	Undergraduate Program in Agrotechnology	Course Portfolio			
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1. Course Identity			
Course Name	Useful Insect Science		
Faculty	Agriculture	**Study Program**	Agrotechnology
Course Code	HPT 3 210	**SKS Weight**	3 CREDITS
Course Group	Programme Study	**Nature of Retrieval**	Required
Semester to	V	**Offline Media**	Laptop, *infocus*, whiteboard, markers
Methods	Online / Offline	**Online Media**	*Platform* (*e-learning*, *zoom, google meet*)
Course family	Plant of Pests and Diseases	**Prerequisites**	-
Course Coordinator	Ameilia Zuliyanti Siregar, M.Sc, Ph.D.	**Course Lecturer**	Ameilia Zulyanti Siregar, M.Sc, Ph.D., Dr. Ir. Marheni MP, Suzanna Fitriany Sitepu, S.P, M.Si

2. Course Learning Outcomes

SLO Code	Formulation of SLOs	CPMK Code	Formulation of CPMK	Indicator	Assignment/ Assessment/ Rating/ Measurement/ Evaluation	Weight (%)
CPL02	Able to apply agrotechnology theory to creating a sustainable agricultural system	CPMK-024	Students are able to apply the theory of insect science useful for the field of agriculture	Able to describe and apply the types and benefits of useful insects in agriculture	Tasks Quiz Written Exam	12,5%
CPL05	Able to apply research methods to identify problems in the field of agrotechnology	CPMK -051	Students are able to apply research methods in the field of agrotechnology	Able to describe and design useful insect research methods and applications in the field of agrotechnology	Tasks Quiz Written Exam	12,5%
		CPMK -052	Students are able to identify problems in the field of agrotechnology	Able to determine and solve problems in the field of agrotechnology	Tasks Quiz Written Exam	12,5%
CPL07	Able to create a business in the field of plantation, food and horticulture on a small or large scale. large independently.	CPMK -071	Students are able to apply the science of entrepreneurship in the fields of food, plantations and horticulture	Able to describe the application of entrepreneurship science in the fields of food, plantations and horticulture	Tasks Quiz Written Exam	12,5%
		CPMK -072	Students are able to manage businesses in the field of agrotechnology	Able to describe business management in the field of	Tasks Quiz Written Exam	12,5%

				agrotechnology		
		CPMK -073	Students are able to design a business in the field of agrotechnology	Able to analyze several business designs in the field of agrotechnology	Tasks Quiz Written Exam	12,5%
CPL08	Able to create innovations and contribute in the field of agrotechnology by utilizing science and technology.	CPMK -081	Students are able to design innovations in the field of agrotechnology by utilizing science and technology	Able to analyze several innovation designs in the field of agrotechnology by utilizing science and technology.	Tasks Quiz Written Exam	12,5%
CPL09	Able to develop global insights to character and potential in accordance with the field scientific and cross-disciplinary.	CPMK -091	Able to apply global insights in various aspects of life within the scope of monodisciplinary and interdisciplinary	Able to apply global insights in various aspects of life within the scope of monodisciplines and interdisciplines.	Tasks Quiz Written Exam	12,5%

