study 120 minutes of self study
ECTS	3.4
Credit Units	1 SKS = 1 system credit unit (SCU) equal to 45 hours according to SNPT 2023 Indonesian total study load (SCU) bachelor degree (4 years) = 144 SCU x 45 hours = 6480 hours ECTS for Bachelor's degree 4 years = 240 ECTS (1 ECTS = 25-30 hours) = 6000 – 7200 hours Conversion from SCU → ECTS = 6480 / 240 = 27 hours Based on that, we use 27 hours of study load for 1 ECTS → 1 SCU = 45 hours /27 hours = 1,7 ECTS 2 SCU = 2 x 1,7 ECTS = 3,4 ECTS
Prerequisite Courses	1. Basic Genetics and Cell Biology (PKH61104)





	<ol style="list-style-type: none">2. Veterinary Biochemistry 2 (PKH62203)3. Veterinary Microbiology 1 (PKH62214)
Module Objectives/Intended Learning Outcomes	<ol style="list-style-type: none">1. Explaining the role of genes in controlling cell, tissue, and individual expression.2. Understanding and explaining the DNA recombination technology and its application in the field of veterinary medicine.3. Understanding the stages of DNA synthesis chemically and biologically, as well as its expression regulation.4. Understanding tissue engineering and the stages of cell and tissue culture in stem cell techniques.5. Understanding various types of plasmids and vectors for the development of recombinant DNA and gene expression regulation in vitro.6. Students are able to apply the basic principles of hybridoma technique, production of monoclonal antibodies, and utilization of monoclonal antibodies in the field of veterinary medicine.
Module Descriptions	<p>The Veterinary Genetic Engineering course covers the structure and role of genes, chemical DNA synthesis, DNA biosynthesis, gene expression control, as well as cell and tissue genetics. Additionally, the course discusses biotechnology applications using eukaryotic cells and totipotent cells in techniques such as stem cell tissue culture, hybridoma technique, monoclonal antibody technique, and the application of recombinant DNA for various purposes. Biotechnology applications in the veterinary field are also introduced, including the development of DNA and RNA vaccines, the utilization of monoclonal antibodies in veterinary medicine, as well as nanotechnology and tissue engineering. This material is provided to equip students with competency in understanding the role of genes in controlling cell, tissue, and individual expression.</p>
Learning Contents	<ol style="list-style-type: none">1. Lecture Overview: Explanation of RPS, Course Contracts, Gene Structure and Role2. Chemical DNA Synthesis3. DNA Biosynthesis and Gene Expression Regulation at the Cellular and Tissue Levels4. Cell Culture, Types of Eukaryotic Cell Lines, Stem Cells and Their Applications in Veterinary Medicine





	<ol style="list-style-type: none">5. Types of Eukaryotic Cell Lines, Stem Cells and Their Applications in Veterinary Medicine6. Nanotechnology and Tissue Engineering7. Course Integration8. Principles of Gene Down-regulation and Up-regulation in Eukaryotic and Prokaryotic Cells9. Development of Recombinant Proteins from Various Expression Systems10. Biotechnology Applications: Development of DNA Vaccines11. Biotechnology Applications: Development of RNA Subunit Vaccines12. Basic Principles of Hybridoma Technique and Production of Polyclonal and Monoclonal Antibodies13. Utilization of Monoclonal Antibodies in Veterinary Medicine14. PBL (Problem-Based Learning)
Evaluation Form /Assessment	<ol style="list-style-type: none">1. Quiz 10%2. Activity score/ discipline/ attitude 10%3. Midterm Exam and Final Exam 30%4. Case Study 50%
Study and examination requirements	<ol style="list-style-type: none">1. This course requires 80% of attendance in the lecture class
Reading list/Book References	<ol style="list-style-type: none">1. Clarke, D., 2005, <i>Molecular Biology</i>, Elsevier, Inc., California, USA2. Primrose, S.B., R.M. Twyman., R.W. Old., 2001, <i>Principles of Gene Manipulation sixth edition</i>, Blackwell Science, Ltd., Berlin, Germany3. Hodge, R., 2009, <i>Genetic Engineering: manipulating the mechanism of life, Facts on file, Inc.</i>, New York, USA4. Nicholl, D.S.T., 2002, <i>An introduction to Genetic Engineering 2nd Edition</i>, Cambridge University Press, Cambridge, UK5. LeVine, H., 2006, <i>Genetic Engineering: A reference handbook 2nd edition</i>, ABC-CLIO, Inc., California, USA6. Schlieff, R., 1993, <i>Molecular Biology 2nd Edition</i>, The John Hopkins University Press, London, UK





	<p>7. Setlow, J.K., and A. Hollaender, 2007, <i>Genetic Engineering: Principles and Methods</i>, Springer Science Business Media, Inc., New York, USA</p> <p>8. Steinberg, M.L., and S.D. Cosloy, 2006, <i>The Facts on File Dictionary of Biotechnology and Genetic Engineering</i>, 3rd edition, Facts on file, Inc., New York, USA</p> <p>9. Omoto, C.K., and P.F. Lurquin, 2004, <i>Genes and DNA: A beginner's guide to genetics and its applications</i>, Columbia University Press, New York, USA</p>
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MODULE 57

Module Name	Biotechnology of Animal Origin Food Product
Code	PKH61522
Semester	5
Study Program	Bachelor of Veterinary Medicine
Person Responsible For This Module	drh. Ajeng Erika Prihastuti Haskito, M.Si
Language	Indonesian
Type of Course (Compulsory/Elective)	Elective
Learning Forms/Teaching Format	1. Discussion 2. Lecture 3. Case Study 4. Small Group Discussion
Workload	50 minutes of lecture class 60 minutes of case study 60 minutes of self-study
ECTS	1.7
Credit Units	1 SKS = 1 system credit unit (SCU) equal to 45 hours according to SNPT 2023 Indonesian total study load (SCU) bachelor degree (4 years) = 144 SCU x 45 hours = 6480 hours ECTS for Bachelor's degree 4 years = 240 ECTS (1 ECTS = 25-30 hours) = 6000 – 7200 hours Conversion from SCU → ECTS = 6480 / 240 = 27 hours Based on that, we use 27 hours of study load for 1 ECTS → 1 SCU = 45 hours /27 hours = 1,7 ECTS
Prerequisite Courses	-





Module Objectives/Intended Learning Outcomes	<ol style="list-style-type: none">1. Able to understand biotechnology in the processing of animal-origin food to enhance functional and nutritional value, including fermentation biotechnology, enzymes, halal food from animals, fish processing, and synthetic foods.2. Able to complete module assignments correctly according to instructions and finish them on time.3. Able to maintain high self-discipline by being punctual for class attendance.4. Able to work collaboratively in teams while emphasizing individual responsibility in group tasks.
Module Descriptions	This course covers the history, concepts, and roles of biotechnology in processing animal-origin food; fundamentals of milk, meat, and egg processing technology; utilizing biotechnology such as fermentation, the use of enzymes to enhance the functional and nutritional value of animal-origin food, thereby making them functional foods from animals.
Learning Contents	<ol style="list-style-type: none">1. Course contract and overview2. The role of biotechnology in enhancing the functional and nutritional value of animal-origin food3. Functional food4. Basics of milk processing technology5. Basics of meat processing technology6. Basics of egg processing technology7. Enzyme biotechnology in animal-origin food processing8. Fermentation biotechnology in animal-origin food processing9. Halal food biotechnology from animals10. Biotechnology in fish processing11. Synthetic food biotechnology12. Case study presentation: Biotechnology in animal-origin food processing based on fermentation13. Case study presentation: Biotechnology in animal-origin food processing based on enzymes14. Case study presentation: Biotechnology in fish processing based on fermentation and/or enzymes
Evaluation Form /Assessment	<ol style="list-style-type: none">1. Case Study 50%2. Midterm Exam 15%3. Final Exam 15%4. Quiz 10%





	5. Activity score 10%
Study and examination requirements	1. This course requires 80% of attendance in the lecture class
Reading List/Book References	<ol style="list-style-type: none">1. Encyclopedia of Biotechnology in Agriculture and Food. D. R. Heldman, et. al.2. Enzyme in Food Biotechnology-Production, Applications, and Future Prospect. M. Kuddus.3. Natural Antioxidants-Applications in Foods of Animal Origin. R. Banerjee, et al. CRC Press.4. Biotechnology in Functional Foods and Nutraceuticals. D. Bagchi, et. al. CRC Press.5. SNI Susu Segar6. SNI Daging Ayam dan Sapi7. SNI Telur Ayam Konsumsi8. Permentan No. 11 Tahun 2020 tentang Sertifikasi Nomor Kontrol Veteriner Unit Usaha Produk Hewan9. ISO 22000: 2008





MODULE 58

Module Name	Animal Breeding
Code	PKH61523
Semester	5
Study Program	Bachelor of Veterinary Medicine
Person Responsible For This Module	drh. Yudit Oktanella, M.Si
Language	Indonesian
Type of Course (Compulsory/Elective)	Elective
Learning Forms/Teaching format	1. Discussion 2. Lecture 3. Case Study
Workload	100 minutes of face to face learning 120 minutes of case study 120 minutes of self study
ECTS	3.4
Credit Units	1 SKS = 1 system credit unit (SCU) equal to 45 hours according to SNPT 2023 Indonesian total study load (SCU) bachelor degree (4 years) = 144 SCU x 45 hours = 6480 hours ECTS for Bachelor's degree 4 years = 240 ECTS (1 ECTS = 25-30 hours) = 6000 – 7200 hours Conversion from SCU → ECTS = 6480 / 240 = 27 hours Based on that, we use 27 hours of study load for 1 ECTS → 1 SCU = 45 hours / 27 hours = 1,7 ECTS 2 SCU = 2 x 1,7 ECTS = 3,4 ECTS
Prerequisite Courses	Basic Genetics and Cell Biology (PKH61104)





	Veterinary Biochemistry 2 (PKH62203) Veterinary Microbiology 1 (PKH62214)
Module Objectives/Intended Learning Outcomes	<ol style="list-style-type: none">1. Students are able to explain the development of animal and livestock breeding, the advancement of breeding science, its relevance to the veterinary field, germplasm conservation, and advancements in animal breeding in various countries.2. Students are able to explain the basic concept of sire and dam selection systems and genetic progress due to selection response.3. Students are able to explain and distinguish between inbreeding and outbreeding mating systems.4. Students are able to explain and recall the concept of Recording Systems: Ruminant and Non-Ruminant in Breeding Farms.5. Students are able to explain and interpret the implementation of Genetic Parameters (Heritability and Repeatability) in Animal Breeding.6. Explaining the concepts of VBC (Vertical Breeding Concept) and the concepts of Open Nucleus Breeding Farm and Closed Nucleus Breeding Farm.7. Students are able to explain and differentiate between the breeding management of ruminant and non-ruminant livestock in tropical and subtropical regions.
Module Descriptions	Discussing the importance of animal breeding in veterinary medicine authority, selecting breeding stock, tracing breed purity, breeding management to crossbreed, maintaining pure breeds, and discovering new breeds This course also covers efforts to improve livestock productivity (production and reproductive traits) through genetic enhancement
Learning Contents	<ol style="list-style-type: none">1. Orientation on RPS, course contracts, general strategies in animal and livestock breeding, advancements in breeding science, relevance to the veterinary field, germplasm conservation, and advancements in breeding in several countries.2. Basic Concept of Selection I: Selection methods.3. Basic Concept of Selection II: Selection response, genetic progress.





