

COURSE : Farming Area Science

COURSE CODE : PTP 228

CREDIT : 2 (2-0)

## TEACHING PROGRAM OUTLINE

- Title of Subject** : Farming Area Science
- Number Code /CSS** : PTP 228 / 2(2-0)
- Brief Description** : Farming Area Science is study about physical environment and climate especially tropical climate and the relation of livestock and ecosystem, thermal management and production, the effect of environment to livestock directly or indirectly, the adaptation to new environment and how to eliminate the bad effect from environment. To understand, student must master the basic knowledge about biology and physiology.
- General Instructional Object** : After following this lecture, student can explain about climate in general and tropical climate especially and its (the influence to livestock and how to eliminate of its (the negativity influence)
- References** :
1. Cole, D.J.A. and G.C. Brander. 1986. Bio-industrial Ecosystem. Elsevier, Amsterdam.
  2. Curtis, E.S. 1981. Environmental Management in Animal Agriculture. Iowa State Univ. Press. Ames, Iowa.
  3. Hafez, E.S.E. 1968. Adaptation of Domestic Animals. Lea & Febiger, Philadelphia.
  4. McLRoy. '1980. Pengelolaan Padang Rumput. Pradnya Paramita, Jakarta.
  5. Yousef, M.K. 1985. Stress Physiology in Livestock. CRC Press Inc. Boca Raton, Florida.

| NO. | SPECIFIC INSTRUCTIONAL OBJECT  | MAIN DISCUSSION  | SUB DISCUSSION   | TIME ESTIMATION | REFERENCES |
|-----|--|------------------|--|-----------------|------------|
| 1.  | After following this lecture student has knowledge and able to explain truly about interrelationship between climates and livestock in ecosystem | ecosystem        | Ecosystem<br>the component of ecosystem  | 1 x 120 minutes |            |
| 2.  | After following this lecture student can explain the definition and the relation of climate and living in ecosystem                              | Bio climate      | Biotic and a biotic environment  | 1 x 120 minutes |            |
| 3.  | After following this lecture student can explain the temperature and can decide the comfortable area for breeding                                | Temperature zone | Cold stress and low critical temperature<br>Hot stress and high critical temperature | 2 x 120 minutes |            |
| 4.  | After following this lecture student can explain the thermal production and  | Thermoregulation | Thermal production<br>Thermal circulation  | 2 x 120 minutes |            |

|    |   |  |   |                 |  |
|----|---|--|---|-----------------|--|
|    | balances, thermoregulation by biological and physical   |  | Thermal balances  |                 |  |
| 5. | After following this lecture student can explain nervous system, relation of nervous system and behavior, milk, meat, eggs production process.                        | The effect of environment to livestock | Behavior, nervous system and production<br>Lactation and milk production<br>Growth<br>Fowl production | 2 x 120 minutes |  |
| 6. | After following this lecture student can explain about adaptation and where livestock will be placed  | Adaptation in environment              | Adapt to environment<br>Adapt to extreme environment<br>Special adaptation                            | 2 x 120 minutes |  |
| 7. | After following this lecture student can make a strategy to anticipate a stress(the excess of extreme temperature) through cage and feed and environment modification | Environment and feed manipulation      | Environment manipulation<br>Feed manipulation   | 2 x 120 minutes |  |

COURSE : Meat and Draught Animal  
Production

COURSE CODE : PTF 305 P

CREDIT : 3 (2-1)

## LECTURING PROGRAM OUTLINE

|                                 |   |
|---------------------------------|---|
| Subject                         | : Meat and Draught Animal Production  |
| Code / Semester<br>Credit Unit  | : PTF 305P/3 (2-1)  |
| Syllabus                        | : This lecture discusses breeds, animal response of production and environment factors to develop meat animal production  |
| General Instructional Objective | : At the end of the lecturing program, students are expected to be able to understand breeds of meat and draught animal, physiology system, animal response to environment factor, animal housing, feeding, growth and development, matting system, and animal management |

### LECTURING PROGRAM

| Meeting | Topic of Discussion                   | Sub-topic of Discussion   | Duration (minutes) |
|---------|---------------------------------------|---|--------------------|
| 1       | Introduction                          | General description of subject lecture, explaining lecture contract, practical, and assignment  | 50                 |
| 1-2     | Breeds                                | Types and breeds of meat and draught animal   | 150                |
| 3       | Balance of physiology system          | Thermal balance, thermoregulation, heart rate, body temperature, comfort zone, and effect of environment to animal production   | 100                |
| 4       | Animal response to climate            | The effect of climate to animal production  | 100                |
| 5-6     | Animal housing and equipment          | Location of animal barn, function, lay out, type of construction, type of barn  | 200                |
| 7-8     | Animal Growth and Development         | Definition of growth and development, compensatory growth, growth of bone, meat and fat, factors affecting growth and development, and manipulation growth to production                        | 200                |
| 9.      | EVALUATION I                          |   | 100                |
| 10.     | Digestive system of meat animal       | Digestive system and process of feed digestive on meat animal   | 100                |
| 11-12.  | Feedstuff and animal response to feed | Kind of feed, factors affecting feed consumption, feed requirement, feeding management, and feed evaluation (feed conversion ratio, feed efficiency)  | 200                |
| 13.     | Matting management of meat animal     | Matting time, methods of matting, sex ratio, post partum matting  | 100                |
| 14-15.  | Care of meat animal                   | Care of animal at parturition, care of animal (sheep, goat, cattle, buffalo, pig and horse) from birth to mature, handling, dehorning, recording, identification, shearing, hoof trimming, etc. | 200                |
| 16.     | EVALUATION II                         |   | 100                |

## LECTURING AGENDA UNITS

|  |   |
|--|---|
| <b>Subject</b>                         | : <b>Meat and Draught Animal Production</b>   |
| <b>Code / Semester<br/>Credit Unit</b> | : <b>PTF 305P/3 (2-1)</b>   |
| <b>Syllabus</b>                        | : This lecture discusses breeds, animal response of production and environment factors to develop meat animal production  |
| <b>General Instructional Objective</b> | : At the end of the lecturing program, students are expected to be able to understand breeds of meat and draught animal, physiology system, animal response to environment factor, animal housing, feeding, growth and development, matting system, and animal management |

|   |   |
|---|---|
| <b>Topic</b>                            | : <b>Introduction</b>   |
| <b>Sub Topics</b>                       | : - Greetings and introducing the lecturers<br>- General Explanation about the Subject Materials<br>- Conditions  |
| <b>Meeting No.</b>                      | : 1   |
| <b>Duration</b>                         | : 50 minutes  |
| <b>General Instructional Objective</b>  | : At the end of the lecturing program, students are expected to be able to understand and explain thoroughly the mechanism and interaction of factors affecting meat animal production. |
| <b>Specific Instructional Objective</b> | : After joining the lecture, students understand the scope of the subject, conditions to fulfill, obligations to do and right to obtain.  |

### Lecture Activities

| Phase        | Lecturer's Activities   | Students' Activities   | Lecturing Media and Facilities |
|--------------|---|--|--------------------------------|
| Introduction | 1. Introducing lecturers themselves   | Paying attention   | Whiteboard                     |
| Presentation | 2. Distributing Lecture Contract<br>3. Explaining general description of the lecture,<br>4. Explaining lecture contract,<br>5. Explaining practical, and<br>6. Explaining assignments | Paying attention, making notes, delivering responses and questions | OHP                            |
| Conclusion   | 7. Explaining briefly the subject content of next meeting   | Paying attention making notes                                      | -                              |

|                                  |   |
|----------------------------------|---|
| Topic                            | : Breeds  |
| Sub Topics                       | : Types and breeds of meat and draught animal   |
| Meeting No.                      | : 1, 2  |
| Duration                         | : 150 minutes   |
| General Instructional Objective  | : At the end of the lecturing program, students are expected to be able to understand breeds of meat and draught animal, physiology system, animal response to environment factor, animal housing, feeding, growth and development, matting system, and animal management |
| Specific Instructional Objective | : At the end of the lecture, students are able to understand and explain breeds of meat and draught animal (cattle, buffalo, goat, sheep, pig, and horse)   |

### Class Activities

| Phase        | Lecturer's Activities  | Students' Activities  | Lecturing Media and Facilities     |
|--------------|--|---|------------------------------------|
| Introduction | 1. Explaining the scope of the subject   | Paying attention  | Whiteboard                         |
| Presentation | 2. Explaining breeds of meat and draught animal:<br><ul style="list-style-type: none"> <li>- Cattle</li> <li>- Buffalo</li> <li>- Sheep</li> <li>- Goat</li> <li>- Pig</li> <li>- Horse</li> </ul> 3. Delivering questions | Paying attention, making notes, delivering responses and questions<br><br>Answering questions | OHP, transparent sheet, whiteboard |
| Conclusion   | 3. Concluding the meeting<br><ul style="list-style-type: none"> <li>- Delivering summary</li> <li>- Giving assignment</li> </ul>   | - Paying attention and making notes.  | -                                  |

|                                  |   |
|----------------------------------|---|
| Topic                            | : Balance of physiology system  |
| Sub Topics                       | : Thermal balance, thermoregulation, heart rate, body temperature, comfort zone, and effect of environment to animal production   |
| Meeting No.                      | : 3   |
| Duration                         | : 100 minutes   |
| General Instructional Objective  | : At the end of the lecturing program, students are expected to be able to understand breeds of meat and draught animal, physiology system, animal response to environment factor, animal housing, feeding, growth and development, matting system, and animal management |
| Specific Instructional Objective | : At the end of the lecture, students are able to understand and explain thermal balance, thermoregulation, heart rate, body temperature, comfort zone, and effect of environment on production   |

### Class Activities

| Phase        | Lecturer's Activities  | Students' Activities  | Lecturing Media and Facilities          |
|--------------|--|---|---|
| Introduction | 1. Explaining the scope of subject   | Paying attention  | Whiteboard,                             |
| Presentation | 2. Explaining thermal balance, thermoregulation, heart rate, body temperature, comfort zone, and effect of environment to animal production<br>3. Delivering questions | Paying attention, making notes, delivering responses and questions<br>Answering questions | Computer, projector, screen, whiteboard |
| Conclusion   | 4. Concluding the meeting<br>- Summarizing materials<br>- Giving assignment  | - Paying attention, making notes,   | Whiteboard                              |

|                                  |   |
|----------------------------------|---|
| Topic                            | : Animal response to climate  |
| Sub Topics                       | : The effect of climate to animal production  |
| Meeting No.                      | : 4   |
| Duration                         | : 100 minutes   |
| General Instructional Objective  | : At the end of the lecturing program, students are expected to be able to understand breeds of meat and draught animal, physiology system, animal response to environment factor, animal housing, feeding, growth and development, matting system, and animal management |
| Specific Instructional Objective | : At the end of the lecture, students are able to explain the effect of climate to animal production  |

### Class Activities

| Phase        | Lecturer's Activities   | Students' Activities  | Lecturing Media and Facilities          |
|--------------|---|---|---|
| Introduction | 1. Explaining the scope of subject  | Paying attention  | Whiteboard,                             |
| Presentation | 2. Explaining the effect of climate to animal production<br><br>3. Delivering questions | Paying attention, making notes, delivering responses and questions<br>Answering questions | Computer, projector, screen, whiteboard |
| Conclusion   | 4. Concluding the meeting<br>- Summarizing materials<br>- Giving assignment             | - Paying attention, making notes,   | Whiteboard                              |

|                                  |   |
|----------------------------------|---|
| Topic                            | : <b>Animal housing and equipment</b>   |
| Sub Topics                       | : Location of animal barn, function, lay out, type of construction, type of barn  |
| Meeting No.                      | : 5-6   |
| Duration                         | : 200 minutes   |
| General Instructional Objective  | : At the end of the lecturing program, students are expected to be able to understand breeds of meat and draught animal, physiology system, animal response to environment factor, animal housing, feeding, growth and development, matting system, and animal management |
| Specific Instructional Objective | : At the end of the lecture, students are able to explain location of animal barn, function, lay out, type of construction, type of barn of meat animal   |

### Class Activities

| Phase        | Lecturer's Activities  | Students' Activities  | Lecturing Media and Facilities          |
|--------------|--|---|---|
| Introduction | 1. Explaining the scope of subject   | Paying attention  | Whiteboard,                             |
| Presentation | 2. Explaining Location of animal barn, function, lay out, type of construction, type of barn of animal production<br>3. Delivering questions | Paying attention, making notes, delivering responses and questions<br>Answering questions | Computer, projector, screen, whiteboard |
| Conclusion   | 4. Concluding the meeting<br>- Summarizing materials<br>- Giving assignment  | - Paying attention, making notes,   | Whiteboard                              |

|                                  |   |
|----------------------------------|---|
| Topic                            | : <b>Animal growth and development</b>  |
| Sub Topics                       | : Definition of growth and development, compensatory growth, growth of bone, meat and fat, factors affecting growth and development, and manipulation growth to production  |
| Meeting No.                      | : 7-8   |
| Duration                         | : 200 minutes   |
| General Instructional Objective  | : At the end of the lecturing program, students are expected to be able to understand breeds of meat and draught animal, physiology system, animal response to environment factor, animal housing, feeding, growth and development, matting system, and animal management |
| Specific Instructional Objective | : At the end of the lecture, students are able to explain definition of growth and development, compensatory growth, growth of bone, meat and fat, factors affecting growth and development, and manipulation growth to production  |

### Class Activities

| Phase        | Lecturer's Activities   | Students' Activities  | Lecturing Media and Facilities         |
|--------------|---|---|--|
| Introduction | 1. Explaining the scope of subject  | Paying attention  | Whiteboard,                            |
| Presentation | 2. Explaining definition of growth and development, compensatory growth, growth of bone, meat and fat, factors affecting growth and development, and manipulation growth to production<br>3. Delivering questions | Paying attention, making notes, delivering responses and questions<br><br>Answering questions | Computer, projector, screen whiteboard |
| Conclusion   | 4. Concluding the meeting<br>- Summarizing materials<br>- Giving assignment   | - Paying attention, making notes,   | Whiteboard                             |

|                                  |   |
|----------------------------------|---|
| Topic                            | : Digestive system of meat animal   |
| Sub Topics                       | : Digestive system and process of feed digestive on meat animal   |
| Meeting No.                      | : 10  |
| Duration                         | : 100 minutes   |
| General Instructional Objective  | : At the end of the lecturing program, students are expected to be able to understand breeds of meat and draught animal, physiology system, animal response to environment factor, animal housing, feeding, growth and development, matting system, and animal management |
| Specific Instructional Objective | : At the end of the lecture, students are able to understand and explain digestive system and process of feed digestive on meat animal  |

### Class Activities

| Phase        | Lecturer's Activities  | Students' Activities  | Lecturing Media and Facilities          |
|--------------|--|---|---|
| Introduction | 1. Explaining the scope of subject   | Paying attention  | Whiteboard,                             |
| Presentation | 2. Explaining digestive system and process of feed digestive on meat animal<br>3. Delivering questions | Paying attention, making notes, delivering responses and questions<br>Answering questions | Computer, projector, screen. whiteboard |
| Conclusion   | 4. Concluding the meeting<br>- Summarizing materials<br>- Giving assignment                            | - Paying attention, making notes,   | Whiteboard                              |

|                                  |   |
|----------------------------------|---|
| Topic                            | : <b>Feedstuff and animal response to feed</b>  |
| Sub Topics                       | : Kind of feed, factors affecting feed consumption, feed requirement, feeding management, and feed evaluation (feed conversion ratio, feed efficiency)  |
| Meeting No.                      | : 11-12   |
| Duration                         | : 200 minutes   |
| General Instructional Objective  | : At the end of the lecturing program, students are expected to be able to understand breeds of meat and draught animal, physiology system, animal response to environment factor, animal housing, feeding, growth and development, matting system, and animal management |
| Specific Instructional Objective | : At the end of the lecture, students are able to understand and explain kind of feed, factors affecting feed consumption, feed requirement, feeding management, and feed evaluation (feed conversion ratio, feed efficiency)   |

### Class Activities

| Phase        | Lecturer's Activities  | Students' Activities   | Lecturing Media and Facilities          |
|--------------|--|--|---|
| Introduction | 1. Explaining the scope of subject   | Paying attention   | Whiteboard,                             |
| Presentation | 2. Explaining kind of feed, factors affecting feed consumption, feed requirement, feeding management, and feed evaluation (feed conversion ratio, feed efficiency) | Paying attention, making notes, delivering responses and questions | Computer, projector, screen, whiteboard |
|              | 3. Delivering questions  | Answering questions  |   |
| Conclusion   | 4. Concluding the meeting<br>- Summarizing materials<br>- Giving assignment  | - Paying attention, making notes,                                  | Whiteboard                              |

|                                  |   |
|----------------------------------|---|
| Topic                            | : <b>Matting management of meat animal</b>  |
| Sub Topics                       | : Matting time, methods of matting, sex ratio, post partum matting  |
| Meeting No.                      | : 13  |
| Duration                         | : 100 minutes   |
| General Instructional Objective  | : At the end of the lecturing program, students are expected to be able to understand breeds of meat and draught animal, physiology system, animal response to environment factor, animal housing, feeding, growth and development, matting system, and animal management |
| Specific Instructional Objective | : At the end of the lecture, students are able to understand and explain matting time, methods of matting, sex ratio, post partum matting   |

### Class Activities

| Phase        | Lecturer's Activities  | Students' Activities   | Lecturing Media and Facilities          |
|--------------|--|--|---|
| Introduction | 1. Explaining the scope of subject   | Paying attention   | Whiteboard,                             |
| Presentation | 2. Explaining matting time, methods of matting, sex ratio, post partum matting | Paying attention, making notes, delivering responses and questions | Computer, projector, screen, whiteboard |
|              | 3. Delivering questions  | Answering questions  |   |
| Conclusion   | 4. Concluding the meeting<br>- Summarizing materials<br>- Giving assignment    | - Paying attention, making notes,                                  | Whiteboard                              |

|                                  |   |
|----------------------------------|---|
| Topic                            | : Care of meat animal   |
| Sub Topics                       | : Care of animal at parturition, care of animal (sheep, goat, cattle, buffalo, pig and horse) from birth to mature, handling, dehorning, recording, identification, shearing, hoof trimming, etc.   |
| Meeting No.                      | : 14-15   |
| Duration                         | : 200 minutes   |
| General Instructional Objective  | : At the end of the lecturing program, students are expected to be able to understand breeds of meat and draught animal, physiology system, animal response to environment factor, animal housing, feeding, growth and development, matting system, and animal management |
| Specific Instructional Objective | : At the end of the lecture, students are able to understand and explain care of animal at parturition, care of animal (sheep, goat, cattle, buffalo, pig and horse) from birth to mature, handling, dehorning, recording, identification, shearing, hoof trimming, etc.  |

### Class Activities

| Phase        | Lecturer's Activities   | Students' Activities   | Lecturing Media and Facilities          |
|--------------|---|--|---|
| Introduction | 1. Explaining the scope of subject  | Paying attention   | Whiteboard,                             |
| Presentation | 2. Explaining care of animal at parturition, care of animal (sheep, goat, cattle, buffalo, pig and horse) from birth to mature, handling, dehorning, recording, identification, shearing, hoof trimming, etc. | Paying attention, making notes, delivering responses and questions | Computer, projector, screen, whiteboard |
|              | 3. Delivering questions   | Answering questions  |   |
| Conclusion   | 4. Concluding the meeting<br>- Summarizing materials<br>- Giving assignment   | - Paying attention, making notes,                                  | Whiteboard                              |

**Evaluation:**

Evaluations are taken 3 times, i.e.

1. on the 9<sup>th</sup> meeting; evaluating the students' understanding on the subjects delivered from the 1<sup>st</sup> to the 8<sup>th</sup> meetings
2. on the 16<sup>th</sup> meeting; evaluating the students' understanding on the subjects delivered from the 10<sup>th</sup> to the 15<sup>th</sup> meetings.
3. on the semester examination; evaluating the students' overall understanding on the subjects of lecture.

**References**

1. Battaglia, R.A., dan V.B. Mayrose. 1981. Handbook of Livestock Management Techniques. Prentice Hall, Inc. New Jersey.
2. Edey, T.N. 1983. Tropical Sheep and Goat Production. Australian Vice-Chancellor' Committee-AUIDP, Canberra.
3. Goodwin, D.H., 1977. Beef Management and Production. A practical guide for farmers and students. 1<sup>st</sup> Ed. Hutchinson & Co. Ltd, London
4. Haresign, W. 1983. Sheep Production. Butterworths, London
5. Pond, W.G., D.C. Church, dan K.R. Pond. 1995. Basic Animal Nutrition and Feeding. 4<sup>th</sup> Ed. John Wiley and Sons, New York.
6. Pond, W.G. dan J.H. Maner. 1974. Swine Production in Temperate and Tropical Environments. W.H. Freeman and Company, San Francisco.
7. Preston, T.R., dan M.B. Willis. 1979. Intensif Beef Production. 2<sup>nd</sup>. Pergamon Press, Oxford.
8. Ross, C.V. 1989. Sheep Production and Management. Prentice Hall, Englewood Cliffs.
9. MacDonald, I. and J. Low. 1994. Livestock Rearing in The Tropics. The Macmillan Press LTD, London

COURSE : Basic of Biochemistry

COURSE CODE : PTF 202 P

CREDIT : (2-1)3

### TEACHING PROGRAM OUTLINE

- Title of Subject** : Basic of Biochemistry
- Number Code /CSS** : PTF 202 P / 3(2-1)
- Brief Description** : This subject study about bio organic metabolism, for example carbohydrate, protein, lipid, nucleate acid, and cholesterol. Also present about enzyme and the function in the life cell and the anticipation of its. Photosynthesis in the life cell also presented.
- General Instructional Object** : After following this lecture student can explain the carbohydrate metabolism, protein, lipid, nucleate acid, and cholesterol, enzyme and photosynthesis process in life cell correctly. Student will able to do carbohydrate, protein and lipid digestion.
- References** :
1. Girindra, A. 1986. Biokimia. PT Gramedia, Jakarta.
  2. Fennemma, O.R. 1986. Principles of Food Science. Marcel Dekker, Inc, New York.
  3. Eskin, N.A.M., H.M. Henderson dan R.J. Townsend. 1971. Biochemistry of Foods. Academic Press, New York.
  4. Mayes, P.A., D.K. Granner., V.W. Rodwel., dan D.W. Martin. 1987. Biokimia "Harper". EGC, Jakarta (diterjemahkan oleh I. Darmawan.
  5. Winarno, F. G. 1983. Enzim Pangan. PT Gramedia, Jakarta.
  6. Whitaker, J. R. 1972. Principle og Enzymologi for the Food Science. Marcel Dekker, Inc., New York.
  7. Daulay, D. 1991. Fermentasi Keju. PAU Pangan dan Gizi. IPB, Bogor.
  8. Lehninger, M. 1992. Dasar-dasar Biokimia. PT Gramedia, Jakarta (diterjemahkan oleh M. Thenawijaya).
  9. Thenawijaya, M. 1989. Dasar-dasat Biokimia. PAU Ilmu Hayati, IPB, Bogor.
  10. Winarno, F.G. 1983. Enzim Pangan. PT Gramedia, Jakarta

| NO. | SPECIFIC INSTRUCTIONAL OBJECT  | MAIN DISCUSSION | SUB DISCUSSION  | TIME ESTIMATION | REFERENCES |
|-----|--|-----------------|---|-----------------|------------|
| 1.  | After attending the lecture, student can explain about the structure of monosaccharide, disaccharide, oligosaccharides, polysaccharides and able to explain the classification and nomenclature of carbohydrate. | carbohydrate    | Structure of carbohydrate<br>Classification of carbohydrate | 2x50 minutes    | 1,2        |
| 2.  | After attending the lecture, student can explain about the digestion of carbohydrate by saliva amylase,  | Carbohydrate    | Digestion of carbohydrate                                   | 2x50 minutes    | 3,4        |

|     |  |               |   |              |         |
|-----|--|---------------|---|--------------|---------|
|     | pancreas amylase and intestine enzyme correctly.   |               |   |              |         |
| 3.  | After attending the lecture, student can explain the metabolism (catabolism and anabolism) correctly.  | Carbohydrate  | Metabolism (catabolism and anabolism)   | 2x50 minutes | 3,4     |
| 4.  | After attending the lecture, student can explain the structure (units of enzyme) and classification (nomenclature and the kinds of enzyme)                     | Enzyme        | Structure and classification of enzyme  | 2x50 minutes | 3,5,6,7 |
| 5.  | After attending the lecture, student can count the enzyme activity and the utilization   | Enzyme        | Enzyme activity   | 2x50 minutes | 3,5,6,7 |
| 6.  | After attending the lecture, student can explain the relation of enzyme activity and the factor that influence its, and enzyme specification as a bio catalyst | Enzyme        | Factors that influence enzyme activity<br>Enzyme specification                        | 2x50 minutes | 3,5,6,7 |
| 7.  | After attending the lecture, student can explain the application of enzyme in food industry, feed, chemical and medicine                                       | Enzyme        | Factors that influence enzyme activity<br>Enzyme specification                        | 2x50 minutes | 3,5,6,7 |
| 8.  | After attending the lecture, student can explain the kinds of amino acids, and the classification base on character and the degree of complexity               | Protein       | Structure of protein and classification of protein                                    | 2x50 minutes | 4,8,9   |
| 9.  | After attending the lecture, student can explain about the digestion of protein correctly  | Protein       | Digestion of protein  | 2x50 minutes | 4,8,9   |
| 10. | After attending the lecture, student can explain about the protein metabolism  | Protein       | Protein metabolism  | 2x50 minutes | 4,8,9   |
| 11. | After attending the lecture, student can explain about the nucleate acid   | nucleate acid | The kinds of nucleate acid<br>Structure of nucleate acid<br>Function of nucleate acid | 2x50 minutes | 4,8,9   |
| 12. | After attending the lecture, student can explain about the lipid   | Lipid         | Structure of lipid<br>Classification of lipid   | 2x50 minutes | 4,8,9   |

|     |   |                |   |              |       |
|-----|---|----------------|---|--------------|-------|
| 13. | After attending the lecture, student can explain about the digestion and metabolism of lipid                          | Lipid          | Digestion of lipid<br>Metabolism of lipid   | 2x50 minutes | 4,8,9 |
| 14. | After attending the lecture, student can explain about the cholesterol ( structure, function, mechanism of formation) | Lipid          | Structure and kinds of cholesterol<br>Function of cholesterol<br>Mechanism of formation | 2x50 minutes | 4,8,9 |
| 15. | After attending the lecture, student can explain about the photosynthesis (light and dark reaction)                   | photosynthesis | light and dark reaction   | 2x50 minutes | 9     |

## SET OF TEACHING SCHEDULE

### A. OBJECT OF TEACHING SUBJECT

TEACHING SUBJECT : Basic of Biochemistry  
 TEACHING SUBJECT CODE / SCS : PTF 202 P / 3 (2-1) SCS  
 MEETING TIME : 2 x 50 minutes  
 MEETING : 1

### A. OBJECT

1. General Instructional Object : After following this lecture, student will be able to explain about basic structure and classification of carbohydrate correctly.
2. Specific Instructional Object : After attending the lecture, student can explain about the structure of monosaccharide, disaccharide, oligosaccharides, polysaccharides and able to explain the classification and nomenclature of carbohydrate.

B. MAIN SUBJECT : carbohydrate

C. SUB SUBJECT : Structure of carbohydrate  
 Classification of carbohydrate

### D. CLASS ACTIVITY:

| PHASE              | TEACHING ACTIVITY   | STUDENTS ACTIVITY                                     | TOOLS  |
|--------------------|---|---|--|
| Introduction       | Explain about the definition and characters of carbohydrate   | Pay attention<br>Write<br>Ask                         |  |
| Topic presentation | Explains about the basic structure of carbohydrate (monosaccharide, disaccharide, oligosaccharides, polysaccharides), nomenclature, classification, and explain the kinds of simple and complex of carbohydrate | Pay attention<br>Write<br>Ask<br>Answer the questions | OHP<br>Transparency<br>Hand out<br>White board<br>Exercise paper |
| Conclusions        | Make a conclusion and gives image of the next lecture   | pays attention  |  |

### E. EVALUATION

### F. REFERENCES

1. Girindra, A. 1986. Biokimia. PT Gramedia, Jakarta
2. Fennemma, O.R. 1986. Principles of Food Science. Marcel Dekker, Inc, New York.

## SET OF TEACHING SCHEDULE

### A. OBJECT OF TEACHING SUBJECT

TEACHING SUBJECT : Basic of Biochemistry  
 TEACHING SUBJECT CODE / SCS : PTF 202 P / 3 (2-1) SCS  
 MEETING TIME : 2 x 50 minutes  
 MEETING : 2

### B. OBJECT

1. General Instructional Object : After following this lecture, student will be able to explain about the digestion of carbohydrate correctly
2. Specific Instructional Object : After attending the lecture, student can explain about the digestion of carbohydrate by saliva amylase, pancreas amylase and intestine enzyme correctly.

B. MAIN SUBJECT : Carbohydrate

C. SUB SUBJECT : Digestion of carbohydrate

### D. CLASS ACTIVITY:

| PHASE              | TEACHING ACTIVITY   | STUDENTS ACTIVITY                                     | TOOLS  |
|--------------------|---|---|--|
| Introduction       | Explain about the definition of digestion and carbohydrate digestion  | Pay attention<br>Write<br>Ask                         |  |
| Topic presentation | Explains about the mechanism of digestion of complex carbohydrate in the digestive tracts by enzyme, the intermediate and main product of carbohydrate digestion and the mechanism and absorption of its in intestines.<br><br>Compare the simple and complex carbohydrate digestion. | Pay attention<br>Write<br>Ask<br>Answer the questions | OHP<br>Transparency<br>Hand out<br>White board<br>Exercise paper |
| Conclusions        | Make a conclusion and gives image of the next lecture   | pays attention  |  |

### E. EVALUATION

### F. REFERENCES

1. Eskin, N.A.M., H.M. Henderson dan R.J. Townsend. 1971. Biochemistry of Foods. Academic Press, New York.
2. Mayes, P. A. , D. K. Graner, V. W. Rodwel, dan D. W. Martin. 1987. Biokimia Harper. EGC, Jakarta (diterjemahkan oleh I. Darmawan)

## SET OF TEACHING SCHEDULE

### A. OBJECT OF TEACHING SUBJECT

TEACHING SUBJECT : Basic of Biochemistry  
 TEACHING SUBJECT CODE / SCS : PTF 202 P / 3 (2-1) SCS  
 MEETING TIME : 2 x 50 minutes  
 MEETING : 3

### C. OBJECT

1. General Instructional Object : After following this lecture, student will be able to explain the metabolism of carbohydrate correctly
2. Specific Instructional Object : After attending the lecture, student can explain the metabolism (catabolism and anabolism) correctly.

### B. MAIN SUBJECT

: Carbohydrate

### C. SUB SUBJECT

: Metabolism (catabolism and anabolism)

### D. CLASS ACTIVITY:

| PHASE              | TEACHING ACTIVITY  | STUDENTS ACTIVITY                                     | TOOLS  |
|--------------------|--|---|--|
| Introduction       | Explain about the definition of metabolism   | Pay attention<br>Write<br>Ask                         |  |
| Topic presentation | Explains about the catabolism of carbohydrate (glycolysis, glycogenolysis, Krebs cyclic) and anabolism (glycogenesis, glycogeneogenesis) in life cells.<br><br>Explain about differences of aerobic and anaerobic glycolysis, ATP/energy formation and give the example of utilization of its for food and feed treatment. | Pay attention<br>Write<br>Ask<br>Answer the questions | OHP<br>Transparency<br>Hand out<br>White board<br>Exercise paper |
| Conclusions        | Make a conclusion and gives image of the next lecture  | pays attention  |  |

### E. EVALUATION

:

### F. REFERENCES

1. Eskin, N.A.M., H.M. Henderson dan R.J. Townsend. 1971. Biochemistry of Foods. Academic Press, New York.
2. Mayes, P. A. , D. K. Graner, V. W. Rodwel, dan D. W. Martin. 1987. Biokimia Harper. EGC, Jakarta (diterjemahkan oleh I. Darmawan)

## SET OF TEACHING SCHEDULE

### A. OBJECT OF TEACHING SUBJECT

TEACHING SUBJECT : Basic of Biochemistry  
 TEACHING SUBJECT CODE / SCS : PTF 202 P / 3 (2-1) SCS  
 MEETING TIME : 2 x 50 minutes  
 MEETING : 4

### D. OBJECT

1. General Instructional Object : After following this lecture, student will be able to explain the structure and classification of enzyme correctly
2. Specific Instructional Object : After attending the lecture, student can explain the structure (units of enzyme) and classification (nomenclature and the kinds of enzyme)

B. MAIN SUBJECT : Enzyme  
 C. SUB SUBJECT : Structure and classification of enzyme

### D. CLASS ACTIVITY:

| PHASE              | TEACHING ACTIVITY   | STUDENTS ACTIVITY                                     | TOOLS  |
|--------------------|---|---|--|
| Introduction       | Explain about the definition of enzyme and the role of enzyme in metabolism   | Pay attention<br>Write<br>Ask                         |  |
| Topic presentation | Explain the structure (units of enzyme), classification (nomenclature and the kinds of enzyme), characteristic, and give the example of utilization | Pay attention<br>Write<br>Ask<br>Answer the questions | OHP<br>Transparency<br>Hand out<br>White board<br>Exercise paper |
| Conclusions        | Make a conclusion and gives image of the next lecture   | pays attention  |  |

### E. EVALUATION

### F. REFERENCES

1. Eskin, N.A.M., H.M. Henderson dan R.J. Townsend. 1971. Biochemistry of Foods. Academic Press, New York.
2. Winarno, F. G. 1983. Enzim Pangan. PT Gramedia, Jakarta.
3. Whitaker, J. R. 1972. Principle og Enzymologi for the Food Science. Marcel Dekker, Inc., New York.
4. Daulay, D. 1991. Fermentasi Keju. PAU Pangan dan Gizi. IPB, Bogor.

## SET OF TEACHING SCHEDULE

### A. OBJECT OF TEACHING SUBJECT

TEACHING SUBJECT : Basic of Biochemistry  
TEACHING SUBJECT CODE / SCS : PTF 202 P / 3 (2-1) SCS  
MEETING TIME : 2 x 50 minutes  
MEETING : 5

### E. OBJECT

1. General Instructional Object : After following this lecture, student will be able to explain the enzyme activity correctly
2. Specific Instructional Object : After attending the lecture, student can count the enzyme activity and the utilization

B. MAIN SUBJECT : Enzyme  
C. SUB SUBJECT : Enzyme activity

### D. CLASS ACTIVITY:

| PHASE              | TEACHING ACTIVITY   | STUDENTS ACTIVITY                                     | TOOLS  |
|--------------------|---|---|--|
| Introduction       | Explain about the definition of enzyme activity   | Pay attention<br>Write<br>Ask                         |  |
| Topic presentation | Explain the method of counting enzyme activity, cinematic curve, give the example and the utilization | Pay attention<br>Write<br>Ask<br>Answer the questions | OHP<br>Transparency<br>Hand out<br>White board<br>Exercise paper |
| Conclusions        | Make a conclusion and gives image of the next lecture   | pays attention  |  |

E. EVALUATION : Give the task to count the rennet enzyme activity

### F. REFERENCES

1. Eskin, N.A.M., H.M. Henderson dan R.J. Townsend. 1971. Biochemistry of Foods. Academic Press, New York.
2. Winarno, F. G. 1983. Enzim Pangan. PT Gramedia, Jakarta.
4. Whitaker, J. R. 1972. Principle og Enzymologi for the Food Science. Marcel Dekker, Inc., New York.
4. Daulay, D. 1991. Fermentasi Keju. PAU Pangan dan Gizi. IPB, Bogor.

## SET OF TEACHING SCHEDULE

### A. OBJECT OF TEACHING SUBJECT

TEACHING SUBJECT : Basic of Biochemistry  
 TEACHING SUBJECT CODE / SCS : PTF 202 P / 3 (2-1) SCS  
 MEETING TIME : 2 x 50 minutes  
 MEETING : 6

### F. OBJECT

1. General Instructional Object : After following this lecture, student will be able to explain about the factor that influence the enzyme activity and enzyme specification
2. Specific Instructional Object : After attending the lecture, student can explain the relation of enzyme activity and the factor that influence its, and enzyme specification as a bio catalyst

B. MAIN SUBJECT : Enzyme

C. SUB SUBJECT : Factors that influence enzyme activity  
 Enzyme spesification

### D. CLASS ACTIVITY:

| PHASE              | TEACHING ACTIVITY  | STUDENTS ACTIVITY                                    | TOOLS  |
|--------------------|--|--|--|
| Introduction       | Explain about the relation of enzyme and the factor that influence of its.   | Pay attention<br>Write<br>Ask                        |  |
| Topic presentation | Explain about factor that increase enzyme activity (substrate concentration, enzyme concentration, optimal temperature, activity curve) , and explain the factors that inhibit the enzyme activity ( temperature changing, denaturizing of protein or enzyme, asynchronies between enzyme and substrate and other factor)<br>Explain the mechanism of enzyme-substrate work and the product. | Pay attention<br>Write<br>Ask<br>Answer the quetions | OHP<br>Transparency<br>Hand out<br>White board<br>Exercise paper |
| Conclusions        | Explain the advantages of studying enzyme activity and gives image of the next lecture   | pays attention                                       |  |

E. EVALUATION : Give the task to count the rennet enzyme activity

### F. REFERENCES

1. Eskin, N.A.M., H.M. Henderson dan R.J. Townsend. 1971. Biochemistry of Foods. Academic Press, New York.
2. Winarno, F. G. 1983. Enzim Pangan. PT Gramedia, Jakarta.
5. Whitaker, J. R. 1972. Principle og Enzymologi for the Food Science. Marcel Dekker, Inc., New York.
4. Daulay, D. 1991. Fermentasi Keju. PAU Pangan dan Gizi. IPB, Bogor.

## SET OF TEACHING SCHEDULE

### A. OBJECT OF TEACHING SUBJECT

TEACHING SUBJECT : Basic of Biochemistry  
 TEACHING SUBJECT CODE / SCS : PTF 202 P / 3 (2-1) SCS  
 MEETING TIME : 2 x 50 minutes  
 MEETING : 7

### G. OBJECT

1. General Instructional Object : After following this lecture, student will be able to explain about the application of enzyme for industry
2. Specific Instructional Object : After attending the lecture, student can explain the application of enzyme in food industry, feed, chemical and medicine

### B. MAIN SUBJECT

: Enzyme

### C. SUB SUBJECT

: Factors that influence enzyme activity  
 Enzyme spesification

### D. CLASS ACTIVITY:

| PHASE              | TEACHING ACTIVITY  | STUDENTS ACTIVITY                                    | TOOLS  |
|--------------------|--|--|--|
| Introduction       | Explain about the relation of enzyme and the factor that influence of its.   | Pay attention<br>Write<br>Ask                        |  |
| Topic presentation | Explain about factor that increase enzyme activity (substrate concentration, enzyme concentration, optimal temperature, activity curve) , and explain the factors that inhibit the enzyme activity ( temperature changing, denaturizing of protein or enzyme, asynchronies between enzyme and substrate and other factor)<br>Explain the mechanism of enzyme-substrate work and the product. | Pay attention<br>Write<br>Ask<br>Answer the quetions | OHP<br>Transparency<br>Hand out<br>White board<br>Exercise paper |
| Conclusions        | Explain the advantages of studying enzyme activity and gives image of the next lecture   | pays attention                                       |  |

### E. EVALUATION

: Give the task to count the rennet enzyme activity

### F. REFERENCES

1. Eskin, N.A.M., H.M. Henderson dan R.J. Townsend. 1971. Biochemistry of Foods. Academic Press, New York.
2. Winarno, F. G. 1983. Enzim Pangan. PT Gramedia, Jakarta.
6. Whitaker, J. R. 1972. Principle og Enzymologi for the Food Science. Marcel Dekker, Inc., New York.
4. Daulay, D. 1991. Fermentasi Keju. PAU Pangan dan Gizi. IPB, Bogor.