3. Learning Outcome Analysis Map

CPMK 024 Students are able to apply the theory of plant pests and diseases	**CPMK 051** Students are able to apply the research in agrotechnology	**CPMK 052** Students are able to identify problems in the field of agrotechnology	**CPMK 071** Students are able to apply the science of entrepreneurship in the fields of food, plantations and horticulture	**CPMK 072** Students are able to manage businesses in agrotechnology field.	**CPMK 073** Students are able to design a business in the field of agrotechnology	**CPMK 081** Students are able to design innovations in agrotechnology field by utilizing science and technology.	**CPMK 091** Able to apply global insights in various aspects of life in scope. monodisciplinary and interdisciplinary
PBC+PBD	PBC+PBD	PBC+PBL+ Practicum	PBC+PBL+ Practicum	PBC+PBL+ Practicum	PBC+PBL+ Practicum	PBC+PBL+ Practicum	PBC+CM+ Practicum
Outline the theory of useful insect science (ISB) for agriculture Classify ISB classifications that are classified in daily life. Understand the benefits of ISB in daily life	Describe and understand Entomo food and its bioecology starting from the rearing stage to the harvesting stage.	Know the categories of useful insects, detect and create pollution indicators from the presence of insects.	Describe the application of entrepreneurial science in the management of insects as a resource for food, agriculture, the drug and cosmetics industry.	Utilization of ISBs (honey bees, crickets, silkworms, sago caterpillars (kidu), bees, dragonflies) as a business field for food, agriculture, industry, cosmetics, and medicine.	Develop innovations in ISB cultivation (honey bee, cricket, silkworm, sago worm (kidu)) to meet consumer demand and community needs.	Develop appropriate innovations to manage insects as food sources (cricket chips, honey, clothing, herbal medicine, predators, pollution indicators).	Utilizing the potential of insects is useful in the field of agriculture (dragonflies, beetles, hemiptera), the field of medicine and cosmetics (bees, wasps, beetles), the field of industry (silkworms), the field of animal husbandry (crickets).

4. Course Syllabus	
Brief Course Synopsis/Description	This course provides knowledge about the scope, benefits, characteristics of useful insects, classifying useful insects, can breed insects as livestock with the aim of producing commodities such as silk, honey, shellac, tea used as food, feed, and detecting insects as pollution indicator detectors.
Learning Materials	1. Scope 2. Benefits 3. Characteristics of Useful Insects 4. Classifying Useful Insects 5. Breeding Insects as Livestock with the aim of producing commodities such as silk, honey, shellac, tea used a feed 6. Detecting insects as pollution indicator detectors

5. Learning Experience and References	
Learning Experience	In this course students gain learning experience through the following activities: 1. Lectures 2. Assistance outside of class hours 3. Practice Problem-Solving 4. Quiz for each CPMK 5. PBL (Program Based Learning) 6. Project
Reference	**Main:** 1. Adihendro. 1999. Secrets of Raising Crickets. Ardy Agensy, Jakarta. Page 1-69. 2. Ameilia Z.S. 2009. Agricultural Useful Insects. USU Press, Medan. 183hlm. 3. Arnett Russ, H.J.R., Richard L., & Jacques, J.R. 1981. Guide to Insects. New York, Simon and Schuster Inc, 68p. 4. Bambang, AM. 1991. Raising Honey Bees. Kanisius. Jakarta. 63 pp. 5. Christian, W and G. Gottsberger. 2000. Diversity of preys in crop pollination. Crop Science 40 (5): 1209-1222. 6. Driesche, R.G.V. and Bellows, Jr TS. 1996. Biological Control. Chapman and Hall, Boston-America. 7. Kalshoven, LGE. 1981. Pest of Crop in Indonesia. Revised and Translated by van Derlaan. Ikhnar Baru, Jakarta. 386-397p. 8. Kusumah, E. 1994. Economic Impact of IPM Concept Implementation on Highland Vegetable Farmers. Workshop on the Socio-Economic Impact of IPM Program. Socio-economic research of agriculture. Bogor, March 7-9, 1994. 10 pp. 9. Paimin, F., B. Pudjiastuti and Erniwati. 1999a. Successful Cricket Breeding. Penebar Swadaya Jakarta. Pages. 1-65 10. Nazaruddin. 1993. Silkworm Cultivation. Page 30-40. 11. Paimin, FB.1999b. Successfully Overcoming the Problems of Raising Crickets... Penebar Swadaya Jakarta. Pages. 1-72. 12. Rismunandar. 1981. Versatile Insect Bees. CV Masa Baru. Jakarta. Pages 13-20. 13. Sumopratowo, CDA and RA Suprapto. 1978. Raising Honey Bees. Kanisius, Jakarta. 14. Siregar, AZ. 2001. Silkworm Cultivation. Science and Technology Alert. Wednesday, December 5, 2001. 15. Siregar, AZ. 2009. Predatory Dragonflies in Agriculture. USU Press, Medan 16. Siregar, A. Z., Che Salmah Md. Rawi, and Zulkifli Nasution. 2009. A Survey of odonates in Upland Rice Field at Manik Rambung, Siantar, North of Sumatra. Journal of Cultivars 1 (3): 21-30. 17. Taufik, RMS. 1991. Raising Silk-producing Caterpillars. Suara Karya. February 19, 1991. **Supporters:** -