	<ol style="list-style-type: none">4. Mating System I: Inbreeding concept.5. Mating System II: Outbreeding concept.6. Recording Systems: Ruminant and Non-Ruminant in Breeding Farms.7. PBL Discussion (Case 1).8. Genetic Parameter: Heritability.9. Genetic Parameter: Repeatability.10. Implementation of Genetic Parameters (Heritability and Repeatability) in Animal Breeding.11. Concept of VBC (Vertical Breeding Concept) and the concepts of Open Nucleus Breeding Farm and Closed Nucleus Breeding Farm.12. Breeding management of Non-Ruminant livestock in tropical and subtropical regions.13. Breeding management of Ruminant livestock in tropical and subtropical regions.14. Team-Based Project.
Evaluation Form /Assessment	<ol style="list-style-type: none">1. Activity score/ discipline/ attitude 10%2. Pretest/ posttest score 10%3. Midterm Exam 15%4. Final Exam 15%5. Case Study 50%
Study and examination requirements	<ol style="list-style-type: none">1. This course requires 80% of attendance in the lecture class
Reading list/Book References	<ol style="list-style-type: none">1. Hammond, K., H.U. Graser, and C.A. Mcdonald.1992. <i>Animal Breeding</i>. Post graduate foundation publication in Veterinary Science. University of Sydney2. Lasley, J.F. 1978. <i>Genetics of Livestock Improvement</i>. 3rd ed. Prentice Hall of India Private Limited, New Delhi3. Gatot Ciptadi, Aulanni'am, Agus Budiarto, Yudit Oktanella. 2019. <i>Genetika dan Pemuliaan: Peternakan-Veteriner</i>. UB Press. Malang. Indonesia.





MODULE 59

Module Name	Veterinary Business
Code	PKH61524
Semester	5
Study Program	Bachelor of Veterinary Medicine
Person Responsible For This Module	drh. Viski Fitri Hendrawan, M.Vet
Language	Indonesian
Type of Course (Compulsory/Elective)	Elective
Learning Forms/Teaching Format	1. Discussion 2. Lecture 3. Case Study
Workload	100 minutes of lecture class 120 minutes of case study 120 minutes of self-study
ECTS	3.4
Credit Units	1 SKS = 1 system credit unit (SCU) equal to 45 hours according to SNPT 2023 Indonesian total study load (SCU) bachelor degree (4 years) = 144 SCU x 45 hours = 6480 hours ECTS for Bachelor's degree 4 years = 240 ECTS (1 ECTS = 25-30 hours) = 6000 – 7200 hours Conversion from SCU → ECTS = $6480 / 240 = 27$ hours Based on that, we use 27 hours of study load for 1 ECTS → $1 \text{ SCU} = 45 \text{ hours} / 27 \text{ hours} = 1,7 \text{ ECTS}$ $2 \text{ SCU} = 2 \times 1,7 \text{ ECTS} = 3,4 \text{ ECTS}$
Prerequisite Courses	1. Animal Welfare and Veterinary Bioethics (PKH62406)





Module Objectives/Intended Learning Outcomes	<ol style="list-style-type: none">1. Able to understand the scope and perspective of Veterinary Business and the significance of Veterinary Business as an orientation.2. Able to analyze and evaluate a business unit.3. Capable of creative and innovative thinking, able to analyze risks, motivated in Veterinary Business, possessing marketing insights, leadership qualities, and communication skills to evaluate suitable entrepreneurial types based on interests and capacities.4. Able to understand and proficiently formulate business planning correctly and effectively.
Module Descriptions	<p>The Veterinary Business course is an elective course for students at the Faculty of Veterinary Medicine. This course discusses the significance of business as an orientation, the ability to develop business plans, creative and innovative thinking, risk calculation, understanding and motivation, leadership qualities and knowledge, as well as communication skills. The course consists of 2 credit hours of lectures.</p>
Learning Contents	<ol style="list-style-type: none">1. Overview of KWU RPS2. Motivation in business3. Decision-making in business4. Legal aspects in business5. Forms and purposes of communication in business6. Readiness to face business challenges7. Effective cash flow management in business8. Leadership and courage in decision-making9. Business monitoring and evaluation techniques10. Micro and Macro influences in entrepreneurship11. Business acceleration, diversification, and stabilization strategies12. Business innovation and creative industries13. Marketing strategies and negotiation strategies in business transactions14. Stages of developing a marketing plan and customer types15. Case Study "Business Portfolio and Financial Reports"
Evaluation Form /Assessment	<ol style="list-style-type: none">1. Case Study 20%2. Midterm Exam 25%3. Final Exam 25%4. Quiz 20%





	5. Activity score 10%
Study and examination requirements	1. This course requires 80% of attendance in the lecture class
Reading list/Book References	<ol style="list-style-type: none">1. Alma, B. 2009. <i>Kewirausahaan Untuk Mahasiswa dan Umum</i>. Alfabeta. Bandung2. Chandra P.E. 2008. <i>Cara Gila Jadi Pengusaha</i>. Elex Media Komputindo. Kelompok Gramedia. Jakarta.3. Hendro, Chandra W.W. 2006. <i>Be a Smart and Good Entrepreneur</i>. CLA Publishing. Jakarta4. Irmin S, Suharyo AP. 2004. <i>The Best Personal</i>. Seyma Media. Malang5. Kennedy, J.E, R Darmawan Soemanagara. 2006. <i>Marketing Communication</i>. Bhuana Ilmu Populer. . Kelompok Gramedia. Jakarta.6. Machfoedz, M, Mahmud Machfoedz. 2006. <i>Kewirausahaan, Metode, Manajemen, dan Implementasi</i>. BPFE. Yogyakarta7. Musrofi, M. 2008. <i>Creative Manager, Creative Entrepreneur</i>. Elex Media Komputindo. Kelompok Gramedia. Jakarta.8. Overton, R. 2004. <i>Are You An Entrepreneur?</i>. Elex Media Komputindo. Kelompok Gramedia. Jakarta.9. Seng, A. W. 2006. <i>Rahasia Bisnis Orang Jepang. Langkah Raksasa Sang Nippon Menguasai Dunia</i>. Hikmah, Mizan Publika. Jakarta10. Seng, A. W. 2007. <i>Rahasia Bisnis Orang Cina Kunci Sukses Menguasai Perdagangan Internasional</i>. Hikmah, Mizan Publika. Jakarta11. Suharyadi, Arissetyanto Nugroho, Purwanto S.K, Maman Faturohman. 2008. <i>Kewirausahaan Membangun Usaha Sukses Sejak Usia Muda</i>. Salemba Empat. Jakarta.12. Yahya, H, Baban Sarbana. 2006. <i>Siapa Berani Jadi Entrepreneur</i>. Elex Media Komputindo. Kelompok Gramedia. Jakarta.





MODULE 60

Module Name	Poultry Health Management
Code	PKH65125
Semester	5
Study Program	Bachelor of Veterinary Medicine
Person Responsible For This Module	drh. Sruti Listra Adrenalin, M.Sc.
Language	Indonesian
Type of Course (Compulsory/Elective)	Elective
Learning Forms/Teaching format	1. Discussion 2. Lecture 3. Case Study
Workload	50 minutes of face to face learning 60 minutes of case study 60 minutes of self study
ECTS	3.4
Credit Units	1 SKS = 1 system credit unit (SCU) equal to 45 hours according to SNPT 2023 Indonesian total study load (SCU) bachelor degree (4 years) = 144 SCU x 45 hours = 6480 hours ECTS for Bachelor's degree 4 years = 240 ECTS (1 ECTS = 25-30 hours) = 6000 – 7200 hours Conversion from SCU → ECTS = $6480 / 240 = 27$ hours Based on that, we use 27 hours of study load for 1 ECTS → 1 SCU = 45 hours / 27 hours = 1,7 ECTS 2 SCU = 2 x 1,7 ECTS = 3,4 ECTS
Prerequisite Courses	1. Animal Husbandry (PKH61105)





	<ol style="list-style-type: none">2. Veterinary Ethology (PKH61107)3. Basic Animal Nutrition (PKH62216)
Module Objectives/Intended Learning Outcomes	<ol style="list-style-type: none">1. Explaining poultry commodities, operational management of poultry farms, management of breeding farm units, and hatcheries.2. The Student is able to outline poultry nutrition management, housing and environmental management, as well as poultry farm waste management.3. Explaining the digestive and reproductive systems of poultry, as well as their health concepts.4. The Student is able to describe poultry disease management, the development of health programs and vaccination schedules, and the implementation of biosecurity on poultry farms.5. The Student is able to demonstrate effective communication and express opinions both individually and in groups, orally and in writing.6. The Student is able to demonstrate good academic ethics and morals.
Module Descriptions	<p>This course explains to students about poultry production systems, poultry housing, various efforts to improve poultry production, methods for estimating poultry production outcomes for both meat and eggs, understanding strategically important poultry diseases with zoonotic potential, as well as planning health maintenance programs and disease prevention (vaccination, deworming, biosecurity, and biosafety), product quality, and behavior of productive livestock. It also covers planning, management, and monitoring of livestock enterprises.</p>
Learning Contents	<ol style="list-style-type: none">1. Course contract, Poultry Livestock Commodities and Health topics.2. Operational Management of Poultry Farms.3. Management of Breeding Farm Units.4. Management of Hatchery Units.5. Poultry Feed/Nutrition Management.6. Housing and Environmental Management.7. Management of Poultry Farm Waste.8. Digestion and Reproduction of Poultry.9. Management of Poultry Disease Handling.