## SET OF TEACHING SCHEDULE

### A. OBJECT OF TEACHING SUBJECT

TEACHING SUBJECT : Basic of Biochemistry  
TEACHING SUBJECT CODE / SCS : PTF 202 P / 3 (2-1) SCS  
MEETING TIME : 1 x 50 minutes  
MEETING : 8

### H. OBJECT

1. General Instructional Object : After following this lecture, student will be able to explain about the application of enzyme for industry
2. Specific Instructional Object : Mid-Examination

B. MAIN SUBJECT : Presentation 1<sup>st</sup> until 7<sup>th</sup>

C. SUB SUBJECT :

### D. CLASS ACTIVITY:

| PHASE              | TEACHING ACTIVITY | STUDENTS ACTIVITY | TOOLS |
|--------------------|-------------------|-------------------|-------|
| Introduction       |                   |                   |       |
| Topic presentation |                   |                   |       |
| Conclusions        |                   |                   |       |

E. EVALUATION :

F. REFERENCES

## SET OF TEACHING SCHEDULE

### A. OBJECT OF TEACHING SUBJECT

TEACHING SUBJECT : Basic of Biochemistry  
TEACHING SUBJECT CODE / SCS : PTF 202 P / 3 (2-1) SCS  
MEETING TIME : 2 x 50 minutes  
MEETING : 9

### I. OBJECT

1. General Instructional Object : After following this lecture, student will be able to explain about protein
2. Specific Instructional Object : After attending the lecture, student can explain the kinds of amino acids, and the classification base on character and the degree of complexity.

B. MAIN SUBJECT : Protein

C. SUB SUBJECT : Structure of protein and classification of protein

### D. CLASS ACTIVITY:

| PHASE              | TEACHING ACTIVITY  | STUDENTS ACTIVITY                                    | TOOLS  |
|--------------------|--|--|--|
| Introduction       | Explain about the definition of protein  | Pay attention<br>Write<br>Ask                        |  |
| Topic presentation | Explain the kinds of amino acids, and the classification base on character and the degree of complexity. | Pay attention<br>Write<br>Ask<br>Answer the quetions | OHP<br>Transparency<br>Hand out<br>White board<br>Exercise paper |
| Conclusions        | Explain the the relation of amino acid and protein   | pays attention                                       |  |

E. EVALUATION : Give the task to count the rennet enzyme activity

### F. REFERENCES

1. Mayes, P. A., D.K. Granner, V.W. Rodwel, dan D.A. Martin. 1987. Biokimia "Harper". EGC Jakarta (diterjemahkan: oleh I. Darmawan)
2. Thenawijaya, M. 1989. Dasar-dasar Biokimia. PAU Ilmu Hayati. IPB, Bogor
3. Lehninger, M. 1992. Dasar-dasar Biokimia. PT Gramedia, Jakarta (diterjemahkan oleh M. Thenawijaya).

## SET OF TEACHING SCHEDULE

### A. OBJECT OF TEACHING SUBJECT

TEACHING SUBJECT : Basic of Biochemistry  
TEACHING SUBJECT CODE / SCS : PTF 202 P / 3 (2-1) SCS  
MEETING TIME : 2 x 50 minutes  
MEETING : 10

### J. OBJECT

1. General Instructional Object : After following this lecture, student will be able to explain about protein
2. Specific Instructional Object : After attending the lecture, student can explain about the digestion of protein correctly

B. MAIN SUBJECT : Protein

C. SUB SUBJECT : Digestion of protein

### D. CLASS ACTIVITY:

| PHASE              | TEACHING ACTIVITY  | STUDENTS ACTIVITY                                     | TOOLS  |
|--------------------|--|---|--|
| Introduction       | Explain about the basic principle digestion of protein and the product | Pay attention<br>Write<br>Ask                         |  |
| Topic presentation | Explain about the mechanism of protein digestion in digestive tract    | Pay attention<br>Write<br>Ask<br>Answer the questions | OHP<br>Transparency<br>Hand out<br>White board<br>Exercise paper |
| Conclusions        | Explain the the relation of amino acid and protein                     | pays attention  |  |

E. EVALUATION : Give the task to count the rennet enzyme activity

### F. REFERENCES

1. Mayes, P. A., D.K. Granner, V.W. Rodwel, dan D.A. Martin. 1987. Biokimia "Harper". EGC Jakarta (diterjemahkan oleh I. Darmawan)
2. Thenawijaya, M. 1989. Dasar-dasar Biokimia. PAU Ilmu Hayati. IPB, Bogor
3. Lehninger, M. 1992. Dasar-dasar Biokimia. PT Gramedia, Jakarta (diterjemahkan oleh M. Thenawijaya).

## SET OF TEACHING SCHEDULE

### A. OBJECT OF TEACHING SUBJECT

TEACHING SUBJECT : Basic of Biochemistry  
 TEACHING SUBJECT CODE / SCS : PTF 202 P / 3 (2-1) SCS  
 MEETING TIME : 2 x 50 minutes  
 MEETING : 11

### K. OBJECT

1. General Instructional Object : After following this lecture, student will be able to explain about protein
2. Specific Instructional Object : After attending the lecture, student can explain about the protein metabolism

B. MAIN SUBJECT : Protein

C. SUB SUBJECT : Protein metabolism

### D. CLASS ACTIVITY:

| PHASE              | TEACHING ACTIVITY  | STUDENTS ACTIVITY                                     | TOOLS  |
|--------------------|--|---|--|
| Introduction       | Explain about the basic principle digestion of protein and the product | Pay attention<br>Write<br>Ask                         |  |
| Topic presentation | Explain about the protein metabolism                                   | Pay attention<br>Write<br>Ask<br>Answer the questions | OHP<br>Transparency<br>Hand out<br>White board<br>Exercise paper |
| Conclusions        | Explain the advantages study protein metabolism                        | pays attention  |  |

E. EVALUATION : Give the task to count the rennet enzyme activity

### F. REFERENCES

1. Mayes, P. A., D.K. Granner, V.W. Rodwel, dan D.A. Martin. 1987. Biokimia "Harper". EGC Jakarta (diterjemahkan oleh I. Darmawan)
2. Thenawijaya, M. 1989. Dasar-dasar Biokimia. PAU Ilmu Hayati. IPB, Bogor
3. Lehninger, M. 1992. Dasar-dasar Biokimia. PT Gramedia, Jakarta (diterjemahkan oleh M. Thenawijaya).

## SET OF TEACHING SCHEDULE

### A. OBJECT OF TEACHING SUBJECT

TEACHING SUBJECT : Basic of Biochemistry  
TEACHING SUBJECT CODE / SCS : PTF 202 P / 3 (2-1) SCS  
MEETING TIME : 2 x 50 minutes  
MEETING : 12

### L. OBJECT

1. General Instructional Object : After following this lecture, student will be able to explain about the application of enzyme for industry

2. Specific Instructional Object : After attending the lecture, student can explain about the nucleate acid

B. MAIN SUBJECT : nucleate acid

C. SUB SUBJECT : The kinds of nucleate acid  
Structure of nucleate acid  
Function of nucleate acid

### D. CLASS ACTIVITY:

| PHASE              | TEACHING ACTIVITY  | STUDENTS ACTIVITY                                     | TOOLS  |
|--------------------|--|---|--|
| Introduction       | Explain about the definition of nucleate acid and position in body                                       | Pay attention<br>Write<br>Ask                         |  |
| Topic presentation | Explain about :<br>The kinds of nucleate acid<br>Structure of nucleate acid<br>Function of nucleate acid | Pay attention<br>Write<br>Ask<br>Answer the questions | OHP<br>Transparency<br>Hand out<br>White board<br>Exercise paper |
| Conclusions        | Resume the lecture   | pays attention  |  |

E. EVALUATION : Give the task to count the rennet enzyme activity

### F. REFERENCES

1. Mayes, P. A., D.K. Granner, V.W. Rodwel, dan D.A. Martin. 1987. Biokimia "Harper". EGC Jakarta (diterjemahkan oleh I. Darmawan)
2. Thenawijaya, M. 1989. Dasar-dasar Biokimia. PAU Ilmu Hayati. IPB, Bogor
3. Lehninger, M. 1992. Dasar-dasar Biokimia. PT Gramedia, Jakarta (diterjemahkan oleh M. Thenawijaya).

## SET OF TEACHING SCHEDULE

### A. OBJECT OF TEACHING SUBJECT

TEACHING SUBJECT : Basic of Biochemistry  
TEACHING SUBJECT CODE / SCS : PTF 202 P / 3 (2-1) SCS  
MEETING TIME : 2 x 50 minutes  
MEETING : 13

### M. OBJECT

1. General Instructional Object : After following this lecture, student will be able to explain about the application of enzyme for industry

2. Specific Instructional Object : After attending the lecture, student can explain about the lipid

B. MAIN SUBJECT : Lipid

C. SUB SUBJECT : Structure of lipid  
Classification of lipid

### D. CLASS ACTIVITY:

| PHASE              | TEACHING ACTIVITY  | STUDENTS ACTIVITY                                     | TOOLS  |
|--------------------|--|---|--|
| Introduction       | Explain about the definition of lipid                            | Pay attention<br>Write<br>Ask                         |  |
| Topic presentation | Explain about :<br>Structure of lipid<br>Classification of lipid | Pay attention<br>Write<br>Ask<br>Answer the questions | OHP<br>Transparency<br>Hand out<br>White board<br>Exercise paper |
| Conclusions        | Resume the lecture   | pays attention  |  |

E. EVALUATION : Give the task to count the rennet enzyme activity

### F. REFERENCES

1. Mayes, P. A., D.K. Granner, V.W. Rodwel, dan D.A. Martin. 1987. Biokimia "Harper". EGC Jakarta (diterjemahkan oleh I. Darmawan)
2. Thenawijaya, M. 1989. Dasar-dasar Biokimia. PAU Ilmu Hayati. IPB, Bogor
3. Lehninger, M. 1992. Dasar-dasar Biokimia. PT Gramedia, Jakarta (diterjemahkan oleh M. Thenawijaya).

## SET OF TEACHING SCHEDULE

### A. OBJECT OF TEACHING SUBJECT

TEACHING SUBJECT : Basic of Biochemistry  
TEACHING SUBJECT CODE / SCS : PTF 202 P / 3 (2-1) SCS  
MEETING TIME : 2 x 50 minutes  
MEETING : 14

### N. OBJECT

1. General Instructional Object : After following this lecture, student will be able to explain about the lipid
2. Specific Instructional Object : After attending the lecture, student can explain about the digestion and metabolism of lipid

B. MAIN SUBJECT : Lipid

C. SUB SUBJECT : Digestion of lipid  
Metabolism of lipid

### D. CLASS ACTIVITY:

| PHASE              | TEACHING ACTIVITY  | STUDENTS ACTIVITY                                     | TOOLS  |
|--------------------|--|---|--|
| Introduction       | Explain about the digestion of lipid and metabolism          | Pay attention<br>Write<br>Ask                         |  |
| Topic presentation | Explain about :<br>Digestion of lipid<br>Metabolism of lipid | Pay attention<br>Write<br>Ask<br>Answer the questions | OHP<br>Transparency<br>Hand out<br>White board<br>Exercise paper |
| Conclusions        | Resume the lecture   | pays attention  |  |

E. EVALUATION : Give the task to count the rennet enzyme activity

### F. REFERENCES

1. Mayes, P. A., D.K. Granner, V.W. Rodwel, dan D.A. Martin. 1987. Biokimia "Harper". EGC Jakarta (diterjemahkan oleh I. Darmawan)
2. Thenawijaya, M. 1989. Dasar-dasar Biokimia. PAU Ilmu Hayati. IPB, Bogor
3. Lehninger, M. 1992. Dasar-dasar Biokimia. PT Gramedia, Jakarta (diterjemahkan oleh M. Thenawijaya).

## SET OF TEACHING SCHEDULE

### A. OBJECT OF TEACHING SUBJECT

TEACHING SUBJECT : Basic of Biochemistry  
TEACHING SUBJECT CODE / SCS : PTF 202 P / 3 (2-1) SCS  
MEETING TIME : 2 x 50 minutes  
MEETING : 15

### O. OBJECT

1. General Instructional Object : After following this lecture, student will be able to explain about the cholesterol
2. Specific Instructional Object : After attending the lecture, student can explain about the cholesterol ( structure, function, mechanism of formation)

### B. MAIN SUBJECT

: Lipid

### C. SUB SUBJECT

: Structure and kinds of cholesterol  
Function of cholesterol  
Mechanism of formation

### D. CLASS ACTIVITY:

| PHASE              | TEACHING ACTIVITY  | STUDENTS ACTIVITY                                     | TCOLS  |
|--------------------|--|---|--|
| Introduction       | Explain about the digestion of cholesterol   | Pay attention<br>Write<br>Ask                         |  |
| Topic presentation | Explain about<br>Structure and kinds of cholesterol<br>Function of cholesterol<br>Mechanism of formation | Pay attention<br>Write<br>Ask<br>Answer the questions | OHP<br>Transparency<br>Hand out<br>White board<br>Exercise paper |
| Conclusions        | Resume the lecture   | pays attention  |  |

### E. EVALUATION

: Give the task to count the rennet enzyme activity

### F. REFERENCES

1. Mayes, P. A., D.K. Granner, V.W. Rodwel, dan D.A. Martin. 1987. Biokimia "Harper". EGC Jakarta (diterjemahkan oleh I. Darmawan)
2. Thenawijaya, M. 1989. Dasar-dasar Biokimia. PAU Ilmu Hayati. IPB, Bogor
3. Lehninger, M. 1992. Dasar-dasar Biokimia. PT Gramedia, Jakarta (diterjemahkan oleh M. Thenawijaya).

## SET OF TEACHING SCHEDULE

### A. OBJECT OF TEACHING SUBJECT

TEACHING SUBJECT : Basic of Biochemistry  
TEACHING SUBJECT CODE / SCS : PTF 202 P / 3 (2-1) SCS  
MEETING TIME : 2 x 50 minutes  
MEETING : 16

### P. OBJECT

1. General Instructional Object : After following this lecture, student will be able to explain about the photosynthesis
2. Specific Instructional Object : After attending the lecture, student can explain about the photosynthesis (light and dark reaction)

B. MAIN SUBJECT : photosynthesis

C. SUB SUBJECT : light and dark reaction

### D. CLASS ACTIVITY:

| PHASE              | TEACHING ACTIVITY  | STUDENTS ACTIVITY                                     | TOOLS  |
|--------------------|--|---|--|
| Introduction       | Explain about the digestion of light and dark reaction     | Pay attention<br>Write<br>Ask                         |  |
| Topic presentation | Explain about light and dark reaction and give the example | Pay attention<br>Write<br>Ask<br>Answer the questions | OHP<br>Transparency<br>Hand out<br>White board<br>Exercise paper |
| Conclusions        | Resume the lecture   | pays attention  |  |

E. EVALUATION : Give the task to count the rennet enzyme activity

### F. REFERENCES

Thenawijaya, M. 1989. Dasar-dasar Biokimia. PAU Ilmu Hayati. IPB, Bogor.

COURSE : Animal Product Knowlwdge

COURSE CODE :

CREDIT :

## SET OF TEACHING INSTRUCTION

Name of Course : **Animal Product Knowledge**  
Course Code :  
SKS : 3 sks  
Meeting Time : 100 minute  
Meeting Number : 1

### A. Target

1. Course Main Goal: After following this course student able to explain and analyses about basic animal product knowledge i.e. physical, chemical, and physicochemical and also do the quality measurement animal product and animal by product.
2. Course Specific Goal : Able to explain relationship between this course and others of eye and also its application in animal product processing.

### B. Main Subject: Introduction

- C. Sub Subject: - Relation with the other course  
- Application of this course.  
- Course role

### D. Teaching activity :

| Teaching Step | Teacher Activity                                | Student Activity                      | Teaching Media    |
|---------------|---|---------------------------------------|-------------------|
| Introductions | Introduction, Course Information                | Note down,<br>Listening,<br>Discusion | OHP<br>Blackboard |
| Presentation  | Explaining relationship this course with others | Note down,<br>Listening,<br>Discusion | OHP<br>Blackboard |
| Conclusion    | Giving substance for the next meeting           | Discusion                             | Blackboard        |

### E. Evaluation : Quiz

### F. References :

1. Hadiwiyoto.S. 1983. Hasil hasil Olahan Susu, Ikan, Daging dan Telur. Liberti. Yogyakarta
2. Stadelman dan Cotterill. 1994. Egg science and Technology

## SET OF TEACHING INSTRUCTION

Name of Course : **Animal Product Knowledge**  
 Course Code :  
 SKS : 3 sks  
 Meeting Time : 100 minute  
 Meeting Number : II

**A. Target**

1. Course Main Goal: After following this course student able to explain and analyses about basic animal product knowledge i.e. physical, chemical, and physicochemical and also do the quality measurement animal product and animal by product.
2. Course Specific Goal : Able to explain relationship between this course and others of eye and also its application in animal product processing.

**B. Main Subject: Introduction**

- C. Sub Subject:** - Eggs physical properties  
 - Eggs chemical properties  
 - Eggs microbial properties

**D. Teaching activity:**

| Teaching Step | Teacher Activity  | Student Activity                | Teaching Media     |
|---------------|---|---------------------------------|--------------------|
| Introductions | Explaining about hatching eggs and consuming eggs.  | Note down, Listening, Discusion | OHP<br>Black board |
| Presentation  | Explaining physical eggs properties<br>Explaining chemical eggs properties<br>Explaining microbiology eggs properties | Note down, Listening, Discusion | OHP<br>Black board |
| Conclusion    | Commenting and concluding result of discussion.<br>Giving substance for the next meeting                              | Discusion                       | Black board        |

**E. Evaluation : Quiz**

**F. References :**

1. Hadiwiyoto.S. 1983. Hasil hasil Olahan Susu, Ikan, Daging dan Telur. Liberti. Yogyakarta
2. Stadelman dan Cotterill. 1994. Egg science and Technology
3. National and international journal

## SET OF TEACHING INSTRUCTION

Name of Course : **Animal Product Knowledge**

Course Code :

SKS : 3 sks

Meeting Time : 100 minute

Meeting Number : III

### A. Target

1. Course Main Goal: After following this course student able to explain and analyses about basic animal product knowledge i.e. physical, chemical, and physicochemical and also do the quality measurement animal product and animal by product.

2. Course Specific Goal : Able to explain relationship between this course and others of eye and also its application in animal product processing.

B. Main Subject: Introduction Eggs Technology

C. Sub Subject: Quality standard, Test Quality

D. Teaching activity:

| Teaching Step | Teacher Activity   | Student Activity                      | Teaching Media     |
|---------------|--|---------------------------------------|--------------------|
| Introductions | Explaining quality standard  | Note down,<br>Listening,<br>Discusion | OHP<br>Black board |
| Presentation  | Explaining eggs quality measurement method   | Note down,<br>Listening,<br>Discusion | OHP<br>Black board |
| Conclusion    | Commenting and concluding result of discussion.<br>Giving substance for the next meeting | Discusion                             | Black board        |

E. Evaluation ; Quiz

F. References:

1. Hadiyono.S. 1983. Hasil hasil Olahan Susu, Ikan, Daging dan Telur. Liberty. Yogyakarta
2. Stadelman dan Cotterill. 1994. Egg science and Technology
3. National and international Journal.

COURSE : Processing of Animal Product

COURSE CODE :

CREDIT : 2 (1-1)

## SESSION UNITY OF LEARNING

Subject : Processing of Animal Product

code of subject :-

SKS : 2 (1-1)

Time of session : 100 minutes

Session : I

### A. object

1. TIU : By following this session, students can know principles of subject, related to others subject, contract of lecturer and students, method of study and evaluation.

2. TIK :

- a. Students can say principles of subject.
- b. Students can make structure of relation inter subject related to this subject.
- c. Students can know description of lecture contract until one semester.
- d. Students can say tution method and evaluation of this subject.

B. Principal of subject : Introduction

C. Sub subject :

- Description of subject
- Relation inter subject
- Lecture contract
- Tution method and evaluation

D. Education activity :

| Stage        | Lecturer activity  | Students activity   | Tool and media of education |
|--------------|--|---------------------|-----------------------------|
| introduction | to expalin all of matter will give at this session.  | To attent and write | OHP and white board         |
|              | To Introduce the lecturer of this subject.   | To attent and write | OHP and white board         |
| Naration     | To explain background of this subject why give at this study programme<br>To explain description of this subject | To attent and write | OHP and white board         |

|          |  |  |  |
|----------|--|--|--|
|          | <p>subject</p> <p>To Give actual examples</p> <p>To make structure of relation inter subject</p> <p>To expalin lecture contract of this subject</p> <p>To expalin of method education</p> <p>To make small group discussion (5-7 students/group)</p> | <p>To do making permanent group based on lecturer instruction.</p> |  |
| Inclosed | <p>To ask anything that need clarification or explanation to much more detail.</p> <p>To ask many things for actual examples to 2-3 students</p> <p>To Give review about sub subject were discussed at this session</p>                              | <p>To ask</p> <p>To answer</p> <p>To attent and write</p>          |  |

**E. Evaluation**

:

This session was tended to students can know all of the matters that will be given at this subject for one semester full.

## SESSION UNITY OF LEARNING

Subject : Processing of Animal Product  
 code of subject : -  
 SKS : 2 (1-1)  
 Time of session : 100 minutes  
 Session : II

### A. Object

1. TUU : After following this session, students can explain principles of meat processing, meat preservation and variety of meat product.
2. TIK :
  - a. Students can say variety meat products
  - b. Students can explain object and principles of meat processing.

**B. Principal of Subject** : Technology of meat Processing

**C. Sub Subject** :

- Principle and object
- Variety of meat products

**D. Learning activity** :

| stage        | Lecturer activity  | Student activity   | Media and tool of learning |
|--------------|--|--|----------------------------|
| Introduction | To Explain all of matters at this session.   | To attent and write  | OHP and white board        |
| Naration     | To explain principle and object of meat processing To explain their aplications included variety of meat products.   | To attent and write  | OHP and white board        |
| In closing   | To ask many problems and give clarifications<br>To give duty about another product that it has the same principle processing.<br>Review and discuss about matters at this session. | To ask<br><br>To attent and write<br><br>To attent and write |                            |

### **E. Evaluation**

:

This session tended to make students can explain principle and object of meats processing included their applications. Example ; dendeng, abon, petis, meat ball ect.

### **F. Literatures**

:

1. Buckle, K.A., Edwards, R.A., Fleet, G.H. and Wooton, M. 1978. Food Science. Watson Ferguson and Co., Brisbane.
2. Hadiwiyoto, S. 1983. Hasil-hasil Olahan Susu, ikan, Daging, Telur. Liberti, Yogyakarta.
3. Hadiwiyoto, S. 1994. Teori dan Pengujian Mutu
4. Lawrie, R.A. 1995. Meat Science. (diterjemahkan oleh Parakkasi A. dan Y. Amwila- Ilmu Daging, UI Press Jakarta

## SESSION UNITY OF LEARNING

Subject : Processing of Animal Product  
 code of subject : -  
 SKS : 2 (1-1)  
 Time of session : 100 minutes  
 Session : III

### A. Object

1. TIU : After following this session, students can do and explain principles of meat processing
2. TIK :
  - a. Students can do handling and processing of meat products..
  - b. Students can identify quality of meats products according to SNI

**B. Principal of subject** : Technology of meat processing

**C. Sub subject** : Handling of fresh meat  
 Procedures of meat processing (abon, kyuring, dendeng, meat ball, exct )

### D. Learning Activity :

| stage        | Lecturer activity  | Student activity                  | Media and tool of learning |
|--------------|--|-----------------------------------|----------------------------|
| Introduction | To Explain all of matters at this session.   | To attent and write               | OHP and white board        |
| Naration     | To explain procedures of fresh meat handling (cooling and freezing)<br>To explain Procedures of meat processing (abon, bakso, dendeng exct)<br>To disccus about standardization of meat products quality | To attent and write               | OHP and white board        |
| In closing   | To give clarification or detail informations<br>Review all of matters at this session.   | To ask<br><br>To attent and write |                            |

### **E. Evaluation**

:

This session tended to make students can do principles of meats processing. Example ; dendeng, abon, petis, meat ball ect.

### **F. Literatures :**

1. Buckle, K.A., Edwards, R.A., Fleet, G.H. and Wooton, M. 1978. Food Science. Watson Ferguson and Co., Brisbane.
2. Hadiwiyoto, S. 1983. Hasil-hasil Olahan Susu, ikan, Daging, Telur. Liberty, Yogyakarta.
3. Hadiwiyoto, S. 1994. Teori dan Pengujian Mutu
4. Lawrie, R.A. 1995. Meat Science. (diterjemahkan oleh Parakkasi A. dan Y. Amwila- Ilmu Daging, UI Press Jakarta

## SESSION UNITY OF LEARNING

Subject : Processing of Animal Product  
 code of subject : -  
 SKS : 2 (1-1)  
 Time of session : 100 minutes  
 Session : IV

### A. Object

1. TIU : After following this session, students can explain and do principles of milk processing..
2. TIK :
  - a. Students can say principles of milk processing.
  - b. Students can explain applications of the principles to milk products.

**B. Principal of subject** : Technology of milk Processing

**C. Sub subject** :

- Principles and object
- Variety of milk products

**D. Learning activity** :

| stage        | Lecturer activity   | Student activity                  | Media and tool of learning |
|--------------|---|-----------------------------------|----------------------------|
| Introduction | To Explain all of matters at this session..   | To attend and write               | OHP and white board        |
| Naration     | To explain Principles and object of milk processing<br>To explain variety of milk products. | To attend and write               | OHP and white board        |
| In closing   | To give clarification or detail informations<br>Review all of matters at this session.      | To ask<br><br>To attend and write |                            |

**E. Evaluation :**

This session tended to make students can explain principles and object of milk processing, and their applications to some milk products.

**F. Literatures :**

1. Adnan, M. 1984. Kimia dan Teknologi Pengolahan Air Susu. Andi Offset Yogyakarta.
2. Arbuckle, M. 1966. Ice Cream. Avi Publ. Co., Westport, Connecticut.
3. Berg, Van den. 1988. Dairy Technology in the Tropics and Subtropics. Pudoc, Wageningen.
4. Buckle, LA, RA Edward, GH Fleet dan M Wootton. 1985. Ilmu Pangan. Universitas Indonesia, Jakarta. (Diterjemahkan oleh Purnomo dan Adiyono).
5. Hadiwiyoto, S. 1983. Hasil-hasil Olahan Susu, Ikan, Daging, Telur. Penerbit Liberti, Yogyakarta.
6. Hadiwiyoto, S. 1994. Teori dan Prosedur Pengujian Mutu Susu dan Hasil Olahannya. Penerbit Liberti, Yogyakarta.
7. Robinson, RK. 1986. Modern Dairy Technology. Vol I & II. Elsevier Applied Sci. Publ. London, New York.
8. Soeparno. 1992. Prinsip Kimia dan Teknologi Susu. PAU Pangan dan Gizi UGM, Yogyakarta.

## SESSION UNITY OF LEARNING

Subject : Processing of Animal Product  
 code of subject : -  
 SKS : 2 (1-1)  
 Time of session : 100 minutes  
 Session : V

### A. Object

1. TIU : After following this session, students can explain and do principles of milk processing..
2. TIK :
  - a. Student can do handling and processing of milk.
  - b. Students can identify quality of milk product according to SNI .

**B. Principal of Subject** : Technology of milk Processing

**C. Sub Subject** : Handling of fresh milk  
 Procedures of milk processing ( pasteurized milk, UHT, yogurt, kefir, butter, ice cream, chesse ect.)  
 Quality of milk products.

### D. Learning Activity :

| stage        | Lecturer activity   | Student activity                  | Media and tool of learning |
|--------------|---|-----------------------------------|----------------------------|
| Introduction | To Explain all of matters at this session.  | To attent and write               | OHP and white board        |
| Naration     | To explain procedures of fresh milk handling<br>To explain Procedures of milk processing<br>To disccus about standardization of milk products quality | To attent and write               | OHP and white board        |
| In closing   | To give clarification or detail informations<br>Review all of matters at this session.  | To ask<br><br>To attent and write |                            |

### **E. Evaluation**

:

This session tended to make students can do principles of milk processing.

### **F. Literatures**

:

1. Adnan, M. 1984. Kimia dan Teknologi Pengolahan Air Susu. Andi Offset Yogyakarta.
2. Arbuckle, M. 1966. Ice Cream. Avi Publ. Co., Westport, Connecticut.
3. Berg. Van den. 1988. Dairy Technology in the Tropics and Subtropics. Pudoc, Wageningen.
3. Buckle, LA, RA Edward, GH Fleet dan M Wootton. 1985. Ilmu Pangan. Universitas Indonesia, Jakarta. (Diterjemahkan oleh Purnomo dan Adiyono).
4. Hadiwijoto, S. 1983. Hasil-hasil Olahan Susu, Ikan, Daging, Telur. Penerbit Liberti, Yogyakarta.
5. Hadiwijoto, S. 1994. Teori dan Prosedur Pengujian Mutu Susu dan Hasil Olahannya. Penerbit Liberti, Yogyakarta.
6. Robinson, RK. 1986. Modern Dairy Technology. Vol I & II. Elsevier Applied Sci. Publ. London, New York.
7. Soeparno. 1992. Prinsip Kimia dan Teknologi Susu. PAU Pangan dan Gizi UGM, Yogyakarta.

## SESSION UNITY OF LEARNING

Subject : Processing of Animal Product  
code of subject : -  
SKS : 2 (1-1)  
Time of session : 100 minutes  
Session : VI

### A. object

1. TIU :-
2. TIK :-

B. Principal of subject : Midterm test

C. Sub of subject :

D. Learning activity :

## SESSION UNITY OF LEARNING

Subject : Processing of Animal Product  
 code of subject : -  
 SKS : 2 (1-1)  
 Time of session : 100 minutes  
 Session : VII

### A. Object

1. TIU : After following this session, students can explain and do principles of egg handling and processing.
2. TIK :
  - c. Students can say principles of egg processing
  - d. Students can explain their applications to egg products.

B. Principal of subject : Technology of egg processing

- C. Sub subject :
- Principles and object
  - Variety of egg products

### D. Learning activity :

| stage        | Lecturer activity   | Student activity                  | Media and tool of learning |
|--------------|---|-----------------------------------|----------------------------|
| Introduction | To Explain all of matters at this session..   | To attend and write               | OHP and white board        |
| Naration     | To explain Principles and object of egg processing<br>To explain variety of egg products. | To attend and write               | OHP and white board        |
| In closing   | To give clarification or detail informations<br>Review all of matters at this session.    | To ask<br><br>To attend and write |                            |

**E. Evaluation :**

This session tended to make students can explain principles and object of egg processing and their applications to some egg products.

**F. Literatures :**

1. Card, C. E. dan M.C. Nesheim. 1973. Poultry Production. Lea and Febiger. Philadelphia.
2. Or, H.L dan D.A. Fletcher. 1973. Eggs and Egg Products. Canada Department of Agriculture, Canada.
3. Sarwono, B., B.A. Murtidjo dan A. Daryanto. 1986. Telur, Pengawetan dan Manfaatnya. Penebar Swadaya, Jakarta.
4. Romanoff, H.A.L dan A.J. Romanoff. 1963. The Avian Egg. John Wiley and Sons, Inc. New York.
5. Stadelman. WJ. dan OJ. Catterill. 1977. Egg Science and Technology. Avi Publ. Co., Connecticut.

## SESSION UNITY OF LEARNING

Subject : Processing of Animal Product  
 code of subject : -  
 SKS : 2 (1-1)  
 Time of session : 100 minutes  
 Session : VIII

### A. Object

1. TIU : After following this session, students can explain and do principles of egg processing.

2. TIK :

a. Student can do handling and processing of egg.

b. Student can identify quality of egg according to SNI and USDA.

**B. Principal of subject** : Technology of egg processing. S

**C. Sub Pokok Bahasan** : Egg handling

Procedures of egg processing (salty egg, pindang, egg powder, pitan or century egg ect )

Egg quality (SNI, USDA)

### G. Learning Activity :

| stage        | Lecturer activity  | Student activity                  | Media and tool of learning |
|--------------|--|-----------------------------------|----------------------------|
| Introduction | To Explain all of matters at this session.   | To attent and write               | OHP and whiteboard         |
| Naration     | To explain procedures of egg handling<br>To explain Procedures of egg processing<br>To disccus about standardization of egg products quality | To attent and write               | OHP and whiteboard         |
| In closing   | To give clarification or detail informations<br>Review all of matters at this session.   | To ask<br><br>To attent and write |                            |

**E. Evaluation :**

This session tended to make students can do principles of egg handling and processing

**F. Literatures :**

1. Card, C. E. dan M.C. Nesheim. 1973. Poultry Production. Lea and Fabiqes. Piladelphia.
2. Or, H.L dan D.A. Fletcher. 1973. Eggs and Egg Products. Canada Department of Agriculture, Canada.
3. Sarwono, B., B.A. Murtidjo dan A. Daryanto. 1986. Telur, Pengawetan dan Manfaatnya. Penebar Swadaya, Jakarta.
4. Romanoff, H.A.L dan A.J. Romanoff. 1963. The Avian Egg. Jhon Willey and Sons, Inc. New York.
5. Stadelman. WJ. dan OJ. Catterill. 1977. Egg Science and Technology. Avi Publ. Co., Connecticut.

## SESSION UNITY OF LEARNING

Subject : Processing of Animal Product  
 code of subject : -  
 SKS : 2 (1-1)  
 Time of session : 100 minutes  
 Session : IX

### A. Object

1. TIU : After following this session, student can explain and do principles of animal by product handling and processing.

2. TIK :

- a. Students can do handling and processing of animal by products.
- b. Students can identify quality of animal by products.

**B. Principal of Subject** : Technology of animal by product

**C. Sub subject** : Handling of animal by product  
 Procedures of animal by product processing (bone meal, gelatine, ect.)  
 Quality of animal by product (SNI)

**D. Learning activity** :

| stage        | Lecturer activity   | Student activity                  | Media and tool of learning |
|--------------|---|-----------------------------------|----------------------------|
| Introduction | To Explain all of matters at this session.  | To attent and write               | OHP and whiteboard         |
| Naration     | To explain procedures of animal by product handling<br>To explain Procedures of animal by product processing<br>To disccus about standardization of animal by product quality | To attent and write               | OHP and whiteboard         |
| In closing   | To give clarification or detail informations<br>Review all of matters at this session.  | To ask<br><br>To attent and write |                            |

**E. Evaluation :**

This session tended to make students can do principles of animal by product handling and processing

**F. Literatures :**

1. Lawrie, R.A. 1995. Meat Science. (diterjemahkan oleh Parakkasi A. dan Y. Amwila-Ilmu Daging, UI Press Jakarta).
2. Man, I. 1980. Processing and Utilization of Animal by Product. FAO.

## SESSION UNITY OF LEARNING

Subject : Processing of Animal Product  
 code of subject : -  
 SKS : 2 (1-1)  
 Time of session : 100 minutes  
 Session : X

### A. Object

1. TIU : After following this session, Students can explain and do procedures of hide handling and processing.
2. TIK :
  - a. Can explain Principles and object of hide preservation or processing..
  - b. Can do preservation of hide.
  - c. Can do Processing of hide ( tanning, gelatin)

B. Principal of subject : Technology of hide Processing

C. Sub Subject :

- Principles and object
- Hide preservation
- Tanning

D. Learning Activity :

| stage        | Lecturer activity   | Student activity                  | Media and tool of learning |
|--------------|---|-----------------------------------|----------------------------|
| Introduction | To Explain all of matters at this session.  | To attent and write               | OHP and whiteboard         |
| Naration     | To explain procedures of hide preservation<br>To explain Procedures of hide processing(tanning)<br>To disccus about standardization of leather and hide quality | To attent and write               | OHP and whiteboard         |
| In closing   | To give clarification or detail informations<br>Review all of matters at this session.  | To ask<br><br>To attent and write |                            |

**E. Evaluation :**

This session tended to make students can do principles of hide preservation and processing (tanning)

**F. Literatures**

1. Sharpouse (1971). Leather technisian and handbook 1<sup>st</sup> ed, 9<sup>th</sup> Thomas Street London.
2. Suwarastuti A. (1996). Teknologi Pasca Panen Hasil Ikutan Ternak. Diktat kuliah.
3. Yudoamijoyo R.M. (1981). Teknik Penyamakan Kulit untuk Pedesaan. Penerbit Angkasa Bandung.
4. Purnomo E. (1984). Penyamakan Kulit Kaki Ayam . Penerbit Kanisius.
5. Sri Untari (1996). Penyamakan/Pengawetan Kulit Kelinci dan Ikan Pari. BPPKP Yogyakarta.

