

KSH 315 Wildlife Captive Breeding

Credit	: 3(2-3)
Semester	: 6 (even)
Course format	: Lectures, reading assignments, course practice, demonstration. 100 minutes per week. 15 weeks.
Pre-requisite	: -
Lecturers	: Dr. Burhanuddin Masyud, MS (Course Coordinator) Dr. A. Machmud Thohari, DEA Dr. Erna Suzanna, M.Sc.F Mrs. Lin Nuriah Ginoga, Msi

Course Description

This course describe the meaning, objectives, legal bases and policies, wildlife utilization development, forms and technical aspects of wildlife captive breeding including pengadaan bibit, wildlife capturing and immobilization, adaptation and acclimatization, caging and man-made habitat (artificial habitat) design, nutrition, wildlife diseases and health care, breeding system and genetics, reproduction technology, harvesting and post-harvesting technology, utilization of captive breeding animals for in-situ wildlife restocking/ reintroduction/rehabilitation, and social, economical and cultural benefits.

Course Objectives

This course is designed to provide students with knowledge and skills on wildlife captive breeding including basic concepts of captive breeding, legal bases and policies related to wildlife captive breeding and technical aspects of captive breeding (pengadaan bibit, immobilization, caging, diseases and health care, reproduction and harvesting) and skills in designing a captive breeding management unit.

Learning Outcomes

1. General learning outcomes

Upon successful completion of this course the students will be able to:

Explain the meaning, objectives, forms and technical aspects of wildlife captive breeding and design a wildlife captive breeding business and provide detail justification of captive breeding standardized criteria.

2. Specific learning outcomes

Upon successful completion of this course the students will be able to:

- a. Justify the importance, position and benefits of wildlife captive breeding in supporting biodiversity conservation, objectives of captive breeding and business development/wildlife trading and development prospect of wildlife captive breeding as a business unit.
- b. Justify sources, criteria and requirements of bibit and teknis pengadaan bibit satwa for wildlife captive breeding.
- c. Justify technical aspects of caging and artificial habitat, requirements for caging location, model design and type of wildlife captive breeding cage, equipments and supporting facilities in captive breeding cage.
- d. Justify wildlife nutrition's aspects including feed type, function and value of feed, and determination of feed needs and formulation and preparation of artificial feed for various wildlife species in captive breeding.
- e. Justify the principles related to breeding system and wildlife genetic aspects in captive breeding based on the captive breeding's objective (social and cultural objectives or preservation objective and germ plasm preservation).
- f. Justify technical aspects of wildlife reproduction including wildlife reproduction system, reproduction technology and wildlife reproduction management in captive breeding.
- g. Justify utilization of captive animals and their side products, including wildlife utilization for rehabilitation purposes and/or wild release to natural habitat to increase in-situ population
- h. Justify the principles and technical steps in designing wildlife captive breeding as a business unit, including feasibility analysis of economical, biological and social economic and cultural aspects.
- i. Justify significance, principles, criteria and indicators related to establishing qualification standard for wildlife captive breeding.

Structure of Course Delivery

1. Lectures and class discussion.
2. Reading assignments from textbooks to supplement topic in discussion.
3. Course practice to train and develop skills on certain technical aspect of captive breeding.

Major References

1. Fakultas Kehutanan IPB. 1987. Studi Kelayakan Pengusahaan Buaya di Irian Jaya. Fakultas Kehutanan IPB. Bogor
2. Fakultas Kehutanan IPB. 1989. Studi Kelayakan dan Perencanaan Tapak Penangkaran Rusa di Jonggol. Kerjasama Perum Perhutani dengan Fakultas Kehutanan IPB. Bogor.
3. Ganslober, U., Hodges, J.K. dan Kaumanns, W. 1995. Research and Captive Propagation. Ganslober: Fialder Verlag.
4. Partodihardjo, S. 1987. Ilmu Reproduksi Hewan. Jakarta: Mutiara Suber Widya.
5. Warwick E.J., Astuti, J.M. dan Hardjosubroto, W.. 1984. Pemuliaan Ternak. Gajah Mada Universitas Press. Yogyakarta.
6. Yerex, D dan Spiers, I. 1990. Modern Deer Farm Management. New Zealand: GP Book Publications.