	<ol style="list-style-type: none">10. Development of Health Programs.11. Development of Vaccination Programs.12. Implementation of Biosecurity on Poultry Farms.13. Dissemination of Research Results and Community Service.14. Case Study.
Evaluation Form /Assessment	<ol style="list-style-type: none">1. Activity score 10%2. Case Study 20%3. Quiz 20%4. Midterm Exam 25%5. Final Exam 25%
Study and examination requirements	<ol style="list-style-type: none">1. This course requires 80% of attendance in the lecture class
Reading list/Book References	<ol style="list-style-type: none">1) Dewulf J., Filip VI. 2019. <i>Biosecurity in Animal Production and Veterinary Medicine From Principles to Practice</i>. CABI Publishing.2) Swayne DE. 2013. <i>Disease of Poultry 13th Edition</i>. Wiley-Blackwell Publishing.3) Tabbu CR. <i>Penyakit Ayam dan Penanggulangannya Volume 1: Penyakit Bakterial, Mikal, dan Viral</i>. Penerbit Kanisius.4) Tabbu CR. <i>Penyakit Ayam dan Penanggulangannya Volume 2: Penyakit Asal Parasit, Noninfeksius, dan Etiologi Kompleks</i>. Penerbit Kanisius.5) Vegad JL. 2007. <i>A Colour Atlas of Poultry Diseases</i>. International Book Distributing Co.





Faculty of
Veterinary Medicine

6th SEMESTER



MODULE 61

Module Name	Veterinary Clinical Pathology
Course Code	PKH62611
Semester	6
Study Program	Bachelor of Veterinary Medicine
Person Responsible for This Module	drh. Tiara Widyaputri, M.Si
Language	Indonesian
Type of Course (Compulsory/Elective)	Compulsory
Learning Forms/Teaching format	<ol style="list-style-type: none">1. Discussion2. Lecture3. Project Based Learning4. Case Study5. Laboratory Work6. Small Group Discussion
Workload	150 minutes of face to face learning 180 minutes of case study 180 minutes of self study
ECTS	5.1
Credit Units	<p>1 SKS = 1 system credit unit (SCU) equal to 45 hours according to SNPT 2023</p> <p>Indonesian total study load (SCU) bachelor degree (4 years) = 144 SCU x 45 hours = 6480 hours</p> <p>ECTS for Bachelor's degree 4 years = 240 ECTS (1 ECTS = 25-30 hours) = 6000 – 7200 hours</p> <p>Conversion from SCU → ECTS = 6480 / 240 = 27 hours</p> <p>Based on that, we use 27 hours of study load for 1 ECTS →</p> <p>1 SCU = 45 hours / 27 hours = 1,7 ECTS</p>





	3 SCU = 3 x 1,7 ECTS = 5.1 ECTS
Prerequisite Courses	<ol style="list-style-type: none">1. Veterinary Physiology 1 (PKH62212)2. Veterinary Physiology 2 (PKH61312)
Module Objectives/Intended Learning Outcomes	<ol style="list-style-type: none">1. Able to take biological samples, which include blood, body fluids, feces and urine2. Able to carry out examination and testing of biological materials related to hematology, clinical chemistry, urine and feces3. Able to analyze and interpret hematological and clinical chemistry abnormalities in animal sample testing4. Able to conclude the results of hematology and clinical chemistry examination analysis from various samples to support diagnosis5. Able to carry out tasks in a timely and responsible manner
Module Descriptions	The Veterinary Clinical Pathology course is a mandatory course for students at the Faculty of Veterinary Medicine. This course discusses the principles and techniques for examining biological materials, changes in clinical pathology, and interpretation of the results of hematology and clinical chemistry analysis of blood, urine, feces and other body fluids to support diagnosis. The composition of lectures and laboratory work is 2:1 credits
Learning Contents	<ol style="list-style-type: none">1. Introduction: Definition and terminology of Clinical Pathology2. Hematology: Erythrocytes and Platelets3. Hematology: Leukocytes and Differential Leukocytes4. Kidney Function: Clinical Chemistry5. Kidney Function: Urinalysis6. Liver Function: Clinical Enzymology7. Liver Function: Case Interpretation8. Exocrine Pancreas9. Metabolism: Abnormality10. Metabolism: Case interpretation11. Body fluids12. Stool examination13. Blood transfusion in small animals14. Discussion or Tutorial
Evaluation Form /Assessment	<ol style="list-style-type: none">1. Assignment: 20%2. Quiz: 15%3. Midterm Exam: 25%4. Final Exam: 25%





	5. Laboratory Work: 30%
Study and examination requirements	<ol style="list-style-type: none">1. This course requires 80% of attendance in the lecture class2. This course requires 100% of attendance in the laboratory practical
Reading list/Book References	<ol style="list-style-type: none">1. Douglas., J.W., dan Wardrop, K.J., 2010, <i>Schalm's Veterinary Hematology</i>, 6th ed., Blackwell Publishing2. Stockham, S.L., dan Scott, M.A., 2008, <i>Fundamentals of Veterinary Clinical Pathology</i>, 2nd ed., Blackwell Publishing3. Cowell, R.L., 2004, <i>Veterinary Clinical Pathology Secrets</i>, Elsevier Mosby: St Louis4. Harvey J.W. <i>Veterinary Hematology A Diagnostic Guide and Color Atlas</i>. 2012. Elsevier Saunders.5. Sodikoff, C.H., 2001. <i>Laboratory profiles of small animal diseases: a guide to laboratory diagnosis</i>. No. 3rd Edition. Mosby Inc..6. Rose E. Raskin, Chapter 2 - <i>General Categories of Cytologic Interpretation</i>, Editor(s): Rose E. Raskin, Denny J. Meyer, <i>Canine and Feline Cytology (Third Edition)</i>, W.B. Saunders.





MODULE 62

Module Name	Veterinary Pharmacy and Prescription Writing
Course Code	PKH6212
Semester	6
Study Program	Bachelor of Veterinary Medicine
Person Responsible for This Module	Agri Kaltaria Anisa, S.Farm., Apt., M.Si.
Language	Indonesian
Type of Course (Compulsory/Elective)	Compulsory
Learning Forms/Teaching format	<ol style="list-style-type: none">1. Discussion2. Lecture3. Project Based Learning4. Case Study5. Laboratory Work6. Exercise
Workload	100 minutes of face to face learning 120 minutes of case study 120 minutes of self study
ECTS	3.4
Credit Units	1 SKS = 1 system credit unit (SCU) equal to 45 hours according to SNPT 2023 Indonesian total study load (SCU) bachelor degree (4 years) = 144 SCU x 45 hours = 6480 hours ECTS for Bachelor's degree 4 years = 240 ECTS (1 ECTS = 25-30 hours) = 6000 – 7200 hours Conversion from SCU → ECTS = 6480 / 240 = 27 hours





	Based on that, we use 27 hours of study load for 1 ECTS → 1 SCU = 45 hours /27 hours = 1,7 ECTS 2 SCU = 2 x 1,7 ECTS = 3,4 ECTS
Prerequisite Courses	Veterinary Pharmacology 2 (PKH61512)
Module Objectives/Intended Learning Outcomes	<ol style="list-style-type: none">1. Able to master, explain concepts and calculate concentrations, dilutions and drug doses.2. Able to master, explain concepts and write recipes well and correctly, as well as understand Latin terms and applications in recipes.3. Able to master and explain the concept of drug classes, as well as the principles of selection and types of veterinary drug dosage forms4. Able to master the concept of administering or applying drugs to various animal species.5. Able to understand how to make good veterinary medicine (CPOHB)6. Able to understand and explain the principles of testing (bioactivity and toxicology) and standardization of natural medicines7. Able to carry out tasks independently or in groups correctly according to work orders and complete them on time.8. Have high ethics, morals and academic responsibility, as well as the ability to communicate and express opinions effectively in oral and written form.
Module Descriptions	This course explains the dilution and concentration of drugs, dose calculations, reading and writing prescriptions, application of Latin in writing prescriptions, drug classes, application of drug administration to various types of animals, principles of selection and dosage forms of drugs, How to Make Good Veterinary Medicines (CPOHB), bioactivity tests, toxicology tests and standardization of herbal medicines (natural ingredients)
Learning Contents	<ol style="list-style-type: none">1. Introduction to Pharmaceutical Sciences and Veterinary Receptors





	<ol style="list-style-type: none">2. Concentration and dilution of drugs3. Medication and dosage4. Recipe writing rules5. Introduction and application of Latin in recipes6. Application of drug administration to various animal species7. How to Make Good Veterinary Medicine (CPOHB)8. Principles of selecting drug dosage forms and solid drug dosage forms9. Semi-solid and liquid medicinal preparations10. Bioactivity Test of herbal medicinal ingredients (natural ingredients)11. Toxicology Test of herbal medicinal ingredients (natural ingredients)12. Standardization of active compounds for the manufacture of herbal medicinal ingredients (natural ingredients)13. Case study 114. Case study 2
Evaluation Form /Assessment	<ol style="list-style-type: none">1. Case Study: 20%2. Quiz: 20%3. Midterm Exam: 25%4. Final Exam: 25%5. Activity Score 10%
Study and examination requirements	<ol style="list-style-type: none">1. This course requires 80% of attendance in the lecture class2. This course requires 100% of attendance in the laboratory practical
Reading list/Book References	<ol style="list-style-type: none">1. Ars Prescribendi Resep yang Rasional2. Ansel's Pharmaceutical Dosage Forms and Drug Delivery Systems





	<ol style="list-style-type: none">3. Plumbs Veterinary Drug Handbook 7th Edition4. Papich Handbook of Veterinary Drugs
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MODULE 63

Module Name	Basic Veterinary Surgery
Course Code	PKH62613
Semester	6
Study Program	Bachelor of Veterinary Medicine
Person Responsible for This Module	drh. Nofan Rickyawan, M.Sc.
Language	Indonesian
Type of Course (Compulsory/Elective)	Compulsory
Learning Forms/Teaching format	<ol style="list-style-type: none">1. Discussion2. Lecture3. Project Based Learning4. Case Study5. Laboratory Work6. Small Group Discussion
Workload	150 minutes of face to face learning 180 minutes of case study 180 minutes of self study
ECTS	5.1
Credit Units	<p>1 SKS = 1 system credit unit (SCU) equal to 45 hours according to SNPT 2023</p> <p>Indonesian total study load (SCU) bachelor degree (4 years) = 144 SCU x 45 hours = 6480 hours</p> <p>ECTS for Bachelor's degree 4 years = 240 ECTS (1 ECTS = 25-30 hours) = 6000 – 7200 hours</p> <p>Conversion from SCU → ECTS = $6480 / 240 = 27$ hours</p> <p>Based on that, we use 27 hours of study load for 1 ECTS →</p> <p>1 SCU = 45 hours / 27 hours = 1,7 ECTS</p>