**SESSION UNITY OF LEARNING**

Subject : Processing of Animal Product  
code of subject : -  
SKS : 2 (1-1)  
Time of session : 100 minutes  
Session : XI

**A. Object**

I. TIU : -

B. Principal of subject : test

C. Sub subject :

• session I to IX

D. learning activity :

COURSE : Animal Product Knowledge

COURSE CODE : PTF 209 P

CREDIT : (2-1)3

**ANIMAL AGRICULTURE OF DIPONEGORO UNIVERSITY**  
**MAIN ROLE OF TEACHING PROCESS**

- Name of Course : **Animal Product Knowledge**  
 Code/sks : PTF 209 P / 3 ( 2 – 1 )  
 Short Description : Discussion : meat science and technology, milk, eggs, hide and animal by product, physical, chemical and microbiology properties and basic quality of meat, milk, eggs, hide and animal by product and basic processing of meat, milk, eggs, hide and animal by product  
 Course Main Goal : After following this course student can explain about basic animal product technology i.e. Physical, chemical and microbiology properties and basic quality of meat, milk, eggs, hide and animal by product and do measurement of animal product quality.  
 References :
  1. Hadiwiyoto, S, 1983. Hasil-hasil Olahan Susu, Ikan, Daging, Telur. Penerbit: Liberti Yogyakarta.
  2. Hadiwiyoto, S, 1994. Teori dan Prosedur Pengujian Mutu Susu dan Hasil Olahannya. Penerbit: Liberti Yogyakarta.
  3. Buckle, LA, RA. Edward, G.H Fleet dan M. Wootton. 1985. Ilmu Pangan. Universitas Indonesia. Jakarta (Diterjemahkan oleh Pumomo dan Adiyono).
  4. Judo Amidjoyo M. 1981. Defek-defek Pada Kulit Mentah dan Samak. Penerbit Batara Karya Aksara. Jakarta.
  5. Lawrie, R.A. 1981. Meat Science.
  6. Mann, I. 1950. Processing and Utilization of Animal by Product, FAO.
  7. Suparno, 1994. Ilmu dan Teknologi Daging. Gajahmada University Press.
  8. Suwarastuti, A. dan Dwiloka, B. 1989. Dasar-dasar Teknologi Hasil Ikutan Ternak. Diktat Kuliah.
  9. Winarno, F.G. 1980. Pengantar Teknologi Pangan. Penerbit PT. Gramedia.
  10. Berbagai jurnal ilmiah nasional dan internasional.

| No. | Course Specific Goal   | Main Subject                       | Sub Subject  | Time Estimation | References   |
|-----|--|------------------------------------|--|-----------------|--------------|
| 1.  | Student can explaining meat, meat classification, understands physical and chemical properties of meat.  | Meat basic technology              | Definition, classification, composition, physical And chemical properties of meat.                                 | 3 x 100 minute  | 1,2,5,7,9,10 |
| 2.  | Student can explaining animal by product, animal by product classification, understands physical and chemical properties of animal by product.   | Animal by product basic technology | Definition, classification, composition, physical And chemical properties of animal by product.                    | 3 x 100 minute  | 4,6,8,10     |
| 3.  | Student can explaining eggs, eggs classification, understands physical and chemical properties of eggs.  | Eggs basic technology              | Definition, classification, composition, physical And chemical properties of eggs.                                 | 3 x 100 minute  | 1,3,10       |
| 4.  | Student can explaining milk, milk classification, understands physical and chemical properties of milk.  | Milk basic technology              | Definition, classification, composition, physical And chemical properties of milk.                                 | 3 x 100 minute  | 1,2,3,9,10   |
| 5.  | Student can understand basic of storage and processing of animal product and animal by product. Can explaining method of handling, storage and processing of animal product and animal by product. | Basic Processing                   | Basic processing and storage of animal and animal by-product.– Method and process of animal and animal by product. | 3 x 100 minute  | 1-10         |

COURSE : BIOCHEMISTRY

COURSE CODE : IPN 35-P

CREDIT : 3 (2-1)

**FACULTY OF ANIMAL SCIENCE DIPONEGORO UNIVERSITY  
COURSE OUTLINE**

**COURSE** : BIOCHEMISTRY  
**COURSE CODE / CREDIT** : IPN35-P / (2-1) 3  
**BRIEF DESCRIPTION** : Studying the metabolism of lipid, carbohydrate, protein and nucleotides in living organism as well as photosynthetic process as source of macronutrients formation  
**GENERAL OBJECTIVE** : After completing this course, the students can describe metabolism of nutrients, describe the class and the action of enzymes involved, and explain photosynthetic process

| No | Specific Objectives  | Main Topic   | Sub Topic   | Allocated Time (100 minutes/lecture) | References   |
|----|--|--------------|---|--------------------------------------|--|
| 1  | After completing this topic, the student can: <ul style="list-style-type: none"> <li>▪ Explain macro &amp; micro nutrients and their functions</li> <li>▪ Defining metabolism, catabolism, anabolism, and digestion</li> <li>▪ Describe the roles of biochemistry in animal science</li> </ul> | Introduction | Course overview and Evaluation<br>Macro and micro nutrients, and their function in living organism<br>Understanding metabolism, catabolism, anabolism, and digestion, Roles of biochemistry in animal science | 1 x                                  | <ul style="list-style-type: none"> <li>▪ Pictures on transparency</li> <li>▪ Modules</li> <li>▪ Hand-outs</li> </ul> |
| 2  | After completing this topic, the student can-explain: <ul style="list-style-type: none"> <li>▪ Structure and organization of cells</li> <li>▪ Cell components and their function</li> </ul>  | Cell         | <ul style="list-style-type: none"> <li>▪ Structure and organization of cells</li> <li>▪ Cell-components and their functions</li> </ul>  | 1x                                   | <ul style="list-style-type: none"> <li>▪ Modules</li> <li>▪ Hand-outs</li> </ul>                                     |

| No | Specific Objectives  | Main Topic   | Sub Topic   | Allocated Time (100 minutes/lecture) | References   |
|----|--|--------------|---|--------------------------------------|--|
| 3  | After completing this topic, the student can explain :<br>definition, function and factors that affect the function of an enzyme, Enzyme classification and nomenclature   | Enzyme       | Enzyme:<br>definition, function and factors that affect the function of an enzyme,<br>Enzyme classification and nomenclature  | 1x                                   | <ul style="list-style-type: none"> <li>▪ Modules</li> <li>▪ Hand-outs</li> </ul> |
| 4  | After completing this topic, the student can explain : <ul style="list-style-type: none"> <li>• Lipid classification and chemical structures</li> <li>• Lipid oxidation to produce energy</li> <li>• Triglyceride anabolism</li> <li>• Definition and function of cholesterol</li> <li>• Cholesterol metabolism</li> </ul> | Lipid        | Lipid classification and chemical structures<br>Lipid oxidation to produce energy<br>Triglyceride anabolism<br>Definition and function of cholesterol<br>Cholesterol metabolism | 3 x                                  | <ul style="list-style-type: none"> <li>▪ Modules</li> <li>▪ Hand-outs</li> </ul> |
| 5  | After completing this topic, the student can explain : <ul style="list-style-type: none"> <li>▪ Carbohydrate classification and chemical structures</li> <li>▪ Carbohydrate catabolism via glycolysis and TCA cycle</li> <li>▪ Carbohydrate anabolism</li> </ul>   | Carbohydrate | Carbohydrate:<br>Carbohydrate classification and chemical structures<br>Carbohydrate catabolism via glycolysis and TCA cycle<br>Carbohydrate anabolism                          | 3 x                                  | <ul style="list-style-type: none"> <li>▪ Modules</li> <li>▪ Hand-outs</li> </ul> |
| 6  | First Evaluation   |              |   | 1x                                   |  |

| No                      | Specific Objectives  | Main Topic      | Sub Topic  | Allocated Time (100 minutes/ lecture) | References   |
|-------------------------|--|-----------------|--|---------------------------------------|--|
| 7                       | After completing this topic, the student can explain :<br>Amino acid structures<br>Protein digestion and metabolism  | PROTEIN         | Protein: Amino acid structures<br>Protein Digestion and metabolism   | 2x                                    | <ul style="list-style-type: none"> <li>▪ Modules</li> <li>▪ Hand-outs</li> </ul> |
| 8,9                     | After completing this topic, the student can explain : <ul style="list-style-type: none"> <li>• the structure of nucleic acid DNA &amp; RNA, nucleic acid metabolism</li> <li>• protein synthesis (from DNA translation)</li> </ul>    | NUCLEIC ACID    | Structure of nucleic acid: nucleotide, DNA, RNA, nucleic acid metabolism<br>Protein synthesis (from DNA translation) | 2x                                    | <ul style="list-style-type: none"> <li>▪ Modules</li> <li>▪ Hand-outs</li> </ul> |
| 10                      | After completing this topic, the student can explain : <ul style="list-style-type: none"> <li>• definition &amp; unit of enzyme activity</li> <li>• factors affecting enzyme activities</li> <li>• Micheles Menten Equation</li> </ul> | ENZYME KINETICS | Enzyme activity, Unit of enzyme activity<br>Factors affecting enzyme activities<br>Micheles Menten equation          | 1x                                    | <ul style="list-style-type: none"> <li>▪ Modules</li> <li>▪ Hand-outs</li> </ul> |
| FINAL EVALUATION        |  |                 |  | 1X                                    |  |
| TOTAL LECTURES IN CLASS |  |                 |  | 16x                                   |  |

**\* REFERENCES :**

1. Lehninger, A. L. 1970. Biochemistry. 1<sup>st</sup> edition. Worth Publ. inc. New York.
2. Murray, R.K., Granner, D.K., Mayes, P.A. and Rodwell, V.W. 2003. Harper's Illustrated Biochemistry.

**FAKULTAS PETERNAKAN UNIVERSITAS DIPONEGORO**  
**TEACHING PROGRAM OUTLINE**

- Title of Subject : Basic of Biochemistry Practicum  
 Number of Code /CSS : PTF 202 P / 3 ( 2 – 1 )  
 Brief Description : This subject apply the method or compose the reagent for biochemistry practicum, doing digestion of biochemistry process, examine the lactic acid in biochemistry of milk damaged, examine acetate acid in cassava fermentation correctly.  
 Specific Instructional Object : After following this practicumstudent can make reagent, doing digestion of biochemistry process, examine the lactic acid in biochemistry of milk damaged, examine acetate acid in cassava fermentation correctly.  
 Books material :  
 1. Apriyantono A., D. Fardiaz, N.L. Puspitasari, Sedarnawati, dan S. Budiyanto. 1989. Analisis Pangan. PAU Pangan dan Gizi. IPB, Bogor.  
 2. Petunjuk Praktikum Biokimia. 1991. Laboratorium Biokimia. PS Kimia. FMIPA. UNDIP, Semarang.  
 3. Petunjuk Praktikum Biokimia. 2005. Laboratorium Fisiologi dan Biokimia. Fakultas Peternakan. UNDIP, Semarang.  
 4. Ruck, J.A. 1963. Chemical Methods for Analysis of Fruit and Vegetable Products. Canada Dep. Agric. Summerland.  
 5. West, E. S. dan W.R. Todd. 1961. Textbook of Biochemistry. The Mac Millon Book Co, New York.

| No. | Specific Instructional Object  | Main Discussin         | Sub Discussion   | Time Estimation | Books Material    |
|-----|--|------------------------|--|-----------------|-------------------|
| 1.  | After following this practicumstudent can make reagent   | Make reagent practicum | 1. Make reagent for digestion practicum<br>2. Make reagent for examine acid test   | 2 x 50 minutes  | 1, 2, 3, 4, and 5 |
| 2.  | After following this practicumdoing digestion of biochemistry process  | Digestion              | 1. Carbohydrate digestion<br>2. Protein digestion<br>3. Lipid digestion  | 6 x 50 minutes  | 2 and 3           |
| 3.  | After following this practicumexamine the lactic acid in biochemistry of milk damaged, examine acetate acid in cassava fermentation correctly. | Examine acid           | 1. Fresh milk damaged observation<br>2. cassava fermentation observation<br>3. Examine the lactic acid in fresh and damaged milk<br>4. Examine the lactic acid in cassava meal and fermented cassava | 4 x 50 minutes  | 1, 2, 3, and 4    |

COURSE : NUTRITION BIOCHEMISTRY

COURSE CODE : PTM 301 P

CREDIT : (2-1)3

## COURSE OUTLINE

|                   |   |   |
|-------------------|---|---|
| Subject Studied   | : | Nutrition Biochemistry  |
| Code of Subject   | : | PTM 301P (2-1)  |
| Discription       | : | To study metabolism processes in the animal and its interrelated on animal product, especially meat, milk, egg and energy for work, and its control metabolism  |
| General Objective | : | After lectured the student can afford explained nutrient metabolismvin animal and its interrelated on biosynthesis of animal product (meat, milk, egg) and energy for work, and analyze its product based on metabolism principles. |

| No. | Specific Objective  | Topics  | Subtopics  | Allocated time | Reference  |
|-----|---|---|--|----------------|--|
| 1.  | After completing this topic the student can explain the objective and the importance of nutrition biochemistry, interrelated another science, bioconversion process of nutrient to animal product and energy for work | Introduction                                  | <ul style="list-style-type: none"> <li>• Objective and advantages in studying nutrition biochemistry</li> <li>• Interrelation of nutritional biochemistry and other field science</li> <li>• Metabolic pathway of nutrient conversion into animal product</li> </ul> | 2 x 50 menit   | <p>Lehninger, A.L. 1970. Biochemistry. 1st edition. Worth Publ. Inc. New York.</p> <p>Riis, P.M. 1983. Dynamic Biochemistry of Animal Production. Elsevier Sci. Publ. Amsterdam.</p>   |
| 2.  | After completing this topic the student can explain the growth metabolic processes of tissue (bone, meat, adipose) and its control metabolism; to make mention of the influence factors of growth                     | The growth of tissue (meat, bone and adipose) | <ul style="list-style-type: none"> <li>• The physiology of growth and influencing factors</li> <li>• Biosynthesis of bone, meat and adipose tissue</li> </ul>  | 6 x 50 menit   | <p>Linder, M.C. 1992. Biokimia Nutrisi dan Metabolisme. Universitas Indonesia Press. Jakarta. (Diterjemahkan oleh A. Parakkasi).</p> <p>Forrest et al. 1975. Principles of Meat Science. WH. Freeman and Company, San Fransisco.</p> |

| No. | Specific Objective   | Topics            | Subtopics   | Allocated time | Reference  |
|-----|--|-------------------|---|----------------|--|
| 3.  | After completing this topic the student can explain nutrient metabolism and milk biosynthesis in animal and its metabolism control | Milk biosynthesis | <ul style="list-style-type: none"> <li>• Lactation physiology</li> <li>• Milk components and their precursor</li> <li>• Biosynthesis of milk components and factors that affect milk production</li> <li>• Vitamin and mineral secretion</li> </ul> | 8 X 50 menit   | <p>Larson, B.L. (Ed.). 1990. Lactation. The Iowa State Univ. Press-ames.</p> <p>Smith, G.H. 1971. Biology of Lactation. W.H. Freeman and Co., San Fransisco.</p>   |
| 4.  | After completing this topic the student can explain nutrient metabolism and egg biosynthesis in animal and its metabolism control  | Egg biosynthesis  | <ul style="list-style-type: none"> <li>• Egg physiology and biosynthesis</li> <li>• Component of eggshell, yolk and egg albumin</li> <li>• Influencing factors in egg synthesis and its hormonal control</li> </ul>                                 | 8 x 50 menit   | <p>Linder, M.C. 1992. Biokimia Nutrisi dan Metabolisme. Universitas Indonesia Press. Jakarta. (Diterjemahkan oleh A. Parakkasi).</p> <p>Riis, P.M. 1983. Dynamic Biochemistry of Animal Production. Elsevier Sci. Publ. Amsterdam.</p> |

| No. | Specific Objective   | Topics              | Subtopics   | Allocated time | Reference   |
|-----|--|---------------------|---|----------------|---|
| 5.  | After completing this topic the student can explain nutrient metabolism and energy biosynthesis in animal and its metabolism control | Energy biosynthesis | <ul style="list-style-type: none"> <li>• Physiology and mechanism of muscle contraction</li> <li>• Biosynthesis of energy and nutrient requirement for muscle contraction</li> <li>• Influencing factors in energy synthesis</li> </ul> | 4 x5 menit     | <p>Linder, M.C. 1992. Biokimia Nutrisi dan Metabolisme. Universitas Indonesia Press. Jakarta. (Diterjemahkan oleh A. Parakkasi).</p> <p>Forrest et al. 1975. Principles of Meat Science. WH. Freeman and Company, San Fransisco.</p> <p>Miffin, H. 1978. Biology of Physical Activity. Houghton Mifflin Co. Boston.</p> |

Nutrition Biochemistry Laboratory  
Animal Science Faculty  
Diponegoro University

COURSE : NUTRITION AND FEED SCIENCE

COURSE CODE :

CREDIT : (2-1)3

**FACULTY OF ANIMAL SCIENCE DIPONEGORO UNIVERSITY  
COURSE OUTLINE**

**COURSE NAME** : Nutrition and Feed Science  
**COURSE CODE / CREDIT** : --- / 3(2-1)  
**BRIEF DESCRIPTION** : Studying comparative anatomy, physiology, nutrient requirements, feed source, and composing nutrient requirements for poultry, swine, equine, and ruminants  
**GENERAL OBJECTIVE** : After completing this course the students can explain requirements and nutrient use in poultry, swine, equine, and ruminants according to production purpose

| No. | Specific Objectives  | Topics                                  | Sub Topics   | Allocated Time (100 minutes/ lecture) | References   |
|-----|--|---|--|---------------------------------------|--|
| 1.  | After completing this topic the student can explain the scope and importance of nutrition and feed science   | Introduction                            | The scope and importance of studying nutrition and feed science for poultry, swine, equine, and ruminants                                | 1x                                    | Prawirokusumo, S. 1994. Ilmu Gizi Komparatif. BPFE UGM. Yogyakarta.<br>Scott, M.L.; M.C. Neshein and R.J. Young. 1982. Nutritiopn of the chicken. Scott and Associate. New York.<br>Cunha, T.J. 1997. Swine feeding and nutrition. Academic Press. New York. |
| 2.  | After completing this topic the student can :<br>▪ compare the anatomy of digestive system among poultry, swine, equine, and ruminants<br>▪ explain the factors that affect digestive system | Comparative anatomy of digestive system | ▪ Comparative anatomy of digestive system in poultry, swine, equine, and ruminants<br>▪ Comparative factors that affect digestive system | 2x                                    | Church, DC. 1988. The ruminant animal Digestive physiology and nutrition. A Reston Book. Penambul<br>Banerjee, G.C. 1978. Animal Nutrition. New Delhi<br>Cunha, T.J. 1997. Swine feeding and nutrition. Academic Press. New York.                            |

| No. | Specific Objectives  | Topics                                     | Sub Topics   | Allocated Time<br>(100 minutes/<br>lecture) | References   |
|-----|--|--|--|---|--|
| 3.  | After completing this topic the student can :<br>compare the physiology of digestive system among poultry, swine, equine, and ruminants<br>explain the factors that affect digestive physiology  | Comparative physiology of digestive system | <ul style="list-style-type: none"> <li>• Comparative physiology of digestive system in poultry, swine, equine, and ruminants</li> <li>• Comparative factors that affect digestive physiology</li> </ul>  | 2x  | Church, DC. 1988. The ruminant animal Digestive physiology and nutrition. A Reston Book. Penambul<br>Banerjee, G.C. 1978. Animal Nutrition. New Delhi<br>Scott, M.L.; M.C. Neshein and R.J. Young. 1982. Nutritiopn of the chicken. Scott and Associate. New York.<br>Cunha, T.J. 1997. Swine feeding and nutrition. Academic Press. New York. |
| 4.  | After completing this topic the student can : <ul style="list-style-type: none"> <li>▪ compare the metabolism of nutrients in poultry, swine, equine, and ruminants</li> <li>▪ explain the factors that affect absorpition and production</li> </ul> | Comparative nutrient metabolism            | <ul style="list-style-type: none"> <li>▪ Comparative metabolism of nutrients (carbohydrate, protein, lipid) in digestive system of poultry, swine, equine, and ruminants</li> <li>• Comparative absorption of metabolites and their effects on production</li> </ul> | 3x  | Church, DC. 1988. The ruminant animal Digestive physiology and nutrition. A Reston Book. Penambul<br>Scott, M.L.; M.C. Neshein and R.J. Young. 1982. Nutritiopn of the chicken. Scott and Associate. New York.<br>Cunha, T.J. 1997. Swine feeding and nutrition. Academic Press. New York.   |

| No. | Specific Objectives   | Topics   | Sub Topics   | Allocated Time (100 minutes/ lecture) | References   |
|-----|---|--|--|---------------------------------------|--|
| 5.  | After completing this topic the student can determine nutrient requirement of livestock   | Comparative nutrient requirements of livestock (poultry, swine, equine, and ruminants) | <ul style="list-style-type: none"> <li>• Determining nutrient requirement for poultry (layer, broiler, duck) and the use of data from Table Nutrient Requirement</li> <li>• Determining nutrient requirement for swine and equine and the use of data from Table Nutrient Requirement</li> <li>• Determining nutrient requirement of ruminants (dairy, beef, goat/ sheep) and the use of data from Table Nutrient Requirement</li> </ul> | 4x                                    | Nutrient Requirement Table for livestock (NRC 1994 , 2001); Kearl, 1988).<br>Scott, M.L.; M.C. Neshein and R.J. Young. 1982. Nutritiopn of the chicken. Scott and Associate. New York.<br>Cunha, T.J. 1997. Swine feeding and nutrition. Academic Press. New York. |
| 6.  | After completing this topic the student can describe the sources of feeds for livestock (poultry, swine, equine, and ruminants) | Feed source for poultry, swine, equine, and ruminants                                  | <ul style="list-style-type: none"> <li>• Conventional feed for livestock and their nutritional value</li> <li>• Inconventional feed for livestock and their nutritional value</li> </ul>   | 2x                                    | Banerjee, G.C. 1978. Animal Nutrition. New Delhi<br>Sutardi et al. 1983. Standardisasi Mutu Protein Bahan Pakan di Indonesia   |
| 7.  | After completing this topic the student can calculate nutrient consumption of livestock (poultry, swine, equine, and ruminants) | Determination of nutrien consumption according to physiological state                  | <ul style="list-style-type: none"> <li>• Determination of feed consumption in poultry, swine, equine, and ruminants</li> <li>• Factors that affect feed consumption in poultry, swine, equine, and ruminants</li> </ul>  | 2x                                    | Parakkasi, A. 1983. Ilmu Nutrisi dan Makanan Ternak Monogastrik. 1B. Penerbit UI Press. Jakarta.<br>Parakkasi, A. 1983. Ilmu Gizi Ternak Ruminansia Pedaging. UI Press. Jakarta  |
|     |   |  | Total lectures   | 16 x                                  |  |

COURSE : Feed Processing Technology

COURSE CODE :

CREDIT : 3 (2-1)

## TEACHING OUTLINE PROGRAMS

**COURSE'S TITLE** : FEED PROCESSING TECHNOLOGY

**COURSE'S CODE / Credit** : / 3 (2-1)

**Semester Unit**

**Description** : Knowledge of processing technique in physical, chemical, biological from various feedstuffs, including of concentrate, forage and also waste and by product to maintain the quality and improve the nutrition value.

**General Instruction** : After attending the course student will be able to explain and differentiate the processing technique of various feedstuffs and finally determine the strategy to maintain the quality and also improve the feed nutrition value.

| No. | Specific Instruction  | Main Subject  | Main Sub Subject  | Duration       | Literatures   |
|-----|---|---|---|----------------|---|
| 1.  | After attending the course student will be able to explain the definition of feed technology processing, processing management and feed preservation. | Introduction  | 1. Definition of feed technology processing<br>2. Feedstuffs management, definition of processing and preservation.   | 4 x 50 minutes | <ul style="list-style-type: none"> <li>• McElhiary, R.R. 1994. Feed Manufacturing Technology IV. Am. Feed Industry Assoc. Inc. Arlington</li> <li>• Pfost, H.B. 1964. Feed Production Handbook. Feed Production School Inc. Kansas city.</li> </ul> |
| 2.  | After attending the course student will be able to explain about the strategy of cereal, forage and waste/by product processing.                      | Strategy of feedstuffs and waste/by product processing. | 1. Strategy of cereal processing.<br>2. Strategy of forage processing.<br>3. Strategy of waste/by product processing. | 6 x 50 minutes | <ul style="list-style-type: none"> <li>• McElhiary, R.R. 1994. Feed Manufacturing Technology IV. Am. Feed Industry Assoc. Inc. Arlington</li> <li>• Pfost, H.B. 1964. Feed Production Handbook. Feed Production School Inc. Kansas city</li> </ul>  |

|    |   |   |   |                |   |
|----|---|---|---|----------------|---|
|    |   |   |   |                | <ul style="list-style-type: none"> <li>• BoGohl, 1975. Tropical Feed Information Summaries and Nutritivves Value. FAO=UN. Rome</li> </ul>   |
| 3. | After attending the course student will be able to explain about feed technology processing for concentrate systematically from grinding up to packaging. | Technology of cereal processing and preservation  | <ol style="list-style-type: none"> <li>1. Feed technology processing of concentrate.</li> <li>2. Flowchart of material processing and physical mechanic processing (grinding, mixing, pelleting)</li> </ol>   | 8 x 50 minutes | <ul style="list-style-type: none"> <li>• McElhiary,R.R.1994 Feed Manufacturing Technology IV. Am.Feed Industry Assoc. Inc. Arlington</li> <li>• Romindo Primavetcom. RPAN Seminar (A New Concept in Poultry Feed Technology).1994.Romindo Primavetcom Co. Jakarta. Unpublished.</li> <li>• Harding,H.A.1978. Manajemen Produksi (Seri Manajenen No.35). Penerbit Balai Aksasra. Jakarta.</li> <li>• Pfof, H.B. 1964. Feed Production Handbook. Feed Production School Inc. Kansas city</li> </ul> |
| 4. | After attending the course student will be able to explain about technology of forage processing and preservation physically, chemically, biologically.   | Technology of forage processing and preservation. | <ol style="list-style-type: none"> <li>1. Technology of physically forage processing and preservation.</li> <li>2. Technology of chemically forage processing and preservation.</li> <li>3. Technology of biologically forage processing and preservation.</li> </ol> | 6 x 50 minutes | <ul style="list-style-type: none"> <li>• McElhiary,R.R. 1994 Feed Manufacturing Technology IV. Am.Feed Industry Assoc. Inc. Arlington</li> <li>• Komar, A. 1984. Teknologi Pengolahan Jerami sebagai Makanan Ternak. Cetakan pertama. Yayasan Dian Grahita, Bandung.</li> <li>• Woolford,M.E. 1984. The Silage Fermentation. Marcel Dekker, Inc,</li> </ul>   |

|    |  |   |   |                |   |
|----|--|---|---|----------------|---|
|    |  |   |   |                | <p>New York</p> <ul style="list-style-type: none"> <li>• McDonald, P.1981. Biochemistry of Silage. John Willey &amp; Sons, New York</li> <li>• Harding,H.A.1978. Manajemen Produksi (Seri Manajenen No.35). Penerbit Balai Aksasra. Jakarta.</li> </ul>   |
| 5. | After attending the course student will be able to explain about feed technology processing to produce complete feed systematically from grinding up to packaging. | Technology processing of complete feed  | <ol style="list-style-type: none"> <li>1. Definition of Complete Feed</li> <li>2. Technology of Complete Feed processing</li> </ol>   | 4 x 50 minutes | <ul style="list-style-type: none"> <li>• McElhhiary,R.R. 1994 Feed Manufacturing Technology IV. Am.Feed Industry Assoc. Inc. Arlington</li> <li>• Pfof, H.B. 1964. Feed Production Handbook. Feed Production School Inc. Kansas city.</li> </ul>  |
| 6. | After attending the course student will be able to explain the advance development of feed technology processing   | Prospect and the development of feed technology processing for feedstuffs and waste/by product. | <ol style="list-style-type: none"> <li>1. Prospect and development of feed technology processing</li> <li>2. Prospect and development of waste/by product technology processing as feedstuffs.</li> </ol> | 4 x 50 minutes | <ul style="list-style-type: none"> <li>• Hodges, J dan Han IK. 2000. Livestock, Ethics and Quality of Life. CABI Publishing, New York.</li> <li>• McElhhiary,R.R. 1994. Feed Manufacturing Technology IV. Am.Feed Industry Assoc. Inc. Arlington</li> <li>• FAO. 1980. Fish Feed Technology. FAO-ACDP UNDP. Food and Agriculture Organization-UN. Rome</li> </ul> |

## Lecturing Program Outline (SAP)

**COURSE** : Technology of Feed Processing

**CODE COURSE / SKS** : / 3 SKS (2-1)

**DURATION** : 2 x 50 minutes

**MEETING** : 1

**A: OBJECTIVE**

1. **GENERAL INSTRUCTION (TIU)** : After attending the course student will be able to explain and differentiate the processing technique of various feedstuffs and finally determine the strategy to maintain the quality and also improve the feed nutrition value.

2. **SPECIFIC INSTRUCTION (TIK)** : After attending the course student will be able to explain the definition and differentiate techniques of various feedstuffs processing, management of processing and preservation minimal 90% correct.

**B. MAIN SUBJECT** : Introduction

**C. SUB MAIN SUBJECT** : Course agreement.  
Correlation among main subject, definition of Feed Processing Technology.  
Management of feed processing and preservation.

**D. LEARNING AND TEACHING ACTIVITY:**

| Activity      | Lecturer Activity  | Student Activity       | Learning Equipments      |
|---------------|--|------------------------|--------------------------|
| Introduction  |  |                        |                          |
| • Description | Explaining the content on lecturing material of 1 <sup>st</sup> Meeting. | Noticing               | Power point presentation |
| • Relevancy   | Explaining correlation among Main Subject                                | Noticing / questioning | Power point presentation |
| • TIK         | Explaining the competency on TIU and TIK for 2 <sup>nd</sup> Meeting.    | Noticing / questioning | Power point presentation |

|              |                   |  |   |                          |
|--------------|-------------------|--|---|--------------------------|
| Presentation | • Description     | Explaining the importance of feed processing   | Noticing / questioning  | Power point presentation |
|              |                   | Explaining the main idea of feed processing management regarding with the processing and preservation  | Noticing / questioning  | Power point presentation |
|              |                   | 1. Asking student the understanding of feed processing.<br>2. Asking student the understanding of feed processing management.<br>3. Explaining 1 and 2 | Answering question<br><br>Answering question                              | Power point presentation |
|              | • Example         | Providing Example about the importance of feed processing technology.  | Noticing / giving suggestion  | Power point presentation |
|              |                   | Providing Example about processing & preservation.   | Noticing / giving suggestion  | Power point presentation |
|              | • Task            | Discussing example of specific case on feed processing management  | Working group, summarizing short report                                   |                          |
| Closing      | • Test / Exercise | Address the delegation of working group to present the result of the discussion.   | Presenting solution of the case study as the result of the discussion.    | Power point presentation |
|              |                   | Inviting comments or questions from other student  | Providing comments or questions concerning with case's solution presented | Power point presentation |

|              |   |   |  |
|--------------|---|---|--|
| • Evaluation | Giving evaluation and comments regarding the case's solution presented. | Noticing, giving suggestion and note lecturer's comment |  |
|--------------|---|---|--|

**E. EVALUATION** : Instrument used ⇒ essay Test to evaluate case's solution made by student which had been revised according to suggestion/ comment by lecturer and other students comparing with theory which was given.

**F. REFERENCES** : Pfost, H.B. 1964. Feed Production Handbook. Feed Production School Inc. Kansas City  
 McElhiary, R.R. 1994 Feed Manufacturing Technology IV. Am. Feed Industry Assoc. Inc. Arlington

**MEETING** : II, III, IV

**A: OBJECTIVE**

1. GENERAL INSTRUCTION (TIU): After attending the course student will be able to explain and differentiate the processing technique of various feedstuffs and finally determine the strategy to maintain the quality and also improve the feed nutrition value.

2. SPECIFIC INSTRUCTION (TIK) : After attending the course with the sub main subject of cereal processing strategy student will be able to explain and differentiate techniques of cereal and concentrate processing systematically from grinding up to packaging minimal 90% correct.

**B. MAIN SUBJECT** : Cereal processing strategy.

**C. SUB MAIN SUBJECT** : Cereal processing strategy  
 Concentrate processing, flowchart of feed processing and physical processing (grinding, mixing, etc).  
 Processing (pelleting, crumbling, etc), equipments & processing machine, packaging.

**D. LEARNING AND TEACHING ACTIVITY:**

| Activity   | Lecturer Activity  | Student Activity   | Learning Equipments   |
|--|--|--|---|
| Introduction <ul style="list-style-type: none"> <li>• Description</li> <li>• Relevancy</li> <li>• TIK</li> </ul> | Explaining content of material on 2nd Meeting<br>Explaining correlation among Main Subject<br>Explaining competencies on TIU and TIK for 2nd, 3rd and 4th Meeting.   | Noticing<br>Noticing / questioning<br>Noticing / questioning   | Power point presentation<br>Power point presentation<br>Power point presentation  |
| Presentation <ul style="list-style-type: none"> <li>• Description</li> <li>• Example</li> <li>• Task</li> </ul>  | 1. Explaining the understanding of cereal processing strategy.<br>2. Explaining the understanding of flowchart on feed processing.<br>3. Explaining the understanding of physical feedstuffs processing.<br>4. Asking the understanding of student about equipments & machine on concentrate processing.<br>5. Explaining 4<br>Providing Example about cereal processing.<br>Providing Example about packaging.<br>Discuss Example of case study on improving pellet | Noticing / questioning<br>Noticing / questioning<br>Noticing / questioning<br>Answering question<br>Noticing / giving suggestion<br>Noticing / giving suggestion<br>Noticing / giving suggestion<br>Working group, short summary report. | Power point presentation<br>Power point presentation<br>Power point presentation<br>Power point presentation<br>Power point presentation<br>Power point presentation<br>In Focus & PC |

|                   |  |  |                          |
|-------------------|--|--|--------------------------|
|                   | quality.   |  |                          |
| Closing           |  |  |                          |
| • Test / Exercise | Addressing group delegation to present result of the discussion.<br><br>Inviting comment or question from other student. | Presenting case's solution as result of the discussion.<br><br>Providing comments or question about case's solution presented. | Power point presentation |
| • Evaluation      | Giving evaluation and comments regarding the case's solution presented.  | Noticing, giving suggestion and note lecturer's comment  | Power point presentation |

#### E. EVALUATION

: Instrument used ⇒ essay Test to evaluate case's solution made by student which had been revised according to suggestion/ comment by lecturer and other students comparing with theory which was given.

#### F. REFERENCES

: Pfost, H.B. 1964. Feed Production Handbook. Feed Production School Inc. Kansas city  
 McElhiary, R.R. 1994. Feed Manufacturing Technology IV. Am. Feed Industry Assoc. Inc. Arlington  
 Harding, H.A. 1978. Manajemen Produksi (Seri Manajemen No.35). Penerbit Balai Aksara. Jakarta.  
 Romindo Primavetcom. RPAN Seminar (A New Concept in Poultry Feed Technology). Romindo Primavetcom Co. Jakarta. Unpublished.  
 Pujaningsih, R.I. 2006. Pengelolaan Pakan Bijian. Cetakan 1. Penerbit Alif Press. Semarang.

#### MEETING

: V, VI, VII and VIII

#### A: OBJECTIVE

1. GENERAL INSTRUCTION (TIU) : After attending the course student will be able to explain and differentiate the processing technique of various feedstuffs and finally determine the strategy to maintain the quality and also improve the feed nutrition value.

2. SPECIFIC INSTRUCTION (TIK) : After attending the course with main sub subject forage processing strategy student will be able to explain

about processing and preservation technology by drying, biologic, fermentation, silage processing and waffering minimal 90% correct.

B. MAIN SUBJECT : Forage processing strategy

C. SUB MAIN SUBJECT : Forage processing strategy  
Forage processing and preservation by using hay production technology, fermentation and waffering.

D. LEARNING AND TEACHING ACTIVITY:

| Activity   | Lecturer Activity  | Student Activity   | Learning Equipments  |
|--|--|--|--|
| Introduction <ul style="list-style-type: none"> <li>• Description</li> <li>• Relevancy</li> <li>• TIK</li> </ul> | Explaining content of material on 5 <sup>th</sup> Meeting<br><br>Explaining correlation among Main Subject<br><br>Explaining competencies on TIU and TIK for 5th, 6th, 7th and 8th Meeting.  | Noticing<br><br>Noticing / questioning<br><br>Noticing / questioning                                     | Power point presentation<br><br>Power point presentation<br><br>Power point presentation                                 |
| Presentation <ul style="list-style-type: none"> <li>• Description</li> </ul>                                     | 1.Explaining about forage processing strategy.<br><br>2. Explaining about hay processing technology, amoniation, fermentation, wafering and the application<br><br>3. Asking the understanding of student about forage processing & preservation technology & application<br><br>4. Explaining 3 | Noticing / questioning<br><br>Noticing / questioning<br><br>Answering question<br><br>Answering question | Power point presentation<br><br>Power point presentation<br><br>Power point presentation<br><br>Power point presentation |

|   |  |  |                          |
|---|--|--|--------------------------|
| <ul style="list-style-type: none"> <li>• Example</li> </ul>         | Providing example about application of forage processing technology  | Noticing / giving suggestion   | In Focus & PC            |
| <ul style="list-style-type: none"> <li>• Task</li> </ul>            | Discuss example of case's study on forage processing & preservation  | Working group, short summary report.   |                          |
| Closing   |  |  |                          |
| <ul style="list-style-type: none"> <li>• Test / Exercise</li> </ul> | Addressing group delegation to present result of the discussion.<br><br>Inviting comment or question from other student. | Presenting case's solution as result of the discussion.<br><br>Providing comments or question about case's solution presented. | Power point presentation |
| <ul style="list-style-type: none"> <li>• Evaluation</li> </ul>      | Giving evaluation and comments regarding the case's solution presented.  | Noticing, giving suggestion and note lecturer's comment  | Power point presentation |

**E. EVALUATION**

: Instrument used ⇒ oral Test to evaluate case's solution made by student which had been revised according to suggestion/ comment by lecturer and other students comparing with theory which was given.

**F. REFERENCES**

: McElhiary,R.R. 1994 Feed Manufacturing Technology IV. Am.Feed Industry Assoc. Inc. Arlington  
Harding,H.A.1978. Manajemen Produksi (Seri Manajemen No.35). Penerbit Balai Aksasra. Jakarta.

**MEETING**

: IX, X, XI and XII

**A: OBJECTIVE**

1. GENERAL INSTRUCTION: After attending the course student will be able to explain and differentiate the processing technique of various feedstuffs and finally determine the strategy to maintain the quality and also improve the feed nutrition value.

2. SPECIFIC INSTRUCTION : After attending the course student will be able to explain about prospect and the development of agricultural & industry waste/by product processing technology for feed minimal 80% correct.

B. MAIN SUBJECT : Agriculture waste/by product processing strategy.

C. SUB MAIN SUBJECT : Agriculture waste/by product processing strategy.  
Feed processing of agriculture & industry feedstuffs.  
Prospect & Technology development of Feed Processing

D. LEARNING AND TEACHING ACTIVITY:

| Activity   | Lecturer Activity  | Student Activity  | Learning Equipments   |
|--|--|---|---|
| Introduction <ul style="list-style-type: none"> <li>Description</li> <li>Relevancy</li> <li>TIK</li> </ul> | <p>Explaining content of material on 6<sup>th</sup> Meeting</p> <p>Explaining correlation among Main Subject</p> <p>Explaining competencies on TIU and TIK for 9th, 10th, 11th and 12th Meeting.</p>   | <p>Noticing</p> <p>Noticing / questioning</p> <p>Noticing / questioning</p>           | <p>Power point presentation</p> <p>Power point presentation</p> <p>Power point presentation</p> |
| Presentation <ul style="list-style-type: none"> <li>Description</li> </ul>                                 | <p>1. Explaining about agriculture &amp; industrial waste/by product processing strategy.</p> <p>2. Explaining about prospect &amp; Technology development of Feed Processing</p> <p>3. Asking the understanding of student about waste/by product processing strategy, application &amp; prospect</p> | <p>Noticing / questioning</p> <p>Noticing / questioning</p> <p>Answering question</p> | <p>Power point presentation</p> <p>Power point presentation</p> <p>Power point presentation</p> |

|                   |  |  |                          |
|-------------------|--|--|--------------------------|
|                   | 5. Explaining 3  | Noticing / giving suggestion   | Power point presentation |
| • Example         | Providing example about application of using agriculture & industrial waste/by product as feed                           | Noticing / giving suggestion   | In Focus & PC            |
| • Task            | Discuss example of case's study on using agriculture & industrial waste/by product as feed                               | Working group, short summary report.   |                          |
| Closing           |  |  |                          |
| • Test / Exercise | Addressing group delegation to present result of the discussion.<br><br>Inviting comment or question from other student. | Presenting case's solution as result of the discussion.<br><br>Providing comments or question about case's solution presented. | Power point presentation |
| • Evaluation      | Giving evaluation and comments regarding the case's solution presented.  | Noticing, giving suggestion and note lecturer's comment  | Power point presentation |

#### E. EVALUATION

: Instrument used  $\Rightarrow$  oral Test to evaluate case's solution made by student which had been revised according to suggestion/ comment by lecturer and other students comparing with theory which was given.

#### F. REFERENCES

: Nurtjahya, E., Rumetor, SD., Salamena, JF., Hernawan, E., Darwati, S., dan Soenarno, SM. 2003. Pemanfaatan Limbah Ternak Ruminansia untuk Mengurangi Pencemaran Lingkungan. Makalah Pengantar Falsafah Sains. Program Pasca Sarjana / S3. Institut Pertanian Bogor  
Yuwono, SD. 2002. Penerapan life cycle assessment pada pemanfaatan limbah pertanian menjadi furfural. Jurnal IPTEKS.