Teaching Material Support

The choice of media and type of technology use include:

1. Face-to-face contact.
2. Printed power point presentation. Text and power point presentation will be available for each discussion topic.
3. Students are encouraged to read the recommended major references. Students are also encouraged to make additional notes based on the development of the discussions for each sub-topic.
4. Computer
5. Projector Infocus
6. Whiteboard

Course Outline

Topics	Sub-topics	Bloom's Taxonomy	Week
Introduction	<ol style="list-style-type: none"> 1. Meaning 2. Objectives 3. Captive breeding system/form 4. Legal bases/captive breeding policies/wildlife utilization 	C1	1
Breeding system	<ol style="list-style-type: none"> 1. Breeding system, objectives, advantages and disadvantages 2. Calculating breeding coefficient 	C1	2 & 3
Pengadaan bibit, capture and transport, immobilization	<ol style="list-style-type: none"> 1. Pengadaan bibit (source, requirements) 2. Capturing and transporting methods 3. Immobilization 	C1, C2	4
Adaptation and acclimatization	<ol style="list-style-type: none"> 1. Adaptation: principles and steps 2. Acclimatization: principles and steps 3. Biological stress, causes and ways to management 	C1	5
Cage and man-made habitat designs	<ol style="list-style-type: none"> 1. Meaning and function of cage/man-made habitat 2. Cage types, forms and sizes 3. Supporting facilities 4. Designing cage/man-made habitat 	C1, C2, C3	6
Wildlife nutrition	<ol style="list-style-type: none"> 1. Function and use of wildlife feed 2. Formulation of wildlife feed 3. Wildlife greeneries preservation techniques 	C1, C2, C3, C4	7
Wildlife disease and health care	<ol style="list-style-type: none"> 1. Important type of diseases on wildlife 2. Field and laboratory wildlife disease identification techniques 3. principles of wildlife health and prevention of contagious diseases 	C1, C2, C3, C4	8
Reproduction	<ol style="list-style-type: none"> 1. General introduction on wildlife reproduction 2. Wildlife reproduction technique: mating, introduction to conventional and modern techniques (egg hatching, IB, TE) 	C1, C2, C3	9
Harvesting and post harvesting technology	<ol style="list-style-type: none"> 1. Types of captive breeding products 2. Wildlife harvesting principles 3. Post-harvesting technology: tannery, meat processing, souvenirs 	C1, C2, C3, C4	10 & 11
Captive breeding qualification standard	<ol style="list-style-type: none"> 1. Meaning 2. Standard criteria 3. Establishment of captive breeding qualification indicators 	C1, C2	12
Wildlife restocking, reintroduction, redistribution and rehabilitation	<ol style="list-style-type: none"> 1. Meaning 2. Objective 3. Requirements 4. performance steps 	C1, C2	13
Wildlife captive breeding business design; business suitability analysis	<ol style="list-style-type: none"> 1. Meaning of designing and planning 2. Planning level: master plan, management plan, business plan, site plan and engineering design 3. Basic considerations in preparing captive breeding business 4. Business suitability concept 5. Basic and analysis framework of wildlife 	C1, C2, C3, C4	14 & 15

Topics	Sub-topics	Bloom's Taxonomy	Week
	population growth in captive breeding 6. Suitability analysis and criteria for establishing business suitability		

Potential Course Overlap

There is a possible overlap with topics offered in other courses such as with Management of Wildlife Feed and Health (KSH 316).

Evaluation and Grading

1. Quizzes

Quizzes are given as ways to receive feedbacks from students on their understanding of previous sub topics given in class. Quizzes are given in the form of direct question to the student during the course of the lecture about 10 minutes. Quizzes will cover certain topic from previous materials given. Quizzes are not graded.