6. Semester Learning Plan								
Week	**Sub-CLOs as Expected End Capabilities**	**Study Material**	**Assessment Criteria (Indicator)**	**Form of Assessment**	**Learning Forms and Methods**	**Learning Activities/Student Experience**	**Assessment Weight**	**Reference**
(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**	**(7)**	**(8)**	**(9)**
1	Explaining the scope of Useful Insect Science (ISB) and its benefits in life	a. Scope of ISB b. ISB Classification c. Benefits of ISB in life	Able to know the scope of ISB Able to classify ISB classifications that are classified in daily life Able to understand the benefits of ISB in daily life	Tasks Group presentation in front of the class Written exam	Lecture Group discussion Case study	Listening, asking and answering questions	Written Examδ 30% Case study and presentationε 50% 20% Assignment	2.
2	Describe and explain the use of insects in human life	a. Insect pollinators of food, horticulture, plantation and forestry crops b. Food source insects c. Insect source of research, cosmetics and medicine	Able to recognize insect pollinators of food crops, horticulture, plantations and forestry Able to recognize and understand food source insects Able to understand Insect sources of research, cosmetics and medicine	Home assignment Group presentation in front of the class Written exam	Lecture Group discussion Case study	Conduct a literature search.	Written Examδ 30% Case study and presentationε 50% 20% assignment	3.
3	Describe and explain Entomopaga and its bioecology	a. Natural enemies b. Predator c. Parasitoids	Able to know and understand natural Enemies. Able to know and understand Predators. Able to know and understand Parasitoids	Home assignment Group presentation in front of the class Written exam	Lecture Group discussion Case study	Conduct experiments in the laboratory.	Written Examδ 30% Case study and presentationε 50% 20% assignment	5.
4	Describe and explain the biology of	a. Characteristics and classification of	Able to know and understand the	Home assignment	Lecture Group		Written Examδ 30%	4.

	honeybees	honey bees b. Life cycle of honey bees c. Benefits and role of honeybees in life	characteristics and classification of honey bees. Able to know and understand the life cycle of honey bees Able to know and understand the benefits and role of honey bees in daily life	Group presentation in front of the class Written exam	discussion Case study		Case study and presentationε 50% 20% assignment	
5	Describe and explain honey bee cultivation	a. Factors affecting the life of honeybees b. Honey bee preparation, breeding & rearing c. Honey bee rearing and harvesting	Able to know and understand what factors affect the life of honey bees. Able to know and understand Preparation, breeding & maintenance of honey bees Able to know and understand how to maintain and harvest honey bees.	Home assignment Group presentation in front of the class Written exam	Lecture Group discussion Case study		Written Examδ 30% Case study and presentationε 50% 20% Assignment	6.
6	Describe and explain the biology of cicadas	a. Characteristics and classification of crickets b. Life cycle of cicadas c. Benefits and role of cicadas in life	Able to know and understand the characteristics and classification of crickets Able to know and understand the life cycle of cicadas. Able to know and understand the benefits and role of cicadas in daily life.	Home assignment Group presentation in front of the class Written exam	Lecture Group discussion Case study		Written Examδ 30% Case study and presentationε 50% 20% assignment	1.
7	Describe and explain	a. Factors affecting the	Able to know and	Home assignment	Lecture Group		Written	9.