COURSE : Statistics Method

COURSE CODE :

CREDIT : 3 (2-1)

FACULTY OF ANIMAL AGRICULTURE DIPONEGORO UNIVERSITY  
GARIS BESAR PROGRAM PENGAJARAN

COURSE OUTLINE

- Subject studied : Statistics Method  
 Code number/ SCS : / 3 (2-1)  
 Course Outline : Statistics Method explaining about methods in collecting the fact/ data, how to organize and analyze, concluding the conclusion and also the making of reasonable conclusion according to the fact and the analyses being done. Statistics Method has relationships with mathematics and Experimental Design.
- General Instruction : After following this course, student will be able to explain and use Statistics Method in analyzing the result of experiment both of observational and experimental.
- Reading Source :  
 1. Dajan, A. 1996. Pengantar Metode Statistika. 1<sup>st</sup> Edition. Penerbit PT.Pustaka LP3ES, Jakarta.  
 2. Dajan, A. 1996. Pengantar Metode Statistika. 2<sup>nd</sup> Edition. Penerbit PT.Pustaka LP3ES, Jakarta.  
 3. Dixon, W.J. and F.J. Massey, Jr. 1997. Pengantar Analisis Statistik. Being translated by: Sri Kustantini S.and Zanzawi S. Gadjah Mada University Press, Yogyakarta.  
 4. Sokal R.R. and F.J. Rohlf. 1991. Pengantar Biostatistika. 2<sup>nd</sup> Edition. Being translated by: Nasrullah and Setyono Setyo Sunarto. Gadjah Mada University Press, Yogyakarta.  
 5. Spiegel, M.R., I. Y. Susila and E. Gunawan. 1961. Statistik Edisi SI (Metrik). Schaum Publishing Company, Edinburg.  
 6. Steel R.G.D. and J.H. Torrie. 1991. Prinsip and Prosedur Statistika Suatu Pendekatan Biometrik. Being translated by: B.Sumantri. Penerbit PT. Gramedia, Jakarta.  
 7. Sudjana. 1975. Metode Statistika. Penerbit Tarsito. Bandung.  
 8. Walpole, R.E. 1988. Pengantar Statistika. Being translated by: B.Sumantri. Penerbit PT. Gramedia, Jakarta.

| No. | Spesific Instruction  | Major Topic            | Minor Topic  | Time Estimation | Reading Source  |
|-----|---|------------------------|--|-----------------|-----------------|
| 1.  | After following this course, student will be able to explain the definition of Biostatistics (Biometric), the developmental history of Statistics and Data in Statistics. | Preface                | 1. Definition of Biostatistics (Biometric)<br>2. The history of Statistics development<br>3. Data in Statistics                                    | 1 x 50 minutes  | 1,2,3,4,5 and 7 |
| 2.  | After following this course, student will be able to explain data in Biostatistics.   | Data in Biostatistics  | 1. Sample and Population<br>2. Variable in Biostatistics<br>3. The accuracy and precision of data<br>4. Frequency distribution<br>5. Data handling | 1 x 50 minutes  | 1,2,3,4,5 and 7 |
| 3.  | After following this course, student will be able to explain and calculating data using central tendency and dispersion.  | Statistics Descriptive | 1. Central tendency (mean, median and modus)<br>2. Statistics dispersion (range, deviation standard and coefficient of variance)                   | 2 x 100 minutes | 1,3,4,5 and 7   |

FACULTY OF ANIMAL AGRICULTURE DIPONEGORO UNIVERSITY

|     |   |                                    |   |                 |                 |
|-----|---|------------------------------------|---|-----------------|-----------------|
| 4.  | After following this course, student will be able to explain and calculating distribution Probability Distribution.   | Probability Distribution           | <ol style="list-style-type: none"> <li>1. Binomial Distribution</li> <li>2. Poisson Distribution</li> <li>3. Frequency Distribution Continuous Variable (Normal Distribution)</li> <li>4. The characteristic of Normal Distribution</li> <li>5. The probability calculation of Normal Distribution</li> </ol> | 2 x 100 minutes | 3,4,5,6 and 7   |
| 5.  | After following this course, student will be able to explain the reason and method of sampling, and also how to calculate the sampling distribution.                | Sampling and Sampling Distribution | <ol style="list-style-type: none"> <li>1. Sampling (definition, reason, method of sampling and the use of stratified random sampling)</li> <li>2. Sampling distribution (Sampling distribution of mean and Central Limit Theorem)</li> </ol>  | 1 x 100 minutes | 1,3,4,5,6 and 7 |
| 6.  | After following this course, student will be able to explain the definition of confidence interval and calculate the confidence interval based on sample statistic. | Confidence Interval Theory         | <ol style="list-style-type: none"> <li>1. The characteristic of confidence interval</li> <li>2. The method of confidence interval (point and interval)</li> <li>3. Confidence interval with big sample</li> <li>4. Confidence interval with small sample</li> </ol>   | 2 x 100 minutes | 2,3,4,5,6 and 7 |
| 7.  |   | Mid-Semester Test                  |   | 1 x 100 minutes |                 |
| 8.  | After following this course, student will be able to explain the definition of hypothesis test and calculate hypothesis test with big sample and small ones.        | Hypothesis Test                    | <ol style="list-style-type: none"> <li>1. Error type I and type II</li> <li>2. The steps of hypothesis test</li> <li>3. Hypothesis test with big sample</li> <li>4. Hypothesis test with small sample</li> </ol>  | 2 x 100 minutes | 2,3,4,5,6 and 7 |
| 9   | After following this course, student will be able to calculate the normality test, variance homogeneity test, and independence test.                                | Chi Square Distribution            | <ol style="list-style-type: none"> <li>1. Variance Homogeneity Test</li> <li>2. Normality Test</li> <li>3. Independence Test</li> </ol>   | 1 x 100 minutes | 2,3,4,5,6 and 7 |
| 10. | After following this course, student will be able to calculate linear regression equations and its significance test.   | Regression Analysis                | <ol style="list-style-type: none"> <li>1. Linear Regression Equations</li> <li>2. Significance Test in Linear Regression</li> </ol>   | 2 x 100 minutes | 1,3,4,5,6 and 7 |
| 11. | After following this course, student will be able to calculate the coefficient of correlation.  | Correlation Analysis               | <ol style="list-style-type: none"> <li>1. Product moment coefficient correlation</li> </ol>   | 2 x 100 minutes | 1,3,4,5,6 and 7 |

COURSE : Research Design

COURSE CODE :

CREDIT :

## LECTURING AGENDA UNIT (SAP)

Subject Studied : RESEARCH DESIGN  
 Code number :  
 Session Duration : 100 minutes x 1 session  
 Session : 1

### A. Instructional Objective :

1. General : After following this course, student will be able to explain the definition of research
2. Specific : After following this course, student will be able to explain and calculate the scientific truth, the definition of research, the function, classification, and the importance of research

### B. Major Topic :

1. Preface

### C. Minor Topic :

1. Human's passion to reveal the secret of nature
2. The scientific truth
3. The definition of research
4. The function, classification, and importance of research

### D. Teaching Activity, Media, and Teaching Aids :

| Stage        | Lecturer Activity  | Student Activity  | Media and Teaching Aids |
|--------------|--|---|-------------------------|
| Preface      | Explain the scope of material, purpose, benefit, and introduction of research  | Paying attention and writing                                      | Blackboard and OHP      |
| Presentation | Explain the human's passion to reveal the secret of nature, the scientific truth, the definition of research, the function, classification, and importance of research | Paying attention and writing, giving response, asking question    | Blackboard and OHP      |
| Closing      | Summarize, giving questions and knowledge of the future benefits   | Writing answering question, asking question, and giving feed back | Blackboard and OHP      |

### E. Evaluation :

Giving grades for the written answer in examination test.

### F. References :

1. Kerlinger, F.N. 1973. Foundation of Behavioral Research. Second Edition. Holt Rinehart and Winstons, Inc. New York.
2. Leedy, P. 1974. Practical Research: Planning and Design. Mac Milan Publishing Co. Inc. New York.
3. Mardalis. 1995. Metode Penelitian. Suatu Pendekatan Proposal. Penerbit Bumi Aksara. Jakarta..

## LECTURING AGENDA UNIT (SAP)

Subject Studied : RESEARCH DESIGN  
 Code number :  
 Session Duration : 100 minutes x 1 session  
 Session : 2

### A. Instructional Objective :

1. General : After following this course, student will be able to explain menjelaskan pengertian Prinsip Penelitian Ilmiah
2. Specific: Setelah mengikuti kuliah mahasiswa mampu menjelaskan dan menghitung kebenaran ilmiah. definisi penelitian, fungsi, jenis dan pentingnya penelitian

### B. Major Topic :

1. Prinsip Penelitian Ilmiah

### C. Minor Topic :

1. The Scientific research attitude
2. The scientific thinking pattern
3. The essence of research
4. The principles of design and report

### D. Teaching Activity, Media and Teaching Aids :

| Stage        | Lecturer Activity   | Student Activity  | Media and Teaching Aids |
|--------------|---|---|-------------------------|
| Preface      | Explain the scope of material, purpose, benefit of The Principles of Scientific Research  | Paying attention and writing                                      | Blackboard and OHP.     |
| Presentation | Explain about the Scientific research attitude, the scientific thinking pattern, the essence of research, the principles of design and report | Paying attention and writing, giving response, asking question    | Blackboard and OHP.     |
| Closing      | Summarize, giving questions and knowledge of the future benefits  | Writing, answering question asking question, and giving feed back | Blackboard and OHP.     |

### E. Evaluation :

Giving grades for the written answer in examination test.

### F. References :

1. Kerlinger, F.N. 1973. Foundation of Behavioral Research. Second Edition. Holt Rinehart and Winstons, Inc. New York.
2. Leedy, P. 1974. Practical Research: Planning and Design. Mac Milan Publishing Co. Inc. New York.
3. Mardalis. 1995. Metode Penelitian. Suatu Pendekatan Proposal. Penerbit Bumi Aksara. Jakarta.

## LECTURING AGENDA UNIT (SAP)

Subject Studied : RESEARCH DESIGN  
 Code number :  
 Session Duration : 100 minutes x 1 session  
 Session : 3

**A. Instructional Objective :**

1. General : After following this course, student will be able to explain the phase of research preparation processes
2. Specific: After following this course, student will be able to explain identify the selection and abbreviation of the problems, library study, identify, classify, and giving operational definition research variable

**B. Major Topic :**

1. The Research Processes phases: The phases of preparation

**C. Minor Topic :**

1. Identify the selection and abbreviation of the problems
2. Library study
3. Identify, classify, and giving operational definition
4. Research variable

**D. Teaching Activity, Media and Teaching Aids :**

| Stage        | Lecturer Activity  | Student Activity   | Media and Teaching Aids |
|--------------|--|--|-------------------------|
| Preface      | Explain the scope of material, purpose, benefit of this topic  | Paying attention and writing                                       | Blackboard and OHP.     |
| Presentation | Explain about identify the selection and abbreviation of the problems, library study, identify, classify, and giving operational definition, and research variable | Paying attention and writing, giving response, asking question     | Blackboard and OHP.     |
| Closing      | Summarize, giving questions and knowledge of the future benefits   | Writing, answering question, asking question, and giving feed back | Blackboard and OHP.     |

**E. Evaluation :**

Giving grades for the written answer in examination test.

**F. References :**

1. Mardalis. 1995. Metode Penelitian. Suatu Pendekatan Proposal. Penerbit Bumi Aksara. Jakarta.
2. Singarimbun, M. 1982. Metode Penelitian Survei. LP3ES. Jakarta.
3. Suryabrata, S. 1983. Metodologi Penelitian. Universitas Gadjah Mada, CV.Rajawali. Jakarta.
4. Hadi, S. 1975. Metode Research. Jilid I. Gadjah Mada University Press. Yogyakarta.

## LECTURING AGENDA UNIT (SAP)

Subject Studied : RESEARCH DESIGN  
 Code number :  
 Session Duration : 100 minutes x 1 session  
 Session : 4

### A. Instructional Objective :

1. General : After following this course, student will be able to explain the phase of research implementation processes
2. Specific : After following this course, student will be able to select/ develop data instrument collector, composing research design, determining sample, collecting data, tabulating and analysis data, interpretation the result of analysis, and composing the report

### B. Major Topic :

1. The Research Processes phases: The phases of implementation

### C. Minor Topic :

1. Selection/ developing the tools to collect data
2. Composing research design
3. Determining sample
4. Collecting data
5. Tabulating and analysis data
6. Interpretation the result of analysis
7. Composing the report

### D. Teaching Activity, Media and Teaching Aids :

| Stage        | Lecturer Activity  | Student Activity   | Media and Teaching Aids |
|--------------|--|--|-------------------------|
| Preface      | Explain the scope of material, purpose, benefit of this topic  | Paying attention and writing                                       | Blackboard and OHP.     |
| Presentation | Explain about selection/ developing the tools to collect data, composing research design, determining sample, collecting data, tabulating and analysis data interpretation the result of analysis composing the report | Paying attention and writing, giving response, asking question     | Blackboard and OHP.     |
| Closing      | Summarize, giving questions and knowledge of the future benefits   | Writing, answering question, asking question, and giving feed back | Blackboard and OHP.     |

### E. Evaluation :

Giving grades for the written answer in examination test.

### F. References :

1. Mardalis. 1995. Metode Penelitian. Suatu Pendekatan Proposal. Penerbit Bumi Aksara. Jakarta.
2. Singarimbun, M. 1982. Metode Penelitian Survei. LP3ES. Jakarta.
3. Suryabrata, S. 1983. Metodologi Penelitian. Universitas Gadjah Mada, CV.Rajawali. Jakarta.
4. Hadi, S. 1975. Metode Research. Jilid I. Gadjah Mada University Press. Yogyakarta.

## LECTURING AGENDA UNIT (SAP)

Subject Studied : RESEARCH DESIGN  
 Code number :  
 Session Duration : 100 minutes x 1 session  
 Session : 5

### A. Instructional Objective :

1. General : After following this course, student will be able to explain The Completely Randomized Design (CRD) and data transformation
2. Specific: After following this course, student will be able to explain the definition of basic design and treatment, randomization and the ground plan of CRD, the linear model and ANOVA of CRD, basic assumption of ANOVA, the variance homogeneity test, and several procedures of data transformation

### B. Major Topic :

1. Experimental Design: Completely Randomized Design (CRD) and data transformation

### Minor Topic :

1. The definition of Basic Design and Treatment
2. Randomization and the ground plan of CRD
3. The linear model and ANOVA of CRD
4. Basic assumption of ANOVA
5. The variance homogeneity test
6. Several procedures of data transformation

### C. Teaching Activity, Media and Teaching Aids :

| Stage        | Lecturer Activity  | Student Activity   | Media and Teaching Aids |
|--------------|--|--|-------------------------|
| Preface      | Explain the scope of material, purpose, benefit of this topic  | Paying attention and writing                                       | Blackboard and OHP.     |
| Presentation | Explain about the definition of basic design and treatment, randomization and the ground plan of CRD, the linear model and ANOVA of CRD, basic assumption of ANOVA, the variance homogeneity test, several procedures of data transformation | Paying attention and writing, giving response, asking question     | Blackboard and OHP.     |
| Closing      | Summarize, giving questions and knowledge of the future benefits   | Writing, answering question, asking question, and giving feed back | Blackboard and OHP.     |

### D. Evaluation :

Giving grades for the written answer in examination test.

### F. References :

1. Gaspersz, V. 1991. Teknik Analisis dalam Penelitian Percobaan. Penerbit Tarsito, Bandung.
2. Gomez, K.A. and A.A. Gomez. 1984. Statistical Procedures for Agricultural Research Second Edition. An International Rice Research Institute Book. A Wiley-interscience Publication. John Wiley & Sons. New York.
3. Steel, R.G.D. dan J.H. Torrie. 1991. Prinsip dan Prosedur Statistika Suatu Pendekatan Biometrik. Edisi ke-2 (Diterjemahkan oleh B.Sumantri). Penerbit PT.Gramc dia. Jakarta.
4. Sudjana. 1980. Disain dan Analisis Eksperimen. Edisi Pertama. Penerbit Tarsito Bandung.

5. Yitnosumarto, S. 1991. Percobaan, Perancangan, Analisis dan Interpretasinya. Edisi Pertama. PT.Gramedia Pustaka Utama. Jakarta.

## LECTURING AGENDA UNIT (SAP)

Subject Studied : RESEARCH DESIGN  
 Code number :  
 Session Duration : 100 minutes x 1 session  
 Session : 6

### A. Instructional Objective :

1. General : After following this course, student will be able to explain Multiple Comparisons and Contrast Comparisons
2. Specific: After following this course, student will be able to explain Least Significance Difference (LSD) test, Turkey test (HSD), Duncan Multiple Range Test, Qualitative treatment contrast, Quantitative treatment contrast

### B. Major Topic :

1. Multiple Comparisons and Contrast Comparisons

### C. Minor Topic :

1. Least Significance Difference (LSD)
2. Turkey test (HSD).
3. Duncan Multiple Range Test
4. Qualitative treatment contrast
5. Quantitative treatment contrast

### D. Teaching Activity, Media and Teaching Aids :

| Stage        | Lecturer Activity  | Student Activity   | Media and Teaching Aids |
|--------------|--|--|-------------------------|
| Preface      | Explain the scope of material, purpose, benefit of this topic  | Paying attention and writing                                       | Blackboard and OHP.     |
| Presentation | Explain about Least Significance Difference (LSD) test, Turkey test (HSD), Duncan Multiple Range Test, Qualitative treatment contrast, Quantitative treatment contrast | Paying attention and writing, giving response, asking question     | Blackboard and OHP.     |
| Closing      | Summarize, giving questions and knowledge of the future benefits   | Writing, answering question, asking question, and giving feed back | Blackboard and OHP.     |

### E. Evaluation :

Giving grades for the written answer in examination test.

### F. References :

1. Gaspersz, V. 1991. Teknik Analisis dalam Penelitian Percobaan. Penerbit Tarsito, Bandung.
2. Gomez, K.A. and A.A. Gomez. 1984. Statisticals Procedures for Agricultural Research Second Edition. An International Rice Research Institute Book. A Wiley-interscience Publication. John Wiley & Sons. New York.
3. Steel, R.G.D. dan J.H. Torrie. 1991. Prinsip dan Prosedur Statistika Suatu Pendekatan Biometrik. Edisi ke-2 (Diterjemahkan oleh B.Sumantri). Penerbit PT.Gramedia. Jakarta.
4. Sudjana. 1980. Disain dan Analisis Eksperimen. Edisi Pertama. Penerbit Tarsito Bandung.
5. Yitnosumarto, S. 1991. Percobaan, Perancangan, Analisis dan Interpretasinya. Edisi Pertama. PT.Gramedia Pustaka Utama. Jakarta.

## LECTURING AGENDA UNIT (SAP)

Subject Studied : RESEARCH DESIGN  
 Code number :  
 Session Duration : 100 minutes x 2 session  
 Session : 7 & 8

### A. Instructional Objective :

1. General : After following this course, student will be able to explain Completely Randomized Block Design (RCBD) and Latin Square Design (LSD)
2. Specific: After following this course, student will be able to explain randomization and ground plan of design, linear model and ANOVA of RCBD, variance difference test , and Latin Square Design

### B. Major Topic :

1. Completely Randomized Block Design (RCBD) and Latin Square Design (LSD)

### C. Minor Topic :

1. Randomization and ground plan of design
2. Linear model and ANOVA of RCBD
3. Variance difference test
4. Latin Square Design

### D. Teaching Activity, Media and Teaching Aids :

| Stage        | Lecturer Activity   | Student Activity   | Media and Teaching Aids |
|--------------|---|--|-------------------------|
| Preface      | Explain the scope of material, purpose, benefit of this topic   | Paying attention and writing                                       | Blackboard and OHP.     |
| Presentation | Explain about randomization and ground plan of design, linear model and ANOVA of RCBD, variance difference test , and Latin Square Design | Paying attention and writing, giving response, asking question     | Blackboard and OHP.     |
| Closing      | Summarize, giving questions and knowledge of the future benefits  | Writing, answering question, asking question, and giving feed back | Blackboard and OHP.     |

### E. Evaluation :

Giving grades for the written answer in examination test.

### F. References :

1. Gaspersz, V. 1991. Teknik Analisis dalam Penelitian Percobaan. Penerbit Tarsito, Bandung.
2. Gomez, K.A. and A.A. Gomez. 1984. Statisticals Procedures for Agricultural Research Second Edition. An International Rice Research Institute Book. A Wiley-interscience Publication. John Wiley & Sons. New York.
3. Steel, R.G.D. dan J.H. Torrie. 1991. Prinsip dan Prosedur Statistika Suatu Pendekatan Biometrik. Edisi ke-2 (Diterjemahkan oleh B.Sumantri). Penerbit PT.Gramedia. Jakarta.
4. Sudjana. 1980. Disain dan Analisis Eksperimen. Edisi Pertama. Penerbit Tarsito Bandung.
5. YitnoSumarto, S. 1991. Percobaan, Perancangan, Analisis dan Interpretasinya. Edisi Pertama. PT.Gramedia Pustaka Utama. Jakarta.

## LECTURING AGENDA UNIT (SAP)

Subject Studied : RESEARCH DESIGN  
 Code number :  
 Session Duration : 100 minutes x 1 session  
 Session : 9

### A. Instructional Objective :

1. General : After following this course, student will be able to explain Factorial Design
2. Specific: After following this course, student will be able to explain randomization and ground plan of design, linear model and ANOVA, and also variance difference test

### B. Major Topic :

1. Factorial Design

### C. Minor Topic :

1. Randomization and ground plan of design
2. Linear model and ANOVA
3. Variance difference test

### D. Teaching Activity, Media and Teaching Aids :

| Stage        | Lecturer Activity  | Student Activity   | Media and Teaching Aids |
|--------------|--|--|-------------------------|
| Preface      | Explain the scope of material, purpose, benefit of this topic  | Paying attention and writing                                       | Blackboard and OHP.     |
| Presentation | Explain about randomization and ground plan of design, linear model and ANOVA, and also variance difference test | Paying attention and writing, giving response, asking question     | Blackboard and OHP.     |
| Closing      | Summarize, giving questions and knowledge of the future benefits   | Writing, answering question, asking question, and giving feed back | Blackboard and OHP.     |

### E. Evaluation :

Giving grades for the written answer in examination test.

### F. References :

1. Gaspersz, V. 1991. Teknik Analisis dalam Penelitian Percobaan. Penerbit Tarsito, Bandung.
2. Gomez, K.A. and A.A. Gomez. 1984. Statisticals Procedures for Agricultural Research Second Edition. An International Rice Research Institute Book. A Wiley-interscience Publication. John Wiley & Sons. New York.
3. Steel, R.G.D. dan J.H. Torrie. 1991. Prinsip dan Prosedur Statistika Suatu Pendekatan Biometrik. Edisi ke-2 (Diterjemahkan oleh B.Sumantri). Penerbit PT.Gramedia. Jakarta.
4. Sudjana. 1980. Disain dan Analisis Eksperimen. Edisi Pertama. Penerbit Tarsito Bandung.
5. Yitnosumarto, S. 1991. Percobaan, Perancangan, Analisis dan Interpretasinya. Edisi Pertama. PT.Gramedia Pustaka Utama. Jakarta.

## LECTURING AGENDA UNIT (SAP)

Subject Studied : RESEARCH DESIGN  
 Code number :  
 Session Duration : 100 minutes x 1 session  
 Session : 10

### A. Instructional Objective :

1. General : After following this course, student will be able to explain Split Plot Design
2. Specific: After following this course, student will be able to explain randomization and ground plan of design, linear model and ANOVA, and also variance difference test

### B. Major Topic :

1. Split Plot Design

### C. Minor Topic :

1. Randomization and ground plan of design
2. Linear model and ANOVA
3. Variance difference test

### D. Teaching Activity, Media and Teaching Aids :

| Stage        | Lecturer Activity  | Student Activity   | Media and Teaching Aids |
|--------------|--|--|-------------------------|
| Preface      | Explain the scope of material, purpose, benefit of this topic  | Paying attention and writing                                       | Blackboard and OHP.     |
| Presentation | Explain about randomization and ground plan of design, linear model and ANOVA, and also variance difference test | Paying attention and writing, giving response, asking question     | Blackboard and OHP.     |
| Closing      | Summarize, giving questions and knowledge of the future benefits   | Writing, answering question, asking question, and giving feed back | Blackboard and OHP.     |

### E. Evaluation :

Giving grades for the written answer in examination test.

### F. References :

1. Gaspersz, V. 1991. Teknik Analisis dalam Penelitian Percobaan. Penerbit Tarsito, Bandung.
2. Gomez, K.A. and A.A. Gomez. 1984. Statistical Procedures for Agricultural Research Second Edition. An International Rice Research Institute Book. A Wiley-Interscience Publication. John Wiley & Sons. New York.
3. Steel, R.G.D. dan J.H. Torrie. 1991. Prinsip dan Prosedur Statistika Suatu Pendekatan Biometrik. Edisi ke-2 (Diterjemahkan oleh B.Sumantri). Penerbit PT.Gramedia. Jakarta.
4. Sudjana. 1980. Disain dan Analisis Eksperimen. Edisi Pertama. Penerbit Tarsito Bandung.
5. Yitnosumarto, S. 1991. Percobaan, Perancangan, Analisis dan Interpretasinya. Edisi Pertama. PT.Gramedia Pustaka Utama. Jakarta.

## LECTURING AGENDA UNIT (SAP)

Subject Studied : RESEARCH DESIGN  
 Code number :  
 Session Duration : 100 minutes x 1 session  
 Session : 11

### A. Instructional Objective :

1. General : After following this course, student will be able to explain Field Research Design: purpose, sampling, and measurement scale
2. Specific: After following this course, student will be able to explain random, purposive, stratification, proportional, multi stage, and measurement scale: Nominal, ordinal, interval, ratio

### B. Major Topic :

1. Field Research Design: purpose, sampling, and measurement scale.

### C. Minor Topic :

1. Random
2. Purposive
3. Stratification
4. Proportional
5. Multi stage
6. Measurement scale: Nominal, ordinal, interval, ratio

### D. Teaching Activity, Media and Teaching Aids :

| Stage        | Lecturer Activity  | Student Activity   | Media and Teaching Aids |
|--------------|--|--|-------------------------|
| Preface      | Explain the scope of material, purpose, benefit of this topic  | Paying attention and writing                                       | Blackboard and OHP.     |
| Presentation | Explain about random, purposive, stratification, proportional, multi stage, and measurement scale: Nominal, ordinal, interval, ratio | Paying attention and writing, giving response, asking question     | Blackboard and OHP.     |
| Closing      | Summarize, giving questions and knowledge of the future benefits   | Writing, answering question, asking question, and giving feed back | Blackboard and OHP.     |

### E. Evaluation :

Giving grades for the written answer in examination test.

### F. References :

1. Mardalis. 1995. Metode Penelitian. Suatu Pendekatan Proposal. Penerbit Bumi Aksara. Jakarta.
2. Singarimbun, M. 1982. Metode Penelitian Survei. LP3ES. Jakarta.
3. Suryabrata, S. 1983. Metodologi Penelitian. Universitas Gadjah Mada, CV.Rajawali. Jakarta.
4. Hadi, S. 1975. Metode Research. Jilid I. Gadjah Mada University Press. Yogyakarta.

## LECTURING AGENDA UNIT (SAP)

Subject Studied : RESEARCH DESIGN  
 Code number :  
 Session Duration : 100 minutes x 1 session  
 Session : 12

### A. Instructional Objective :

1. General : After following this course, student will be able to explain Different  $\mu$  Analysis
2. Specific: After following this course, student will be able to explain t test: 1 sample, paired sample, independent

### B. Major Topic :

1. Different  $\mu$  Analysis

### C. Minor Topic :

1. t test: 1 sample, paired sample, independent

### D. Teaching Activity, Media and Teaching Aids :

| Stage        | Lecturer Activity  | Student Activity   | Media and Teaching Aids |
|--------------|--|--|-------------------------|
| Preface      | Explain the scope of material, purpose, benefit of this topic    | Paying attention and writing                                       | Blackboard and OHP.     |
| Presentation | Explain about t test: 1 sample, paired sample, independent       | Paying attention and writing, giving response, asking question     | Blackboard and OHP.     |
| Closing      | Summarize, giving questions and knowledge of the future benefits | Writing, answering question, asking question, and giving feed back | Blackboard and OHP.     |

### E. Evaluation :

Giving grades for the written answer in examination test.

### F. References :

1. Dajan, A. 1996. Pengantar Metode Statistika. Jilid I. Cetakan ke-18. Penerbit PT.Pustaka LP3ES, Jakarta.
2. Dajan, A. 1996. Pengantar Metode Statistika. Jilid II. Cetakan ke-18. Penerbit PT.Pustaka LP3ES, Jakarta.
3. Dixon, W.J. dan F.J. Massey, Jr. 1997. Pengantar Analisis Statistik. Cetakan ke-2. Diterjemahkan oleh: Sri Kustantini S. dan Zanzawi S. Gadjah Mada University Press, Yogyakarta.
4. Ostle, B. 1963. Statistics in Research. 2nd Ed. The Iowa State University. Press. Ames.
5. Siegel, S. 1994. Statistik Non Parametrik Untuk Ilmu – Ilmu Sosial. PT. Gramedia, Jakarta.
6. Snedecor, G.W. and W.G. Cochran. 1967. Statisticals Methods. Sixth Edition. Oxford & IBH Publishing Co. Calcutta, Bombay, New Delhi.
7. Sudjana. 1975. Metode Statistika. Cetakan ke-1. Penerbit Tarsito. Bandung.
8. Walpole, R.E. 1988. Pengantar Statistika. Cetakan ke-3. Diterjemahkan oleh: B.Sumantri. Penerbit PT.Gramedia, Jakarta..

## LECTURING AGENDA UNIT (SAP)

Subject Studied : RESEARCH DESIGN  
 Code number :  
 Session Duration : 100 minutes x 1 session  
 Session : 13

**A. Instructional Objective :**

1. General : After following this course, student will be able to explain Different Median Analysis
2. Specific: After following this course, student will be able to explain U-test, W-test, Kruskal-Wallis test and Friedman test.

**B. Major Topic :**

1. Different Median Analysis

**C. Minor Topic :**

U-test, W-test, Kruskal-Wallis test and Friedman test

**D. Teaching Activity, Media and Teaching Aids :**

| Stage        | Lecturer Activity   | Student Activity   | Media and Teaching Aids |
|--------------|---|--|-------------------------|
| Preface      | Explain the scope of material, purpose, benefit of this topic       | Paying attention and writing                                       | Blackboard and OHP.     |
| Presentation | Explain about U-test, W-test, Kruskal-Wallis test and Friedman test | Paying attention and writing, giving response, asking question     | Blackboard and OHP.     |
| Closing      | Summarize, giving questions and knowledge of the future benefits    | Writing, answering question, asking question, and giving feed back | Blackboard and OHP.     |

**E. Evaluation :**

Giving grades for the written answer in examination test.

**F. References :**

1. Dajan, A. 1996. Pengantar Metode Statistika. Jilid I. Cetakan ke-18. Penerbit PT.Pustaka LP3ES, Jakarta.
2. Dajan, A. 1996. Pengantar Metode Statistika. Jilid II. Cetakan ke-18. Penerbit PT.Pustaka LP3ES, Jakarta.
3. Dixon, W.J. dan F.J. Massey, Jr. 1997. Pengantar Analisis Statistik. Cetakan ke-2. Diterjemahkan oleh: Sri Kustantini S. dan Zanzawi S. Gadjah Mada University Press, Yogyakarta.
4. Ostle, B. 1963. Statistics in Research. 2nd Ed. The Iowa State University. Press. Ames.
5. Siegel, S. 1994. Statistik Non Parametrik Untuk Ilmu – Ilmu Sosial. PT. Gramedia, Jakarta.
6. Snedecor, G.W. and W.G. Cochran. 1967. Statistical Methods. Sixth Edition. Oxford & IBH Publishing Co. Calcutta, Bombay, New Delhi.
7. Sudjana. 1975. Metode Statistika. Cetakan ke-1. Penerbit Tarsito. Bandung.
8. Walpole, R.E. 1988. Pengantar Statistika. Cetakan ke-3. Diterjemahkan oleh: B.Sumantri. Penerbit PT.Gramedia, Jakarta..

## LECTURING AGENDA UNIT (SAP)

Subject Studied : RESEARCH DESIGN  
 Code number :  
 Session Duration : 100 minutes x 1 session  
 Session : 14

**A. Instructional Objective :**

1. General : After following this course, student will be able to explain Regression Analysis
2. Specific: After following this course, student will be able to explain Regression equations and t/ F test

**B. Major Topic :**

1. Regression Analysis

**C. Minor Topic :**

1. Regression equations and t/ F test

**D. Teaching Activity, Media and Teaching Aids :**

| Stage        | Lecturer Activity  | Student Activity   | Media and Teaching Aids |
|--------------|--|--|-------------------------|
| Preface      | Explain the scope of material, purpose, benefit of this topic    | Paying attention and writing                                       | Blackboard and OHP.     |
| Presentation | Explain about Regression equations and t/ F test                 | Paying attention and writing, giving response, asking question     | Blackboard and OHP.     |
| Closing      | Summarize, giving questions and knowledge of the future benefits | Writing, answering question, asking question, and giving feed back | Blackboard and OHP.     |

**E. Evaluation :**

Giving grades for the written answer in examination test.

**F. References :**

1. Dajan, A. 1996. Pengantar Metode Statistika. Jilid I. Cetakan ke-18. Penerbit PT.Pustaka LP3ES, Jakarta.
2. Dajan, A. 1996. Pengantar Metode Statistika. Jilid II. Cetakan ke-18. Penerbit PT.Pustaka LP3ES, Jakarta.
3. Dixon, W.J. dan F.J. Massey, Jr. 1997. Pengantar Analisis Statistik. Cetakan ke-2. Diterjemahkan oleh: Sri Kustantini S. dan Zanzawi S. Gadjah Mada University Press, Yogyakarta.
4. Ostle, B. 1963. Statistics in Research. 2nd Ed. The Iowa State University. Press. Ames.
5. Siegel, S. 1994. Statistik Non Parametrik Untuk Ilmu – Ilmu Sosial. PT. Gramedia, Jakarta.
6. Snedecor, G.W. and W.G. Cochran. 1967. Statistical Methods. Sixth Edition. Oxford & IBH Publishing Co. Calcutta, Bombay, New Delhi.
7. Sudjana. 1975. Metode Statistika. Cetakan ke-1. Penerbit Tarsito. Bandung.
8. Walpole, R.E. 1988. Pengantar Statistika. Cetakan ke-3. Diterjemahkan oleh: B.Sumantri. Penerbit PT.Gramedia, Jakarta.

## LECTURING AGENDA UNIT (SAP)

Subject Studied : RESEARCH DESIGN  
 Code number :  
 Session Duration : 100 minutes x 1 session  
 Session : 15

**A. Instructional Objective :**

1. General : After following this course, student will be able to explain Correlation Analysis
2. Specific: After following this course, student will be able to explain the criteria of close relationships and the direction of relationships and also Pearson correlation and Spearman test

**B. Major Topic :**

1. Correlation Analysis

**C. Minor Topic :**

1. The criteria of close relationships and the direction of relationships
2. Pearson correlation and Spearman test

**D. Teaching Activity, Media and Teaching Aids :**

| Stage        | Lecturer Activity   | Student Activity   | Media and Teaching Aids |
|--------------|---|--|-------------------------|
| Preface      | Explain the scope of material, purpose, benefit of this topic   | Paying attention and writing                                       | Blackboard and OHP.     |
| Presentation | Explain about the criteria of close relationships and the direction of relationships and also Pearson correlation and Spearman test | Paying attention and writing, giving response, asking question     | Blackboard and OHP.     |
| Closing      | Summarize, giving questions and knowledge of the future benefits  | Writing, answering question, asking question, and giving feed back | Blackboard and OHP.     |

**E. Evaluation :**

Giving grades for the written answer in examination test.

**F. References :**

1. Dajan, A. 1996. Pengantar Metode Statistika. Jilid I. Cetakan ke-18. Penerbit PT.Pustaka LP3ES, Jakarta.
2. Dajan, A. 1996. Pengantar Metode Statistika. Jilid II. Cetakan ke-18. Penerbit PT.Pustaka LP3ES, Jakarta.
3. Dixon, W.J. dan F.J. Massey, Jr. 1997. Pengantar Analisis Statistik. Cetakan ke-2. Diterjemahkan oleh: Sri Kustamitini S. dan Zanzawi S. Gadjah Mada University Press, Yogyakarta.
4. Ostle, B. 1963. Statistics in Research. 2nd Ed. The Iowa State University. Press. Ames.
5. Siegel, S. 1994. Statistik Non Parametrik Untuk Ilmu – Ilmu Sosial. PT. Gramedia, Jakarta.
6. Snedecor, G.W. and W.G. Cochran. 1967. Statistical Methods. Sixth Edition. Oxford & IBH Publishing Co. Calcutta, Bombay, New Delhi.
7. Sudjana. 1975. Metode Statistika. Cetakan ke-1. Penerbit Tarsito. Bandung.
8. Walpole, R.E. 1988. Pengantar Statistika. Cetakan ke-3. Diterjemahkan oleh: B.Sumantri. Penerbit PT.Gramedia, Jakarta.