2. Mid-term examination

Midterm examination will be held during examination period scheduled by Registrar's office (after 7 weeks lecture). Each exam is composed of multiple choice and essay questions to identify different cognitive level and certain skills. Length of the exam is 90-120 minutes. The exam will cover course topics delivered in week 1-7.

3. Final Examination

Midterm examination will be held during examination period scheduled by Registrar's office (after 14 weeks lecture). Each exam is composed of multiple choice and essay questions to identify different cognitive level and certain skills. Length of the exam is 90-120 minutes. The exam will cover course topics delivered in week 8-14.

4. Assigned Paper

Each student is required to submit an assigned paper at the end of the course that review the whole topics discussed directed at real life application. Specifically it is directed at wildlife captive breeding design. Papers are based on literature

studies, field observation, internet and other necessary sources. This assigned paper is intended to recognize the cognitive, affective and skills of students after taking the whole course for 14 weeks. Plagiarized paper will receive zero grade.

Compositions of grading are as follows:

Assessment Tools	Maximum Score	% of Grade
Midterm examination	100	25
Final examination	100	25
Assigned paper	100	20
Course practice examination	100	30

Final grade classification: A (≥ 75), B (68-74), C (60-67), D (55-59), E (< 55)

**Coverage of DFORCE Core Competence
in Wildlife Captive Breeding (KSH 315)**

Code : KSH 315
Course : Wildlife Captive Breeding
Credit : 3(2-3)

Code	Core Competencies	Course Content Covered	Cognitive Level	Topic
IV	Students will be able to explain meaning and two main objectives of captive breeding, captive breeding system/form and basic principles of wildlife captive breeding and meaning, and show the legal bases and policies for captive breeding	Meaning	C1	Introduction
		Objectives		
		Captive breeding system/form		
		Legal bases/captive breeding policies/wildlife utilization		
II	Students will be able to explain breeding systems (inbreeding, outbreeding and crossbreeding), their objectives, advantages and disadvantages and wildlife genetic principles	Breeding system, objectives, advantages and disadvantages	C1, C2	Breeding
		Calculating breeding coefficient		
III	Students will be able to explain bibit selection requirements, capturing and transporting techniques, and wildlife mechanic and chemical immobilization	Pengadaan bibit (source, requirements)	C1, C2, C3	Pengadaan bibit, capture and transport, immobilization
		Capturing and transporting methods		
		Immobilization		
IV	Students will be able to explain adaptation and acclimatization principles, adaptation and acclimatization steps in captive	Adaptation: principles and steps	C1, C2, C3	Adaptation and acclimatization
		Acclimatization: principles and steps		

Code	Core Competencies	Course Content Covered	Cognitive Level	Topic
	breeding	Biological stress, causes and management		
V	Students will be able to explain requirements for cage location/man-made habitat selection, types, forms and sizes of cage, important facilities in the cage and designing cage or man-made habitat	Meaning and function of cage/man-made habitat Cage types, forms and sizes Supporting facilities Designing cage/man-made habitat	C1, C2, C3, C4	Cage design and habitat
VI	Students will be able to explain the use of nutrition, ration formulation and wildlife greeneries preservation techniques	Function and use of wildlife feed Formulation of wildlife feed Wildlife greeneries preservation techniques	C1, C2, C3, C4	Wildlife nutrition
VII	Students will be able to explain types of wildlife diseases, show symptoms and cure technique, disease identification technique and wildlife health care principles	Important type of diseases on wildlife Field and laboratory wildlife disease identification techniques Principles of wildlife health and prevention of contagious diseases	C1, C2, C3	Wildlife disease and health care
VIII	Students will be able to explain several conventional and modern reproduction techniques that can be use in wildlife breeding	General introduction on wildlife reproduction Wildlife reproduction technique: mating, introduction to conventional and modern techniques (egg hatching, IB, TE)	C1, C2, C3	Reproduction
IX	Students will be able to explain types of captive breeding production, harvesting principles and post harvesting technologies for various captive breeding products (skin, meat, feather, bone, souvenir, etc.)	Types of captive breeding products Wildlife harvesting principles Post-harvesting technology: tannery, meat processing, souvenirs	C1, C2, C3	Harvesting and post harvesting technology
X	Students will be able to explain the criteria and standards for wildlife	Meaning Standard criteria	C1	Captive breeding qualification standards