	cricket cultivation	life of cicadas b. Preparation, breeding and rearing of crickets c. Cricket maintenance and harvesting	understand the factors that affect the life of crickets. Able to do Preparation, breeding and maintenance of crickets Able to know and understand how to maintain and harvest crickets	Group presentation in front of the class Written exam	discussion Case study		Examδ 30% Case study and presentationε 50% 20% assignment	
8	Describe and explain silkworm biology	a. Characteristics and classification of silkworms b. Life cycle of the silkworm c. Benefits and roles of silkworms in life	Able to know and understand the characteristics and classification of silkworms. Able to know and understand the silkworm life cycle Able to know and understand the benefits and role of silkworms in life.	Home assignment Group presentation in front of the class Written exam	Lecture Group discussion Case study		Written Examδ 30% Case study and presentationε 50% 20% Assignment	10.
	Midterm Evaluation: Validate Assessment, Evaluation and Improvement of the Next Learning Process							
9	Describe and explain silkworm cultivation	a. Factors affecting silkworm life b. Preparation, seeding and rearing of silkworms c. Silkworm rearing and harvesting	Able to know and understand the factors that affect the life of silkworms. Able to know and understand the preparation, breeding and maintenance of silkworms. Able to know and understand how to maintain and harvest	Home assignment Group presentation in front of the class Written exam	Lecture Group discussion Case study	Ask and answer questions	Written Examδ 30% Case study and presentationε 50% 20% Assignment	17.

			silkworms.					
10	Describe and explain appropriate insect processing	a. Utilization of insects in agriculture b. Utilization of insects as food c. Utilization of insects as ingredients for medicines and cosmetics d. Utilization of insects as pollution detection	Able to know and understand the utilization of insects in agriculture Able to know and understand the utilization of insects as food ingredients. Able to know and understand how to utilize insects as ingredients for medicines and cosmetics in everyday life. Able to know and understand the use of insects as pollution detection.	Home assignment Group presentation in front of the class Written exam	Lecture Group discussion Case study	Ask and answer questions	Written Examδ 30% Case study and presentationε 50% 20% Assignment	8.
11	Describe and explain dragonfly biology	a. Characteristics and classification of dragonflies b. Dragonfly life cycle c. Benefits and role of dragonflies in life	Able to know and understand the characteristics and classification of dragonflies. Able to know and understand the dragonfly life cycle. Able to know and understand the benefits and role of dragonflies in daily life.	Home assignment Group presentation in front of the class Written exam	Lecture Group discussion Case study	Ask and answer questions	Written Examδ 30% Case study and presentationε 50% 20% assignment	7.
12	Describe and explain dragonfly rearing	a. Factors affecting dragonfly life b. Preparation, seeding and rearing of dragonflies c. Dragonfly	Able to know and understand what factors affect the life of dragonflies. Able to know and understand the	Home assignment Group presentation in front of the class	Lecture Group discussion Case study		Written Examδ 30% Case study and presentationε 50%	15.

		maintenance and harvesting	procedures for preparation, breeding and maintenance of dragonflies. Able to know and understand dragonfly maintenance and harvesting.	Written exam			20% assignment	
13	Describe and explain insect processing as a food source	Locusts, caterpillars, crickets, centipedes, beetles	Able to know and understand grasshoppers, caterpillars, crickets, centipedes, beetles, and the benefits of these insects as daily food.	Home assignment Group presentation in front of the class Written exam	Lecture Group discussion Case study Practicum		Written Examδ 30% Case study and presentationε 50% 20% assignment	16.
14	Describe and explain the processing of insects as a source of medicine	Locusts, caterpillars, centipedes, beetles	Able to know and understand and be able to describe and explain the processing of insects as a source of medicine in everyday life.	Home assignment Group presentation in front of the class Written exam	Lecture Group discussion Case study Practicum		Written Examδ 30% Case study and presentationε 50% 20% Assignment	13.
15	Describe and explain insect processing as a cosmetic tool	caterpillars, beetles and other insects	Able to know and understand and be able to Describe and explain the processing of caterpillars, beetles and other insects as cosmetic tools	Home assignment Group presentation in front of the class Written exam	Lecture Group discussion Case study		Written Examδ 30% Case study and presentationε 50% 20% Assignment	12.
16	Describe and explain insects as indicators	a. Categories of pollution	Able to know and understand the	Home assignment	Lecture Group		Written Examδ 30%	11.