**FACULTY OF ANIMAL AGRICULTURE DIPONEGORO UNIVERSITY**  
**COURSE OUTLINE**

|                     |   |   |
|---------------------|---|---|
| Subject studied     | : | Research Design   |
| Code number/ SCS    | : | / 3 (2-1)   |
| Course Outline      | : | The truth of knowledge learned by the assumption of scientific method. Scientific research build on the based of rational and empirical thinking patern through systematic procedures of experimental research, field, and library study. The impelementation of scientific research need a brief plan that consist of: treatment, material, sample and analyses based on its statistics.   |
| General Instruction | : | After following this course, student will be able to explain and use the scientific assumptions of statistics in analyzing the result of research both of observation and experimental.   |
| Reading Source      | : | <ol style="list-style-type: none"><li>1. Dajan, A. 1996. Pengantar Metode Statistika. 1<sup>st</sup> Edition. Penerbit PT.Pustaka LP3ES, Jakarta.</li><li>2. Dajan, A. 1996. Pengantar Metode Statistika. 2<sup>nd</sup> Edition. Penerbit PT.Pustaka LP3ES, Jakarta.</li><li>3. Dixon, W.J. and F.J. Massey, Jr. 1997. Pengantar Analisis Statistik. Translated by: Sri Kustantini S. and Zauzawi S. Gadjah Mada University Press, Yogyakarta.</li><li>4. Gaspersz, V. 1991. Teknik Analisis dalam Penelitian Percobaan. Penerbit Tarsito, Bandung.</li><li>5. Gomez, K.A. and A.A. Gomez. 1984. Statisticals Procedures for Agricultural Research Second Edition. An International Rice Research Institute Book. A Wiley-interscience Publication. John Wiley &amp; Sons. New York.</li><li>6. I.P.W.I. 1995. Modul Metodologi Riset Bisnis. Badan Penerbit I.P.W.I. Jakarta.</li><li>7. Kerlinger, F.N. 1973. Foundation of Behavioural Research. Second Edition. Holt Rinehart and Winstons, Inc. New York.</li><li>8. Leedy, P. 1974. Practical Research: Planning and Design. Mac Milan Publishing Co. Inc. New York.</li><li>9. Mardalis. 1995. Metode Penelitian. Suatu Pendekatan Proposal. Penerbit Bumi Aksara. Jakarta.</li><li>10. Singarimbun, M. 1982. Metode Penelitian Survai. LP3ES. Jakarta.</li><li>11. Ostle, B. 1963. Statistics in Research. 2nd Ed. The Iowa State University. Press. Ames.</li><li>12. Siegel, S. 1994. Statistik Non Parametrik Untuk Ilmu – Ilmu Sosial. PT. Gramedia, Jakarta.</li><li>13. Snedecor, G.W. and W.G. Cochran. 1967. Statisticals Methods. Sixth Edition. Oxford &amp; IBH Publishing Co. Calcutta, Bombay, New Delhi.</li><li>14. Sokal, R.R. and F.J. Rohlf. 1991. Pengantar Biostatistika. 2<sup>nd</sup> Edition. Translated by: Nasrullah and Setyono Setyo Sumarto. Penerbit Gadjah Mada University Press Yogyakarta.</li><li>15. Spiegel, M.R., I. Y. Susila and E. Gunawan. 1961. Statistik Edisi SI (Metrik). Schaum Publishing Company, Edinburg.</li><li>16. Steel, R.G.D. and J.H. Torrie. 1991. Prinsip dan Prosedur Statistika Suatu Pendekatan Biometrik. 2nd Edition. Translated by: B.Sumantri). Penerbit PT.Gramedia. Jakarta.</li><li>17. Sudjana. 1975. Metode Statistika. Penerbit Tarsito. Bandung.</li><li>18. Sudjana. 1980. Disain dan Analisis Eksperimen. 1<sup>st</sup> Edition. Penerbit Tarsito Bandung.</li><li>19. Suryabrata, S. 1983. Metodologi Penelitian. Universitas Gadjah Mada, CV.Rajawali. Jakarta.</li><li>20. Hadi, S. 1975. Metode Research. Gadjah Mada University Press. Yogyakarta.</li><li>21. Walpole, R.E. 1988. Pengantar Statistika. Translated by: B.Sumantri. Penerbit PT.Gramedia, Jakarta.</li><li>22. Yitnosumarto, S. 1991. Percobaan, Perancangan, Analisis dan Interpretasinya. PT.Gramedia Pustaka Utama. Jakarta.</li></ol> |

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| No. | Specific Instruction  | Major Topic  | Minor Topic  | Time Estimation | Reading Source      |
|-----|---|--|--|-----------------|---------------------|
| 1.  | After following this course, student will be able to explain the definition and importance of research.                     | Preface  | <ol style="list-style-type: none"> <li>1. Human's passion to reveal the secret of nature</li> <li>2. The scientific truth</li> <li>3. The definition of research</li> <li>4. The function, classification, and importance of research</li> </ol>   | 1 x 100 minutes | 7, 8 and 9          |
| 2.  | After following this course, student will be able to explain The Principles of Research                                     | The Scientific Research Principles   | <ol style="list-style-type: none"> <li>1. The Scientific research attitude</li> <li>2. The scientific thinking pattern</li> <li>3. The essence of research</li> <li>4. The principles of design and report</li> </ol>  | 1 x 100 minutes | 7, 8 and 9          |
| 3.  | After following this course, student will be able to explain the phase of research preparation processes                    | The Research Processes phases:<br>The phases of preparation                        | <ol style="list-style-type: none"> <li>1. Identify the selection and abbreviation of the problems</li> <li>2. Library study</li> <li>3. Identify, classify, and giving operational definition</li> <li>4. Research variable</li> </ol>   | 1 x 100 minutes | 9, 10, 19 and 20    |
| 4.  | After following this course, student will be able to explain the phase of research implementation processes                 | The Research Processes phases:<br>The phases of implementation                     | <ol style="list-style-type: none"> <li>1. Selection/ developing the tools to collect data</li> <li>2. Composing research design</li> <li>3. Determining sample</li> <li>4. Collecting data</li> <li>5. Tabulating and analysis data</li> <li>6. Interpretation the result of analysis</li> <li>7. Composing the report</li> </ol>          | 1 x 100 minutes | 9, 10, 19 and 20    |
| 5.  | After following this course, student will be able to explain The Completely Randomized Design (CRD) and data transformation | Experimental Design:<br>Completely Randomized Design (CRD) and data transformation | <ol style="list-style-type: none"> <li>1. The definition of Basic Design and Treatment</li> <li>2. Randomization and the ground plan of CRD</li> <li>3. The linear model and ANOVA of CRD</li> <li>4. Basic assumption of ANOVA</li> <li>5. The variance homogeneity test</li> <li>6. Several procedures of data transformation</li> </ol> | 1 x 100 minutes | 4, 5, 16, 18 and 22 |
| 6.  | After following this course, student will be able to explain Multiple Comparisons and Contrast Comparisons                  | Multiple Comparisons and Contrast Comparisons                                      | <ol style="list-style-type: none"> <li>1. Least Significance Difference (LSD)</li> <li>2. Turkey test (HSD).</li> <li>3. Duncan Multiple Range Test</li> <li>4. Qualitative treatment contrast</li> <li>5. Quantitative treatment contrast</li> </ol>  | 1 x 100 minutes | 4, 5, 16, 18 and 22 |

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|     |  |   |  |                 |                                    |
|-----|--|---|--|-----------------|------------------------------------|
| 7.  | After following this course, student will be able to explain Completely Randomized Block Design (RCBD) and Latin Square Design (LSD) | Completely Randomized Block Design (RCBD) and Latin Square Design (LSD) | 1. Randomization and ground plan of design<br>2. Linear model and ANOVA of RCBD<br>3. Variance difference test<br>4. Latin Square Design       | 1 x 100 minutes | 4, 5, 16, 18 and 22                |
| 8.  |  | Mid-Semester  |  | 1 x 100 minutes |                                    |
| 9.  | After following this course, student will be able to explain Factorial Design  | Factorial Design  | 1. Randomization and ground plan of design<br>2. Linear model and ANOVA<br>3. Variance difference test   | 1 x 100 minutes | 4, 5, 16, 18 and 22                |
| 10. | After following this course, student will be able to explain Split Plot Design   | Split Plot Design   | 1. Randomization and ground plan of design<br>2. Linear model and ANOVA<br>3. Variance difference test   | 1 x 100 minutes | 4, 5, 16, 18 and 22                |
| 11. | After following this course, student will be able to explain Field Research Design: aim, sampling, and measurement scale             | Field Research Design: aim, sampling, and measurement scale             | 1. Random<br>2. Purposive<br>3. Stratification<br>4. Proportional<br>5. Multi stage<br>6. Measurement scale: Nominal, ordinal, interval, ratio | 1 x 100 minutes | 9, 10, 19 and 20                   |
| 12. | After following this course, student will be able to explain Different $\mu$ Analysis  | Different $\mu$ Analysis  | t test: 1 sample, paired sample, independent   | 1 x 100 minutes | 1, 2, 3, 11, 12, 13, 15, 17, 21 22 |
| 13. | After following this course, student will be able to explain Different Median Analysis   | Different Median Analysis   | U-test, W-test, Kruskal-Wallis test and Friedman test  | 1 x 100 minutes | 1, 2, 3, 11, 12, 13, 15, 17 and 21 |
| 14. | After following this course, student will be able to explain Regression Analysis   | Regression Analysis   | Regression equations and t/F test  | 1 x 100 minutes | 1, 2, 3, 11, 12, 13, 15, 17 and 21 |
| 15. | After following this course, student will be able to explain Correlation Analysis  | Correlation Analysis  | 1. The criteria of close relationships and the direction of relationships<br>2. Pearson correlation and Spearman test                          | 1 x 100 minutes | 1, 2, 3, 11, 12, 13, 15, 17 and 21 |
| 16. | After following this course, student will be able to implement discussion and develop the material has been given                    | Discussion of the assignment  |  | 1 x 100 minutes | Depend on the student              |

COURSE : Basic Animal Nutrition

COURSE CODE :

CREDIT : 3 (2-1)

LECTURING AGENDA UNIT

Subject Studied : Basic Animal Nutrition  
 Subject Code : \_\_\_\_\_  
 Credits : 3 (2-1)  
 Duration : 100 minute (2 x 50 minute)  
 Meeting of the : 1st

A. Instrution

1. General Instruction : End of lecture, student could explain about definition, history and development of nutrition science; the objective of learning basic animal nutrition and feedstuffs classification
2. Specific Instruction : End of lecture, student could explain well about definition, history and development of nutrition science; the objective of learning basic animal nutrition; the relation of other sciences and feedstuffs classification

B. Main Topic : The history and development of nutrition science

C. Sub Topic : Course outline; definition, history and development of nutrition science; the objective of learning basic animal nutrition; the relation of other sciences; International feedstuffs classification

D. Teaching Learning Activity :

| Steps          | Teaching Activity  | Student Activity  | Teaching Instrument   |
|----------------|--|---|---|
| Introduction   | 1. Giving the course outline   | Listening, question   | Copy of course outline  |
|                | 2. Explain the course outline, schedule, the role and evaluation methode of the whole lecture included the laboratory work |   |   |
|                | 3. Explain the general and specisfic intruction of this meeting  | Listening, question   | LCD   |
| Delivery       | 4. Giving hand out of this topic   | Listening, question   | Copy of l hand out about definition, history and development of nutrition science |
|                | 5. Explain about definition, history and development of nutrition science  |   |   |
|                | 6. Explain the usefullness and the objective of studying this subject and the relation of other field of science           | Listening, question and giving an idea                        |   |
|                | 7. Giving sample of some field of science and explain the role and the relationship animal nutrition science               | Question, giving an idea and discussion                       | LCD   |
|                | 8. Explain and give sample about international feedstuffs clasification  |   |   |
| Closing Remark | 9. Stimulate question and comment from student   | Discussion  |   |
|                | 10. Summarize and highlight the importance   | Listening, question and giving an idea<br>Writing the comment | LCD   |
|                | 11. Giving hand out for the next topic   | Reading and learning the hand out                             | Copy of hand out for the next topic   |

E. Evaluation : using respon card, question and home work that give at the end of each meeting

F. References :

1. Pond, W.G., D.C. Church, and K.R. Pond: 1995. Basic Animal Nutrition and Feeding. 4<sup>th</sup> Ed. John Wiley & Sons, New York.
2. Sutardi, T. 1980. Landasan Ilmu Nutrisi. Book 1. Departemen Ilmu Makanan Ternak Fakultas Peternakan Institut Pertanian Bogor, Bogor (Not Published).
3. Tillman, A.D., H. Hartadi, S. Reksohadiprojjo, S. Prawirokusumo and S. Lebdoesoekojo. 1998. Ilmu Makanan Ternak Dasar. Gajah Mada University Press. Yogyakarta.

## LECTURING AGENDA UNIT

Duration : 400 minute ( 8 x 50 minute)  
 Meeting of the : 2nd, 3rd, 4th and 5th

**A. Instruction**

1. General Instruction : End of lecture, student could explain about composition and function of nutrient for animals body
2. Specific Instruction : End of lecture, student could explain about nutrient composition of feedstuffs based on Weende and Van Soest analysis method as well as conversion on nutrient content; Nutrient composition of plant and animal and its function in animal body

**B. Main Topi** : Composition and function of nutrient for animal body

**C. Sub Topic** :

- nutrient composition of feedstuffs based on Weende and Van Soest analysis method as well as conversion on nutrient content
- Nutrient composition of plant and animal and its function in animal body

**D. Teaching Learning Activity :**

| Steps          | Teaching Activity  | Student Activity  | Teaching Instrument  |
|----------------|--|---|--|
| Introduction   | <ol style="list-style-type: none"> <li>1. Explain the general and specific instruction of the 2<sup>nd</sup> to 5<sup>th</sup> meeting</li> <li>2. Explain the benefit of studying this topic</li> </ol>   | Listening, question   | LCD  |
| Delivery       | <ol style="list-style-type: none"> <li>3. Explain about nutrient composition fractionation based on Weende dan Van Soest analysis</li> <li>4. Giving an example of nutrient composition based on Weende dan Van Soest analysis</li> <li>5. Explain about the nutrient content of feedstuff based on fresh, air dry and oven dry</li> <li>6. Explain how to convert nutrient content from fresh to air dry and into oven dry</li> <li>7. Giving problem on nutrient content conversion</li> <li>8. Giving home work on computation of nutrient content conversion</li> <li>9. Stimulate question and comment from student</li> <li>10. Explain about nutrient composition of plant and animal as well as the function in animal body</li> <li>11. Giving home work to find at least 3 feedstuffs showing the nutrient composition base on Weende dan Van Soest analysis and explain which kind of animal could eat the feedstuffs and what is the function for the animal of those dominated nutrient in feedstuffs</li> <li>12. Stimulate question and comment from student</li> </ol> | Listening, question<br><br>Question and giving idea<br><br>Question and giving idea<br><br>Question, giving idea and Discussion<br><br>Group discussion<br><br>Question, giving idea and Discussion | Hand out of Composition and function of nutrient in animal body<br>LCD<br><br>Table of Feedstuffs Composition<br><br>LCD |
| Closing Remark | <ol style="list-style-type: none"> <li>13. Summarize and highlight the importance</li> </ol>   | Memperhatikan, sumbang saran dan mencatat komentar pengajar   | LCD  |
|                | <ol style="list-style-type: none"> <li>14. Giving hand out for the next topic</li> </ol>   |   | Hand-out-for-the-next-topoic   |

**E. Evaluation** : using respon card, question and home work that give at the end of each meeting

**F. References** :

1. AOAC. 2005. Official Methods of Analysis of The Association of Official Agricultural Chemists. AOAC, Washington D.C.
2. Crampton, E.W. dan L.E. Harris. 1969. Applied Animal Nutrition. 2<sup>nd</sup> Ed. W.H. Freeman and Co., San Fransisco.

3. Cullison, A.E. 1978. Feeds and Feeding. Prentice Hall of Indian Private Ltd., New Delhi.
4. Pond, W.G., D.C. Church and K.R. Pond. 1995. Basic Animal Nutrition and Feeding. 4<sup>th</sup> Ed. John Wiley & Sons, New York.
5. Sutardi, T. 1980. Landasan Ilmu Nutrisi. Book 1. Departemen Ilmu Makanan Ternak Fakultas Peternakan Institut Pertanian Bogor, Bogor (Not Published).

## LECTURING AGENDA UNIT

Duration : 500 minute ( 10 x 50 minute)

Meeting of the : 6th , 7th , 8th dan 9th

### A. Instruction

1. General Instruction : End of lecture, student could explain about function and process of nutrient digestion and absorption in ruminant and non ruminant

2. Specific Instruction : End of lecture, student was capable to:

- a. Group animals base on the gastric, digestion phisiology and kind of feed eaten
- b. Differentiate the antomy and function of the digestive truct in the different kind of animal
- c. Differentiate the place and process of digestion and nutrient absopction that inclcled carbohydrate, lipid, protein, vitamin and mineral
- d. Mastering of physiology control of feed intake

B. Main Topic : Function and process of nutrient digestion and absorption

### C. Sub Topic :

- Anatomy of digestive organ of ruminant, non ruminant, pseudoruminant and poultry
- Digestion process and nutrient (carbohidrate, lipid, protein, vitamin dan mineral) absorption
- Physiology control of feed intake

### D. Teaching Learning Activity

| Steps          | Teaching Activity  | Student Activity  | Teaching Instrument  |
|----------------|--|---|--|
| Introduction   | <ol style="list-style-type: none"> <li>1. Explain the general and specific intruction of the 6<sup>th</sup> to 9<sup>th</sup> meeting</li> <li>2. Explain the benefit of studying this topic</li> </ol>  | Listening, question   | LCD  |
| Delivery       | <ol style="list-style-type: none"> <li>3. Explain animal grouppping based on kind of feed eaten (herbivore, omnivore and karnivore) and give sample of the animals</li> <li>4. Explain the digestive organs in succession from mout to anus</li> <li>5. Explain animal grouppping based on their gastric (monogastric and poligastric) and give sample of the animals</li> <li>6. Explain the meaning of digestion process included the 3 kind general digestion process</li> <li>7. Explain animal grouppping based on digestion physiology (ruminant, non ruminant, pseudoruminant dan poultry) and give sample of the animals</li> <li>8. Giving assignment to the group of student as follows: let each group choose a feedstuffs and explain how this feed would be digested in a specific animal (choose one animal per group)</li> <li>9. Discuss the topic in the group and present the summury in the class</li> <li>10. Guide the group or class discussion, stimulate question and comment</li> <li>11. Summarize and highlight the importance</li> <li>12. Explain the anatomy of digestive organ and its function in ruminant, non ruminant and poultry</li> <li>13. Explain the nutrien digestion processes included carbohidrate, lipid, protein, vitamin, mineral and water untill it ready to be absorp</li> <li>14. Explain the absorption process of end product of nutrient digestion and place of absorption along the digestive truct</li> </ol> | Listening, question<br><br>Question and giving idea<br><br>Question and giving idea<br>Question, giving idea and Discussion<br><br>Work the assignment<br><br>Group discussion<br>Present the summary<br>Class discussion<br>Question, giving idea and Discussion | Hand out of this topic<br><br>LCD<br><br>Illustration of digestive organ of each animal<br><br>LCD |
|                |  | Question, giving idea and Discussion<br><br>Question, giving idea and Discussion<br><br>Question, giving idea and Discussion  |  |
| Closing Remark | <ol style="list-style-type: none"> <li>15. Summarize and highlight the importance</li> </ol>   | Question, giving idea and Discussion  | LCD  |

|  |  |                                    |                             |
|--|--|------------------------------------|-----------------------------|
|  | 16. Giving hand out for the next topic | Giving hand out for the next topic | Hand out for the next topic |
|--|--|------------------------------------|-----------------------------|

E. Evaluation : using respon card, question and home work that give at the end of each meeting

F. References :

1. Lassiter, J.W., and H.M. Edwards. 1982. Animal Nutrition. Reston Publishing Company Inc. A Prentice-Hall Company, Reston.
2. Pond, W.G., D.C. Church and K.R. Pond. 1995. Basic Animal Nutrition and Feeding. 4<sup>th</sup> Ed. John Wiley & Sons. New York.
3. Prawirokusumo, S. 1994. Ilmu Gizi Komparatif. Cetakan I. BPFE, Yogyakarta.
4. Sutardi, T. 1980. Landasan Ilmu Nutrisi. Book 1. Departemen Ilmu Makanan Ternak Fakultas Peternakan Institut Pertanian Bogor, Bogor (Not Published).
5. Tillman, A.D., H. Hartadi, S. Reksohadiprodjo, S. Prawirokusumo and S. Lebdosoekojo. 1998. Ilmu Makanan Ternak Dasar. Gadjah Mada University Press. Yogyakarta.

LECTURING AGENDA UNIT

Duration : 200 minute (4 x 50 minute)

Meeting of the : 10th and 11th

A. Instruction

1. General Instruction : End of lecture, student could explain about function and process of nutrient digestion and absorption

2. Specific Instruction : End of lecture, student could classified the nutrient requirement for maintenance (protein dan energy); growth and fattening; Reproduction, lactation and production (work, egg, wool)

B. Main Topic : Nutrient requirement classification based on physiological status of the animal

C. Sub Topic : Nutrient requirement for: maintenance (protein dan energy); growth and fattening; Reproduction, lactation and production (work, egg, wool)

D. Teaching Learning Activity :

| Steps          | Teaching Activity  | Student Activity  | Teaching Instrument   |
|----------------|--|---|---|
| Introduction   | 1. Explain the general and specific instruction of the 10 <sup>th</sup> to 11 <sup>th</sup> meeting<br>2. Explain the benefit of studying this topic   | Listening, question   | LCD   |
| Delivery       | 3. Explain the meaning of nutrient requirement and the benefit for the animal<br>4. Explain nutrient requirement based on physiological status (maintenance, growth and fattening; Reproduction, lactation and production (work, egg, wool))<br>5. Explain how to read nutrient requirement in the table of nutrient requirement<br>6. Giving assignment: looking for nutrient requirement of specific animal at a certain physiological stage<br>7. Present the result<br>8. Stimulate question and comment | Listening, question<br>Question, giving idea and Discussion<br><br>Group discussion<br><br>Present the result<br>Question, giving idea and Discussion | Hand out of this topic<br>LCD<br><br>Table of nutrient requirement of the kind of animal at the different physiological stages<br><br>LCD |
| Closing Remark | 9. Summarize and highlight the importance<br>10. Giving hand out for the next topic  | Question, giving idea and Discussion<br><br>Giving hand out for the next topic  | LCD<br><br>Hand out for the next topic  |

E. Evaluation : using response card, question and home work that give at the end of each meeting

F. References :

1. Crampton, E.W. and L.E. Harris. 1969. Applied Animal Nutrition. 2<sup>nd</sup> Ed. W.H. Freeman and Co., San Francisco.

2. Cullison, A.E. 1978. Feeds and Feeding. Prentice Hall of Indian Private Ltd., New Delhi.

3. Pond, W.G., D.C. Church and K.R. Pond. 1995. Basic Animal Nutrition and Feeding. 4<sup>th</sup> Ed. John Wiley & Sons, New York.

4. Tillman, A.D., H. Hartadi, S. Reksohadiprodjo, S. Prawirokusumo and S. Lebdoesoekojo. 1998. Ilmu Makanan Ternak Dasar. Gadjah Mada University Press, Yogyakarta

## LECTURING AGENDA UNIT

Duration : 100 minute (2 x 50 minute)

Meeting of the : 12th

### A. Instruction

1. General Instruction : End of lecture, student could explain about the meaning and method used for feed digestion evaluation in ruminant and non ruminant
2. Specific Instruction : End of lecture, student could explain and choose the right digestion method for ruminant and non ruminant based on the available instrument.

B. Main Topic : Feed digestion evaluation method

C. Sub Topic : 1. The meaning of digestion; 2. Digestion method measurement : *In vivo* (indicator, total collection and force feeding), *In vitro*, *In sacco (in situ)*

### D. Teaching Learning Activity :

| Steps          | Teaching Activity   | Student Activity  | Teaching Instrument   |
|----------------|---|---|---|
| Introduction   | 1. Explain the general and specific instruction of the 12 <sup>th</sup> meeting<br>2. Explain the benefit of studying this topic  | Listening, question   | LCD   |
| Delivery       | 3. Explain the meaning and evaluation method of feed digestion<br>4. Explain several methods of feed digestion { <i>In Vivo</i> (Indicator, Total collection, Force Feeding), <i>In Vitro</i> , <i>In Situ/In Sacco</i> }<br>5. Explain the benefit and the harmfulness of each method<br>6. Giving assignment to the student to look for feed digestion evaluation from student last task or journals<br>7. Present the result<br>8. Stimulate question and comment from the student | Listening, question<br>Question, giving idea and Discussion<br><br>Group discussion<br><br>Present the result<br>Question, giving idea and Discussion | Hand out of this topic<br>LCD<br><br>Research report, journals<br><br>LCD |
| Closing Remark | 9. Summarize and highlight the importance<br>10. Giving homework : looking a digestion evaluation method used in an experiment<br>11. Giving hand out for the next topic  | Question, giving idea and Discussion<br><br>Giving hand out for the next topic  | LCD<br><br>Hand out for the next topic                                    |

E. Evaluation : using respon card, question and home work that give at the end of each meeting

### F. References :

1. Crampton, E.W. and L.E. Harris. 1969. Applied Animal Nutrition. 2<sup>nd</sup> Ed. W.H. Freeman and Co., San Fransisco.
2. Cullison, A.E. 1978. Feeds and Feeding. Animal Nutrition. Prentice Hall of Indian Private Ltd., New Delhi.
3. Pond, W.G., D.C. Church and K.R. Pond. 1995. Basic Animal Nutrition and Feeding. 4<sup>th</sup> Ed. John Wiley & Sons, New York.
4. Tillman, A.D., H. Hartadi, S. Reksahadiprodo, S. Prawirokusumo and S. Lebdoockojo. 1998. Ilmu Makanan Ternak Dasar. Gadjah Mada University Press, Yogyakarta

## LECTURING AGENDA UNIT

Duration : 100 minute (2 x 50 minute)  
 Meeting of the : 13 th

- A. Instruction
1. General Instruction : End of lecture, student could explain about feed nutrient balance
  2. Specific Instruction : End of lecture, student could compute the nutrient balance especially the balance of N and C. energy and protein as well as mineral

B. Main Topic : Feed nutrient balance

C. Sub Topic : Nutrient balance ; N dan C balance; Mineral balance; Energy and protein balance

### D. Teaching Learning Activity

| Steps          | Teaching Activity  | Student Activity  | Teaching Instrument   |
|----------------|--|---|---|
| Introduction   | <ol style="list-style-type: none"> <li>1. Explain the general and specific instruction of the 13<sup>th</sup> meeting</li> <li>2. Explain the benefit of studying this topic</li> </ol>  | Listening, question   | LCD   |
| Delivery       | <ol style="list-style-type: none"> <li>3. Explain about the meaning of feed nutrient balance</li> <li>4. Explain about feed nutrient balance, balance of N dan C, mineral, energy and protein</li> <li>5. Giving sample of computation of each balance (N dan C, mineral, energy and protein)</li> <li>6. Giving assignment of those computation (1 problem each)</li> <li>7. Present the result</li> <li>8. Stimulate question and comment</li> </ol> | Listening, question<br>Question, giving idea and Discussion<br>Discussion<br>Group discussion<br>Present the result<br>Question, giving idea and Discussion | Hand out of this topic<br>LCD<br>Research report, journals<br>LCD |
| Closing Remark | <ol style="list-style-type: none"> <li>9. Summarize and highlight the importance</li> <li>10. Giving hand out for the next topic</li> </ol>  | Question, giving idea and Discussion<br>Giving hand out for the next topic  | LCD<br>Hand out for the next topic                                |

E. Evaluation : using respon card, question and home work that give at the end of each meeting

### F. References :

1. Cullison, A.E. 1978. Feeds and Feeding. Animal Nutrition. Prentice Hall of Indian Private Ltd., New Delhi.
2. Pond, W.G., D.C. Church and K.R. Pond. 1995. Basic Animal Nutrition and Feeding. 4<sup>th</sup> Ed. John Wiley & Sons, New York.
3. Tillman, A.D., H. Hartadi, S. Reksohadiprodjo, S. Prawirokusumo and S. Lebdoesoekojo. 1998. Ilmu Makanan Ternak Dasar. Gajah Mada University Press, Yogyakarta.

## LECTURING AGENDA UNIT

Duration : 100minute (2 x 50 minute)  
 Meeting of the : 14th

- A. Instruction
1. General Instruction : End of lecture, student could explain about energy value of feedstuff
  2. Specific Instruction : End of lecture, student could choose the right method to evaluate the energy of feedstuffs for the different kind of animal than computed base on the different criteria of energy(Gross Energy, Digestible Energy, Metabolizable Energy, Heat Increment, NetEnergy)
- B. Main Topic : Energy value of feedstuff  
 C. Sub Topic : Gross Energy, Digestible Energy, Metabolizable Energy, Heat Increment , Net Energy

D. Teaching Learning Activity

| Steps          | Teaching Activity  | Student Activity  | Teaching Instrument  |
|----------------|--|---|--|
| Introduction   | 1. Explain the general and specific intruction of the 14 <sup>th</sup> meeting<br>2. Explain the benefit of studying this topic  | Listening, question   | LCD  |
| Delivery       | 3. Explain the meaning of feedstuffs energy value<br>4. Explain the different kind of energy value in feedstuffs (Gross Energy, Digestible Energy, Metabolizable Energy, Heat Increment, Net Energy)<br>5. Explain the relationship of those energy values (Gross Energy, Digestible Energy, Metabolizable Energy, Heat Increment, Net Energy)<br>6. Giving sample of a feedstuffs energy value and explain how to get the value, and let the student categorize the value<br>7. Giving several cases on grouping feedstuffs energy value wheather it include as GE, DE dan ME<br>8. Present the result<br>9. Stimulate question and comment | Listening, question<br>Question, giving idea and Discussion<br>Question, giving idea and Discussion<br>Discussion<br>Group discussion<br>Present the result<br>Question, giving idea and Discussion | Hand out of this topic<br>LCD<br>Research report, journals<br>LCD<br>LCD |
| Closing Remark | 10. Summarize and highlight the importance<br>11. Giving hand out for the next topic   | Question, giving idea and Discussion<br>Giving hand out for the next topic  | LCD<br>Hand out for the next topic                                       |

E. Evaluation : using respon card, question and home work that give at the end of each meeting

F. References :

1. Crampton, E.W. and L.E. Harris. 1969. Applied Animal Nutrition. 2<sup>nd</sup> Ed. W.H. Freeman and Co., San Fransisco.
2. Cullison, A.E. 1978. Feeds and Feeding. Animal Nutrition. Prentice Hall of Indian Private Ltd., New Delhi.
3. Lassiter, J.W. and H.M. Edwards. 1982. Animal Nutrition. Reston Publishing Company Inc. A Prentice-Hall Co., Reston.
4. Pond, W.G., D.C. Church and K.R. Pond. 1995. Basic Animal Nutrition and Feeding. 4<sup>th</sup> Ed. John Wiley & Sons, New York.
5. Tillman, A.D., H. Hartadi, S. Reksohadiprodjo, S. Prawirokusumo and S. Lebdoesoekojo. 1998. Ilmu Makanan Ternak Dasar. Gadjah Mada University Press, Yogyakarta.

## LECTURING AGENDA UNIT

WaDuration : 100 minute (2 x 50 minute)  
 Meeting of the : 15th

- A. Instruction  
 1. General Instruction : End of lecture, student could compute and used of energy unit system and protein balance in feed  
 2. Specific Instruction : End of lecture, student could compute and applied the energy system in relation to balancing with the protein in the feed

B. Main Topic : Energy unit system and protein balance in feed

C. Sub Topic : Starch Grade, Milk Grade, Futter Einhet (FE); Total digestible nutrients (TDN) dan protein balance

### D. Teaching Learning Activity

| Steps          | Teaching Activity  | Student Activity  | Teaching Instrument   |
|----------------|--|---|---|
| Introduction   | 1. Explain the general and specific instruction of the 15 <sup>th</sup> meeting<br>2. Explain the benefit of studying this topic   | Listening, question   | LCD   |
| Delivery       | 3. Explain the meaning of sistem enegy unit and protein balance<br>4. Explain about the diffrent kind of enegy unit (Starch Grade, Milk Grade, Futter Einhet (FE); Total digestible nutrients/TDN) and protein balance<br>5. Giving some value of those energy unit and explain or asking the student the meaning of the value<br>6. Giving problem of Starch Grade, Milk Grade, Futter Einhet (FE); Total digestible nutrients/TDN) and protein balance | Listening, question<br>Question, giving idea and Discussion<br><br>Question, giving idea and Discussion<br>Discussion<br><br>Question, giving idea and Discussion | Hand out of this topic<br>LCD<br><br>Research report, journals<br><br>LCD |
| Closing Remark | 7. Summarize and highlight the importance<br>8. Giving hand out for the next topic   | Question, giving idea and Discussion<br><br>Giving hand out for the next topic  | LCD<br><br>Hand out for the next topic                                    |

E. Evaluation : using respon card, question and home work that give at the end of each meeting

### F. References

1. Crampton, E.W. and L.E. Harris. 1969. Applied Animal Nutrition. 2<sup>nd</sup> Ed. W.H. Freeman and Co., San Fransisco.
2. Cullison, A.E. 1978. Feeds and Feeding. Animal Nutrition. Prentice Hall of Indian Private Ltd., New Delhi.
3. Soelistyono, H.S. 1976. Dasar-dasar Ilmu Makanan Ternak. Cetakan Kedua. Fakultas Peternakan Universitas Diponegoro. Semarang (Not Published).

LECTURING AGENDA UNIT

Duration : 100 minute (2 x 50 minute)  
 Meeting of the : 16th

- A. Instruction  
 1. General Instruction : End of lecture, student could explain about feed protein evaluation  
 2. Specific Instruction : End of lecture, student could choose and apply on feed protein evaluation in ruminant and non ruminant  
 B. Main Topic : Feed protein evaluation

C. Sub Topic : Protein quality measurement in ruminant; Protein quality measurement in non-ruminant

D. Teaching Learning Activity

| Steps          | Teaching Activity  | Student Activity  | Teaching Instrument  |
|----------------|--|---|--|
| Introduction   | 1. Explain the general and specific instruction of the 16 <sup>th</sup> meeting<br>2. Explain the benefit of studying this topic   | Listening, question   | LCD  |
| Delivery       | 3. Explain the meaning of feed protein evaluation<br>4. Explain the different kind of method on feed protein evaluation included biological value, protein efficiency ratio, nitrogen retention, net protein retention and net protein utilization<br>5. Giving cases on feed protein evaluation in ruminant<br>a. Ask the student about the right method<br>b. Discuss the answer in terms of the benefit and the harmfulness of the method<br>c. Explain the main principles on doing feed protein evaluation in ruminant<br>d. Summarized and highlight the right method on feed protein evaluation in ruminant<br>e.<br>6. Giving cases on feed protein evaluation in non ruminant<br>a. Ask the student about the right method<br>b. Discuss the answer in terms of the benefit and the harmfulness of the method<br>c. Explain the main principles on doing feed protein evaluation in non ruminant<br>d. Summarized and highlight the right method on feed protein evaluation in non ruminant | Listening, question<br>Question, giving idea and Discussion<br>Discussion<br>Question, giving idea and Discussion<br>Question, giving idea and Discussion<br>discussion<br>Question, giving idea and Discussion<br>Question, giving idea and Discussion | Hand out of this topic<br>LCD<br>Research report, journals<br>LCD<br>LCD |
| Closing Remark | 7. Summarize and highlight the importance  | Question, giving idea and Discussion  | LCD  |

E. Evaluation : using respon card, question and home work that give at the end of each meeting

F. References :

1. Crampton, E.W. and L.E. Harris. 1969. *Applied Animal Nutrition*. 2<sup>nd</sup> Ed. W.H. Freeman and Co., San Fransisco.
2. Cullison, A.E. 1978. *Feeds and Feeding, Animal Nutrition*. Prentice Hall of Indian Private Ltd., New Delhi.
3. Lassiter, J.W. and H.M. Edwards. 1982. *Animal Nutrition*. Reston Publishing Company Inc. A Prentice-Hall Co., Reston.
4. Pond, W.G., D.C. Church and K.R. Pond. 1995. *Basic Animal Nutrition and Feeding*. 4<sup>th</sup> Ed. John Wiley & Sons, New York.
5. Tillman, A.D., H. Hartadi, S. Reksohadiprodjo, S. Prawirokusumo dan S. Lebdosoekojo. 1998. *Ilmu Makanan Ternak Dasar*. Gadjah Mada University Press, Yogyakarta.