	3 SCU = 3 x 1,7 ECTS = 5.1 ECTS
Prerequisite Courses	<ol style="list-style-type: none">1. Veterinary Pharmacology 2 (PKH61512)2. Veterinary Clinical Diagnosis (PKH61511)
Module Objectives/Intended Learning Outcomes	<ol style="list-style-type: none">1. Able to understand veterinary surgical procedures which include pre-, peri- and post-operation aseptically and legeartically for facilities, instruments, teams and patients.2. Able to understand the management of surgical patients, the surgical team and the infrastructure used in surgery.3. Able to understand wound healing and wound care management, wound suturing, material selection and suture patterns, as well as infection management and antibiotic selection in surgical patients.4. Able to understand fluid therapy and emergency measures for patients.5. Able to understand anaesthesia and pain management in animals which includes pre-, peri- and post-anaesthesia.6. Able to understand the types, functions, tools and materials as well as the management of bandages, casting, splinting, drains.
Module Descriptions	Courses that study veterinary surgical procedures including pre-, peri- and post-operation. It discusses the basics of veterinary surgery, principles of aseptic surgery, fluid therapy, emergencies, anaesthesia and patient monitoring, pain management, sutures and closure of surgical wounds, wound healing, control and prevention of surgical wound infections, post-operative patient management, laparotomy, biopsy and bandaging, casting, splinting, drains
Learning Contents	<ol style="list-style-type: none">1. Basics of veterinary surgery2. Principles of veterinary surgery3. Management of handling and preparation of surgical instruments, equipment and facilities4. Surgical attire and surgical team preparation5. Pre-operative and intra-operative patient management6. Sutures, materials, hemostasis, and wound closure7. Fluid therapy8. Wound healing, wound care management, surgical infections, and antibiotic use in surgical patients9. Emergency10. Anaesthesia and anaesthesia monitoring11. Anaesthesia for special conditions and pain management





	<ol style="list-style-type: none">12. Postoperative patient management and nutritional management of surgical patients13. Bandaging, casting, splinting, and drainage14. Laparotomy and case studies
Evaluation Form /Assessment	<ol style="list-style-type: none">1. Case Study: 50%2. Quiz: 20%3. Midterm Exam: 15%4. Final Exam: 15%5. Activity Score 10%
Study and examination requirements	<ol style="list-style-type: none">1. This course requires 80% of attendance in the lecture class2. This course requires 100% of attendance in the laboratory practical
Reading list/Book References	<ol style="list-style-type: none">1. Fundamentals of Small Animal Surgery2. Small Animal Surgery 5th3. Small Animal Anesthesia and Pain Management, 2nd Edition: A Color Handbook4. Small Animal Fluid Therapy, Acid-base and Electrolyte Disorders, A Color Handbook5. Textbook of Small Animal Emergency Medicine





MODULE 64

Module Name	Internal Medicine of Large Animal
Course Code	PKH62605
Semester	6
Study Program	Bachelor of Veterinary Medicine
Person Responsible for This Module	drh. Dodik Prasetyo, M.Vet
Language	Indonesian
Type of Course (Compulsory/Elective)	Compulsory
Learning Forms/Teaching format	<ol style="list-style-type: none">1. Discussion2. Lecture3. Case Study4. Small Group Discussion
Workload	100 minutes of face to face learning 120 minutes of case study 120 minutes of self study
ECTS	3.4
Credit Units	<p>1 SKS = 1 system credit unit (SCU) equal to 45 hours according to SNPT 2023</p> <p>Indonesian total study load (SCU) bachelor degree (4 years) = 144 SCU x 45 hours = 6480 hours</p> <p>ECTS for Bachelor's degree 4 years = 240 ECTS (1 ECTS = 25-30 hours) = 6000 – 7200 hours</p> <p>Conversion from SCU → ECTS = 6480 / 240 = 27 hours</p> <p>Based on that, we use 27 hours of study load for 1 ECTS →</p> <p>1 SCU = 45 hours /27 hours = 1,7 ECTS</p>





	2 SCU = 2 x 1,7 ECTS = 3,4 ECTS
Prerequisite Courses	<ol style="list-style-type: none">1. Veterinary Clinical Diagnosis (PKH61511)2. Veterinary Pharmacology 2 (PKH61512)
Module Objectives/Intended Learning Outcomes	<ol style="list-style-type: none">1. Able to comprehensively understand the results of a diagnosis with the pathogenesis of the course of the disease in order to find out the cause and how to treat it and prevent it2. Able to understand and explain procedures for establishing a diagnosis, pathogenesis of disease, causes of disease, and/or etiology as well as determining appropriate treatment and treatment measures3. Able to understand the greatness of God Almighty in living creatures for various conditions of healthy and sick animals and able to understand teaching materials for texts on internal diseases of small animals4. Able to do assignments on time and willing and have the ability to collaborate with study group friends
Module Descriptions	The course is a science that explains various types of internal diseases, procedures for designing disease diagnosis steps to be able to comprehensively understand the cause/etiology, clinical symptoms, pathogenesis and treatment related to internal diseases/internal diseases both infectious and non-infectious in large animals.
Learning Contents	<ol style="list-style-type: none">1. Introductory lectures, RPS Overview, lecture contracts, delivery of structured assignments (1 assignment per semester) and benefits of the Large Animal Internship Course2. Diseases of the eyes and ears in large animals3. Intoxication disorders and metabolic disorders in large animals4. Diseases of the integumentary system and skin diseases in large animals5. Diseases of the cardiovascular system and circulatory disorders in large animals6. Diseases of the digestive system in large ruminant animals in cattle





	<ol style="list-style-type: none">7. Diseases of the nervous and musculoskeletal systems in large animals8. Diseases of the digestive system and metabolic disorders in non-ruminant animals in horses9. Diseases of the respiratory system and respiratory disorders in large animals10. Neonatal disease (hereditary / congenital) in large animal breeds11. Infectious and non-infectious internal diseases in small ruminants/sheep12. Infectious and non-infectious internal diseases in pigs13. Diseases of the urinary and genital systems in large animals14. Case Study (Problem Base Learning)
Evaluation Form /Assessment	<ol style="list-style-type: none">1. PBL: 20%2. Quiz: 20%3. Midterm Exam: 25%4. Final Exam: 25%5. Activity Score 10%
Study and examination requirements	This course requires 80% of attendance in the lecture class
Reading list/Book References	<ol style="list-style-type: none">1. Blowey, R.W and Weaver, A.D. 2011. <i>Color Atlas of Diseases and Disorders of Cattle. 3rd Edition.</i> Mosby. Elsevier2. Divers, T.J. dan Peek, S. F. <i>Rebhun's Diseases of Dairy Cattle.</i> Saunders. Elsevier.3. Radostits, O.M., Gay, C.C., Hinchcliff, K.W., and Constable, P.D. <i>Veterinary Medicine: A Text Book of the Diseases of Cattle, Sheep,</i>4. <i>Goats, Pigs and Horses. 10thEdition.</i> Saunders. Elsevier.5. 4. Scott, P.R., Penny, C.D. dan Macrae, A.I. 2011. <i>Cattle Medicine.</i> Manson Publishing.





MODULE 65

Module Name	Veterinary Toxicology
Course Code	PKH62622
Semester	6
Study Program	Bachelor of Veterinary Medicine
Person Responsible for This Module	drh. Aldila Noviatri, M.Biomed.
Language	Indonesian
Type of Course (Compulsory/Elective)	Compulsory
Learning Forms/Teaching format	<ol style="list-style-type: none">1. Discussion2. Lecture3. Case Study4. Small Group Discussion
Workload	100 minutes of face to face learning 120 minutes of case study 120 minutes of self study
ECTS	3.4
Credit Units	<p>1 SKS = 1 system credit unit (SCU) equal to 45 hours according to SNPT 2023</p> <p>Indonesian total study load (SCU) bachelor degree (4 years) = 144 SCU x 45 hours = 6480 hours</p> <p>ECTS for Bachelor's degree 4 years = 240 ECTS (1 ECTS = 25-30 hours) = 6000 – 7200 hours</p> <p>Conversion from SCU → ECTS = $6480 / 240 = 27$ hours</p> <p>Based on that, we use 27 hours of study load for 1 ECTS →</p> <p>1 SCU = 45 hours / 27 hours = 1,7 ECTS</p> <p>2 SCU = 2 x 1,7 ECTS = 3,4 ECTS</p>





Prerequisite Courses	Veterinary Pharmacology 2 (PKH61512)
Module Objectives/Intended Learning Outcomes	<ol style="list-style-type: none">1. Able to understand concepts and be able to explain toxicology, types of toxicity, dose-response relationships, toxicant metabolism (Absorption, Distribution, Metabolism, Excretion), toxicokinetics, mechanism of action of toxicants, factors influencing toxicants, classification of toxicants, types of intoxication, Margin of Safety, Safety testing2. Able to explain the classification of intoxication based on clinical symptoms, explain the management of detoxification therapy in general and determine the choice of antidote.3. Able to explain about medicinal plants, the history of medicinal plants and examples of their use in the veterinary field), secondary metabolites in plants and the synthesis of secondary metabolites in tissue culture.4. Able to carry out module tasks correctly according to work orders and complete on time.5. Able to work together in a team by prioritizing individual responsibility in doing group work & Able to have high self-discipline and not be late for lectures.
Module Descriptions	Basic toxicology, types of toxicology (chemicals, plants, food ingredients, chemotherapeutics, metalloids and radioactive substances, teratogenic substances, environment), applicable laws, medicinal plants and the use of phytopharmaceuticals so that students are able to understand the material provided in lectures and discussions.
Learning Contents	<ol style="list-style-type: none">1. Lecture contract, overview, and toxicology terminology2. Xenobiotic metabolism phase 13. Xenobiotic metabolism phase 24. Toxicological agents5. Effects of toxic compounds on skin and eyes6. Effects of toxic compounds on the respiratory and cardiovascular systems7. Effects of toxic compounds on the liver system8. Effects of toxic compounds on the kidneys9. Medicinal plants (history of medicinal plants and examples of their use in the veterinary field)10. Emergency Toxicology





	<ol style="list-style-type: none">11. Secondary metabolites (Phenolics, flavonoids, alkanoids, and terpenoids) and chemopreventive12. Effects of toxic compounds on the immune system, reproduction and fetal development13. Synthesis of secondary metabolites in tissue culture14. Case study project (Journal discussion/case study regarding intoxication in the immune system, reproduction and fetal development, cardiovascular, respiratory, liver and kidney systems including clinical symptoms, confirmation of diagnosis, and therapeutic management)
Evaluation Form /Assessment	<ol style="list-style-type: none">1. Case Study: 20%2. Quiz: 10%3. Midterm Exam: 25%4. Final Exam: 25%5. Activity Score 10%
Study and examination requirements	This course requires 80% of attendance in the lecture class
Reading list/Book References	<ol style="list-style-type: none">1. Osweiler, Gary D., Lynn R. Hovda, Ahna G. Brutlag and Justine A. Lee, 2011. <i>Blackwell's Five-Minutes Veterinary Consult Clinical Companion Small Animal Toxicology</i>. Wiley-Blackwell Inc.2. Tiwari, Radhey Mohan and Malini Sinha, 2010. <i>Veterinary Toxicology</i>. Jaipur : Oxford Book Company.3. Plumlee, Konnie, 2004. <i>Clinical Veterinary Toxicology</i>. Mosby.