	of pollution	indicator insects b. Limiting factors in aquatic ecosystems c. Indicator organisms in water d. Indicator organisms in soil	category of pollution indicator insects. Able to know and understand the limiting factors in aquatic ecosystems. Able to know and understand the benefits and role of indicator organisms in soil indicators in the soil.	Group presentation in front of the class Written exam	discussion Case study		Case study and presentationε 50% 20% assignment	
	End of Semester Evaluation: Validating Final Assessment and Determining Student Graduation							

7. Assessment

Assessment Rubric

Assessment Criteria based on an absolute / absolute Learning Outcome system, with the following Assessment Rubric

a). CPMK-024

No.	CPMK 024	Assessment			
		1	2	3	4
		Unable (≤59)	Quite capable (60-69)	Able (70-79)	Very Capable (≥80)
1	Students are able to apply the theory of useful insect science (ISB)	Unable to understand and scope and benefits of ISB	Able to explain and understand the scope and benefits of ISB.	Able to understand and apply the scope and benefits of ISB.	Able to apply, educate and find solutions to problems that occur in ISB.

b). CPMK-051

No.	CPMK 051	Assessment			
		1	2	3	4
		Unable (≤59)	Quite capable (60-69)	Able (70-79)	Very Capable (
1	Students are able to apply the research in agrotechnology	Unable to understand food entomologists and their bioecology starting from the rearing stage to the harvesting stage.	Able to explain and understand food entomologists and their bioecology starting from the rearing stage to the harvesting stage.	Able to understand and apply food entomologists and their bioecology starting from the rearing stage to the harvesting stage.	Able to ap educate a find solut to food entomolog and its bioecology starting fr the maintenar stage to th harvesting stage.

c). CPMK-052

No.	CPMK 052	Assessment			
		1	2	3	4
		Unable (≤59)	Quite capable (60-69)	Able (70-79)	Very Capable (≥80)
1	Students are able to identify problems in the field of agrotechnology	Unable to understand the category of useful insects, detect and create pollution indicators from the	Able to explain and understand the categories of useful insects, detect and make pollution indicators from the	Able to understand and apply the category of useful insects, detect and make pollution indicators from the	Able to apply, educate and find solutions for useful insect

		presence of insects.	presence of insects.	presence of insects.	categories, detect and make pollution indicators from the presence of insects.

d). CPMK-071

No.	CPMK 071	Assessment			
		1	2	3	4
		Unable (≤59)	Quite capable (60-69)	Able (70-79)	Very Capable (≥80)
1	Students are able to apply knowledge food, plantation and horticulture entrepreneurship	Unable to understand the application of entrepreneurial science in the management of insects as a resource for food, agriculture, medicine and cosmetics industries.	Able to explain and understand the application of entrepreneurship science in the management of insects as a resource for food, agriculture, medicine and cosmetic industries.	Able to understand and apply the application of entrepreneurial science in the management of insects as a resource for food, agriculture, the drug and cosmetic industry.	Able to apply, educate and find solutions from the application of entrepreneurial science in the management of insects as a resource for food, agriculture, medicinal and cosmetic industries.

e). CPMK-072

No.	CPMK 072	Assessment			
		1	2	3	4
		Unable (≤59)	Quite capable (60-69)	Able (70-79)	Very Capable (≥80
1	Students are able to manage businesses in agrotechnology field	Unable to understand the utilization of ISB (honey bees, crickets, silkworms, sago caterpillars (kidu), bees, dragonflies) as a business field for food, agriculture, industry, cosmetics, and medicine.	Able to explain and understand the utilization of ISB (honey bees, crickets, silkworms, sago caterpillars (kidu), bees, dragonflies) as a business field for food, agriculture,	Able to understand and apply the utilization of ISB (honey bees, crickets, silkworms, sago caterpillars (kidu), bees, dragonflies) as a	Able to apply, educate and fin solutions to the utilization of ISB (honey bees, crickets, silkworms, sago caterpillars (kid bees, dragonflie as a business fie

			industry, cosmetics, and medicine.	business field for food, agriculture, industry, cosmetics, and medicine.	for food, agriculture, industry, cosmetics, and medicine.