### COURSE OUTLINE

|                      |   |  |
|----------------------|---|--|
| Subject Studied      | : | Basic Animal Nutrition   |
| Subject Code/Credits | : | _____ / 3(2-1)   |
| Description          | : | Knowledge of: (1) Definition of nutrition science, feedstuffs classification, nutrient composition of feedstuffs based of Weende and Van Soest analysis method, computing nutrient content and energy of feedstuffs based on Weende proximate analysis; (2) Digestion system, function and nutrient digestion processes until it absorbed in different kind of animal based on their anatomy, physiology and kind of feed eaten. |
| General Instruction  | : | End of lecture, student could understand and explain about nutrients composition of feedstuff, computing nutrient content and energy of feedstuffs based on Weende proximate and Van Soest analysis; the student could also master and differentiate digestion processes as well as nutrient absorption in the different kind of animal based on its physiological status  |
| Laboratory Topics    | : | Introducing and identification the different kind of feedstuff, digestion organs of ruminant, non ruminant, pseudo ruminant and poultry; computing DE, ME and TDN value of feed.   |

| No. | Specific Instruction   | Main Topic  | Sub Topic   | Time Estimation | References   |
|-----|--|---|---|-----------------|--|
| 1.  | End of lecture, student could explain about definition, history and development of nutrition science; the objective of learning basic animal nutrition; the relation of other sciences and feedstuffs classification | The history and development of nutrition science          | <ul style="list-style-type: none"> <li>• Course outline</li> <li>• definition, history and development of nutrition science</li> <li>• the objective of learning basic animal nutrition</li> <li>• the relation of other sciences</li> <li>• International feedstuffs classification</li> </ul> | 2 x 50 menit    | Pond, W.G., D.C. Church and K.R. Pond. 1995. Basic Animal Nutrition and Feeding. 4 <sup>th</sup> Ed. John Wiley & Sons, New York.<br>Sutardi, T. 1980. Landasan Ilmu Nutrisi. Book 1. Departemen Ilmu Makanan Ternak Fakultas Peternakan Institut Pertanian Bogor, Bogor (Not Published).<br>Tillman, A.D., H. Hartadi, S. Reksohadiprodjo, S. Prawirokusumo and S. Lebdoesoekojo. 1998. Ilmu Makanan Ternak Dasar. Gajah Mada University Press, Yogyakarta.   |
| 2.  | End of lecture, student could explain about composition and function of nutrient for animals body  | Composition and function of nutrient for animal body      | <ul style="list-style-type: none"> <li>• nutrient composition of feedstuffs based on Weende and Van Soest analysis method as well as conversion on nutrient content</li> <li>• Nutrient composition of plant and animal and its function in animal body</li> </ul>                              | 8 X 50 menit    | AOAC. 2005. Official Methods of Analysis of The Association of Official Agricultural Chemists. AOAC, Washington D.C.<br>Crampton, E.W. and L.E. Harris. 1969. Applied Animal Nutrition. 2 <sup>nd</sup> Ed. W.H. Freeman and Co., San Fransisco.<br>Cullison, A.E. 1978. Feeds and Feeding. Prentice Hall of Indian Private Ltd., New Delhi.<br>Pond, W.G., D.C. Church and K.R. Pond. 1995. Basic Animal Nutrition and Feeding. 4 <sup>th</sup> Ed. John Wiley & Sons, New York.<br>Sutardi, T. 1980. Landasan Ilmu Nutrisi. Book 1. Departemen Ilmu Makanan Ternak .Fakultas Peternakan Institut Pertanian Bogor, Bogor (Not Published). |
| 3.  | End of lecture, student could explain about function and process of nutrient digestion and absorption in ruminant and non ruminant   | Function and process of nutrient digestion and absorption | <ul style="list-style-type: none"> <li>• Anatomy of digestive organ of ruminant, non ruminant, pseudoruminant and poultry</li> <li>• Digestion process and nutrient (carbohydrate, lipid, protein, vitamin dan mineral) absorption</li> <li>• Physiology of feed intake</li> </ul>              | 8 x 50 menit    | Lassiter, J.W. and H.M. Edwards. 1982. Animal Nutrition. Reston Publishing Company Inc. A Prentice-Hall Company, Reston.<br>Pond, W.G., D.C. Church and K.R. Pond. 1995. Basic Animal Nutrition and Feeding. 4 <sup>th</sup> Ed. John Wiley & Sons, New York.<br>Prawirokusumo, S. 1994. Ilmu Gizi Komparatif. Cetakan 1. BPPE, Yogyakarta.<br>Sutardi, T. 1980. Landasan Ilmu Nutrisi. Book 1. Departemen Ilmu  |

|    |  |   |   |              |  |
|----|--|---|---|--------------|--|
|    |  |   |   |              | Makanan Ternak Fakultas Peternakan Institut Pertanian Bogor, Bogor (Not Published).<br>Tillman, A.D., H. Hartadi, S. Reksohadiprodjo, S. Prawirokusumo and S. Lebdosoekojo. 1998. Ilmu Makanan Ternak Dasar. Gadjah Mada University Press, Yogyakarta.   |
| 4. | End of lecture, student could explain about function and process of nutrient digestion and absorption                              | Nutrient requirement classification based on physiological status of the animal | <ul style="list-style-type: none"> <li>Nutrient requirement for: <ul style="list-style-type: none"> <li>maintanace (protein dan energy)</li> <li>growth and fattening</li> <li>Reproduction, lactation and production (work, egg, wool)</li> </ul> </li> </ul>                                  | 4 x 50 menit | Crampton, E.W. and L.E. Harris. 1969. Applied Animal Nutrition. 2 <sup>nd</sup> Ed. W.H. Freeman and Co., San Fransisco.<br>Cullison, A.E. 1978. Feeds and Feeding. Prentice Hall of Indian Private Ltd., New Delhi.<br>Pond, W.G., D.C. Church and K.R. Pond. 1995. Basic Animal Nutrition and Feeding. 4 <sup>th</sup> Ed. John Wiley & Sons, New York.<br>Tillman, A.D., H. Hartadi, S. Reksohadiprodjo, S. Prawirokusumo and S. Lebdosoekojo. 1998. Ilmu Makanan Ternak Dasar. Gadjah Mada University Press, Yogyakarta.   |
| 5. | End of lecture, student could explain about the meaning and method used for feed digestion evaluation in ruminant and non ruminant | Feed digestion evaluation method  | <ul style="list-style-type: none"> <li>The meaning of digestion</li> <li>Digestion method measurement : <ul style="list-style-type: none"> <li><i>In vivo</i> (indicator, total colektion and force feeding)</li> <li><i>In vitro</i></li> <li><i>In sacco (in situ)</i></li> </ul> </li> </ul> | 2 x 50 menit | Crampton, E.W. and L.E. Harris. 1969. Applied Animal Nutrition. 2 <sup>nd</sup> Ed. W.H. Freeman and Co., San Fransisco.<br>Cullison, A.E. 1978. Feeds and Feeding. Animal Nutrition. Prentice Hall of Indian Private Ltd., New Delhi.<br>Pond, W.G., D.C. Church and K.R. Pond. 1995. Basic Animal Nutrition and Feeding. 4 <sup>th</sup> Ed. John Wiley & Sons, New York.<br>Tillman, A.D., H. Hartadi, S. Reksohadiprodjo, S. Prawirokusumo and S. Lebdosoekojo. 1998. Ilmu Makanan Ternak Dasar. Gadjah Mada University Press, Yogyakarta.   |
| 6. | End of lecture, student could explain about feed nutrient balance  | feed nutrient balance   | <ul style="list-style-type: none"> <li>Nutrient balance</li> <li>N dan C balance</li> <li>Mineral balance</li> <li>Energy and protein balance</li> </ul>  | 2 x 50 menit | Cullison, A.E. 1978. Feeds and Feeding. Animal Nutrition. Prentice Hall of Indian Private Ltd., New Delhi.<br>Pond, W.G., D.C. Church and K.R. Pond. 1995. Basic Animal Nutrition and Feeding. 4 <sup>th</sup> Ed. John Wiley & Sons, New York.<br>Tillman, A.D., H. Hartadi, S. Reksohadiprodjo, S. Prawirokusumo and S. Lebdosoekojo. 1998. Ilmu Makanan Ternak Dasar. Gadjah Mada University Press, Yogyakarta.   |
| 7. | End of lecture, student could explain about energy value of feedstuff  | Energy value of feedstuff   | <ul style="list-style-type: none"> <li><i>Gross Energy</i> (GE), <i>Digestible Energy</i> (DE), <i>Metabolizable Energy</i> (ME), <i>Heat Increment</i> (HI), <i>Net Energy</i> (NE)</li> </ul>   | 2 x 50 menit | Crampton, E.W. and L.E. Harris. 1969. Applied Animal Nutrition. 2 <sup>nd</sup> Ed. W.H. Freeman and Co., San Fransisco.<br>Cullison, A.E. 1978. Feeds and Feeding. Animal Nutrition. Prentice Hall of Indian Private Ltd., New Delhi.<br>Lassiter, J.W. and H.M. Edwards. 1982. Animal Nutrition. Reston Publishing Company Inc. A Prentice-Hall Co., Reston.<br>Pond, W.G., D.C. Church and K.R. Pond. 1995. Basic Animal Nutrition and Feeding. 4 <sup>th</sup> Ed. John Wiley & Sons, New York.<br>Tillman, A.D., H. Hartadi, S. Reksohadiprodjo, S. Prawirokusumo and S. Lebdosoekojo. 1998. Ilmu Makanan Ternak Dasar. Gadjah Mada University Press, Yogyakarta. |
| 8. | End of lecture, student could compute and used energy unit   | energy unit system and  | <ul style="list-style-type: none"> <li>Starch Grade, Milk Grade, Futter Einheit (FE)</li> </ul>   | 2 x 50       | Crampton, E.W. and L.E. Harris. 1969. Applied Animal Nutrition. 2 <sup>nd</sup> Ed. W.H. Freeman and Co., San Fransisco.   |

|  |                                    |                         |  |       |  |
|--|------------------------------------|-------------------------|--|-------|--|
|  | system and protein balance in feed | protein balance in feed | <ul style="list-style-type: none"> <li>Total digestible nutrients (TDN) dan protein balance</li> </ul> | menit | <p>Cullison, A.E. 1978. Feeds and Feeding. Animal Nutrition. Prentice Hall of Indian Private Ltd., New Delhi.</p> <p>Soelistyono, H.S. 1976. Dasar-dasar Ilmu Makanan Ternak. Cetakan Kedua. Fakultas Peternakan Universitas Diponegoro, Semarang (Not Published).</p> |
|--|------------------------------------|-------------------------|--|-------|--|

|    |   |                         |  |              |  |
|----|---|-------------------------|--|--------------|--|
| 9. | End of lecture, student could explain about feed protein evaluation | feed protein evaluation | <ul style="list-style-type: none"> <li>• Protein quality measurement in ruminant</li> <li>• Protein quality measurement in non-ruminant</li> </ul> | 2 x 50 menit | <p>Crampton, E.W. and L.E. Harris. 1969. Applied Animal Nutrition. 2<sup>nd</sup> Ed. W.H Freeman and Co., San Fransisco.</p> <p>Cullison, A.E. 1978. Feeds and Feeding. Animal Nutrition. Prentice Hall of Indiar Private Ltd., New Delhi.</p> <p>Lassiter, J.W. and H.M. Edwards. 1982. Animal Nutrition. Reston Publishing Company Inc. A Prentice-Hall Co., Reston.</p> <p>Pond, W.G., D.C. Church and K.R. Pond. 1995. Basic Animal Nutrition and Feeding 4<sup>th</sup> Ed. John Wiley &amp; Sons. New York.</p> <p>Tillman, A.D., H. Hartadi, S. Reksobadiprodjo, S. Prawirokusumo and S. Lebdoekojo. 1998. Ilmu Makanan Ternak Dasar. Gadjah Mada University Press Yogyakarta.</p> |
|----|---|-------------------------|--|--------------|--|

COURSE : Forage Crops

COURSE CODE :

CREDIT : 3 (2-1)

## ANIMAL SCIENCE FACULTY – DIPONEGORO UNIVERSITY

### COURSE OUTLINE

- Course : Forage Crops  
 Code number/credit : ----- / 3(2-1)  
 Course Outline : Mastering forage science for the production of forage and seeds (discuss about the adaptation, distribution, systematic, morphology, identification, physiology, reproduction, cultivation of forage crops).
- General Instruction : After finishing this course, student will be able to understand and explain correctly about the adaptation and distribution, systematics, morphology, identification, physiology, reproduction and cultivation of forage crops
- References : 1. Crowder, L. V. And H. R. Chheda. 1982. Tropical Grassland Husbandry. Longman Group Ltd, London.  
 2. Humphreys, L. R. 1980.a Tropical Pasture and Fodder Crops. 2<sup>nd</sup> Ed., ITAS, Longman Group Ltd., London  
 3. Humphreys, L. R. 1980.b A Guide to Better pasture for the Tropics and Subtropics. 4<sup>th</sup>. Ed. Wright Stephenson and Co Pty. Ltd. Australia.  
 4. McIlroy, R. L. 1976. Pengantar Budidaya Padang Rumput Tropika. Pradnya Paramita, Jakarta.  
 5. Reksahadiprodjo, S. 1981. Produksi Tanaman Hijauan Makanan Ternak Tropik. Bagian Penerbitan Fakultas Ekonomi UGM, Yogyakarta.  
 6. Whiteman, P. C. 1980. Tropical pasture Science. Oxford University Press, London.

| No. | Specific Instruction  | Topic                                       | Sub Topic   | Duration      | Reference  |
|-----|---|---|---|---------------|--|
| 1.  | After finishing this lecture, student will be able to explain correctly about the roles of forage and its production.principle  | Introduction                                | 1. Forage crops<br>2. The role of forage<br>3. Production process principle   | 2 x 50 minute | L.R. Humphreys (1980) a pp. 7-12                                 |
| 2.  | After finishing this lecture, student will be able to explain correctly about adaptation and distribution of forage crops       | Adaptation and distribution of forage crops | 1. Adaptation of forage crops<br>2. Distribution of forage crops              | 4 x 50 minute | R.J. Mc Ilroy (1976) pp.32-55<br>L.R. Humphreys (1980) a pp. 1-6 |
| 3.  | After finishing this lecture, student will be able to explain correctly about systematics and morphology of grasses and legumes | Botany of grasses and legumes               | 1. Systematics of grasses and legumes<br>2. Morphology of grasses and legumes | 4 x 50 minute | L.V. Crowder and Chheda (1980) pp. 47-62                         |

|    |   |  |  |                  |   |
|----|---|--|--|------------------|---|
| 4. | After finishing this lecture, student will be able to explain correctly about characteristic and adaptation of important types of grasses and legumes as forage crops | Grasses and legumes  | 1. Forage grasses<br>2. Forage legumes   | 4 x 50<br>minute | R.J. Mc Ilroy (1976)<br>pp. 21-31<br>L.R. Humphreys (1980) b<br>pp. 24-79                 |
| 5. | Test  |  |  | 2 x 50<br>minute |   |
| 6. | After finishing this lecture, student will be able to explain correctly physiology of forage crops, the effect of environment for forage crop growth                  | Physiology of forage crops and environment effect for forage crop growth | 1. Physiology of forage crops<br>2. The edaphic environment<br>3. The climatic environment | 3 x 50<br>minute | L.V. Crowder and H.R. Chheda (1982) pp. 63-83<br>G.O. Mott and Popenoe (1977) pp. 157-187 |
| 7. | After finishing this lecture, student will be able to explain correctly about forage cultivation technique to build a forage crop land                                | Basics of making forage crop land  | 1. Land Preparation<br>2. Planting material<br>3. Forage cultivation                       | 4 x 50<br>minute | L.R. Humphreys (1980) a<br>pp 57-78<br>L.R. Humphreys (1980) b<br>pp. 10-13               |
| 8. | After finishing this course, student will be able to explain correctly forage crop utilisation and take care of forage crop land                                      | The usage and caring of forage crop land                                 | 1. Defoliation principle<br>2. Types of usage<br>3. The caring of the soil's fertility     | 4 x 50<br>minute | R.J. Mc Ilroy (1976)<br>pp 73-89, 114-116<br>L.R. Humphreys (1980) b<br>pp. 14-21         |

## LECTURING AGENDA UNIT

Course : Forage Crops  
 Code Course : ----- / 3 (2-1)  
 Credit : 3 (three)  
 Duration : 2 x 50 minute  
 Session : 1

### A. Purpose

#### 1. General Instruction

After finishing this course, student will be able to understand and explain correctly about adaptation and distribution, systematics, morphology, identification, physiology, reproduction and cultivation of forage crops

#### 2. Specific Instruction

After finishing this lecture, student will be able to understand and explain correctly about the role of forage and its production principle.

**B. Topics** : Introduction

### C. Sub Topics

1. Forage crops
2. The role of forage crops
3. Production process principle

### D. Teaching Activity

|         | Lecturer Activity   |   | Student Activity    | Media and teaching aids |
|---------|---|---|---------------------|-------------------------|
| Preface | 1.  | Explain the topics in first session   | Paying attention    | -                       |
|         | 2.  | Explain the benefit of studying forage crops                                | Paying attention    | -                       |
|         | 3.  | Explain general and specific instruction in the first session               | Paying attention    | -                       |
| Content | 4.  | Explain definition of forage crops  |                     | OHP or LCD              |
|         |   | a. Ask the student about forage crops                                       | Answer the question | White board             |
|         |   | b. Discuss student answer   |                     |                         |
|         |   | c. Explain the benefit of studying forage crops                             |                     |                         |
|         | 5.  | Explain the role of forage crops in animal production                       |                     | OHP or LCD              |
|         |   | a. Ask the student and discuss the answer of forage crops role              | Discuss the answers | White board             |
|         |   | b. Give clues to student about the role of forage crop in animal production | Paying attention    | OHP<br>IFP              |
|         | 6.  | Explain production process of forage crops                                  |                     | OHP or LCD              |
|         |   | a. Ask the student and discuss the answer of forage crops role              | Discuss the answer  | White board             |
|         | b. Explain the benefit of will be able to understand and explaining forage crops production process | Paying attention  | OHP                 |                         |

|         |    |                       |  |                  |             |
|---------|----|-----------------------|--|------------------|-------------|
| Closing | 7. | Closing first session |  |                  |             |
|         |    | a.                    | Ask the student to summarize the lecture content | Give the answer  | White board |
|         |    | b.                    | Give time to student question                    | Ask question     |             |
|         |    | c.                    | Explain overview the next lecture                | Paying attention | OHP         |

**E. Evaluation**

1. Check list and quiz

**F. Reference**

Humphreys, L. R. 1980.a Tropical Pasture and Fodder Crops. 2<sup>nd</sup> Ed., ITAS, Longman Group td., London

**LECTURING AGENDA UNIT**

Course : Forage Crops  
 Code Course : ----- / 3 (2-1)  
 Credit : 3 (three)  
 Duration : 4 x 50 minute  
 Session : 2 and 3

**A. Purpose**

1. General Instruction  
 After finishing this course, student will be able to understand and explain correctly about adaptation and distribution, systematics, morphology, identification, physiology, reproduction and cultivation of forage crops
2. Specific Instruction  
 After finishing this lecture, student will be able to explain correctly about adaptation and distribution of forage crops

**B. Topics** : Adaptation and distribution of forage crops

**C. Sub Topics**

1. Adaptation of forage crops
2. Distribution of forage crops

**D. Teaching Activity**

|         | Lecturer Activity |  | Student Activity    | Media and teaching aids |
|---------|-------------------|--|---------------------|-------------------------|
| Preface | 1.                | Explain the topics in second and third session                           | Paying attention    | -                       |
|         | 2.                | Explain general and specific instruction in the second and third session | Paying attention    | -                       |
| Content | 3.                | Explain adaptation of forage crops                                       |                     | OHP or LCD              |
|         | a.                | Ask the student about forage crops adaptation                            | Answer the question | White board             |

|         |    |    |   |                     |             |
|---------|----|----|---|---------------------|-------------|
|         |    | b. | Discuss student answer  |                     |             |
|         | 4. |    | Explain the distribution of forage crops in world                                   |                     | OHP or LCD  |
|         |    | a. | Ask the student and discuss the answer of forage crops distribution                 | Discuss the answers | White board |
|         |    | b. | Give clues to student about the adaptation and distribution of forage crop in world | Paying attention    | OHP         |
| Closing | 5. |    | Closing first session   |                     |             |
|         |    | a. | Ask the student to summarize the lecture content                                    | Give the answer     | White board |
|         |    | b. | Give time to student question   | Ask question        |             |
|         |    | c. | Explain overview the next lecture   | Paying attention    | OHP         |

#### E. Evaluation

1. Check list and quiz

#### F. References

- Humphreys, L. R. 1980.a Tropical Pasture and Fodder Crops. 2<sup>nd</sup> Ed., ITAS, Longman Group Ltd., London
- McIlroy, R. L. 1976. Pengantar Budidaya Padang Rumput Tropika. Pradnya Paramita, Jakarta.

#### LECTURINGAGENDA UNIT

|             |   |                 |
|-------------|---|-----------------|
| Course      | : | Forage Crops    |
| Code Course | : | ----- / 3 (2-1) |
| Credit      | : | 3 (three)       |
| Duration    | : | 4 x 50 minute   |
| Session     | : | 4, 5            |

#### A. Purpose

1. General Instruction  
After finishing this course, student will be able to understand and explain correctly about adaptation and distribution, systematics, morphology, identification, physiology, reproduction and cultivation of forage crops
2. Specific Instruction  
After finishing this lecture, student will be able to explain correctly about systematics and morphology of grasses and legumes

**B. Topics** : Botany of grasses and legumes

#### C. Sub Topics

1. Systematics of grasses and legumes
2. Morphology of grasses and legumes

#### D. Teaching Activity

|         | Lecturer Activity |  | Student Activity    | Media and teaching aids |
|---------|-------------------|--|---------------------|-------------------------|
| Preface | 1.                | Explain the topics in 4th and 5th session  | Paying attention    | -                       |
|         | 2.                | Explain general and specific instruction in this session   | Paying attention    | -                       |
| Content | 3.                | Explain systematics of grasses   |                     | OHP or LCD              |
|         | a.                | Ask the student about grasses  | Answer the question | White board             |
|         | b.                | Discuss student answer   |                     |                         |
|         | 4.                | Explain systematics of legumes   |                     | OHP or LCD              |
|         | a.                | Ask the student and discuss the answer   | Discuss the answers | White board             |
|         | b.                | Give clues to student about the systematics of grasses and legumes                                 | Paying attention    | OHP<br>IFP              |
|         | 5.                | Explain morphology of grasses and legumes  |                     | OHP or LCD              |
|         | a.                | Ask the student and discuss the answer   | Discuss the answer  | White board             |
|         | b.                | Explain the benefit of will be able to understand and explaining morphology of grasses and legumes | Paying attention    | OHP                     |
| Closing | 7.                | Closing 4th and 5th session  |                     |                         |
|         | a.                | Ask the student to summarize the lecture content   | Give the answer     | White board             |
|         | b.                | Give time to student question  | Ask question        |                         |
|         | c.                | Explain overview the next lecture  | Paying attention    | OHP                     |

#### E. Evaluation

2. Check list and quiz

#### F. References

Crowder, L. V. And H. R. Chheda. 1982. Tropical Grassland Husbandry. Longman Group Ltd, London.

## LECTURING AGENDA UNIT

Course : Forage Crops  
 Code Course : ----- / 3 (2-1)  
 Credit : 3 (three)  
 Duration : 4 x 50 minute  
 Session : 6, 7

### A. Purpose

1. General Instruction  
 After finishing this course, student will be able to understand and explain correctly about adaptation and distribution, systematics, morphology, identification, physiology, reproduction and cultivation of forage crops
2. Specific Instruction  
 After finishing this lecture, student will be able to explain correctly about characteristic and adaptation of important types of grasses and legumes as forage crops

**B. Topics** : Grasses and legumes

### C. Sub Topics

1. Forage grasses
2. Forage legumes

### D. Teaching Activity

|         | Lecturer Activity |  | Student Activity    | Media and teaching aids |
|---------|-------------------|--|---------------------|-------------------------|
| Preface | 1.                | Explain the topics in this session                                       | Paying attention    | -                       |
|         | 2.                | Explain general and specific instruction in the first session            | Paying attention    | -                       |
| Content | 3.                | Explain characteristic and adaptation of grasses                         |                     | OHP or LCD              |
|         | a.                | Ask the student about identification of grasses                          | Answer the question | White board             |
|         | b.                | Discuss student answer   |                     |                         |
|         | c.                | Explain the benefit of studying characteristic and adaptation of grasses |                     |                         |
|         | 4.                | Explain characteristic and adaptation of legumes                         |                     | OHP or LCD              |
|         | a.                | Ask the student and discuss the answer                                   | Discuss the answers | White board             |
|         | b.                | Give clues to student about the characteristic and adaptation of legumes | Paying attention    | OHP<br>IFP              |
| Closing | 5.                | Closing this session   |                     |                         |
|         | a.                | Ask the student to summarize the lecture content                         | Give the answer     | White board             |
|         | b.                | Give time to student question  | Ask question        |                         |
|         | c.                | Explain overview the next lecture  | Paying attention    | OHP                     |

## E. Evaluation

1. Check list and quiz

## F. References

- Humphreys, L. R. 1980.b A Guide to Better pasture for the Tropics and Subtropics. 4<sup>th</sup>. Ed. Wright Stephenson and Co Pty. Ltd. Australia
- McIlroy, R. L. 1976. Pengantar Budidaya Padang Rumput Tropika. Pradnya Paramita, Jakarta.
- Reksohadiprodjo, S. 1981. Produksi Tanaman Hijauan Makanan Ternak Tropik. Bagian Penerbitan Fakultas Ekonomi UGM, Yogyakarta

## LECTURINGAGENDA UNIT

|             |   |                 |
|-------------|---|-----------------|
| Course      | : | Forage Crops    |
| Code Course | : | ----- / 3 (2-1) |
| Credit      | : | 3 (three)       |
| Duration    | : | 8 x 50 minute   |
| Session     | : | 8, 9, and 10    |

### A. Purpose

1. General Instruction

After finishing this course, student will be able to understand and explain correctly about adaptation and distribution, systematics, morphology, identification, physiology, reproduction and cultivation of forage crops

2. Specific Instruction

After finishing this lecture, student will be able to explain correctly physiology of forage crops, the effect of environment for forage crop growth

### B. Topics

Physiology of forage crops and environment effect for forage crop growth

### C. Sub Topics

1. Physiology of forage crops
2. The edaphic environment
3. The climatic environment

### D. Teaching Activity

|         | Lecturer Activity |  | Student Activity    | Media and teaching aids |
|---------|-------------------|--|---------------------|-------------------------|
| Preface | 1.                | Explain the topics in this session                       | Paying attention    | -                       |
|         | 2.                | Explain general and specific instruction in this session | Paying attention    | -                       |
| Content | 3.                | Explain physiology of forage crops                       |                     | OHP or LCD              |
|         | a.                | Ask the student about physiology of forage crops         | Answer the question | White board             |
|         | b.                | Discuss student answer                                   |                     |                         |

|         |    |    |   |                     |             |
|---------|----|----|---|---------------------|-------------|
|         |    | c. | Explain the benefit of studying physiology of forage crops  |                     |             |
|         | 4. |    | Explain the effect of edaphic environment on forage crops   |                     | OHP or LCD  |
|         |    | a. | Ask the student and discuss the answer  | Discuss the answers | White board |
|         |    | b. | Give clues to student about the effect of edaphic environment   | Paying attention    | OHP<br>IFP  |
|         | 5. |    | Explain the effect of climatic environment on forage crops  |                     | OHP or LCD  |
|         |    | a. | Ask the student and discuss the answer  | Discuss the answer  | White board |
|         |    | b. | Explain the benefit of will be able to understand and explaining the effect of climatic environment on forage crops | Paying attention    | OHP         |
| Closing | 6. |    | Closing first session   |                     |             |
|         |    | a. | Ask the student to summarize the lecture content  | Give the answer     | White board |
|         |    | b. | Give time to student question   | Ask question        |             |
|         |    | c. | Explain overview the next lecture   | Paying attention    | OHP         |

#### E. Evaluation

1. Check list and quiz

#### F. References

- Crowder, L. V. And H. R. Chheda. 1982. Tropical Grassland Husbandry. Longman Group Ltd, London
- Humphreys, L. R. 1980.a Tropical Pasture and Fodder Crops. 2<sup>nd</sup> Ed., ITAS, Longman Group Ltd., London

### LECTURINGAGENDA UNIT

|             |   |                 |
|-------------|---|-----------------|
| Course      | : | Forage Crops    |
| Code Course | : | ----- / 3 (2-1) |
| Credit      | : | 3 (three)       |
| Duration    | : | 4 x 50 minute   |
| Session     | : | 11, 12          |

#### A. Purpose

1. General Instruction  
After finishing this course, student will be able to understand and explain correctly about adaptation and distribution, systematics, morphology, identification, physiology, reproduction and cultivation of forage crops
2. Specific Instruction  
After finishing this lecture, student will be able to explain correctly forage cultivation technique to build forage crop land

**B. Topics** : Basics of making forage crop land

**C. Sub Topics**

1. Land Preparation
2. Planting material
3. Forage cultivation

**D. Teaching Activity**

|         | Lecturer Activity |   | Student Activity    | Media and teaching aids |
|---------|-------------------|---|---------------------|-------------------------|
| Preface | 1.                | Explain the topics in this session                            | Paying attention    | -                       |
|         | 2.                | Explain general and specific instruction in the first session | Paying attention    | -                       |
| Content | 3.                | Explain land preparation for grassland                        | Paying attention    | OHP or LCD              |
|         | a.                | Ask the student about how to set up grassland                 | Answer the question | White board             |
|         | b.                | Discuss student answer  |                     |                         |
|         | 4.                | Explain forage cultivation                                    | Paying attention    | OHP or LCD              |
|         | a.                | Ask the student and discuss forage cultivation                | Discuss the answers | White board             |
|         | b.                | Give clues to student about forage cultivation                | Paying attention    | OHP<br>IFP              |
| Closing | 6.                | Closing first session   |                     |                         |
|         | a.                | Ask the student to summarize the lecture content              | Give the answer     | White board             |
|         | b.                | Give time to student question                                 | Ask question        |                         |
|         | c.                | Explain overview the next lecture                             | Paying attention    | OHP                     |

**E. Evaluation**

1. Check list and quiz

**F. References**

Humphreys, L. R. 1980.a Tropical Pasture and Fodder Crops. 2<sup>nd</sup> Ed., ITAS, Longman Group Ltd., London

Humphreys, L. R. 1980.b A Guide to Better pasture for the Tropics and Subtropics. 4<sup>th</sup>. Ed. Wright Stephenson and Co Pty. Ltd. Austr

## LECTURING AGENDA UNIT

Course : Forage Crops  
 Code Course : ----- / 3 (2-1)  
 Credit : 3 (three)  
 Duration : 4 x 50 minute  
 Session : 13, 14

### A. Purpose

#### 1. General Instruction

After finishing this course, student will be able to understand and explain correctly about adaptation and distribution, systematics, morphology, identification, physiology, reproduction and cultivation of forage crops

#### 2. Specific Instruction

After finishing this course, student will be able to explain correctly forage crop utilisation and take care of forage crop land

**B. Topics** : The usage and caring of forage crop land

### C. Sub Topics

1. Types of usage
2. Defoliation principle
3. The caring of soil's fertility

### D. Teaching Activity

|         | Lecturer Activity |  | Student Activity    | Media and teaching aids |
|---------|-------------------|--|---------------------|-------------------------|
| Preface | 1.                | Explain the topics in first session                                      | Paying attention    | -                       |
|         | 2.                | Explain the benefit of studying The usage and caring of forage crop land | Paying attention    | -                       |
|         | 3.                | Explain general and specific instruction in the first session            | Paying attention    | -                       |
| Content | 4.                | Explain types of usage of forage crops                                   |                     | OHP or LCD              |
|         | a.                | Ask the student about types of usage of forage crops                     | Answer the question | White board             |
|         | b.                | Discuss student answer   |                     |                         |
|         | 5.                | Explain forage crop defoliation  |                     | OHP or LCD              |
|         | a.                | Ask the student and discuss the answer                                   | Discuss the answers | White board             |
|         | b.                | Give clues to student about the defoliation of forage crop               | Paying attention    | OHP<br>IFP              |
|         | 6.                | Explain the caring of soil's fertility                                   | Paying attention    | OHP or LCD              |
|         | a.                | Ask the student and discuss the answer of renovation                     | Discuss the answer  | White board             |
|         | b.                | Explain the benefit of the caring of soil's fertility                    | Paying attention    | OHP                     |
| Closing | 7.                | Closing first session  |                     |                         |
|         | a.                | Ask the student to summarize the lecture content                         | Give the answer     | White board             |

|  |    |                                   |                  |     |
|--|----|-----------------------------------|------------------|-----|
|  | b. | Give time to student question     | Ask question     |     |
|  | c. | Explain overview the next lecture | Paying attention | OHP |

**E. Evaluation**

1. Check list and quiz

**F. References**

Humphreys, L. R. 1980. A Guide to Better pasture for the Tropics and Subtropics. 4<sup>th</sup>. Ed. Wright Stephenson and Co Pty. Ltd. Australia.

McIlroy, R. L. 1976. Pengantar Budidaya Padang Rumput Tropika. Pradnya Paramita, Jakarta.

COURSE : Feed Matter and Rations  
Formulation

COURSE CODE :

CREDIT : 3 (2-1)

## LECTURING AGENDA UNIT

**Subject Studied** : Feed Matter and Rations Formulation  
**Code** : PTF 405 P  
**SCS** : 3(2-1)  
**Session Duration** : 1 x (2 x 50 minutes)  
**Session** : 1

- A. Objective** :
1. **General Instructional** : At the end of this course, student will be able to categorize feed matter and its nutrition contains used to compose rations and evaluate the quality of feed matter based on proximate analysis.
  2. **Specific Instructional** : At the end of this course, student will be able to explain the feed problems in Indonesia, the aim in learning The Feed Matter and Rations Formulation and the interrelationships with other related field of science.
- B. Major Topic** : Preface
- C. Minor Topic** : Contract of course, definition and feed matter problems, the scope of field of science, aim in learning feed matter and rations formulation

**D. Teaching Activity :**

| Stage        | Teacher Activity   | Student Activity                        | Media and Teaching Tools     |
|--------------|--|---|------------------------------|
| Preface      | 1. Giving contract of course   | Paying attention                        | Copy of Course contract, LCD |
| Presentation | 2. Giving the scope of the course's material                             | Paying attention                        | LCD                          |
|              | 3. Definition of feed matter, feed nutrients, rations                    | Paying attention, asking and discussion |                              |
|              | 4. Explaining the problems of feed matter and rations in Indonesia       | Paying attention, asking and discussion |                              |
|              | 5. Explaining the interrelationships with other related field of science | Paying attention, asking and discussion |                              |

|         |   |   |     |
|---------|---|---|-----|
| Closing | 6. Giving stressing/ summarizing the result of discussion as mention on preface | Paying attention, giving feed back, and writting teacher's comments | LCD |
|---------|---|---|-----|

**E. Evaluation** : Using work book or response card toward Student Activity in class and take home test

**F. References** :

1. Pond, W.G., D.C. Church, and K.R. Pond. 1995. Basic Animal Nutrition and Feeding. 4<sup>th</sup> Ed. John Wiley & Sons, New York.
2. Cullison, A.E. 1978. Feeds and Feeding. Animal Nutrition. Prentice Hall of Indian Private Ltd. New Delhi.
3. Tillman, A.D., H. Hartadi, S. Reksohadiprodjo, dan S. Lebdoekojo. 1998. Ilmu Makanan Ternak Dasar. Gadjah Mada University Press. Yogyakarta.

## LECTURING AGENDA UNIT

**Subject Studied** : Feed Matter and Rations Formulation  
**Code** : PTF 405 P  
**SCS** : 3(2-1)  
**Session Duration** : 2 x (2 x 50 minutes)  
**Session** : 2 and 3

- A. Objective** :
- 1. General Instructional** : At the end of this course, student will be able to mention classification of feed matter both generally and internationally and able to do feed matter sampling representatively.
  - 2. Specific Instructional** : At the end of this course, student will be able to:
    1. Mention correctly about Basis of Feed Matter Classification
    2. Differentiate the criteria of each group/ classification
    3. Do sampling of feed matter/ rations according to the good sampling technique correctly

**B. Major Topic** : Feed Matter Classification and Sampling

**C. Minor Topic** : Basis of feed matter classification, the criteria of each group, and sampling technique and the handling of forage and concentrate sample

**D. Teaching Activity :**

| Stage        | Teacher Activity   | Student Activity                    | Media and Teaching Aids |
|--------------|--|-------------------------------------|-------------------------|
| Preface      | 1. Explaining about the basis condition of feed matter and rations according to the goal of farming business | Paying attention - Giving feed back | LCD, Blackboard, OHP    |
|              | 2. Explaining about the importance of feed classification  | Paying attention - Giving feed back |                         |
|              | 3. Explaining about the importance of sampling   | Paying attention - Giving feed back |                         |
| Presentation | 4. Several methods in classify feed matter and rations   | Paying attention - Giving feed back | LCD, Blackboard, OHP    |

|                |  |   |                 |
|----------------|--|---|-----------------|
|                | 5. Explaining feed matter grouping based on the classification methods and the implementation in rations<br>6. Explaining how to do sampling based on the correct sampling technique appropriate with the classification | Paying attention - Giving feed back<br><br>Paying attention - Giving feed back                |                 |
| <b>Closing</b> | 7. Making group discussion<br>8. Giving the students opportunity to ask a question or having discussion with other groups  | Discussion and giving response<br>Clarify and getting agreement appropriate with the material | Discussion, LCD |

**E. Evaluation** : Using work book or response card toward Student Activity in class and take home test

**F. References** :

1. Harris, L.E. 1970. Nutrition Research Techniques for Domestic and Wild Animal. Utah State University, Logan Utah.
2. Tillman, A.D., H. Hartadi, S. Reksohadiprodjo, S. Prawirokoesoemo, dan S. Lebdoesoekojo. 1998. Ilmu Makanan Ternak Dasar. Gadjah Mada University Press. Yogyakarta.
3. Jurgens, M.H. 1974. Applied Animal Feeding and Nutrition. 3<sup>rd</sup> Ed. Kendal/Hunt Publishing Co., Iowa.

FAKULTAS PETERNAKAN UNIVERSITAS DIPONEGORO  
  
**COURSE OUTLINE**

- Subject studied** : Feed Matter and Rations Formulation
- Code number/ SCS** : PTF 405 P/ 3( 2-1)
- Course Outline** : Studying the limitation in nutrition and livestock feed; the classification of feed matter and its use; testing the quality of feed matter, the principles of proximate analysis; feed supplement and rations formulation.
- General Instruction** : At the end of this course, student will be able to categorize feed matter and its nutrition contains used to compose rations and evaluate the quality of feed matter based on proximate analysis.

| No. | Spesific Instruction   | Major Topic                             | Minor Topic   | Time Estimation | Reading Source   |
|-----|--|---|---|-----------------|--|
| 1.  | At the end of this course, student will be able to explain the feed problems in Indonesia, the aim in learning The Feed Matter and Rations Formulation and the interrelationships with other related field of science. | Preface                                 | <ul style="list-style-type: none"> <li>• Contract of course</li> <li>• Definition and Feed Matter Problems</li> <li>• The scope of field of science</li> <li>• Aim in learning Feed Matter and Rations Formulation</li> </ul> | 2x50 minutes    | Pond, W.G., D.C. Church and K.R. Pond. 1995. Basic Animal Nutrition and Feeding. Ed. 4 <sup>th</sup> John Wiley & Sons, New York.<br>Cullison, A.E. 1978. Feed and Feeding. Animal Nutrition Prentice Hall of Indian Private Ltd. New Delhi.<br>Tillman, A.D., H. Hartadi, S.Reksohadiprodjo, S. Prawirokusumo and Lebdoesoekojo. 1998. Ilmu Makanan Ternak Dasar. Gadjahmada University Press. Yogyakarta.        |
| 2.  | At the end of this course, student will be able to mention classification of feed matter both generally and internationally and able to do feed matter sampling representatively.                                      | Feed Matter Classification and Sampling | <ul style="list-style-type: none"> <li>• Basis of Feed Matter Classification</li> <li>• The criteria of each group</li> <li>• Sampling technique and the handling of forage and concentrate sample</li> </ul>                 | 4x50 minutes    | Harris, L.E. 1970. Nutrition Research Techniques for Domestic and Wild Animal. Utah State University, Logan, Utah, USA<br>2.Tillman, A.D.,H. Hartadi, S.Reksohadiprodjo, S.Prawirokusumo and S.Lebdoesoekojo. 1998. Ilmu Makanan Ternak Dasar. Gadjahmada University Press. Yogyakarta.<br>Jurgens, M:H. 1974. Applied Animal Feeding and Nutrition. 3 <sup>rd</sup> Edition. Kendal/Hunt Publishing Co. Iowa, USA |
| 3.  | At the end of this course, student will  | Testing The Quality of Feed             | <ul style="list-style-type: none"> <li>• The aim and methods</li> </ul>   |                 | AOAC. 1970. Official Methods of Analysis of The  |



COURSE OUTLINE

| No. | Specific Instruction   | Major Topic                         | Minor Topic   | Time Estimation | Reading Source  |
|-----|--|-------------------------------------|---|-----------------|---|
|     | be able to explain the methods of feed quality physically and chemically and also able to do proximate analysis.                                       | Matter                              | <ul style="list-style-type: none"> <li>• Testing technique and procedures</li> <li>• The factors that influence feed quality</li> <li>• Information about Feed Matter Analysis Table</li> </ul>                   | 6x50 minutes    | Association of Official Agricultural Chemists. Washington DC, USA.<br>Harris, L.E. 1970. Nutrition Research Techniques for Domestic and Wild Animal. Utah State University, Logan, Utah, USA.<br>PCAARD. 1987. The Philippines Recommends for Livestocks Feed Formulation. Technical Bulletin No. 64. PCAARD, Los Banos   |
| 4.  | At the end of this course, student will be able to explain the limitation and mention the plants and animal feed both conventional and in conventional | Plants and Animal Feed Matter       | <ul style="list-style-type: none"> <li>• Conventional Plants and Animal Feed Matter</li> <li>• In conventional Plants and Animal Feed Matter</li> </ul>   | 4x50 minutes    | Koloman Bod'a. 1990. Non Conventional Feedstuffs in The Nutrition of Farm Animal. Development in Animal and Veterinary Science. 23. Elsevier Science Publishing Company. Inc. New York.<br>Tillman, A.D., H. Hartadi, S.Reksohadiprojo, S.Prawirokusumo and S.Lebdosoekojo. 1998. Ilmu Makanan Ternak Dasar. Gadjahmada University Press. Yogyakarta.   |
| 5.  | At the end of this course, student will be able to explain and mention several anti quality factors on feed matter                                     | Anti quality factors on feed matter | <ul style="list-style-type: none"> <li>• The classification of anti quality factors on feed matter</li> <li>• The limitation in using feed matter contains anti quality factors in rations formulation</li> </ul> | 2x50 minutes    | Cullison, A.E. 1978. Feed and Feeding. Animal Nutrition Prentice Hall of Indian Private Ltd. New Delhi.<br>Pond, W.G., D.C. Church and K.R. Pond. 1995. Basic Animal Nutrition and Feeding. 4 <sup>th</sup> . Edition. John Wiley & Sons, New York.<br>Tilden Wayne Perry. 1982. Feed Formulation. 4 <sup>th</sup> . Edition. The Interstate Printers and Publisers. Inc. Andville. Illinois. |
|     | At the end of this course, student will be able to explain and mention feed supplements and also use it both nutritive and non nutritive               | Feed Supplements                    | <ul style="list-style-type: none"> <li>• Nutritive feed supplements</li> <li>• Non-nutritive feed supplements</li> <li>• Function and the doses of using</li> </ul>   | 2x50 minutes    | Cullison, A.E. 1978. Feed and Feeding. Animal Nutrition Prentice Hall of Indian Private Ltd. New Delhi.<br>Pond, W.G., D.C. Church and K.R. Pond. 1995. Basic Animal Nutrition and Feeding. 4 <sup>th</sup> . Edition. John Wiley & Sons, New York.<br>Tilden Wayne Perry. 1982. Feed Formulation. 4 <sup>th</sup> . Edition. The Interstate Printers ar. J Publisers. Inc.                   |
|     |  |                                     |   |                 |   |



**COURSE OUTLINE**

| No. | Specific Instruction   | Major Topic                  | Minor Topic  | Time Estimation | Reading Source   |
|-----|--|------------------------------|--|-----------------|--|
|     |  |                              |  |                 | Andville. Illinois.  |
| 6.  | At the end of this course, student will be able to mention and explain the pre requirements of feed matter selection and also explain several methods of rations formulation according to the purpose of animal husbandry business | Basis of Rations Formulation | <ul style="list-style-type: none"> <li>• Basis of feed matter selection</li> <li>• Methods in rations formulation</li> <li>• Trial and error method</li> <li>• Diagonal method (Pearson's square method)</li> <li>• Linear programming method</li> </ul> | 12x50 minutes   | <p>Cullison, A.E. 1978. Feed and Feeding. Animal Nutrition Prentice Hall of Indian Private Ltd. New Delhi.</p> <p>Pond, W.G., D.C. Church and K.R. Pond. 1995. Basic Animal Nutrition and Feeding. Ed. 4<sup>th</sup> John Wiley &amp; Sons, New York.</p> <p>Tillman, A.D.,H. Hartadi, S.Reksohadiprodo, S.Prawirokusumo and S.Lebdosoekojo. 1998. Ilmu Makanan Ternak Dasar. Gadjahmada University Press. Yogyakarta</p> <p>Tilden Wayne Perry. 1982. Feed Formulation. 4<sup>th</sup>. Edition. The Interstate Printers and Publisers. Inc. Andville. Illinois.</p> |

COURSE : Agricultural Extension

COURSE CODE :

CREDIT : 3(2-1)

## OUTLINE OF TEACHING PROGRAM

**Subject** : Agricultural Extension  
**Code / SKS** : / 3 (2 – 1) sks

### **Description :**

Argue about the meaning, purpose and the objective of agricultural extension, education and behavioral change, communication, adoption and diffusion of innovation, method, media, material and extension tools, the planning of extension program, evaluation, government policy in extension

### **General Instruction :**

After attending the course, students be able to understand the importance of the education process and behavioral change through communication, diffusion of innovation, using method, media and extension tools, program planning, and understand the government policy in agriculture, especially in extension program

### **References :**

1. Anomious. 1970. Psikologi pendidikan.
2. Balai Informasi Pertanian. 1989. Pedoman pembinaan kelompok tani nelayan. Deptan. Jakarta.
3. Bloom, B.S., F. D. R Karthwohl and B. B. Masia. 1965. Taxonomi of educational objectives. New York : David McKay Co., Inc.
4. Direktorat Jenderal Peternakan. 1992. Petunjuk pelaksanaan pembinaan kelompok tani ternak. Dirjen peternakan, Deptan. Jakarta.
5. Gunardi. 1980. Dasar-dasar penyuluhan. IPB. Bogor.
6. Goldberg, A. 1985. Komunikasi kelompok, proses diskusi dan penerapannya. UI. Jakarta.
7. Havelock, R. G., 1969. Planning for innovation. Dissemination and utilization of knowledge. ISR. The University of Michigan, Ann Arbor, Michigan.
8. Hawkins, H. S., A. M. Dunn and J. W. Cary. 1982. Agricultural and livestock extension. Vol. 2. The extension process. Canberra. AUIDP.
9. Hawkins, H. S. and Van den Ban. 1990. Agricultural extension. Co-publish in The United State with Joh Wiley and Son. Inc. New York.
10. Isbandi. 1991. Pendidikan dalam penyuluhan. FP UNDIP. Semarang.
11. Isbandi. 1992. Proses pendidikan penyuluhan. FP UNDIP. Semarang.