MODULE 66

Module Name	Veterinary Obstetrics, Gynaecology and Infertility
Course Code	PKH62616
Semester	6
Study Program	Bachelor of Veterinary Medicine
Person Responsible for This Module	drh. Viski Fitri Hendrawan, M.Vet
Language	Indonesian
Type of Course (Compulsory/Elective)	Compulsory
Learning Forms/Teaching format	<ol style="list-style-type: none">1. Discussion2. Lecture3. Project Based Learning4. Case Study5. Laboratory Work6. Small Group Discussion
Workload	150 minutes of face to face learning 180 minutes of case study 180 minutes of self study
ECTS	5.1
Credit Units	<p>1 SKS = 1 system credit unit (SCU) equal to 45 hours according to SNPT 2023</p> <p>Indonesian total study load (SCU) bachelor degree (4 years) = 144 SCU x 45 hours = 6480 hours</p> <p>ECTS for Bachelor's degree 4 years = 240 ECTS (1 ECTS = 25-30 hours) = 6000 – 7200 hours</p> <p>Conversion from SCU → ECTS = 6480 / 240 = 27 hours</p> <p>Based on that, we use 27 hours of study load for 1 ECTS →</p> <p>1 SCU = 45 hours / 27 hours = 1,7 ECTS</p>





	3 SCU = 3 x 1,7 ECTS = 5.1 ECTS
Prerequisite Courses	<ol style="list-style-type: none">1. Veterinary Reproductive Physiology (PKH61307)2. Veterinary - Artificial Insemination and Reproduction Technology (PKH61514)
Module Objectives/Intended Learning Outcomes	<ol style="list-style-type: none">1. Concludes reproductive health conditions and birth management in various animals2. Able to understand the concept of handling birth assistance and reproductive diseases and reproductive disorders3. Able to understand and be able to treat various kinds of reproductive diseases and reproductive disorders as a form of promotive action in the field of animal health and breeding4. Able to apply correct and appropriate birth assistance
Module Descriptions	<p>This course discusses obstetrics in various animal species ranging from livestock, pet animals and wild animals as well as exotic animals, with midwifery topics in the form of birth control, pregnancy diagnosis and malposition in cases of dystocia, etc. Apart from midwifery, this course also discusses the science of fertility in both male and female animals, as well as the factors that cause fertility and reproductive disorders and reproductive diseases, both zoonotic and non-zoonotic. This course uses teaching methods in the form of: Seminars (face to face), book reviews, case discussions using the PBL system and discussing cases through multimedia media (YouTube and case videos in the field) so that students are able to understand midwifery cases, fertility and reproductive disorders</p>
Learning Contents	<ol style="list-style-type: none">1. Socialization of RPS, lecture contracts, the role of Midwifery, Maternity and Reproductive Disorders in medical science2. animals, medical terminology ko Obstetrics, Maternity and Reproductive Disorders and Medical Terminology3. Pregnancy Physiology, Pregnancy Endocrinology and Pregnancy Examination Diagnostic Techniques in various4. Animal5. Birth physiology, birth endocrinology, uterine involution, birth induction and birth management and6. Post parturition handling7. Maternal dystocia and its treatment8. Foetal dystocia and its treatment9. Pathology of Pregnancy and Abortion, Early Embryo Death





	<ol style="list-style-type: none">10. Post Partum Complications and Post Partum Metabolism Disorder11. Reproductive Diseases due to Bacterial and Parasite Infections (Protozoa)12. Reproductive Diseases due to Viral and Fungal Infections13. Reproductive Disorders Due to Feed Factors14. Reproductive Disorders Due to Hormonal Factors15. Reproductive Disorders Due to Genetic Factors16. Femininity in Male Animals and Male Genital Pathology17. Femininity in Female Animals and Pathology of Female Genitals
Evaluation Form /Assessment	<ol style="list-style-type: none">1. Case Study: 20%2. Quiz: 20%3. Midterm Exam: 25%4. Final Exam: 25%5. Activity Score 10%
Study and examination requirements	<ol style="list-style-type: none">1. This course requires 80% of attendance in the lecture class2. This course requires 100% of attendance in the laboratory practical
Reading list/Book References	<ol style="list-style-type: none">1. Bovine reproduction manual (www.kashvet.org)2. Clinical Canine and Feline Reproduction Evidence Based Answers, 1st Edition (Margaret V. Root Kustritz, 2010)3. Comparative Reproductive Biology, 1st Edition (Heide Schatten, 2007)4. Equine Reproductive Physiology, Breeding and Study Management, 2nd Edition (M. C. G. Davies Morel, 2003)5. Ilmu Kebidanan (Mahaputera, Airlangga pers, 2001)6. Teknik Penanganan Gangguan Kelahiran pada Sapi (Noordin M dan Tuty L Yusuf, IPB Pers, 2012)7. Kebidanan (Toilehere, 1989)8. Arthur_s Veterinary Reproduction and Obstetrics (Eighth Edition)9. Bovine Medicine Diseases and Husbandry of Cattle, 2nd Edition (A. H. Andrews, 2004)10. Handbook of Veterinary Obstetrics 2nd Edition11. Juknis Gangguan Reproduksi12. The Handbook of Contraception, A Guide for Practical Management (Donna Shoupe, 2006)13. Veterinary Reproductive Ultrasonography





MODULE 67

Module Name	Epidemiology and Veterinary Economy
Course Code	PKH4605
Semester	6
Study Program	Bachelor of Veterinary Medicine
Person Responsible for This Module	drh. Widi Nugroho, Ph.D.
Language	Indonesian
Type of Course (Compulsory/Elective)	Compulsory
Learning Forms/Teaching format	<ol style="list-style-type: none">1. Discussion2. Lecture3. Case Study4. Small Group Discussion
Workload	100 minutes of face to face learning 120 minutes of case study 120 minutes of self study
ECTS	3.4
Credit Units	<p>1 SKS = 1 system credit unit (SCU) equal to 45 hours according to SNPT 2023</p> <p>Indonesian total study load (SCU) bachelor degree (4 years) = 144 SCU x 45 hours = 6480 hours</p> <p>ECTS for Bachelor's degree 4 years = 240 ECTS (1 ECTS = 25-30 hours) = 6000 – 7200 hours</p> <p>Conversion from SCU → ECTS = $6480 / 240 = 27$ hours</p> <p>Based on that, we use 27 hours of study load for 1 ECTS →</p> <p>1 SCU = 45 hours / 27 hours = 1,7 ECTS</p> <p>2 SCU = 2 x 1,7 ECTS = 3,4 ECTS</p>





Prerequisite Courses	<ol style="list-style-type: none">1. Zoonoses (PKH61506)2. Statistics (PKH61508)3. Research Methodology (PKH61509)
Module Objectives/Intended Learning Outcomes	<ol style="list-style-type: none">1. [Work skills] Able to design animal health concepts through a veterinary epidemiology approach, to protect, secure and guarantee the health and welfare of animals, humans and the environment through appropriate approval, prevention, control, eradication and treatment of animal and zoonotic diseases based on invitation regulations in the field administering animal health2. [Knowledge] Able to master the concept of veterinary epidemiology in animal health so that it can protect, secure and guarantee public health and the welfare of animals, humans and the environment3. [Attitude] Able to take responsibility academically for drafting veterinary epidemiology concepts independently or in a working group under guidance4. [supporting competencies] Able to create interdisciplinary academic collaboration in the field of veterinary epidemiology
Module Descriptions	<p>This course discusses the concept of veterinary epidemiology in analyzing the causes, diagnosis, control and economics of animal diseases. Students will learn the terms veterinary epidemiology, investigation of animal disease outbreaks, various observational studies of veterinary epidemiology, sample selection techniques, methods of measuring disease levels, methods of identifying risk factors and methods of measuring the impact of risk factors on disease incidence rates. Students will also be introduced to analysis of diagnostic accuracy and successful treatment of clinical cases of animal disease, measuring the risk of spreading infectious diseases and analyzing the level of economic loss as a result of animal disease and economic efficiency in animal disease control measures.</p>
Learning Contents	<ol style="list-style-type: none">1. Basic concepts of epidemiology and history of disease causality2. Koch's postulates, Epidemiological Triad, Evan's postulates and Rothman's proposal on determinants of disease3. Epidemiological case studies – index cases, disease incidence patterns, case frequency, temporal and spatial distribution of disease, and R0 (R-zero).4. Observational epidemiological research designs – Cross sectional, Case - control, Cohort.





	<ol style="list-style-type: none">5. Cross-sectional survey sampling techniques: random, cluster, and stratified sampling6. Calculating disease levels: Prevalence, incidence, morbidity and mortality7. Sample selection for case - control and cohort studies8. Identifying risk factors – Risk Ratio and Odd Ratio9. Measuring the impact of risk factors on animal disease levels – Attributable risk and attributable fraction10. Clinical epidemiology, diagnostic tests: Sensitivity, Specificity, and Predictive Value11. Clinical epidemiology, measuring the impact of treatment: Number needed to treat and number needed to harm12. Animal disease economics: cost and benefit analysis in disease treatment and control13. Analysis of the risk of animal disease transmission between regions14. Epidemiological case study presentation – Investigation, estimating risk and disease control
Evaluation Form /Assessment	<ol style="list-style-type: none">1. Assignment: 30%2. Quiz: 10%3. Midterm Exam: 25%4. Final Exam: 25%5. Activity Score 10%
Study and examination requirements	This course requires 80% of attendance in the lecture class
Reading list/Book References	<ol style="list-style-type: none">1. Thrusfield, M., 1995. <i>Veterinary Epidemiology</i>, second ed. Blackwell Science Ltd., Oxford.2. Nugroho W, Efendi A, Putra A.A.G. 2021. <i>Pengantar Epidemiologi Veteriner Dirk U Pfeiffer</i>, EGC, Jakarta3. Sumiarto, B dan Budiharta, S. 2021. <i>Epidemiologi Veteriner Analitik</i>, UGM Press4. Martin, S.W, Meek, A. 1987. <i>Veterinary Epidemiology - Principles and Methods</i>5. Jonathan Rushton. 2008. <i>Economics of Animal Health and Production</i>, CABI