Code	Core Competencies	Course Content Covered	Cognitive Level	Topic
	captive breeding qualification	Establishment of captive breeding qualification standards		
XI	Students will be able to explain the meaning of wildlife restocking, reintroduction, redistribution and rehabilitation, objectives, requirements and performance steps	Meaning	C1, C2	Wildlife restocking, reintroduction, redistribution and rehabilitation
		Objective		
		Requirements		
		Performance steps		
XII	Students will be able to explain various planning level in captive breeding business Students will be able to formulate captive breeding business plan Students will be able to formulate concept for captive breeding business suitability analysis	Meaning of designing and planning	C1, C2, C3, C4	Wildlife captive breeding business design; business suitability analysis
		Planning level: master plan, management plan, business plan, site plan and engineering design		
		Basic considerations in preparing captive breeding business		
		Business suitability concept		
		Basic and analysis framework of wildlife population growth in captive breeding		
		Suitability analysis and criteria for establishing business suitability		

**Assessment Tools to Measure the Achievement of
Learning Outcomes in Wildlife Captive Breeding (KSH 315)**

Code : KSH 315

Course : Wildlife Captive Breeding

Credit : 3(2-3)

Code	Core Competencies	Learning Outcome	Bloom's Taxonomy	Assessment Tool(s)	Learning Activities
II	Students will be able to understand meaning and two main objectives of captive breeding, captive breeding system/form and basic principles of wildlife captive breeding and meaning, and show the legal bases and policies for captive breeding	Students will be able to explain meaning and two main objectives of captive breeding, captive breeding system/form and basic principles of wildlife captive breeding and meaning, and show the legal bases and policies for captive breeding	C1, C2, C3	Written examinations at different cognitive level (mid-term exam), Written assignment, quiz	Classroom lecture and discussion
II	Students will be able to understand breeding systems (inbreeding, outbreeding and crossbreeding), their objectives, advantages and disadvantages and wildlife genetic principles	Students will be able to explain breeding systems (inbreeding, outbreeding and crossbreeding), their objectives, advantages and disadvantages and wildlife genetic principles	C1, C2	Written examinations at different cognitive level ((mid-term exam)), Written assignment, quiz	<ul style="list-style-type: none"> ▪ Classroom lecture and discussion ▪ Demonstration
III	Students will be able to understand bibit selection requirements, capturing and transporting techniques, and wildlife	Students will be able to explain bibit selection requirements, capturing and transporting techniques, and wildlife mechanic and chemical immobilization	C1	Written examinations at different cognitive level ((mid-term exam)), Written assignment, quiz	<ul style="list-style-type: none"> ▪ Classroom lecture and discussion ▪ Demonstration