12. Isbandi. 1992. Pendidikan, komunikasi dan perencanaan program penyuluhan peternakan. FP UNDIP. Semarang.
13. Jalaluddin, R. 2001. Psikologi komunikasi. Penerbit PT Remaja Rosdakarya. Bandung.
14. Kartasapoetra, A. G. 1994. Teknologi penyuluhan pertanian. Penerbit Bumi Aksara. Jakarta.
15. Lionberger, H. F. 1960. Adoption of new ideas and practices. Iowa : The Iowa State Univbersity Press.
16. Mardikanto, T. 1993. Penyuluhan pembangunan pertanian. SMU Press. Surakarta.
17. Sastraatmadja, E. 1993. Penyuluhan pertanian. Falsafah, masalah dan strategi. Alamuni. Bandung.
18. Slamet, M. 1978. Penyuluhan pertanian. Kumpulan bahan bacaan penyuluhan.. Edisi III. IPB. Bogor
19. Satmoko, S. 1996. Komunikasi penyuluhan. Diktat kuliah penyuluhan. FP UNDIP. Semarang.
20. Soedijanto, P., 1997. Media penyuluhan pertanian. Universitas Terbuka.
21. Soedijanto, P., 1999. Evaluasi penyuluhan pertanian. Universitas Terbuka.

| No. | Specific Instruction  | Topics  | Subtopics  | Duration      |
|-----|---|---|--|---------------|
| 1.  | Students be able to understand and explain the meaning of agricultural extension  | The meaning of agricultural extension               | <ul style="list-style-type: none"> <li>▪ Agricultural development, especially in animal husbandry</li> <li>▪ The relation of extension and other sciences</li> <li>▪ Purpose, Objectives, function, principles, phylosophy and extension ethics</li> </ul> | 100 minutes   |
| 2.  | Students be able to understand and explain the function of education related with behavioral domains                            | Education and behavioural domain                    | <ul style="list-style-type: none"> <li>▪ Education and behavioral change process</li> <li>▪ Types of education and their processes</li> <li>▪ Behavioral domain and the phase of change</li> </ul>   | 100 minutes t |
| 3.  | Students be able to understand and explain about communication, adoption, diffusion of innovation in the agricultural extension | Communication, adoption and diffusion of innovation | <p>The definition of communication, adoption and diffusion of innovation</p> <ul style="list-style-type: none"> <li>▪ Communication functions</li> <li>▪ Adoption and diffusion of innovation processes</li> </ul>   | 100 minutes   |
| 4.  | Students be able to understand and explain about extension method   | Extension method                                    | <ul style="list-style-type: none"> <li>▪ Meaning of extension method</li> <li>▪ Types of extension metod and its practices</li> <li>▪ Strategy of the use of the methods in behavioral change</li> </ul>   | 200 minutes   |

|     |  |                                    |   |             |
|-----|--|------------------------------------|---|-------------|
| 5.  | Students be able to understand and explain about extension media   | Extension Media                    | <ul style="list-style-type: none"> <li>▪ Definition of extension media</li> <li>▪ Various media and their applicationa</li> <li>▪ Strategy of the use of media</li> </ul>   | 200 minutes |
| 6.  | Students be able to understand and explain about material, tools and education kits                      | Material, tools and extension kits | <ul style="list-style-type: none"> <li>▪ Definiton of material, tools and extension kits</li> <li>▪ Types of material, sources and the selection of materials</li> <li>▪ Types of Material, tools and extension kits</li> </ul>         | 200 minutes |
| 7.  | Students be able to understand and explain about extension program planning                              | Extension program planning         | <ul style="list-style-type: none"> <li>▪ Definition of extension program</li> <li>▪ The formation of program planning</li> <li>▪ Steps in program planning</li> </ul>   | 200 minutes |
| 8.  | Students be able to understand and explain extension program evaluation                                  | Evaluation in extension program    | <ul style="list-style-type: none"> <li>▪ Definition of extension program evaluation</li> <li>▪ Formation of extension program evaluation</li> </ul>   | 200 minutes |
| 9.  | Students be able to understand and explain government policy in extension, agriculture and food security | extension program evaluation       | <ul style="list-style-type: none"> <li>▪ Identifying the work's place</li> <li>▪ Physical, infrastructure, institutional and human resources</li> <li>▪ Organisation and Adminstration</li> <li>▪ Facilities and work system</li> </ul> | 100 minutes |
| 10. | Students recognize the practice of agricultural extension  | Capita Selecta                     | The practice of extension programs  | 100 minutes |

## TEACHING AGENDA

**Subject** : Agricultural Extension  
**Code** : / 3 (3-1) SKS  
**Duration** : 12 – 14 x (2 x 1) x 100 minutes

### TEACHING AGENDA I

#### **DESCRIPTION :**

Talks about definition, meaning and objectives of extension in agriculture, related with theories of education and agricultural development

#### **GENERAL INSTRUCTION :**

After attending the class, students be able to understand the importance of educational process and behavioral change for farmers and their families

#### **SPECIFIC INSTRUCTION**

Students be able to understand and able to explain the concepts of educational process and behavioral change of the farmers

#### **Subtopics**

1. The meaning of development and agricultural development
2. The meaning of education (Formal, Non-formal dan Informal)
3. The meaning of behavioral change

#### **Teaching activities**

| No. | Phases       | Lecturere Activities   | Students activities      | Media education kits /   |
|-----|--------------|--|--------------------------|--------------------------|
| 1.  | Introduction | Explaining:<br>The meaning of development and agricultural development<br>The meaning of education (Formal, Non-formal dan Informal)<br>The meaning of behavioral change | Listening and responding | Whiteboard<br>OHP<br>LCD |
| 2.  | Presentation |  |                          |                          |

## TEACHING AGENDA II

| WEEKS        | TOPIC   | SUBTOPIC   | LECTURER |
|--------------|---|--|----------|
| I            | The meaning of extension, especially in the field of animal husbandry | <ul style="list-style-type: none"> <li>▪ Agricultural development, especially in animal husbandry</li> <li>▪ The relation of extension and other sciences</li> <li>▪ Purpose, Objectives, function, principles, phylosophy and extension ethics</li> </ul> | ISB      |
| II           | Types of education and behavioral domain                              | <ul style="list-style-type: none"> <li>▪ Education and behavioral change process</li> <li>▪ Types of education and their processes</li> <li>▪ Behavioral domain and the phase of change</li> </ul>   | ISB      |
| III          | Communication, adoption and diffusion of innovation                   | <p>The definition of communication, adoption and diffusion of innovation</p> <ul style="list-style-type: none"> <li>▪ Communication functions</li> <li>▪ Adoption and diffusion of innovation processes</li> </ul>   | ISB      |
| IV dan V     | Extension method  | <ul style="list-style-type: none"> <li>▪ Meaning of extension method</li> <li>▪ Types of extension metod and its practices</li> <li>▪ Strategy of the use of the methods in behavioral change</li> </ul>   | ISB      |
| VI dan VII   | Extension Media   | <ul style="list-style-type: none"> <li>▪ Definition of extension media</li> <li>▪ Various media and their applicatiiona</li> <li>▪ Strategy of the use of media</li> </ul>   | ISB      |
| VIII         | MID SEMESTER  |  |          |
| IX dan X     | Material, and educational kit in extension                            | <ul style="list-style-type: none"> <li>▪ Definiton of material, tools and extension kits</li> <li>▪ Types of material, sources and the selection of materials</li> <li>▪ Types of Material, tools and extension kits</li> </ul>                            | TSE      |
| XI dan XII   | Extension Program   | <ul style="list-style-type: none"> <li>▪ Definition of extension program</li> <li>▪ The formation of program planning</li> <li>▪ Steps in program planning</li> </ul>  | TSE      |
| XIII dan XIV | Extension program evaluation  | <ul style="list-style-type: none"> <li>▪ Definition of extension program evaluation</li> <li>▪ Formation of extension program evaluation</li> </ul>  | TSE      |
| XV           | Government policy in agricultural extension                           | <ul style="list-style-type: none"> <li>▪ Identifying the work's place</li> <li>▪ Physical, infrastructure, institutional and human resources</li> <li>▪ Organisation and Adminstration</li> </ul>  | TSE      |

|     |                |                                    |     |
|-----|----------------|------------------------------------|-----|
|     |                | ▪ Facilities and work system       |     |
| XVI | Capita Selecta | The practice of extension programs | TSE |

**KRITERIA PENILAIAN :**

1. Ujian MID Semester : 30 %
2. Ujian Akhir Semester: 30 %
3. Tugas : 10 %
4. Praktikum : 30%
- Jumlah : 100%

**BUKU PUSTAKA :**

- Anomious. 1970. Psikologi pendidikan.
- Balai Informasi Pertanian. 1989. Pedoman pembinaan kelompok tani nelayan. Deptan. Jakarta.
- Bloom, B.S., F. D. R Karthwohl and B. B. Masia. 1965. Taxonomi of educational objectives. New York : David McKay Co., Inc.
- Direktorat Jenderal Peternakan. 1992. Petunjuk pelaksanaan pembinaan kelompok tani ternak. Dirjen peternakan, Deptan. Jakarta.
- Gunardi. 1980. Dasar-dasar penyuluhan. IPB. Bogor.
- Goldberg, A. 1985. Komunikasi kelompok, proses diskusi dan penerapannya. UI. Jakarta.
- Havelock, R. G., 1969. Planning for innovation. Dissemination and utilization of knowledge. ISR. The University of Michigan, Ann Arbor, Michigan.
- Hawkins, H. S., A. M. Dunn and J. W. Cary. 1982. Agricultural and livestock extension. Vol. 2. The extension process. Canberra. AUIDP.
- Hawkins, H. S. and Van den Ban. 1990. Agricultural extension. Co-publish in The United State with Joh Wiley and Son. Inc. New York.
- Isbandi. 1991. Pendidikan dalam penyuluhan. FP UNDIP. Semarang.
- Isbandi. 1992. Proses pendidikan penyuluhan. FP UNDIP. Semarang.
- Isbandi. 1992. Pendidikan, komunikasi dan perencanaan program penyuluhan peternakan. FP UNDIP. Semarang.
- Jalaluddin, R. 2001. Psikologi komunikasi. Penerbit PT Remaja Rosdakarya. Bandung.
- Kartasapoetra, A. G. 1994. Teknologi penyuluhan pertanian. Penerbit Bumi Aksara. Jakarta.
- Lionberger, H. F. 1960. Adoption of new ideas and practices. Iowa : The Iowa State Univbersity Press.
- Mardikanto, T. 1993. Penyuluhan pembangunan pertanian. SMU Press, Surakarta.
- Sastraatmadja, E. 1993. Penyuluhan pertanian. Faisafah, masalah dan strategi. Alamuni. Bandung.
- Slamet, M. 1978. Penyuluhan pertanian. Kumpulan bahan bacaan penyuluhan.. Edisi III. IPB. Bogor
- Satmoko, S. 1996. Komunikasi penyuluhan. Diktat kuliah penyuluhan. FP UNDIP. Semarang.
- Soedijanto, P., 1997. Media penyuluhan pertanian. Universitas Terbuka.
- Soedijanto, P., 1999. Evaluasi penyuluhan pertanian. Universitas Terbuka.

COURSE : ENTREPRENEURSHIP

COURSE CODE :

CREDIT : 2(2-0)

## COURSE OUT LINE

SUBJECT STUDIED : ENTREPRENEURSHIP  
 CODE NO. : MWU 109  
 SCS : 2(2-0)

### SHORT DISCREPTION:

It is study about autonomy and share of business to perspective of entrepreneurship related to business of failure and success, to livestock enterprise especially.

### GENERAL INSTRUCTION GOALS:

After joint in this lecture, student may knew and understood the role of entrepreneurship, to livestock enterprise especially, and to develop and to motivate for made business.

### REFERENCES:

1. Birah Paul, Brian Clegg, 1996. business Creativity. PT Gramedia pustaka Utama, Jakarta
2. Djatmiko, D. wirausaha dan Pembangunan. CV Alfabeta, Bandung
3. Drucher, PF. 1996. Inovasi dan Kewirausahaan, Erlangga. Jakarta.
4. Geoffrey G.M, et al. 1992. Kewirausahaan Teori dan Praktek Seni Manajemen no. 97. PT Pustaka Binaman Pressindo
5. Histick, R.D., Peters MP. 1995. Entrepreneurship. Irwin. Chicago.
6. Alma, B. 2000. Kewirausahaan. Penerbit Alfabeta, Bandung.
7. Wiratmo, M. 1996. pengantar kewirausahaan, kerangka Dasar memasuki Dunia Bisnis., BPFE, Yogyakarta.
8. Virgilio. V. Vitung dkk. 1988 (editor). Agribusiness Opportunities. A practical how to book on likelihood and agricultural business ventures. Agriscoope, Quezon City.
9. Longenecker J.R., C.W. Moore dan J.W. Petty. Kewirausahaan, Manajemen Usaha Kecil (terjemahan). Buku 1 dan 2. Salemba Empat, Jakarta.

| NO. | SPECIFIC INSTRUCTION GOALS   | TOPICS       | SUB-TOPICS  | TIME ESTIMATION                      | REFE RENCES |
|-----|--|--------------|---|--------------------------------------|-------------|
| 1.  | At the end of lectures, students know and can explain terms of entrepreneurship, to livestock enterprise especially. | Introduction | 1. Sense and term of entrepreneurship<br>2. Scope based pattern of entrepreneurship<br>3. Entrepreneurship as culture | 2x100minutes<br>(2 times of meeting) | 5, 6, 7     |

|    |  |  |   |                                      |            |
|----|--|--|---|--------------------------------------|------------|
| 2. | At the end of lectures, students know and can explain the role and goals of entrepreneurship | Role and goals of entrepreneurship     | 1. be interested in to entrepreneurship<br>2. Crisis factors to start to business<br>3. measuring for interested business person    | 2x100minutes<br>(2 times of meeting) | 5, 6, 7    |
| 3. | At the end of lectures, students know and can explain how to become business person          | Personalities of business person       | 1. Characters of business person<br>2. Attitude, temperament and personalities of business person                                   | 1x100minutes                         | 5, 6, 7    |
| 4. | At the end of lectures, students know and can explain how to become entrepreneurship         | To move of motivate                    | 1. Social motivate<br>2. achievement<br>3. to rise power of motivation<br>4. to motivate other person                               | 2x100minutes<br>(2 times of meeting) | 5, 6, 7    |
| 5. | At the end of lectures, students know and can explain how to identification business share   | identification of business share       | 1. Change as innovation<br>2. Sources of innovation<br>3. Failure of business share   | 2x100minutes<br>(2 times of meeting) | 3          |
| 6. | At the end of lectures, students know and can explain concepts and challenge of business     | The concepts and challenge of business | 1. Opportunities to business<br>2. Reward and Challenge<br>3. Livestock enterprises Model   | 2x100minutes<br>(2 times of meeting) | 9 (Book 1) |
| 7. | At the end of lectures, students know and can explain how to build farm enterprise           | Build farm enterprise                  | 1. New farm business<br>2. Family business<br>3. Buy farm business  | 2x100minutes<br>(2 times of meeting) | 9 (Book 1) |
| 8. | At the end of lectures, students know and can explain to build consumer loyalty              | Build consumer loyalty                 | 1. Component of consumer satisfy<br>2. Commitment of servicing<br>3. Knowing consumer<br>4. Build product supply (make value added) | 2x100minutes<br>(2 times of meeting) | 9 (Book 2) |

## SET OF STUDY PROGRAMS

Subject of study : Entrepreneurship  
 Code of Study : MWU 109  
 SCS : 2(2-0)  
 Time schedule : 2 x 100 minute  
 Meeting times : 1 & 2

### A. GOALS

1. GIG: Student may know and understand the role and goals of entrepreneurship, to livestock enterprise especially, and develop attitude and motivate become business person.
2. SIG: At the end of lectures, students know and can explain terms of entrepreneurship, to livestock enterprise especially

### B. SUB-TOPICS:

1. Sense and term of entrepreneurship
2. Scope based of entrepreneurship pattern
3. Entrepreneurship as culture

### C. D. Learning and teaching activity:

| STEPS        | TEACHING ACTIVITY   | STUDENT ACTIVITY                 | MEDIA AND TEACHING TOOLS              |
|--------------|---|----------------------------------|---------------------------------------|
| Introduction | Explain about :<br>1. Introduction of entrepreneurship to course 1 & 2<br>2. Competency GIG and SIG   | Pay attention                    | White Board, OHP/LCD, felt-tip marker |
| Presentation | 1. Explain about sense and term of entrepreneurship<br>2. Explain Scope based of entrepreneurship pattern<br>3. Entrepreneurship as culture | Pay attention<br><br>Writing     | White Board, OHP/LCD, felt-tip marker |
| Closing      | Opportunities to student make question and answering the question from course   | Asking & Answering<br>Discussing | Notes                                 |

Evaluation:

References:

1. Alma, B. 2000. Kewirausahaan. Penerbit Alfabeta, Bandung.
2. Histick, R.D., Peters MP. 1995. Enterpreneurship. Irwin. Chicago.
3. Wiratmo, M. 1996. pengantar kewirausahaan, kerangka Dasar memasuki Dunia Bisnis., BPFE, Yogyakarta.

## SET OF STUDY PROGRAMS

Subject of study: Entrepreneurship  
 Code of Study: MWU 109  
 SCS : 2(2-0)  
 Time schedule : 2 x 100 minute  
 Meeting times : 3 & 4

### GOALS

1. GIG: Student may know and understand the role and goals of entrepreneurship, to livestock enterprise especially, and develop attitude and motivate become business person.
2. SIG: At the end of lectures, students know and can explain role and goals of entrepreneurship, to livestock enterprise especially,

### SUB-TOPICS:

1. Be interested in to entrepreneurship
2. Crisis factors to start to business
3. Measuring for interested business person

### Learning and teaching activity:

| STEPS        | TEACHING ACTIVITY   | STUDENT ACTIVITY                          | MEDIA AND TEACHING TOOLS              |
|--------------|---|---|---------------------------------------|
| Introduction | Explain about Competency GIG and SIG  | Pay attention<br>Writing                  | White Board, OHP/LCD, felt-tip marker |
| Presentation | 1. Explain about be interested in to entrepreneurship<br>2. Explain about crisis factors to start to business<br>3. Explain about how to measuring for interested business person | Pay attention<br><br>Writing              | White Board, OHP/LCD, felt-tip marker |
| Closing      | Opportunities to student make question and answering the question from course   | Asking & Answering question<br>Discussing | Notes                                 |

### Evaluation:

### References:

1. Alma, B. 2000. Kewirausahaan. Penerbit Alfabeta, Bandung.
2. Histick, R.D., Peters MP. 1995. Enterpreneurship. Irwin. Chicago.
3. Wiratmo, M. 1996. pengantar kewirausahaan, kerangka Dasar memasuki Dunia Bisnis., BPFE, Yogyakarta.

## SET OF STUDY PROGRAMS

Subject of study: Entrepreneurship

Code of Study: MWU 109

SCS : 2(2-0)

Time schedule : 2 x 100 minute

Meeting times : 5

### GOALS

1. GIG: Student may know and understand the role and goals of entrepreneurship, to livestock enterprise especially, and develop attitude and motivate become business person.
2. SIG: At the end of lectures, students know and can explain how to be business person

### SUB-TOPICS:

1. Characters of business person
2. Attitude, temperament and personalities of business person

### Learning and teaching activity:

| STEPS        | TEACHING ACTIVITY   | STUDENT ACTIVITY                          | MEDIA AND TEACHING TOOLS              |
|--------------|---|---|---------------------------------------|
| Introduction | Explain about Competency GIG and SIG  | Pay attention<br>Writing                  | White Board, OHP/LCD, felt-tip marker |
| Presentation | 1. Explain about what characters must be own by business person<br>2. Explain about what attitude, temperament and personalities of business person | Pay attention<br><br>Writing              | White Board, OHP/LCD, felt-tip marker |
| Closing      | Opportunities to student make question and answering the question from course   | Asking & Answering question<br>Discussing | Notes                                 |

### Evaluation:

Instrument used: student ability to asking and answering question from materials

### References:

1. Alma, B. 2000. Kewirausahaan. Penerbit Alfabeta, Bandung.
2. Histick, R.D., Peters MP. 1995. Enterpreneurship. Irwin. Chicago.
3. Wiratmo, M. 1996. pengantar kewirausahaan, kerangka Dasar memasuki Dunia Bisnis., BPFE, Yogyakarta.

## SET OF STUDY PROGRAMS

Subject of study : Entrepreneurship  
 Code of Study : MWU 109  
 SCS : 2(2-0)  
 Time schedule : 2 x 100 minute  
 Meeting times : 6 & 7

### GOALS

1. GIG: Student may know and understand the role and goals of entrepreneurship, to livestock enterprise especially, and develop attitude and motivate become business person.
2. SIG: At the end of lectures, students know and can explain how become entrepreneurship

### SUB-TOPICS:

1. Social motivate
2. Achievement
3. to rise power of motivation
4. to motivate other person

### LEARNING AND TEACHING ACTIVITY:

| STEPS        | TEACHING ACTIVITY  | STUDENT ACTIVITY                          | MEDIA AND TEACHING TOOLS              |
|--------------|--|---|---------------------------------------|
| Introduction | Explain about Competency GIG and SIG   | Pay attention<br>Writing                  | White Board, OHP/LCD, felt-tip marker |
| Presentation | Explain about:<br>1. Social motivate<br>2. how to achievement<br>3. how to rise power of motivation<br>4. how to motivate other person | Pay attention<br><br>Writing              | White Board, OHP/LCD, felt-tip marker |
| Closing      | Opportunities to student make question and answering the question from course  | Asking & Answering question<br>Discussing | Notes                                 |

Evaluation:

Instrument used: student ability to asking and answering question from materials

References:

1. Alma, B. 2000. Kewirausahaan. Penerbit Alfabeta, Bandung.
2. Histick, R.D., Peters MP. 1995. Enterpreneurship. Irwin. Chicago.
3. Wiratmo, M. 1996. pengantar kewirausahaan, kerangka Dasar memasuki Dunia Bisnis., BPFE, Yogyakarta.

## SET OF STUDY PROGRAMS

Subject of study : Entrepreneurship  
 Code of Study : MWU 109  
 SCS : 2(2-0)  
 Time schedule : 2 x 100 minute  
 Meeting times : 8 & 9

### GOALS

1. GIG: Student may know and understand the role and goals of entrepreneurship, to livestock enterprise especially, and develop attitude and motivate become business person.
2. SIG: At the end of lectures, students know and can explain to identification business share

### SUB-TOPICS:

1. Change as innovation
2. Sources of innovation
3. Failure of business share

### LEARNING AND TEACHING ACTIVITY:

| STEPS        | TEACHING ACTIVITY   | STUDENT ACTIVITY                          | MEDIA AND TEACHING TOOLS              |
|--------------|---|---|---------------------------------------|
| Introduction | Explain about Competency GIG and SIG  | Pay attention<br>Writing                  | White Board, OHP/LCD, felt-tip marker |
| Presentation | Explain about:<br>1. Change as innovation<br>2. Sources of innovation<br>3. Failure of business share | Pay attention<br><br>Writing              | White Board, OHP/LCD, felt-tip marker |
| Closing      | Opportunities to student make question and answering the question from course                         | Asking & Answering question<br>Discussing | Notes                                 |

### Evaluation:

Instrument used: student ability to asking and answering question from materials

### References:

Drucher, PF. 1996. Inovasi dan Kewirausahaan, Erlangga. Jakarta.

## SET OF STUDY PROGRAMS

Subject of study : Entrepreneurship  
 Code of Study : MWU 109  
 SCS : 2(2-0)  
 Time schedule : 2 x 100 minute  
 Meeting times : 10 & 11

### GOALS

1. GIG: Student may know and understand the role and goals of entrepreneurship, to livestock enterprise especially, and develop attitude and motivate become business person.
2. SIG: At the end of lectures, students know and can explain concepts and challenge of business

### SUB-TOPICS:

1. Opportunities to business
2. Reward and Challenge
3. Livestock enterprises Model

### LEARNING AND TEACHING ACTIVITY:

| STEPS        | TEACHING ACTIVITY   | STUDENT ACTIVITY                          | MEDIA AND TEACHING TOOLS              |
|--------------|---|---|---------------------------------------|
| Introduction | Explain about Competency GIG and SIG  | Pay attention<br>Writing                  | White Board, OHP/LCD, felt-tip marker |
| Presentation | Explain about:<br>1. how to opportunities business<br>2. Reward and Challenge<br>3. Livestock enterprises Model | Pay attention<br><br>Writing              | White Board, OHP/LCD, felt-tip marker |
| Closing      | Opportunities to student make question and answering the question from course                                   | Asking & Answering question<br>Discussing | Notes                                 |

### Evaluation:

Instrument used: student ability to asking and answering question from materials

### References:

Longenecker J.R., C.W. Moore dan J.W. Petty. Kewirausahaan, Manajemen Usaha Kecil (terjemahan). Buku 1. Salemba Empat, Jakarta.

## SET OF STUDY PROGRAMS

Subject of study : Entrepreneurship  
 Code of Study : MWU 109  
 SCS : 2(2-0)  
 Time schedule : 2 x 100 minute  
 Meeting times : 12 & 13

### GOALS

1. GIG: Student may know and understand the role and goals of entrepreneurship, to livestock enterprise especially, and develop attitude and motivate become business person.
2. SIG: At the end of lectures, students know and can explain how to build farm enterprise

### SUB-TOPICS:

1. New farm business
2. Family business
3. Buy farm business

### Learning and teaching activity:

| STEPS        | TEACHING ACTIVITY   | STUDENT ACTIVITY                          | MEDIA AND TEACHING TOOLS              |
|--------------|---|---|---------------------------------------|
| Introduction | Explain about Competency GIG and SIG  | Pay attention<br>Writing                  | White Board, OHP/LCD, felt-tip marker |
| Presentation | Explain about:<br>1. New farm business<br>2. Family business<br>3. how to buy farm business | Pay attention<br><br>Writing              | White Board, OHP/LCD, felt-tip marker |
| Closing      | Opportunities to student make question and answering the question from course               | Asking & Answering question<br>Discussing | Notes                                 |

### Evaluation:

Instrument used: student ability to asking and answering question from materials

### References:

Longenecker J.R., C.W. Moore dan J.W. Petty. Kewirausahaan, Manajemen Usaha Kecil (terjemahan). Buku 1. Salemba Empat, Jakarta.

## SET OF STUDY PROGRAMS

Subject of study : Entrepreneurship

Code of Study : MWU 109

SCS : 2(2-0)

Time schedule : 2 x 100 minute

Meeting times : 14 & 15

### GOALS

1. GIG: Student may know and understand the role and goals of entrepreneurship, to livestock enterprise especially, and develop attitude and motivate become business person.
2. SIG: At the end of lectures, students know and can explain to build consumer loyalty

### SUB-TOPICS:

1. Component of consumer satisfy
2. Commitment of servicing
3. Knowing consumer
4. Build product supply (make value added)

### LEARNING AND TEACHING ACTIVITY:

| STEPS        | TEACHING ACTIVITY  | STUDENT ACTIVITY                          | MEDIA AND TEACHING TOOLS                 |
|--------------|--|---|--|
| Introduction | Explain about Competency GIG and SIG   | Pay attention<br>Writing                  | White Board, OHP/LCD,<br>felt-tip marker |
| Presentation | Explain about:<br>1. Component of consumer satisfy<br>2. Commitment of servicing<br>3. How to Know consumer<br>4. How to build product supply (make value added) | Pay attention<br><br>Writing              | White Board, OHP/LCD,<br>felt-tip marker |
| Closing      | Opportunities to student make question and answering the question from course  | Asking & Answering question<br>Discussing | Notes                                    |

Evaluation:

Instrument used: student ability to asking and answering question from materials

References:

Longenecker J.R., C.W. Moore dan J.W. Petty. Kewirausahaan, Manajemen Usaha Kecil (terjemahan). Buku 2. Salemba Empat, Jakarta.

## CONTRACT STUDY

Study Program : S1 Social Economics of Animal Husbandry  
 Date schedule : Thursday  
 Time schedule : 1 - 3 PM  
 Place :  
 Lecturer :

### SHORT DISCREPTION:

It is study about autonomy and share of business to perspective of entrepreneurship related to business of failure and success, to livestock enterprise especially.

### GENERAL INSTRUCTION GOALS:

After joint in this lecture, student may knew and understood the role of entrepreneurship, to livestock enterprise especially, and to develop and to motivate for made business.

### SET OF COURSES PROGRAMS

| Weeks | Topics                             | Sub-topics   | Lecturer |
|-------|------------------------------------|--|----------|
| 1     | Introduction                       | 1. Sense and term of entrepreneurship<br>2. Scope based pattern of entrepreneurship<br>3. Entrepreneurship as culture            | WSM      |
| 3 & 4 | Role and goals of entrepreneurship | 1. be interested in to entrepreneurship<br>2. Crisis factors to start to business<br>3. measuring for interested business person | WSM      |
| 5     | Personalities of business person   | 1. Characters of business person<br>2. Attitude, temperament and personalities of business person                                | WSM      |
| 6 & 7 | To move of motivate                | 1. Social motivate<br>2. achievement<br>3. to rise power-of-motivation<br>4. to motivate other person                            |          |
| 8     | identification of business share   | 1. Change as innovation<br>2. Sources of innovation<br>3. Failure of business share  |          |

|         |  |   |  |
|---------|--|---|--|
| 9 & 10  | The concepts and challenge of business | <ol style="list-style-type: none"> <li>1. Opportunities to business</li> <li>2. Reward and Challenge</li> <li>3. Livestock enterprises Model</li> </ol>   |  |
| 13 & 14 | Build farm enterprise                  | <ol style="list-style-type: none"> <li>1. New farm business</li> <li>2. Family business</li> <li>3. Buy farm business</li> </ol>  |  |
| 15 & 16 | Build consumer loyalty                 | <ol style="list-style-type: none"> <li>1. Component of consumer satisfy</li> <li>2. Commitment of servicing</li> <li>3. Knowing consumer</li> <li>4. Build product supply (make value added)</li> </ol> |  |

Evaluation:

Mid-test: 50%

Last-test: 50%

#### REFERENCES:

1. Birah Paul, Brian Clegg, 1996. business Creativity. PT Gramedia pustaka Utama, Jakarta
2. Djatmiko, D. wirausaha dan Pembangunan. CV Alfabeta, Bandung
3. Drucher, PF. 1996. Inovasi dan Kewirausahaan, Erlangga. Jakarta.
4. Geoffrey G.M, et al. 1992. Kewirausahaan Teori dan Praktek Seni Manajemen no. 97. PT Pustaka Binaman Pressindo
5. Histick, R.D., Peters MP. 1995. Enterpreneurship. Irwin. Chicago.
6. Alma, B. 2000. Kewirausahaan. Penerbit Alfabeta, Bandung.
7. Wiratmo, M. 1996. pengantar kewirausahaan, kerangka Dasar memasuki Dunia Bisnis., BPFE, Yogyakarta.
8. Virgilio. V. Vitung dkk. 1988 (editor). Agribusiness Opportunities. A practical how to book on likelihood and agricultural business ventures. Agriscoope, Quezon City.
9. Longenecker J.R., C.W. Moore dan J.W. Petty. Kewirausahaan, Manajemen Usaha Kecil (terjemahan). Buku 1 dan 2. Salemba Empat, Jakarta.

COURSE : INTRODUCTION ECONOMICS

COURSE CODE :

CREDIT : 2 (2-0)

|    |   |                                     |   |               |  |
|----|---|-------------------------------------|---|---------------|--|
| 4. | Student understand to determine of market price, the market functions, market classification and farm business equilibrium                    | Marketing theory                    | 1. market price determination<br>2. market functions<br>3. market classification<br>4. farm business equilibrium                  | 2 x 100 munit | Ekonomi Mikro. Erlangga. Jakarta.  |
| 5. | Student understand the indicators of economic growth and economic development, economic welfare and factors of economic growth determination. | National economic welfare           | 1. indicators of economic growth and economic development<br>2. welfare indicators<br>3. factors of economic growth determination | 2 x 100 munit | 6. Mangkoesobroto, G dan Algifari. 1998. Teori Ekonomi Makro. STIE YKPN. Yogyakarta.<br>7. Darmawan, I. 1992. Pengantar Uang dan Perbankan. Rineka Cipta. Jakarta. |
| 6. | Student understand 2, 3 and 4 sectors of economic cycle and fiscal and monetary policy.   | Economic cycle and economic policy. | 1. the economic system of 2, 3 and 4 sectors.<br>2. fiscal and monetary policy.   | 3 x 100 munit | 8. Simorangkir, O.P.. 2000. Pengantar Lembaga Keuangan Bank dan NonBank. Ghalia Indonesia. Jakarta.  |
| 7. | Student understand to the kinds and functions of money, banking and financing institution, inflation and deflation.                           | Banking and financing               | 1. the concept of money, kinds and functions of money<br>2. banking and financing institution<br>3. Inflation and dan deflation   | 3 x 100 munit |  |

## SUBJECT STUDIED CONTRACT

**SUBJECT STUDIED** : INTRODUCTION TO ECONOMICS  
**S C S** : 2 (2-0) / PTF 108  
**STUDY PROGRAM** : Technology of Livestock Post Harvest  
**DAY/TIME** : Friday / 07.00-09.00 WIB  
**ROOM** : E1.01  
**LECTURER** : Ir. Mukson, MS (MKS)\*  
 Ir. B. Mulyatno S, MS (BMS)

1. **SYLLABUS** : Introduction to Economics discuss relation to economics development, production and consumption, marketing, economic welfare, economy cycle, economic policy, monetary and banking aspect.

**AIM OF GENERAL INSTRUCTION :**

At the end of study, the student can understand to economic concept and economic development, production and consumption, marketing, economic welfare, economy cycle, economic policy, monetary and banking aspect.

**3. LECTURING AGENDA UNIT**

| Week  | Topic and Sub Topic  | Lecturer |
|-------|--|----------|
| 1-2   | Economic Scoupe<br>1. Introduction and economic history<br>2. Economic problems and aim of economy   | MKS      |
| 3-4   | Consumption and demand<br>1. utility concept and demand utility<br>2. factors of demand influencing<br>3. demand elasticity                            | MKS      |
| 5-6   | Production, production process and supply<br>1. production concept and production factors<br>2. Cost of production, supply and supply elasticity       | MKS      |
| 7     | Consumer utility theory  | MKS      |
| 8     | Market Theory<br>1. market price determination<br>2. market functions<br>3. market classification<br>4. farm business equilibrium                      | MKS      |
| 9     | MID – TEST SEMESTER  | TIM      |
| 10-11 | Economics Welfare<br>1. indicators of economic growth and economic development<br>2. welfare indicators<br>3. factors of economic growth determination | BMS      |
| 12-14 | Economic cycle and economic policy<br>1. the economic system of 2, 3 and 4 sectors.<br>2. fiscal and monetary policy.                                  | BMS      |
| 15-16 | Banking and Financing  | BMS      |

|  |   |  |
|--|---|--|
|  | 1. the concept of money, kinds and functions of money<br>2. banking and financing institution<br>3. Inflation and dan deflation |  |
|--|---|--|

#### 4. REFERENCES :

- a. Partadiredja, A. 1994. Pengantar Ekonomika. BPFE. Yogyakarta.
- b. Sukirno S. 1995. Pengantar Teori Mikro Ekonomi. PT. Radja Grafindo Persada, Jkt.
- c. Sukirno S. 1997. Pengantar Teori Makro Ekonomi, PT. Radja Grafindo Persada, Jkt.
- d. Darmawan I, 1992, Pengantar Uang dan Perbankan, Rineka Cipta, Jakarta.