MODULE 68

Module Name	Necropsy and Veterinary Forensic
Course Code	PKH62618
Semester	6
Study Program	Bachelor of Veterinary Medicine
Person Responsible for This Module	Dr. drh. Handayu Untari
Language	Indonesian
Type of Course (Compulsory/Elective)	Compulsory
Learning Forms/Teaching format	<ol style="list-style-type: none">1. Discussion2. Lecture3. Project Based Learning4. Case Study5. Laboratory Work6. Small Group Discussion
Workload	100 minutes of face to face learning 120 minutes of case study 120 minutes of self study
ECTS	3.4
Credit Units	<p>1 SKS = 1 system credit unit (SCU) equal to 45 hours according to SNPT 2023</p> <p>Indonesian total study load (SCU) bachelor degree (4 years) = 144 SCU x 45 hours = 6480 hours</p> <p>ECTS for Bachelor's degree 4 years = 240 ECTS (1 ECTS = 25-30 hours) = 6000 – 7200 hours</p> <p>Conversion from SCU → ECTS = 6480 / 240 = 27 hours</p> <p>Based on that, we use 27 hours of study load for 1 ECTS →</p> <p>1 SCU = 45 hours / 27 hours = 1,7 ECTS</p>





	2 SCU = 2 x 1,7 ECTS = 3,4 ECTS
Prerequisite Courses	Veterinary Systemic Pathology (PKH62412)
Module Objectives/Intended Learning Outcomes	<ol style="list-style-type: none">1. Able to explain the role of necropsy and sampling techniques to confirm the diagnosis of animal abnormalities2. Able to explain the role of forensic science and examples of forensic cases in the veterinary world3. Able to understand and explain necropsy techniques, sample management, and strategic disease pathognomosis changes in various types of animals4. Have high ethics and morals, be independent and responsible5. Students are able to work in groups, have leadership qualities, and are able to communicate verbally and in writing
Module Descriptions	The course explains the procedures for necropsy for a veterinary forensic approach, apart from equipping students with veterinary forensic science including post mortems and taking samples to confirm the diagnosis of animal abnormalities caused by disease, trauma or poisoning
Learning Contents	<ol style="list-style-type: none">1. Overview of Initial Lectures2. Necropsy Basics and Legislation (includes the concept of investigative and forensic necropsy)3. Management of Specimens, Evidence and Photography in Necropsy4. Postmortem Changes and Pathological Changes5. Necropsy Techniques in Avian Species (Guest Lecture)6. Biosafety, PPE, and Disposal7. Quadrupedal Mammal Necropsy Technique 1 (Ruminants and Nonruminants)8. Quadrupedal Mammal Necropsy Technique 2 (Pet Animal)9. Necropsy Techniques in Reptiles 1 (Snakes and Crocodiles)10. Necropsy Techniques in Reptiles 1 (Chelonian)11. Necropsy Techniques in Fish12. Forensic Guest Lecture 113. Forensic Guest Lecture 214. Case Studies
Evaluation Form /Assessment	<ol style="list-style-type: none">1. Case Study: 17%2. Quiz: 8%





	<ol style="list-style-type: none">3. Midterm Exam: 10%4. Final Exam: 10%5. Activity Score 5%6. Lab Work: 25%7. Project based: 25%
Study and examination requirements	<ol style="list-style-type: none">1. This course requires 80% of attendance in the lecture class2. This course requires 100% of attendance in the laboratory practical
Reading list/Book References	<ol style="list-style-type: none">1. McDonough and Southard. 2017. <i>Necropsy Guide for Dogs, Cats and Small Mammals</i>. Wiley Blackwell.2. King JM, Roth-Johnson L, Dodd DC, Newsom ME. 2013. <i>The Necropsy Book</i>. Cornell University.3. Feldman DB and Seely JC. 1988. <i>Necropsy Guide : Rodents and The Rabbit</i>. CRC Press.4. Munro R and Munro HMC. 2008. <i>Animal Abuse and Unlawful Killing: Forensic Veterinary Pathology</i>. Elsevier : United Kingdom.5. Byrd JH, Norris P, Bradley-Siemens N. 2020. <i>Veterinary Forensic Medicine and Forensic Sciences</i>. CRC Press : UK.6. Cooper JE and Cooper ME. 2007 <i>Introduction to Veterinary and Comparative Forensic Medicine</i>. Blackwell Publishing.7. Merck M. 2012. <i>Veterinary Forensics: Animal Cruelty Investigation</i>. John Wiley and Sons, Inc. UK.





MODULE 69

Module Name	Quality Assurance of Animal Origin Food Product
Course Code	PKH62621
Semester	6
Study Program	Bachelor of Veterinary Medicine
Person Responsible for This Module	drh. Ajeng Erika Prihastuti Haskito, M.Si
Language	Indonesian
Type of Course (Compulsory/Elective)	Elective
Learning Forms/Teaching format	<ol style="list-style-type: none">1. Discussion2. Lecture3. Case Study4. Small Group Discussion
Workload	100 minutes of face to face learning 120 minutes of case study 120 minutes of self study
ECTS	3.4
Credit Units	<p>1 SKS = 1 system credit unit (SCU) equal to 45 hours according to SNPT 2023</p> <p>Indonesian total study load (SCU) bachelor degree (4 years) = 144 SCU x 45 hours = 6480 hours</p> <p>ECTS for Bachelor's degree 4 years = 240 ECTS (1 ECTS = 25-30 hours) = 6000 – 7200 hours</p> <p>Conversion from SCU → ECTS = $6480 / 240 = 27$ hours</p> <p>Based on that, we use 27 hours of study load for 1 ECTS →</p> <p>1 SCU = 45 hours / 27 hours = 1,7 ECTS</p> <p>2 SCU = 2 x 1,7 ECTS = 3,4 ECTS</p>





Prerequisite Courses	Food Hygiene (PKH61513)
Module Objectives/Intended Learning Outcomes	<ol style="list-style-type: none">1. Able to master concepts and be able to explain hazards and risks in animal products2. Able to understand quality control methods and HACCP concepts as outlined in the RKJM document and able to recognize certification related to quality assurance of animal products3. Able to prepare RKJM documents, so that they can implement quality control methods and HACCP concepts, correctly in accordance with work orders and completed on time4. Able to work together in a team by prioritizing individual responsibility in doing group work, Able to have high self-discipline and not be late for lectures
Module Descriptions	This course discusses procedures for implementing quality assurance and safety of animal products, so as to prevent the transmission of foodborne zoonoses and safeguard food products of animal origin and other animal origin ingredients for the benefit of public health.
Learning Contents	<ol style="list-style-type: none">1. Tuition contract2. Hazard (danger) & risk (risk) in milk and its products3. Hazard (danger) & risk (risk) in meat and processed products4. Hazard (danger) & risk (risk) in eggs and processed products5. Quality control cycle (7 tools of quality control)6. NKV, CODEX, SMM/ISO7. Good manufacturing practices/GMP8. Sanitation Standard Operation Procedures/SSOP9. Hazard Analytic Critical Control Point/HACCP10. Preparation of Quality Assurance Work Plan/RKJM documents11. Lectures integrating research results and/or lecturer service12. Case Based Project 1: Preparation of Quality Assurance Work Plan/RKJM documents for milk/dairy products13. Case Based Project 2: Preparation of Quality Assurance Work Plan/RKJM documents for meat/meat products14. Case Based Project 3: Preparation of Quality Assurance Work Plan/RKJM documents for egg/processed egg products
Evaluation Form /Assessment	<ol style="list-style-type: none">1. Case Study: 20%2. Quiz: 20%3. Midterm Exam: 25%4. Final Exam: 25%





	5. Activity Score 10%
Study and examination requirements	This course requires 80% of attendance in the lecture class
Reading list/Book References	<ol style="list-style-type: none">1. HACCP-a Practical Approach 3rd Ed. Sara Mortimore and Carol Wallace2. Safety Analysis of Foods of Animal Origin. CRC Press. Leo M. L. Nollet and Fidel Toldra3. Food Safety and Quality Assurance Foods of Animal Origin. 2nd Ed. William T. Hubbert et al.4. SNI Susu Segar5. SNI Daging Ayam dan Sapi6. SNI Telur Ayam Konsumsi7. Permentan No. 11 Tahun 2020 tentang Sertifikasi Nomor Kontrol Veteriner Unit Usaha Produk Hewan8. ISO 22000 : 2008





MODULE 70

Module Name	Veterinary Alternative Therapy
Course Code	PKH62622
Semester	6
Study Program	Bachelor of Veterinary Medicine
Person Responsible for This Module	Dr. drh. Ricadonna Raissa, M.Si.
Language	Indonesian
Type of Course (Compulsory/Elective)	Elective
Learning Forms/Teaching format	1. Discussion 2. Lecture 3. Case Study
Workload	100 minutes of face to face learning 120 minutes of case study 120 minutes of self study
ECTS	3.4
Credit Units	1 SKS = 1 system credit unit (SCU) equal to 45 hours according to SNPT 2023 Indonesian total study load (SCU) bachelor degree (4 years) = 144 SCU x 45 hours = 6480 hours ECTS for Bachelor's degree 4 years = 240 ECTS (1 ECTS = 25-30 hours) = 6000 – 7200 hours Conversion from SCU → ECTS = 6480 / 240 = 27 hours Based on that, we use 27 hours of study load for 1 ECTS → 1 SCU = 45 hours / 27 hours = 1,7 ECTS 2 SCU = 2 x 1,7 ECTS = 3,4 ECTS
Prerequisite Courses	1. Veterinary Clinical Diagnosis (PKH61511) 2. Veterinary Pharmacology 2 (PKH61512)





Module Objectives/Intended Learning Outcomes	<ol style="list-style-type: none">1. Able to understand about acupuncture2. Able to understand manual therapy and massage3. Able to understand medical rehabilitation and physiotherapy4. Able to understand integrated nutritional therapy5. Able to understand herbal medicine6. Able to work in groups, communicate effectively and express opinions in oral and written form7. Able to demonstrate good academic ethics and morals
Module Descriptions	The veterinary alternative medicine course is an elective course that discusses alternative medicine in the world of veterinary medicine from its history, definition, scope, controversy and clinical approaches and applications to animals. Types of alternative treatment discussed include acupuncture, manual therapy and massage, herbal medicine, integrated nutrition, medical rehabilitation and physiotherapy
Learning Contents	<ol style="list-style-type: none">1. Basics of alternative veterinary medicine2. Acupuncture3. Manual therapy and massage4. Herbal medicine5. Integrated nutrition6. Medical rehabilitation and physiotherapy
Evaluation Form /Assessment	<ol style="list-style-type: none">1. Case Study: 20%2. Quiz: 20%3. Midterm Exam: 25%4. Final Exam: 25%5. Activity Score 10%
Study and examination requirements	This course requires 80% of attendance in the lecture class
Reading list/Book References	<ol style="list-style-type: none">1. Complementary and Alternative Veterinary Medicine Considered2. Equine Sport Medicine and Surgery3. Canine Sport Medicine and Rehabilitation4. Canine Rehabilitation and Physical Therapy 2 edition5. Animal Physiotherapy, Assessment, Treatment and Rehabilitation of Animals6. BSAVA Canine and Feline Rehabilitation, Supportive and Palliative Care7. Essentials of Western Veterinary Acupuncture