Code	Core Competencies	Learning Outcome	Bloom's Taxonomy	Assessment Tool(s)	Learning Activities
	mechanic and chemical immobilization				
IV	Students will be able to understand adaptation and acclimatization principles, adaptation and acclimatization steps in captive breeding	Students will be able to explain adaptation and acclimatization principles, adaptation and acclimatization steps in captive breeding	C1, C2	Written examinations at different cognitive level ((mid-term exam)), Written assignment, quiz	<ul style="list-style-type: none"> ▪ Classroom lecture and discussion ▪ Reading text, looking for answers to stated learning objectives
V	Students will be able to understand requirements for cage location/man-made habitat selection, types, forms and sizes of cage, important facilities in the cage and designing cage or man-made habitat	Students will be able to explain requirements for cage location/man-made habitat selection, types, forms and sizes of cage, important facilities in the cage and designing cage or man-made habitat	C1, C2	Written examinations at different cognitive level ((mid-term exam)), Written assignment, quiz	<ul style="list-style-type: none"> ▪ Classroom lecture and discussion ▪ Reading text, looking for answers to stated learning objectives
VI	Students will be able to understand the use of nutrition, ransom formulation and wildlife greeneries preservation techniques	Students will be able to explain the use of nutrition, ransom formulation and wildlife greeneries preservation techniques	C3, C4	Written examinations at different cognitive level ((mid-term exam)), Written assignment, quiz	<ul style="list-style-type: none"> ▪ Classroom lecture and discussion ▪ Demonstration
VII	Students will be able to understand types of wildlife diseases, show symptoms and cure technique, disease identification technique and wildlife health care principles	Students will be able to explain types of wildlife diseases, show symptoms and cure technique, disease identification technique and wildlife health care principles	C1, C2	Written examinations at different cognitive level (middle and final exam), Written assignment, quiz	<ul style="list-style-type: none"> ▪ Classroom lecture and discussion ▪ Reading text, looking for answers to stated learning objectives
VIII	Students will be able to understand several conventional and modern	Students will be able to explain several conventional and modern reproduction techniques that can	C1, C2	Written examinations at different cognitive level (final exam), Written	<ul style="list-style-type: none"> ▪ Classroom lecture and discussion ▪ Reading text,

Code	Core Competencies	Learning Outcome	Bloom's Taxonomy	Assessment Tool(s)	Learning Activities
	reproduction techniques that can be use in wildlife breeding	be use in wildlife breeding		assignment, quiz	looking for answers to stated learning objectives
IX	Students will be able to understand types of captive breeding production, harvesting principles and post harvesting technologies for various captive breeding products (skin, meat, feather, bone, souvenir, etc.)	Students will be able to explain types of captive breeding production, harvesting principles and post harvesting technologies for various captive breeding products (skin, meat, feather, bone, souvenir, etc.)	C1	Written examinations at different cognitive level (final exam), Written assignment, quiz	<ul style="list-style-type: none"> ▪ Classroom lecture and discussion ▪ Reading text, looking for answers to stated learning objectives
X	Students will be able to understand the criteria and standards for wildlife captive breeding qualification	Students will be able to explain the criteria and standards for wildlife captive breeding qualification	C1	Written examinations at different cognitive level (final exam), Written assignment, quiz	<ul style="list-style-type: none"> ▪ Classroom lecture and discussion ▪ Reading text, looking for answers to stated learning objectives
XI	Students will be able to understand the meaning of wildlife restocking, reintroduction, redistribution and rehabilitation, objectives, requirements and performance steps	Students will be able to explain the meaning of wildlife restocking, reintroduction, redistribution and rehabilitation, objectives, requirements and performance steps	C1, C2	Written examinations at different cognitive level (final exam), Written assignment, quiz	<ul style="list-style-type: none"> ▪ Classroom lecture and discussion ▪ Reading text, looking for answers to stated learning objectives
XII	<ul style="list-style-type: none"> - Students will be able to understand various planning level in captive breeding business - Students will be able to formulate captive 	<ul style="list-style-type: none"> - Students will be able to explain various planning level in captive breeding business - Students will be able to formulate captive breeding business plan - Students will be able to 	C1, C2, C3, C4	Written examinations at different cognitive level (final exam), Written assignment, quiz	<ul style="list-style-type: none"> ▪ Classroom lecture and discussion ▪ Reading text, looking for answers to stated learning objectives

Code	Core Competencies	Learning Outcome	Bloom's Taxonomy	Assessment Tool(s)	Learning Activities
	breeding business plan - Students will be able to formulate concept for captive breeding business suitability analysis	formulate concept for captive breeding business suitability analysis			