f). CPMK-073

No.	CPMK 073	Assessment			
		1	2	3	4
		Unable (≤59)	Quite capable (60-69)	Able (70-79)	Very Capable (≥80)
1	Students are able to design a business in agrotechnology field	Unable to understand and develop innovations in the cultivation of ISB (honey bees, crickets, silkworms, sago caterpillars (kidu)) to meet consumer demand and community needs.	Able to explain, understand and develop innovations in the cultivation of ISB (honey bees, crickets, silkworms, sago caterpillars (kidu)) to meet consumer demand and community needs.	Able to understand and apply innovations in the cultivation of ISB (honey bees, crickets, silkworms, sago caterpillars (kidu)) to meet consumer demand and community needs.	Able to apply, educate and find solutions from Development of innovations in ISB cultivation (honey bees, crickets, silkworms, sago caterpillars (kidu)) to meet consumer demand and community needs

g). CPMK-081

No.	CPMK 081	Assessment			
		1	2	3	4
		Unable (≤59)	Moderately capable (60-69)	Able (70-79)	Highly Capable (≥80)
1	Students are able to design innovations in agrotechnology field by utilizing science and technology	Unable to understand and develop appropriate innovations to manage insects as food sources (cricket chips, honey, clothing, herbal medicines,	Able to explain, understand and develop appropriate innovations to manage insects as food sources (cricket chips, honey, clothing, herbal medicines,	Able to understand and apply the development of appropriate innovations to manage insects as a food source (cricket chips, honey, clothing,	Able to apply, educate and find solutions to Develop appropriate innovations to manage insects as food sources (cricket chips, honey, clothing,

		predators, pollution indicators).	predators, pollution indicators).	herbal medicines, predators, pollution indicators).	herbal medicines, predators, pollution indicators).

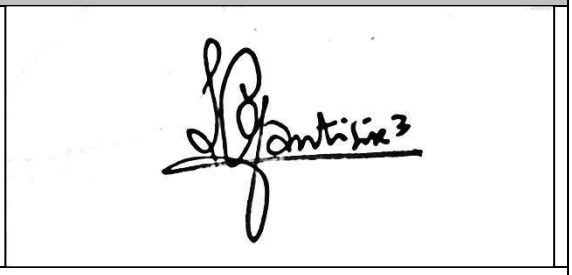
h). CPMK-091

No.	CPMK 091	Assessment			
		1	2	3	4
		Unable (≤59)	Moderately capable (60-69)	Able (70-79)	Highly Capable (≥
1	Able to apply global insights in various aspects of life within the scope of monodisciplinary and interdisciplinary	Unable to understand the potential utilization of useful insects in the fields of agriculture (dragonflies, beetles, hemiptera), medicine and cosmetics (bees, wasps, beetles), industry (silkworms), animal husbandry (crickets).	Able to explain and understand the potential utilization of useful insects in the fields of agriculture (dragonflies, beetles, hemiptera), medicine and cosmetics (bees, wasps, beetles), industry (silkworms), animal husbandry (crickets).	Able to understand and apply the potential utilization of useful insects in the fields of agriculture (dragonflies, beetles, hemiptera), medicine and cosmetics (bees, wasps, beetles), industry (silkworms), animal husbandry (crickets).	Able to apply, educate and find solutions for utilizing the potential of use insects in the fie of agriculture (dragonflies, beetles, hemiptera), medicine and cosmetics (bee wasps, beetles) industry (silkworms), animal husband (crickets).

Letter Range	The scoring system uses PAP (Benchmark Assessment), an absolute assessment, with the following components and letter grade ranges.