	<ol style="list-style-type: none">8. Veterinary Herbal Medicine9. Acupuncture for Dogs and Vats a Pocket Atlas10. Xie's Veterinary Acupuncture11. Applied Veterinary Clinical Nutrition12. Therapeutic of Veterinary Homeopathy and Repertory
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Faculty of
Veterinary Medicine

7th SEMESTER



MODULE 71

Module Name	Veterinary Clinical Nutrition's
Course Code	PKH61701
Semester	7
Study Program	Bachelor of Veterinary Medicine
Person Responsible for This Module	drh. Dodik Prasetyo, M.Vet
Language	Indonesian
Type of Course (Compulsory/Elective)	Compulsory
Learning Forms/Teaching format	1. Discussion 2. Lecture 3. Case Study
Workload	100 minutes of face to face learning 120 minutes of case study 120 minutes of self study
ECTS	3.4
Credit Units	1 SKS = 1 system credit unit (SCU) equal to 45 hours according to SNPT 2023 Indonesian total study load (SCU) bachelor degree (4 years) = 144 SCU x 45 hours = 6480 hours ECTS for Bachelor's degree 4 years = 240 ECTS (1 ECTS = 25-30 hours) = 6000 – 7200 hours Conversion from SCU → ECTS = 6480 / 240 = 27 hours Based on that, we use 27 hours of study load for 1 ECTS → 1 SCU = 45 hours /27 hours = 1,7 ECTS 2 SCU = 2 x 1,7 ECTS = 3,4 ECTS
Prerequisite Courses	1. Basic animal nutrition (PKH62216) 2. Veterinary Toxicology (PKH62604) 3. Internal Medicine of Large Animal (PKH62605)
Module Objectives/Intended Learning Outcomes	1. Students are capable of positioning themselves as prospective veterinary graduates in understanding the importance of nutritional intake for animals, especially for therapeutic diets for pets, akin to a feed formulator. 2. Students possess the skills to select types of feed for animals according to the needs of each animal (poultry, ruminants, non-ruminants, and pets) whether in healthy or diseased conditions.





	<ol style="list-style-type: none">Students are capable of formulating rations for animals (poultry, ruminants, non-ruminants, and pets) according to their needs, as well as special feed for therapeutic diets for sick animals.Students possess knowledge about feed ingredients containing nutrients that can be used to formulate animal rations and/or understand and analyze the nutritional value of animal feed products.
Module Descriptions	<p>The Veterinary Clinical Nutrition course is a compulsory subject for students of the Faculty of Veterinary Medicine. It covers the composition/nutritional value of various feed ingredients and their role in supporting the physiological mechanisms of animals, serving as the basis for discussing nutritional requirements to support basic life needs as well as for animals during illness and recovery (therapeutic diet). The course also involves formulating feed rations for animals during their recovery from disease. The learning activities comprise 2 credit hours of lectures.</p>
Learning Contents	<ol style="list-style-type: none">Basic Nutrition Overview and Determining Energy RequirementsIntegration of Nutrition into Clinical PracticeNutritional Management of Body WeightUsing Pet Food Labels and Product GuidesNutritional Management of Gastrointestinal DiseasesNutritional Management of Kidney DiseaseNutritional Management of Cardiovascular DiseasesNon-Ruminant Nutrition and Feed Formulation (Poultry)The Role of Feed Additives (Antibiotics, Probiotics, Prebiotics) on Animal Nutrition and HealthNutrition Related to Immunology in RuminantsNutrition and Management of Metabolic Disorders in RuminantsClinical Dietetics: Nutritional Intervention in Clinical Setting I (Gastrointestinal Disorders and Weight Management)Clinical Dietetics: Nutritional Intervention in Clinical Setting II (Skin and Urinary Tract Disorders)Clinical Case Report Literature
Evaluation Form /Assessment	<ol style="list-style-type: none">PBL: 20%Quiz: 20%Midterm Exam: 25%Final Exam: 25%Activity Score 10%





Study and examination requirements	1. Students must have at least 80% of attendance out of total meetings for classes
Reading list/Book References	Andrea J. Fascetti, VMD, PhD, DACVIM, DACVN. 2012. <i>Applied Veterinary Clinical Nutrition</i> . Blackwell Publishing. California





MODULE 72

Module Name	Clinical Case Interpretation
Course Code	PKH61702
Semester	7
Study Program	Bachelor of Veterinary Medicine
Person Responsible for This Module	Drh. Tiara Widyaputri, M.Si
Language	Indonesian
Type of Course (Compulsory/Elective)	Compulsory
Learning Forms/Teaching format	4. Discussion 5. Project Based Learning 6. Case Study
Workload	50 minutes of face to face learning 60 minutes of case study 60 minutes of self study
ECTS	1.7
Credit Units	1 SKS = 1 system credit unit (SCU) equal to 45 hours according to SNPT 2023 Indonesian total study load (SCU) bachelor degree (4 years) = 144 SCU x 45 hours = 6480 hours ECTS for Bachelor's degree 4 years = 240 ECTS (1 ECTS = 25-30 hours) = 6000 – 7200 hours Conversion from SCU → ECTS = 6480 / 240 = 27 hours Based on that, we use 27 hours of study load for 1 ECTS → 1 SCU = 45 hours / 27 hours = 1,7 ECTS
Prerequisite Courses	1. Veterinary Clinical Pathology (PKH62611) 2. Veterinary Toxicology (PKH62604) 3. Internal Medicine of Large Animal (PKH62605)
Module Objectives/Intended Learning Outcomes	1. Capable of analyzing clinical cases and interpreting abnormalities in laboratory examinations. 2. Capable of explaining the pathomechanisms underlying abnormalities in laboratory test results. 3. Capable of evaluating and concluding the results of laboratory analysis from clinical cases to support diagnosis and therapy. 4. Capable of working in groups, communicating effectively, and expressing opinions both orally and in writing.





	5. Capable of demonstrating good academic ethics and morals.
Module Descriptions	The Clinical Case Interpretation course is a mandatory subject for students of the Faculty of Veterinary Medicine. This course covers disease cases and clinical case interpretation, focusing on changes in laboratory test results, interpretation of hematological and clinical chemistry analyses of blood, urine, and feces as supportive measures for diagnosis determination. The course consists of a lecture and practicum ratio of 1:0 credits.
Learning Contents	<ol style="list-style-type: none">1. Course contract, definition, and terminology of clinical case interpretation.2. Data evaluation and pathomechanisms, as well as determining the direction of diagnosis and differential diagnosis based on clinical symptom findings - Surgical Cases3. Data evaluation and pathomechanisms, as well as determining the direction of diagnosis and differential diagnosis based on clinical symptom findings - Respiratory Cases4. Data evaluation and pathomechanisms, as well as determining the direction of diagnosis and differential diagnosis based on clinical symptom findings - Digestive Cases5. Data evaluation and pathomechanisms, as well as determining the direction of diagnosis and differential diagnosis based on clinical symptom findings - Metabolic Cases6. Data evaluation and pathomechanisms, as well as determining the direction of diagnosis and differential diagnosis based on clinical symptom findings - Cardiovascular Cases7. Data evaluation and pathomechanisms, as well as determining the direction of diagnosis and differential diagnosis based on laboratory findings from independent case analysis (Case-Based Project 1)8. Data evaluation and pathomechanisms, as well as determining the direction of diagnosis and differential diagnosis based on laboratory findings - Urinary Case 1 (Upper)9. Data evaluation and pathomechanisms, as well as determining the direction of diagnosis and differential diagnosis based on laboratory findings - Infectious Case 110. Data evaluation and pathomechanisms, as well as determining the direction of diagnosis and differential diagnosis based on laboratory findings - Urinary Case 2 (Lower)





	<ol style="list-style-type: none">11. Data evaluation and pathomechanisms, as well as determining the direction of diagnosis and differential diagnosis based on laboratory findings - Endocrine Case 112. Data evaluation and pathomechanisms, as well as determining the direction of diagnosis and differential diagnosis based on laboratory findings - Infectious Case 213. Data evaluation and pathomechanisms, as well as determining the direction of diagnosis and differential diagnosis based on laboratory findings - Endocrine Case 214. Data evaluation and pathomechanisms, as well as determining the direction of diagnosis and differential diagnosis based on independent case analysis (Case-Based Project 2)
Evaluation Form /Assessment	<ol style="list-style-type: none">6. Case Study: 25%7. Quiz: 20%8. Midterm Exam: 25%9. Final Exam: 25%10. Activity Score 5%
Study and examination requirements	<ol style="list-style-type: none">1. Students must have at least 80% of attendance out of total meetings for classes
Reading list/Book References	<ol style="list-style-type: none">1. Charles H. Sodikoff. 2001. Laboratory Profiles of Small Animal Diseases: A Guide to Laboratory Diagnosis, 3rd Edition2. Maxey L. Wellman, M. Judith Radin. 2001. Interpretation of Canine and Feline Cytology.3. Alan H. Rebar. Hemogram interpretation for dog and cat. Ralston Purina Company. Clinical Handbook Series.4. Cowell, R.L. Tyler, R.D. Meinkoth J.H. Denikola, D.B. Diagnostic cytology and hematology of the dog and cat. 3th edition. Mosby Elsavier.5. Rose E. Raskin, Denny Meyer. 2015. Canine and Feline Cytology; A Color Atlas and Interpretation Guide, 3rd Edition. Elsavier.





MODULE 73

Module Name	Specific Veterinary Surgery
Course Code	PKH61713
Semester	7
Study Program	Bachelor of Veterinary Medicine
Person Responsible for This Module	drh. M. Arfan Lesmana, M.Sc.
Language	Indonesian
Type of Course (Compulsory/Elective)	Compulsory
Learning Forms/Teaching format	7. Discussion 8. Lecture 9. Project Based Learning 10. Case Study 11. Laboratory Work 12. Small Group Discussion
Workload	150 minutes of face to face learning 180 minutes of case study 180 minutes of self study
ECTS	5.1
Credit Units	1 SKS = 1 system credit unit (SCU) equal to 45 hours according to SNPT 2023 Indonesian total study load (SCU) bachelor degree (4 years) = 144 SCU x 45 hours = 6480 hours ECTS for Bachelor's degree 4 years = 240 ECTS (1 ECTS = 25-30 hours) = 6000 – 7200 hours Conversion from SCU → ECTS = 6480 / 240 = 27 hours Based on that, we use 27 hours of study load for 1 ECTS → 1 SCU = 45 hours /27 hours = 1,7 ECTS 3 SCU = 3 x 1,7 ECTS = 5.1 ECTS
Prerequisite Courses	Basic Veterinary Surgery (PKH62613)
Module Objectives/Intended Learning Outcomes	1. Capable of understanding the definition, indications, principles, surgical techniques, post-operative care, anesthesia, tools and materials, anatomy, approaches, and considerations for surgery on the digestive and hepatic systems. 2. Capable of understanding the definition, indications, principles, surgical techniques, post-operative care, anesthesia, tools and





	<p>materials, anatomy, approaches, and considerations for surgery on the urogenital system.</p> <ol style="list-style-type: none">3. Capable of understanding the definition, indications, principles, surgical techniques, post-operative care, anesthesia, tools and materials, anatomy, approaches, and considerations for surgery on the musculoskeletal and orthopedic systems.4. Capable of understanding the definition, indications, principles, surgical techniques, post-operative care, anesthesia, tools and materials, anatomy, approaches, and considerations for surgery on the integumentary and cardiovascular systems.5. Capable of understanding the definition, indications, principles, surgical techniques, post-operative care, anesthesia, tools and materials, anatomy, approaches, and considerations for genital and reproductive systems, and the sensory systems of the eyes and ears.6. Capable of understanding the definition, indications, principles, surgical techniques, post-operative care, anesthesia, tools and materials, anatomy, approaches, and considerations for elective surgery on large and exotic animals.
Module Descriptions	<p>The course covers various surgical procedures per system in small animals, such as surgery on the eyes and ears, integumentary and aesthetic systems, thorax and respiratory system, abdomen and digestive system, reproductive and genitalia, urinary system, musculoskeletal and orthopedic systems, and oral and dental systems. Additionally, it also covers the fundamentals of surgical procedures in large livestock and exotic animals.</p>
Learning Contents	<ol style="list-style-type: none">1. Ophthalmic and Otologic System Surgery2. Orthopedic System Surgery3. Integumentary System Surgery4. Upper and Lower Respiratory System Surgery5. Cardiovascular System Surgery6. Lower Respiratory System Surgery/Project Based7. Upper Digestive System Surgery8. Lower Respiratory System and Abdominal Cavity Surgery9. Hepatic and Extrahepatic System Surgery10. Genitalia and Reproductive System Surgery11. Renal and Urinary Tract System Surgery12. Musculoskeletal System Surgery





	13. Exotic Animal Surgery 14. Surgery on Large Animals
Evaluation Form /Assessment	11. Case Study: 10% 12. Quiz: 20% 13. Midterm Exam: 25% 14. Final Exam: 25% 15. Activity Score 5% 16. Laboratory work and PBL: 25%
Study and examination requirements	2. Students must have at least 80% of attendance out of total meetings for classes 3. Students must have 100% of attendance out of total meetings for practical work
Reading list/Book References	1. Fossum T.W. 2013. <i>Small Animal Surgery. 4th Edition</i> . Elsevier. 2. Bojrab, M.J, Waldron, D.R., Toombs, J.P. <i>Current Techniques in Small Animal Surgery 5th Edition</i> . Teton Newmedia. Wyoming. 3. Tobias, K. M. And Johnston, S.A. 2012. <i>Veterinary Surgery: Small Animal</i> . Saunders. Elsevier.





MODULE 74

Module Name	Internal Medicine of Small Animal
Course Code	PKH61704
Semester	7
Study Program	Bachelor of Veterinary Medicine
Person Responsible for This Module	drh. Dodik Prasetyo, M.Vet
Language	Indonesian
Type of Course (Compulsory/Elective)	Compulsory
Learning Forms/Teaching format	13. Discussion 14. Lecture 15. Project Based Learning 16. Case Study 17. Small Group Discussion
Workload	100 minutes of face to face learning 120 minutes of case study 120 minutes of self study
ECTS	3.4
Credit Units	1 SKS = 1 system credit unit (SCU) equal to 45 hours according to SNPT 2023 Indonesian total study load (SCU) bachelor degree (4 years) = 144 SCU x 45 hours = 6480 hours ECTS for Bachelor's degree 4 years = 240 ECTS (1 ECTS = 25-30 hours) = 6000 – 7200 hours Conversion from SCU → ECTS = 6480 / 240 = 27 hours Based on that, we use 27 hours of study load for 1 ECTS → 1 SCU = 45 hours /27 hours = 1,7 ECTS 2 SCU = 2 x 1,7 ECTS = 3,4 ECTS
Prerequisite Courses	1. Veterinary Clinical Diagnosis (PKH61511) 2. Veterinary Pharmacology 2 (PKH61512)
Module Objectives/Intended Learning Outcomes	1. Capable of comprehensively understanding diagnostic results along with the pathogenesis of disease progression to identify causes, treatment methods, and prevention strategies. 2. Capable of understanding and explaining diagnostic procedures, disease pathogenesis, causes or etiology of diseases, and determining appropriate handling and treatment actions.





	<ol style="list-style-type: none">3. Capable of appreciating the greatness of Almighty God in living beings under various conditions, whether healthy or ill, and understanding the teaching materials related to small animal internal diseases.4. Capable of completing tasks on time and willing to cooperate effectively with study group peers.
Module Descriptions	The course explains the procedures for designing diagnostic steps for internal diseases to comprehensively gather information for understanding the causes, clinical symptoms, etiology, pathogenesis, treatment management, and preventive measures related to internal diseases (non-surgical) in small animals, whether infectious or non-infectious.
Learning Contents	<ol style="list-style-type: none">1. Material on the Module and Course Contract and Introduction to Internal Medicine in Small Animals2. Material on the causes, pathogenesis, diagnosis, therapy, and prevention of various intoxication diseases in small animals3. Material on the causes, pathogenesis, diagnosis, therapy, and prevention of various metabolic and endocrine diseases in small animals4. Material on the causes, pathogenesis, diagnosis, therapy, and prevention of various respiratory system diseases in small animals5. Material on the causes, pathogenesis, diagnosis, therapy, and prevention of various hematological and oncological diseases in small animals6. Material on the causes, pathogenesis, diagnosis, therapy, and prevention of various integumentary system diseases in small animals7. Case Study (Problem-Based Learning) outlining and explaining disease issues from assigned tasks8. Material on the causes, pathogenesis, diagnosis, therapy, and prevention of various digestive system diseases in small animals9. Material on the causes, pathogenesis, diagnosis, therapy, and prevention of various cardiovascular system diseases in small animals10. Material on the causes, pathogenesis, diagnosis, therapy, and prevention of various musculoskeletal diseases in small animals11. Material on the causes, pathogenesis, diagnosis, therapy, and prevention of various nervous system diseases in small animals





	<ol style="list-style-type: none">12. Material on the causes, pathogenesis, diagnosis, therapy, and prevention of various eye and ear diseases in small animals13. Material on the causes, pathogenesis, diagnosis, therapy, and prevention of various urogenital system diseases in small animals14. Case Study (Problem-Based Learning) outlining and explaining disease issues from assigned tasks
Evaluation Form /Assessment	<ol style="list-style-type: none">17. Quiz: 20%18. PBL: 20%19. Midterm Exam: 25%20. Final Exam: 25%21. Activity Score 10%
Study and examination requirements	<ol style="list-style-type: none">4. Students must have at least 80% of attendance out of total meetings for classes
Reading list/Book References	<ol style="list-style-type: none">1. Nelson, R. W., & Couto, C. G. (2014). <i>Small Animal Internal Medicine</i> - E-Book: Elsevier Health Sciences.2. Shaw, D. H., & Ihle, S. L. (1996). <i>Small Animal Internal Medicine</i>: Wiley.





MODULE 75

Module Name	Thesis
Course Code	UBU60001
Semester	7
Study Program	Bachelor of Veterinary Medicine
Person Responsible for This Module	drh. Fajar Shodiq Permata, M. Biotech.
Language	Indonesian
Type of Course (Compulsory/Elective)	Compulsory
Learning Forms/Teaching format	18. Discussion 19. Lecture 20. Laboratory Work
Workload	300 minutes of face to face learning 360 minutes of case study 360 minutes of self study
ECTS	10.2
Credit Units	1 SKS = 1 system credit unit (SCU) equal to 45 hours according to SNPT 2023 Indonesian total study load (SCU) bachelor degree (4 years) = 144 SCU x 45 hours = 6480 hours ECTS for Bachelor's degree 4 years = 240 ECTS (1 ECTS = 25-30 hours) = 6000 – 7200 hours Conversion from SCU → ECTS = 6480 / 240 = 27 hours Based on that, we use 27 hours of study load for 1 ECTS → 1 SCU = 45 hours / 27 hours = 1,7 ECTS 6 SCU = 3 x 1,7 ECTS = 10.2 ECTS
Prerequisite Courses	Students must reach at least 120 Credit Units
Module Objectives/Intended Learning Outcomes	<ol style="list-style-type: none">1. Capable of formulating and providing alternative problem-solving designs through promotive, preventive, curative, or rehabilitative actions.2. Capable of mastering theoretical concepts in the field of veterinary medicine as well as other fields related to the main issues focused on in the final project.3. Capable of developing or designing scientific activities by referring to scientific literature and organizing them systematically.





	<ol style="list-style-type: none">4. Capable of providing guidance independently or in groups in selecting alternative solutions based on conclusions derived from data analysis and interpretation.5. Students are capable of writing a thesis/final project manuscript correctly and accurately in accordance with the guidelines for preparing undergraduate final project works.6. Capable of orally communicating the final project plan and the results of the final project/thesis.7. Capable of completing the final project/thesis with full responsibility and adhering to the ethics of scientific writing.
Module Descriptions	In this course, students compose a written scientific work that demonstrates their critical thinking, analysis, and synthesis regarding a phenomenon or problem, taking into account the development of science, technology, and the arts. This is done from the perspective of the field of veterinary medicine, utilizing data from various activities such as literature reviews, research, internships, practical/innovative production projects, entrepreneurship, or other equivalent activities.
Learning Contents	<ol style="list-style-type: none">1. Research Proposal Preparation2. Research Proposal Seminar3. Conducting research or final project and data collection4. Data analysis and interpretation5. Discussion of analysis and interpretation results6. Decision-making and drawing conclusions7. Preparation of the final project manuscript according to the applicable final project writing guidelines8. Dissemination of research/final project results in the form of a seminar or equivalent activity9. Final project examination (comprehensive)
Evaluation Form /Assessment	<ol style="list-style-type: none">22. Proposal Seminar: 30%23. Thesis defence: 30%24. Comprehensive: 40%
Study and examination requirements	Students must reach at least 120 Credit Units
Reading list/Book References	<ol style="list-style-type: none">1. Buku Pedoman Pendidikan FKH UB2. Buku Pedoman Penulisan Skripsi/Tugas Akhir