No.	Number Score Range	Letter Grade
1	00.00 to 49.99	**E**
2	50.00 to 59.99	**D**
3	60.00 to 64.99	**C**
4	65.00 to 69.99	**C+**
5	70.00 to 74.99	**B**
6	75.00 to 79.99	**B+**
7	80.00 to 100.00	**A**

Evaluation System	Students are declared to have passed (received a minimum letter grade of C) only if each CPMK has a numerical value equal to or greater than 60 (≥ 60). If one or more of the CPMK scores are less than 60 (< 60), but the weighted score is equal to or greater than 60 (≥ 60), then it is expected to take the unmet CPMK measurement exam. Meanwhile, if the weighted score is smaller than 60 (< 60), students are required to repeat the entire course (all CPMK).) Student participation in this course is declared forfeited if attendance is less than 75% (< 75%) or less than 10 (<10) student attendance, or cheating.

Date:	
Endorsed by, **Head of Agrotechnology Department**	Prepared by, **Course Coordinator**
	
Dr. Nini Rahmawati SP., M.Si	**Ameilia Zuliyanti Siregar, M.Sc, Ph.D.**

MEASUREMENT OF LEARNING OUTCOMES

SUBJECT : Useful Insect Science
COURSE CODE : HPT 3 210
SEMESTER : V
MEASURE TO- : 1
TIME : 60 minutes
DOSEN NAME : Ameilia Zuliyanti Siregar, M.Sc, Ph.D.

LEARNING OUTCOMES OF THE COURSE BEING MEASURED:

No.	Course Learning Outcomes (CP) Measured		Course CP No.
1	Students are able to apply insect science theories useful for agriculture.		3
2	Students are able to apply research methods in the field of agrotechnology.		
SOAL :	No CP		Weight
1	Describe the scope and benefits of ISB?	3	50
2	Explain what an entomophagous insect is and give 3 examples?	3	50

MEASUREMENT OF LEARNING OUTCOMES

SUBJECT : Useful Insect Science
COURSE CODE : HPT 3 210
SEMESTER : V
MEASURE TO- : 1
TIME : 60 minutes
DOSEN NAME : Ameilia Zuliyanti Siregar, M.Sc, Ph.D.

LEARNING OUTCOMES OF THE COURSE BEING MEASURED:

No.	Course Learning Outcomes (CP) Measured	Course CP No.
3	Students are able to identify problems in the field of agrotechnology	3
4	Students are able to apply the science of entrepreneurship in the fields of food, plantations and horticulture	
5	Students are able to manage businesses in the field of agrotechnology	
6	Students are able to design a business in the field of agrotechnology	

SOAL :	No CP	Weight	
1	How to detect silkworm pests? Explain schematically.	3	20
2	Please bring insect products that you cultivate and manage (please choose one :Honey bee, cricket, silkworm, sago worm (kidu)).	3	20
3	Please make a video of you cultivating useful insects. (Please choose one :Honey bee, cricket, silkworm, sago worm (kidu)).	3	30
4	Please make a Business Plan for the cultivation of useful insects in agriculture. (please choose one :Honey bee, cricket, silkworm, sago worm (kidu))	3	30

MEASUREMENT OF LEARNING OUTCOMES

SUBJECT	:	Useful Insect Science
COURSE CODE	:	HPT 3 210
SEMESTER	:	V
MEASURE TO-	:	1
TIME	:	60 minutes
DOSEN NAME	:	Ameilia Zuliyanti Siregar, M.Sc, Ph.D.

LEARNING OUTCOMES OF THE COURSE BEING MEASURED:

No.	Course Learning Outcomes (CP) Measured	Course CP No.	
1	Students are able to design innovations in the field of agrotechnology by utilizing science and technology.	3	
2	Able to apply global insights in various aspects of life within the scope of monodisciplines and interdisciplines		
SOAL :	No CP	Weight	
1	Around you must often find insects, such as honey bees, crickets, silkworms, sago caterpillars (kidu), dragonflies. The existence of these insects can function as predators (Dragonflies, Beetles, Diptera) Parasitoids (Tetrastichus. sp., Telenomus sp., Trichorgamma sp.) and useful insects (honey bees, crickets, silkworms, sago caterpillars (kidu), dragonflies). Please do a literacy study and collect 6 journals (Attach Google Drive Journal link), then make a product design, cultivate insects (please choose one: Honey bees, crickets, silkworms, sago worms (kidu)) and collect them.	3	50