#### 5. EVALUATION :

1. Assignment/problem : 10 %
2. Mid semester : 40 %
3. Final Exam : 50 %

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Final Evaluation : 100 %

## LECTURING AGENDA UNIT I

Subject Studied : Introduction Economic  
 Code of Subject : PTF 108  
 System of Credit Semester : 2 SCS  
 Time Schedule : 2 x 100 munit  
 Schedule of meeting : 1 and 2

- A. AIM Introduction Economics discuss relation to economics
1. Aim of General Instruction : development, production and consumption, marketing, economic welfare, economy cycle, economic policy, monetary and banking aspect.
  2. Aim of Specific Instruction : Student can understand and explain to the economic introduction and economic history, economic problems and aim of economy
- B. Topic : Introduction and Economic scoupe
- C. Sub Topic : 1. Introduction and economic history  
 2. Economic problems, aim and scoupe of economy

### D. Teaching and Learning Activities

| Phase                      | Lecturer Activities   | Student Activities   | Media and teaching equipment   |
|----------------------------|---|--|--|
| 1                          | 2   | 3  | 4  |
| Introduction               | Describe and explain the subject material: <ul style="list-style-type: none"> <li>• Introduction economics</li> <li>• to explain the competence of topic and sub topic</li> <li>• explain the lectured contract</li> </ul>  | <ul style="list-style-type: none"> <li>▪ Take note of</li> <li>▪ written</li> <li>▪ Take note of</li> </ul>  | White board, OHP / LCD, board maker.   |
| Presentation               | <ol style="list-style-type: none"> <li>1. explain the introduction and economic history</li> <li>2. describe and clarify the scoupe of economy, economic problems and aim of economy</li> </ol>   | <ul style="list-style-type: none"> <li>▪ give suggestion</li> <li>▪ discussion</li> <li>▪ written</li> </ul>   | White board, OHP / LCD, board maker.   |
| The closing of the session | <ol style="list-style-type: none"> <li>a. closing of session</li> <li>b. randomly point toward the student to present the group discussion report</li> <li>c. the comment from other student</li> <li>d. give an assignment to revise the group discussion report completed by textbook</li> <li>e. describe the next subject lectured</li> </ol> | <ul style="list-style-type: none"> <li>▪ presentation</li> <li>▪ give comment or question related to introduction and scoupe of economic</li> <li>▪ doing an assignment</li> <li>▪ take not eof</li> </ul> | <ul style="list-style-type: none"> <li>▪ group report</li> <li>▪ written the comment and question</li> </ul> |

**E. Evaluation :**

The Instrument usage : check list for evaluating an assignment student capability

**F. References :**

- Partadiredja, A. 1992. Pengantar Ekonomika. BPFE. Yogyakarta.
- Hartowo,. 1979. Cakrawala Ekonomi. Fakultas Ekonomi UNDIP. Semarang.
- Darmawan I, 1992, Pengantar Uang dan Perbankan, Rineka Cipta, Jakarta.
- Sadono Sukirno. 1997. Pengantar Teori Makro Ekonomi

## LECTURING AGENDA UNIT II

Subject Studied : Introduction Economic  
 Code of Subject : PTF 108  
 System of Credit Semester : 2 SCS  
 Time Schedule : 2 x 100 munite  
 Schedule of meeting : 3 and 4

### A. AIM

1. Aim of General Instruction : Introduction Economics discuss relation to economics development, production and consumption, marketing, economic welfare, economy cycle, economic policy, monetary and banking aspect.
2. Aim of Specific Instruction : At the end of study, the student can understand and explain to factors and cost of production, product, optimizing and supply function.

B. Topic : Production and production process

- C. Sub Topic : 1. production factors  
 2. cost of production and product  
 3. optimizing and supply function

### D. Teaching and Learning Activities

| Phase                      | Lecturer Activities  | Student Activities   | Media and teaching equipment   |
|----------------------------|--|--|--|
| 1                          | 2  | 3  | 4  |
| Introduction               | <ol style="list-style-type: none"> <li>1. to explain the competence of topic and sub topic</li> <li>2. to explain the production and process</li> </ol>  | <ul style="list-style-type: none"> <li>▪ take note of</li> <li>▪ take note of</li> </ul>   | White board, OHP / LCD, board maker.   |
| Presentation               | Describe and explain : <ol style="list-style-type: none"> <li>1. production factors</li> <li>2. cost of production and product</li> <li>3. optimizing and supply function</li> </ol>   | <ul style="list-style-type: none"> <li>▪ give suggestion</li> <li>▪ discussion</li> <li>▪ written</li> </ul>   | White board, OHP / LCD, board maker. Form of student self evaluation   |
| The closing of the session | <ol style="list-style-type: none"> <li>1. closing of session</li> <li>2. randomly point toward the student to present the group discussion report</li> <li>3. the comment from other student</li> <li>4. give an assignment to revise the group discussion report completed by textbook or journal</li> <li>5. describe the next subject lectured</li> </ol> | <ul style="list-style-type: none"> <li>▪ presentation</li> <li>▪ give comment or question related to production, optimizing and supply</li> <li>▪ doing an assignment</li> <li>▪ take note of</li> </ul> | <ul style="list-style-type: none"> <li>▪ group report</li> <li>▪ written the comment and question</li> </ul> |

**E. Evaluation :**

The Instrument usage : check list for evaluating an assignment student capability

**F. References :**

- Partadiredja, A. 1992. Pengantar Ekonomika. BPFE. Yogyakarta.
- Hartowo,. 1979. Cakrawala Ekonomi. Fakultas Ekonomi UNDIP. Semarang.
- Darmawan I, 1992, Pengantar Uang dan Perbankan, Rineka Cipta, Jakarta.
- Sadono Sukirno. 1997. Pengantar Teori Makro Ekonomi

### LECTURING AGENDA UNIT III

Subject Studied : Introduction Economic  
 Code of Subject : PTF 108  
 System of Credit Semester : 2 SCS  
 Time Schedule : 2 x 100 munit  
 Schedule of meeting : 5 and 6

**A. AIM**

1. Aim of General Instruction : Introduction Economics discuss relation to economics development, production and consumption, marketing, economic welfare, economy cycle, economic policy, monetary and banking aspect.
2. Aim of Specific Instruction : Student can understand and explain utility concept and services and goods consumption utility, demand and elasticity elasticity and factors of demand influencing

**B. Topic** : Consumption and demand

- C. Sub Topic** :
1. utility concept and demand utility
  2. Value and price of goods and services
  3. demand function

**D. Teaching and Learning Activities**

| Phase                      | Lecturer Activities  | Student Activities   | Media and teaching equipment   |
|----------------------------|--|--|--|
| 1                          | 2  | 3  | 4  |
| Introduction               | <ol style="list-style-type: none"> <li>1. describe the competence of topic and sub topic</li> <li>2. describe utility, consumption and demand</li> </ol>   | <ul style="list-style-type: none"> <li>▪ take note of</li> <li>▪ take note of</li> </ul>   | White board, OHP / LCD, board maker.   |
| Presentation               | Explain the subject lectured, such : <ol style="list-style-type: none"> <li>1. utility concept and demand utility</li> <li>2. Value and price of goods and services</li> <li>3. demand function</li> </ol>   | <ul style="list-style-type: none"> <li>▪ give suggestion</li> <li>▪ discussion for observing student capability</li> <li>▪ written</li> </ul>  | White board, OHP / LCD, board maker. Form of student self evaluation   |
| The closing of the session | <ol style="list-style-type: none"> <li>1. closing of session</li> <li>2. randomly point toward the student to present the group discussion report</li> <li>3. the comment from other student</li> <li>4. give an assignment to revise the group discussion report</li> </ol> | <ul style="list-style-type: none"> <li>▪ presentation</li> <li>▪ give comment or question related to utility, consumption and demand</li> <li>▪ doing an assignment</li> <li>▪ take note of</li> </ul> | <ul style="list-style-type: none"> <li>▪ group report</li> <li>▪ written the comment and question</li> </ul> |

|  |  |   |  |  |
|--|--|---|--|--|
|  |  | completed by textbook or journal<br>5. describe the next subject lectured |  |  |
|--|--|---|--|--|

**E. Evaluation :**

The Instrument usage : check list for evaluating an assignment student capability

**F. References :**

- Partadiredja, A. 1992. Pengantar Ekonomika. BPFE. Yogyakarta.
- Hartowo,. 1979. Cakrawala Ekonomi. Fakultas Ekonomi UNDIP. Semarang.
- Darmawan I, 1992, Pengantar Uang dan Perbankan, Rineka Cipta, Jakarta.
- Sadono Sukirno. 1997. Pengantar Teori Makro Ekonomi

## LECTURING AGENDA UNIT IV

Subject Studied : Introduction Economic  
 Code of Subject : PTF 108  
 System of Credit Semester : 2 SCS  
 Time schedule : 2 x 100 munite  
 Schedule of meeting : 7 and 8

### A. AIM

1. Aim of General Instruction : Introduction to Economics discuss relation to economics development, production and consumption, marketing, economic welfare, economy cycle, economic policy, monetary and banking aspect.
2. Aim of Specific Instruction : Student understand to determine of market price, the market functions, market classification and farm business equilibrium

### B. Topic

: Marketing

### C. Sub Topic

- : 1. market price determination
2. market functions
3. market classification
4. farm business equilibrium

### D. Teaching and Learning Activities

| Phase                      | Lecturer Activities   | Student Activities   | Media and teaching equipment   |
|----------------------------|---|--|--|
| 1                          | 2   | 3  | 4  |
| Introduction               | <ol style="list-style-type: none"> <li>1. describe the competence of topic and sub topic</li> <li>2. describe market concept and classification of market</li> </ol>  | <ul style="list-style-type: none"> <li>▪ take note of</li> <li>▪ take note of</li> </ul>   | White board.<br>OHP / LCD.<br>board maker.   |
| Presentation               | Explain the subject lectured, such : <ol style="list-style-type: none"> <li>1. market price determination</li> <li>2. market functions</li> <li>3. market classifications</li> </ol>  | <ul style="list-style-type: none"> <li>▪ give suggestion</li> <li>▪ discussion for observing student capability</li> <li>▪ written</li> </ul>  | White board.<br>OHP / LCD.<br>board maker.<br>Form of student self evaluation                                |
| The closing of the session | <ol style="list-style-type: none"> <li>1. closing of session</li> <li>2. randomly point toward the student to present the group discussion report</li> <li>3. the comment from other student</li> <li>4. give an assignment to revise the group discussion report completed by textbook or</li> </ol> | <ul style="list-style-type: none"> <li>▪ presentation</li> <li>▪ give comment or question related to marketing concept</li> <li>▪ doing an assignment</li> <li>▪ take note of</li> </ul> | <ul style="list-style-type: none"> <li>▪ group report</li> <li>▪ written the comment and question</li> </ul> |

|  |                                       |  |  |
|--|---------------------------------------|--|--|
|  | journal                               |  |  |
|  | 5. describe the next subject lectured |  |  |

**E. Evaluation :**

The Instrument usage : check list for evaluating an assignment student capability

**F. References :**

- Partadiredja, A. 1992. Pengantar Ekonomika. BPFE. Yogyakarta.
- Hartowo,. 1979. Cakrawala Ekonomi. Fakultas Ekonomi UNDIP. Semarang.
- Darmawan I, 1992, Pengantar Uang dan Perbankan, Rineka Cipta, Jakarta.
- Sadono Sukirno. 1997. Pengantar Teori Makro Ekonomi

## LECTURING AGENDA UNIT V

Subject Studied : Introduction Economic  
 Code of Subject : PTF 108  
 System of Credit Semester : 2 SCS  
 Time Schedule : 4 x 50 munite  
 Schedule of meeting : 9 and 10

### A. AIM

1. Aim of General Instruction : At the end of study, student can undestand and explain about national economic welfare
2. Aim of Specific Instruction : Student understand the indicators of economic growth and economic development, economic welfare and factors of economic growth determination.

B. Topic : National Economic Welfare

- C. Sub Topic : 1. indicators of economic growth and economic development  
 2. welfare indicators  
 3. factors of economic growth determination

### D. Teaching and Learning Activities

| Phase        | Lecturer Activities  | Student Activities  | Media and teaching equipment   |
|--------------|--|---|--|
| 1            | 2  | 3   | 4  |
| Introduction | <ol style="list-style-type: none"> <li>1. describe the competence of topic and sub topic</li> <li>2. describe the nationaleconomic wlfare</li> </ol>   | <ul style="list-style-type: none"> <li>▪ take note of</li> <li>▪ take note of</li> </ul>  | White board, OHP / LCD, board maker.                                 |
| Presentation | <ol style="list-style-type: none"> <li>1. describe and explain the indicators of economic growth and economic development                             <ul style="list-style-type: none"> <li>▪ give an indicators of economic growth question</li> <li>▪ discussion and give an aswere of the economic growth indicators</li> </ul> </li> <li>2. describe and explain the economic welfare indicators                             <ul style="list-style-type: none"> <li>▪ give an indicators of economic welfare question</li> <li>▪ discussion and give an aswere the economic welfare indicators</li> </ul> </li> </ol> | <ul style="list-style-type: none"> <li>▪ give suggestion</li> <li>▪ discussion for observing student capability</li> <li>▪ written and summary up of the economic growth and welfare and economic growth determination</li> </ul> | White board, OHP / LCD, board maker. Form of student self evaluation |

|                            |  |   |  |  |
|----------------------------|--|---|--|--|
|                            |  | <p>3 describe and explain the factors of economic growth determination</p> <ul style="list-style-type: none"> <li>▪ give question about how to determine the economic growth</li> <li>▪ discussion and give an aswere of the economic growth determination</li> </ul> |  |  |
| The closing of the session | <ol style="list-style-type: none"> <li>1. closing of session</li> <li>2. randomly point toward the student to present the group discussion report</li> <li>3. the comment from other student</li> <li>4. give an assignment to revise the group discussion report completed by textbook or journal</li> <li>5. describe the next subject lectured</li> </ol> | <ul style="list-style-type: none"> <li>▪ presentation</li> <li>▪ give comment or question related to marketing concept</li> <li>▪ doing an assignment</li> <li>▪ take note of</li> </ul>  | <ul style="list-style-type: none"> <li>▪ group report</li> <li>▪ written the comment and question</li> </ul> |  |

**E. Evaluation :**

The Instrument usage : check list for evaluating an assigment student capability

**F. References :**

- Partadiredja, A. 1992. Pengantar Ekonomika. BPFE. Yogyakarta.
- Hartowo,. 1979. Cakrawala Ekonomi. Fakultas Ekonomi UNDIP. Semarang.
- Darmawan I, 1992, Pengantar Uang dan Perbankan, Rineka Cipta, Jakarta.
- Sadono Sukirno. 1997. Pengantar Teori Makro Ekonomi

## LECTURING AGENDA UNIT VI

Subject Studied : Introduction Economic

Code of Subject : PTF 108

System of Credit Semester : 2 SCS

Time Schedule : 6 x 50 munite

Schedule of meeting : 11,12 and 13

### A. AIM

1. Aim of General Instruction : At the end of study, student can undestand and explain about economic cycle and economic policy

2. Aim of Specific Instruction : Student can understand explain the 2, 3 and 4 sectors of economic cycle and fiscal and monetry policy.

B. Topic : Economic cycle and economic policy

C. Sub Topic : 1. Economy system of the 2, 3 and 4 sectors  
2. Fiscal and monetry policy.

### D. Teaching and Learning Activities

| Phase        | Lecturer Activities   | Student Activities  | Media and teaching equipment   |
|--------------|---|---|--|
| 1            | 2   | 3   | 4  |
| Introduction | <ol style="list-style-type: none"> <li>1. describe the competence of topic and sub topic</li> <li>2. describe the economic cycle and economic policy</li> </ol>   | <ul style="list-style-type: none"> <li>▪ take note of</li> <li>▪ take note of</li> </ul>  | White board, OHP / LCD, board maker.                                 |
| Presentation | <ol style="list-style-type: none"> <li>1. describe and explain the 2,3, and 4 sectors of economic                             <ul style="list-style-type: none"> <li>▪ give a question of the 2,3 and 4 economic sectors</li> <li>▪ discussion, give an aswere and conclusion of the 2, 3 and 4 economic sectors</li> </ul> </li> <li>2. describe and explain thefiscal and monetry policy                             <ul style="list-style-type: none"> <li>▪ give a question of the fscal and monetry policy</li> <li>▪ discussion and give an aswere and conclusion of the fiscal and monetry policy</li> </ul> </li> </ol> | <ul style="list-style-type: none"> <li>▪ give suggestion</li> <li>▪ discussion an simulation for observing student capability</li> <li>▪ written and summary up of the 2,3 and 4 economic sector and fiscal and monetry policy</li> </ul> | White board, OHP / LCD, board maker. Form of student self evaluation |

|                            |  |  |  |
|----------------------------|--|--|--|
| The closing of the session | <ol style="list-style-type: none"> <li>1. closing of session</li> <li>2. randomly point toward the student to present the group discussion report</li> <li>3. the comment from other student</li> <li>4. give an assignment to revise the group discussion report completed by textbook or journal</li> <li>5. describe the next subject lectured</li> </ol> | <ul style="list-style-type: none"> <li>▪ presentation</li> <li>▪ give comment or question related to marketing concept</li> <li>▪ doing an assignment</li> <li>▪ take note of</li> </ul> | <ul style="list-style-type: none"> <li>▪ group report</li> <li>▪ written the comment and question</li> </ul> |
|----------------------------|--|--|--|

**E. Evaluation :**

The Instrument usage : check list for evaluating an assignment student capability

**F. References :**

- Mangkoesobroto, G dan Algifari.1998. Teori Ekonomi Makro. STIE YKPN. Yogyakarta.
- Sadono Sukirno. 1997. Pengantar Teori Makro Ekonomi. PT Radja Grafindo, Persada, jakarta.

## LECTURING AGENDA UNIT VII

Subject Studied : Introduction Economic

Code of Subject : PTF 108

System of Credit Semester : 2 SCS

Time Schedule : 6 x 50 munit

Schedule of meeting : 14,15 and 16

### A. AIM

1. Aim of General Instruction : At the end of study, student can understand and explain about banking and financing

2. Aim of Specific Instruction : Student understand to the kinds and functions of money, banking and financing institution, inflation and deflation.

B. Topic : Banking and financing

C. Sub Topic : 1. the concept of money, kinds and functions of money  
2. banking and financing institution  
3. Inflation and dan deflation

### D. Teaching and Learning Activities

| Phase        | Lecturer Activities  | Student Activities   | Media and teaching equipment  |
|--------------|--|--|---|
| 1            | 2  | 3  | 4   |
| Introduction | <ol style="list-style-type: none"> <li>1. describe the competence of topic and sub topic</li> <li>2. describe the banking economic financing policy</li> </ol>   | <ul style="list-style-type: none"> <li>▪ take note of</li> <li>▪ take note of</li> </ul>   | White board.<br>OHP / LCD.<br>board maker.                                    |
| Presentation | <ol style="list-style-type: none"> <li>1. describe and explain of the concept of money, kinds and money functions                             <ul style="list-style-type: none"> <li>▪ give a question of the concept, kinds and functions of money</li> <li>▪ discussion, give an aswere and conclusion of the concept, kinds and functions of money</li> </ul> </li> <li>2. describe and explain the banking and financing institution                             <ul style="list-style-type: none"> <li>▪ give a question of the banking and financing</li> <li>▪ discussion and give an aswere and conclusion of the banking and financing</li> </ul> </li> </ol> | <ul style="list-style-type: none"> <li>▪ give suggestion</li> <li>▪ discussion an simulation for observing student capability</li> <li>▪ written and summary up of subject lectured such monay concept, banking and financing, inflation and deflation.</li> </ul> | White board.<br>OHP / LCD.<br>board maker.<br>Form of student self evaluation |
|              | <ol style="list-style-type: none"> <li>3. describe and explain the</li> </ol>  | <ul style="list-style-type: none"> <li>▪ presentation of</li> </ul>  |   |

|                            |  |  |  |
|----------------------------|--|--|--|
|                            | inflation and deflation <ul style="list-style-type: none"> <li>▪ give a question of the inflation and deflation</li> <li>▪ discussion and give an aswere and conclusion of the inflation and deflation</li> </ul>  | the simulation report  |  |
| The closing of the session | <ol style="list-style-type: none"> <li>1. closing of session</li> <li>2. randomly point toward the student to present the group discussion report</li> <li>3. the comment from other student</li> <li>4. give an assignment to revise the group discussion report completed by textbook or journal</li> <li>5. describe the exam material</li> </ol> | <ul style="list-style-type: none"> <li>▪ presentation</li> <li>▪ give comment or question related to marketing concept</li> <li>▪ doing an assignment</li> <li>▪ take note of</li> </ul> | <ul style="list-style-type: none"> <li>▪ group report</li> <li>▪ written the comment and question</li> </ul> |

**E. Evaluation :**

The Instrument usage : check list for evaluating an assigment student capability

**F. References :**

- Darmawan I, 1992, Pengantar Uang dan Perbankan, Rineka Cipta, Jakarta.
- Mangkoesobroto, G dan Aigifari.1998. Teori Ekonomi Makro. STIE YKPN. Yogyakarta.
- Partadiredja, A. 1992. Pengantar Ekonomika. BPFE. Yogyakarta.
- Sadono Sukirno. 1997. Pengantar Teori Makro Ekonomi. PT Radja Grafindo, Persada, Jakarta.
- Simorangkir, O.P.. 2000. Pengantar Lembaga Keuangan Bank dan Non Bank. Ghalia Indonesia. Jakarta.

COURSE : ECONOMICS OF FARM BUSINESS

COURSE CODE :

CREDIT : 2 (2-0)

## COURSE OUTLINE

- SUBJECT STUDIED** : **ECONOMICS OF FARM BUSINESS**
- CODE NUMBER/SYSTEM OF SEMESTER CREDIT** : **PTE /2 (2-0)**
- DESCRIPTION** : Economics of Farm Business subject studied discuss about definition and farm business characteristic; the aspect and function of farm business; classification of farm business; financial analysis (Profit analysis, Liquid assets, Solvency) and budgeting; risk of farm businss; and the application of farm business to livestock farmers in term of cashflow analysis.
- AIM OF GENERAL INSTRUCTION** : At the end of study, the student can understand the basic of economics of farm business in particular of definition and farm business characteristic; the aspect and function of farm business; classification of farm business; financial analysis (Profit analysis, Liquid assets, Solvency) and budgeting; risk of farm businss; and the application of farm business to livestock farmers in term of cashflow analysis.
- REFERENCES** :
1. Bambang Riyanto, 1984. Dasar dasar Pembelanjaan Perusahaan. BPFE. Yogyakarta
  2. Madura, J. 2001. Introduction to Business. 2<sup>nd</sup>. Penerjemah S.W. R Salib. Penebit Salemba 4. Jakarta.
  3. M. Fuad, Christin H, Nurlela, Sugiarto dan Y.E.F. Paulus, 2000. Pengantar Bisnis. PT Gramedia Utama. Jakarta
  4. Mulia Nasution 1996. Pengantar Bisnis Rencana Pendirian pwerusahaan. Penerbit Djambatan. Jakarta
  5. Murti Sumarni dan J. Soeprihanto, 2000. Pengantar Bisnis (Dasar dasar Ekonomi Perusahaan) Edisi ke -5, Liberty Yogyakarta.
  6. Pandojo, H R., Irawan dan Sukanto R eksohadiprodjo. 1982. Pengantar Ekonomi Perusahaan. BPFE. Yogyakarta.
  7. Soedarsono, 1994 Pengantar Ekonomi Perusahaan. Penerbit PT. Gramedia Pustaka Utama. Jakarta.
  8. Swasta, B dan I Sukotjo, W. 1997. Pengantar Bisnis Modern (Pengantar Ekonomi Perusahaan Modern. Penerbit Liberty. Yogyakarta.

| NO. | AIM OF SPECIFIC INSTRUCTION  | TOPIC   | SUB TOPIC  | TIME (MNT)  |
|-----|--|---|--|-------------|
| 1.  | The student can understand and explain the subject relation to definition of business, environmental aspects of farm business, the characteristic and regulation of farm business and farm business application to the farmers         | <ul style="list-style-type: none"> <li>▪ Introduction</li> <li>▪ The principle of farm business</li> <li>▪ The scope of farm business</li> </ul>  | <ol style="list-style-type: none"> <li>1. Definition of business and farm business</li> <li>2. Application of economic principle to the livestock farmers</li> <li>3. Business environment and factors influencing business</li> <li>4. Characteristic, farm business regulation and scope of farm business</li> <li>5. The economic system influencing farm business development</li> </ol> | 2 x 100 mnt |
| 2.  | The student can understand and explain the subject relation to farm business classification based on the legal and technical aspect, the opportunity and threat of farm business. Layout of farm and some factors should be considered | <ul style="list-style-type: none"> <li>▪ Farm business classification based on the legal and technical-economic aspects (business, livestock, agriculture, industry, trade and services)</li> <li>▪ Layout of farm and some factors should be considered</li> </ul> | <ol style="list-style-type: none"> <li>1. The legal aspect classification of farm business (PT, CV, Firma, Holding company, Trust, etc)</li> <li>2. The technical and economic of farm business (business, livestock, agriculture, industry, trade and services)</li> <li>3. Layout of farm and some factors should be considered</li> </ol>   | 2 x 100 mnt |
| 3.  | The student can understand and explain the subject relation to management aspects and the farm business functions have been done   | <ul style="list-style-type: none"> <li>▪ Management aspects</li> <li>▪ Farm business functions</li> </ul>   | Farm management functions : <ul style="list-style-type: none"> <li>▪ Planning</li> <li>▪ Producing</li> <li>▪ Marketing</li> <li>▪ Financing</li> <li>▪ Organising</li> </ul>  | 3 x 100 mnt |
| 4.  | The student can understand and explain the subject relation to cost of production, production cost price and selling cost price and break even point (BEP)   | <ul style="list-style-type: none"> <li>▪ Cost of production</li> <li>▪ The method of price determination</li> </ul>   | <ol style="list-style-type: none"> <li>1. Definition of cost</li> <li>2. Cost of production</li> <li>3. Determination of production and selling cost price and Break Even Point (BEP)</li> </ol>   | 2 x 100 mnt |

|    |  |   |  |                |
|----|--|---|--|----------------|
| 5. | The student can understand and explain the subject relation to budgeting, capital and analysis of financial ratios | <ul style="list-style-type: none"> <li>▪ Budgeting</li> <li>▪ Analysis of financial ratios</li> </ul> | <ol style="list-style-type: none"> <li>1. Budgeting</li> <li>2. Sources of capital</li> <li>3. Analysis of financial ratios, such as :<br/>liquid assets, solvency, profit analysis</li> </ol> | 4 x 100<br>mnt |
| 6. | The student can understand and explain the subject relation to farm development and risks of farm                  | <ul style="list-style-type: none"> <li>▪ Farm development</li> <li>▪ The risks of farm</li> </ul>     | <ol style="list-style-type: none"> <li>1. Farm development model</li> <li>2. Risk factors and kinds of farm risk</li> </ol>  | 2 x 100<br>mnt |

**SUBJECT STUDIED CONTRACT : ECONOMIC OF FARM BUSINESS (2 SCS)**

STUDY PROGRAM : S-1 NUT, PROD, SOSEK, THT  
 DAY :  
 TIME :  
 CLASS :  
 LECTURER :

**SYLLABUS :**

Economic of Farm Business subject studied discuss about definition and farm business characteristic; the aspect and function of farm business; classification of farm business; financial analysis (Profit analysis, Liquid assets, Solvency) and budgeting; risk of farm businss; and the application of farm business to livestock farmers in term of cashflow analysis.

**AIM OF GENERAL INSTRUCTION :**

At the end of study, the student can understand the basic of economic of farm business in particular of definition and farm business characteristic; the aspect and function of farm business; classification of farm business; financial analysis (Profit analysis, Liquid assets, Solvency) and budgeting; risk of farm businss; and the application of farm business to livestock farmers in term of cashflow analysis.

**LECTURING AGENDA UNIT**

| WEEK | TOPIC  | SUB TOPIC   | LECTURER |
|------|--|---|----------|
| 1, 2 | <ol style="list-style-type: none"> <li>1. Introduction</li> <li>2. The principle of farm business</li> <li>3. The scoupe of farm business</li> </ol>   | <ol style="list-style-type: none"> <li>1. Definition of business and farm business</li> <li>2. Application of economic principle to the livestock farmers</li> <li>3. Business environment and factors influencing business</li> <li>4. Characteristic, farm business regulation and scoupe of farm business</li> <li>5. The economic system influencing farm business development</li> </ol> |          |
| 3, 4 | <ol style="list-style-type: none"> <li>1. farm business classification based on the legal and technical aspect,</li> <li>2. the opportunity and threat of farm business.</li> <li>3. Layout of farm and some factors should be considered</li> </ol> | <ol style="list-style-type: none"> <li>1. The legal aspect classification of farm business (PT, CV, Firma, Holding company, Trust, etc)</li> <li>2. The technical and economic of farm business (business, livestock, agriculture, industry, trade and services)</li> <li>3. Layout of farm and some factors should be considered</li> </ol>  |          |

|                |   |  |      |
|----------------|---|--|------|
| 5, 6, 7        | Management aspects and the farm business functions have been done   | Farm management functions, such planning, producing, marketing, financing and organising   |      |
| 8              | MID SEMESTER  |  | TEAM |
| 9, 10          | <ul style="list-style-type: none"> <li>▪ Cost of production</li> <li>▪ The method of price determination</li> </ul> | <ol style="list-style-type: none"> <li>1. Definition of cost</li> <li>2. Cost of production</li> <li>3. Determination of production and selling cost price and Break Even Point (BEP)</li> </ol> |      |
| 11, 12, 13, 14 | budgeting, capital and analysis of financial ratios   | <ol style="list-style-type: none"> <li>1. Budgeting</li> <li>2. Sources of capital</li> <li>3. Analysis of financial ratios, such as : liquid assets, solvency, profit analysis</li> </ol>       |      |
| 15 and 16      | farm development and risks of farm  | <ol style="list-style-type: none"> <li>1. Farm development model</li> <li>2. Risk factors and kinds of farm risk</li> </ol>  |      |

REFERENCES :

1. Bambang Riyanto, 1984. Dasar dasar Pembelanjaan Perusahaan. BPFE. Yogyakarta
2. Madura, J. 2001. Introduction to Business. 2<sup>nd</sup>. Penerjemah S.W. R Salib. Penerbit Salemba 4. Jakarta.
3. M. Fuad, Christin H, Nurlela, Sugiarto dan Y.E.F. Paulus, 2000. Pengantar Bisnis. PT Gramedia Utama. Jakarta
4. Mulia Nasution 1996. Pengantar Bisnis Rencana Pendirian pwerusahaan. Penerbit Djambatan. Jakarta
5. Murti Sumarni dan J. Soeprihanto, 2000. Pengantar Bisnis (Dasar dasar Ekonomi Perusahaan) Edisi ke -5, Liberty Yogyakarta.
6. Pandojo, H R., Irawan dan Sukanto Reksohadiprodo. 1982. Pengantar Ekonomi Perusahaan. BPFE. Yogyakarta.
7. Soedarsono, 1994 Pengantar Ekonomi Perusahaan. Penerbit PT. Gramedia Pustaka Utama. Jakarta.
8. Swasta, B dan I Sukotjo, W. 1997. Pengantar Bisnis Modern (Pengantar Ekonomi Perusahaan Modern. Penerbit Liberty. Yogyakarta

EVALUATION :

- mid semester : 50%
- final exam : 50%

NOTE :

The evaluation of an assignment is part of mid semester or final exam

COURSE : FEASIBILITY STUDY AND  
PROJECT EVALUATION (FSPE)

COURSE CODE :

CREDIT : 3 (2-1)

## OUTLINE COURSE

SUBJECT STUDIED : **FEASIBILITY STUDY AND PROJECT EVALUATION (FSPE)**

CODE NUMBER/SYSTEM : PTE 308/3(2-1)  
OF SEMESTER CREDIT

DESCRIPTION : Feasibility Studi and Project Evaluation (FSPE) Subject Studied discuss about farm activity proposal and farm business evaluation in part of benefit and feasible based on time value of money and investment criteria.

AIM OF GENERAL INSTRUCTION : 

- At the end of study, the student can understand and explain the component, definition and meaning of livestock FSPE
- Student can understand and compose the livestock farm business FSPE proposal

BIBLIOGRAPHY : 

1. Clive Gray, Payaman Simanjuntak, Lien K. Sabur, PFL Maspaitela dan RCG Varley. 1997. Pengantar Evaluasi Proyek. Gramedia Jakarta.
2. Ellen Christina, M. Fuad, Sugiyanto dan E. Sukarno. 2002. Anggaran Perusahaan Suatu Pendekatan Praktis. PT Gramedia Pustaka Utama, Jakarta.
3. Iman Suharto. 1995. Manajemen Proyek. Dari Konseptual sampai Operasional. Penerbit Erlangga, Surabaya.
4. Indriyo Gitosudarmo dan Muhamad Najnudin. 2003. Anggaran Perusahaan Teori dan Soal Jawab. BPFE, Yogyakarta
5. J. Price Gittinger. 1992. Analisa Ekonomi Proyek-Proyek Pertanian. UI Press, Jakarta. (Terjemahan)
6. Kadariah, Lien Karlina dan Clive Gray. 1978. Pengantar Evaluasi Proyek. FE UI, Jakarta.
7. Siswanto Sutojo. 1989. Studi Kelayakan Proyek. PT Pustaka Binaman Pressindo. Jakarta.
8. Soetrisno PH. 1995. Dasar-Dasar Evaluasi dan Manajemen Proyek. Andi Offset. Yogyakarta.
9. Suad Husnan dan Suwarsono Muhammad. 2000. Studi Kelayakan Proyek. UKPN Yogyakarta.
10. Yakob Ibrahim. 2003. Studi Kelayakan Bisnis. Rineka Cipta. Jakarta.

|    | Aim of Special Instruction  | Topic  | Sub Topic   | Time Estimation | Bahan Pustaka                       |
|----|---|--|---|-----------------|-------------------------------------|
| 1. | Student can understand and explain the definition and meaning, benefit and scope of FSPE  | Introduction   | <ul style="list-style-type: none"> <li>• Definition and meaning of Feasibility Study and Project Evaluation (FSPE) and its application for livestock farm business.</li> <li>• Benefit and scope of FSPE</li> </ul>   | 100 minute      | Book no. 1, 3, 5, 6, 7, 8, 9 and 10 |
| 2. | Student can understand and explain some aspects of FSPE, such technical aspect, managerial and administration aspect, commercial aspect, financial and economic aspect, legal aspect and environmental aspect                           | Some aspects of FSPE   | <ul style="list-style-type: none"> <li>▪ Technical aspect,</li> <li>▪ Managerial and administration aspect,</li> <li>▪ Commercial aspect,</li> <li>▪ Financial and economic aspect,</li> <li>▪ Legal aspect</li> <li>▪ Environmental aspect</li> </ul>  | 3 x 100 minute  | Book no. 1,3,6 and 9                |
| 3. | Student can understand and explain the financial and economic aspects consist of input factors utilizing for livestock farm business, livestock product, opportunity cost and, the differences between financial and economic analysis. | <ul style="list-style-type: none"> <li>▪ Financial and economic aspect for livestock farm business</li> <li>▪ Shadow prices</li> </ul> | <ul style="list-style-type: none"> <li>• Input – output livestock farm business</li> <li>• Opportunity cost</li> <li>• The concept, determination and evaluation of shadow price for livestock farm business</li> <li>• the differences between financial and economic analysis.</li> <li>• Determination of financial and economic analysis</li> </ul> | 3 x 100 minute  | Book no. 1,2, 3, 4,5 and 9          |
| 4. | Student can understand and explain The concept of discounting and undiscounting computation and application of time value of money for livestock farm business investment analysis.   | Discounting and undiscounting analysis, time value of money  | <ul style="list-style-type: none"> <li>• Compounding interest factor</li> <li>• Annuity and deferred annuity</li> </ul>   | 100 minute      | Book no. 1,3,6 and 9                |

|    |   |   |   |                |                                 |
|----|---|---|---|----------------|---------------------------------|
| 5. | Student can understand and explain the investment criteria concept consist of NPV, IRR, Gross BC, Net BC and influencing inflation for investment | Investment criteria for livestock farm business   | <ul style="list-style-type: none"> <li>• Net Present Value (NPV)</li> <li>• Internal Reate of Return (IRR)</li> <li>• Gross Benefit Cost Ratio (Gross BC)</li> <li>• Net Benefit Cost Ratio (Net BC)</li> <li>• Inflation focuss on the investment</li> </ul> | 6 x 100 minute | Book no. 1,3,5,6,7, 8,9, and 10 |
| 6. | Student can understand and explain investment criteria utilizing for choosing livestock farm business investment possibility                      | Investment criteria utilizing for choosing livestock farm business investment possibility | <ul style="list-style-type: none"> <li>• IRR and Net BC comparison</li> <li>• Cross over discount rate</li> </ul>   | 100 minute     | Book no. 1,3,5,6,7, 8,9, and 10 |
| 7. | Student can understand, explain and compose the Livestock fram business FSPE Proposal   | Composing the FSPE Proposal   | <ul style="list-style-type: none"> <li>• Composing the FSPE Proposal of livesctok farm business</li> <li>• Evaluating method of livestock Investment Criteria</li> </ul>  | 100 minute     | Book no. 1 and 6                |

**SUBJECT STUDIED CONTRACT**  
**FEASIBILITY STUDY AND PROJECT EVALUATION (3 SCS)**

|               |   |                                    |
|---------------|---|------------------------------------|
| STUDY PROGRAM | : | SOCIAL ECONOMIC ANIMAL AGRICULTURE |
| DAY           | : |                                    |
| TIME          | : |                                    |
| CLASS         | : |                                    |
| LECTURER      | : |                                    |

**SYLLABUS :**

Feasibility study and project evaluation discuss about project planning, some aspects of FSPE, cost and benefit identification for FSPE, Financial and economic analysis, discounting and discounting factor, investment criteria, and composing of FSPE Proposal

**AIM OF GENERAL INSTRUCTION :**

- At the end of study, the student can understand and explain the component, definition and meaning of livestock FSPE
- Student can understand and compose the livestock farm business FSPE proposal

**LECTURING AGENDA UNIT**

| WEEK    | TOPIC  | SUB TOPIC   | LECTURER |
|---------|--|---|----------|
| 1       | Introduction   | <ul style="list-style-type: none"> <li>▪ Definition and meaning of Feasibility Study and Project Evaluation (FSPE) and its application for livestock farm business.</li> <li>▪ Benefit, scope and project cycle of FSPE</li> </ul>  |          |
| 2, 3    | Some aspects of FSPE   | <ul style="list-style-type: none"> <li>▪ Technical aspect,</li> <li>▪ Managerial and administration aspect,</li> <li>▪ Commercial aspect,</li> <li>▪ Financial and economic aspect,</li> <li>▪ Legal aspect</li> <li>▪ Environmental aspect</li> </ul>                                      |          |
| 4, 5, 6 | <ul style="list-style-type: none"> <li>▪ Financial and economic aspect for livestock farm business</li> <li>▪ Shadow prices</li> </ul> | <ul style="list-style-type: none"> <li>• Input – output livestock farm business</li> <li>• Opportunity cost</li> <li>• The concept, determination and evaluation of shadow price for livestock farm business</li> <li>• the differences between financial and economic analysis.</li> </ul> |          |

|                    |   |   |      |
|--------------------|---|---|------|
|                    |   | <ul style="list-style-type: none"> <li>• Determination of financial and economic analysis</li> </ul>  |      |
| 7                  | Discounting and undiscouting analysis, time value of money                                | <ul style="list-style-type: none"> <li>• Compounding interest factor</li> <li>• Annuity and deferred annuity</li> </ul>   |      |
| 8                  | • MID TEST  |   | TEAM |
| 10, 11, 12, 13, 14 | Investment criteria for livestock farm business   | <ul style="list-style-type: none"> <li>• Net Present Value (NPV)</li> <li>• Internal Reate of Return (IRR)</li> <li>• Gross Benefit Cost Ratio (Gross BC)</li> <li>• Net Benefit Cost Ratio (Net BC)</li> <li>• Inflation focuss on the investment</li> </ul> |      |
| 14, 15             | Investment criteria utilizing for choosing livestock farm business investment possibility | <ul style="list-style-type: none"> <li>• IRR and Net BC comparison</li> <li>• Cross over discount rate</li> </ul>   |      |
| 16                 | Composing the FSPE Proposal   | <ul style="list-style-type: none"> <li>• Composing the FSPE Proposal of livesctok farm business</li> <li>• Evaluating method of livestock Investment Criteria</li> </ul>  |      |

#### PRACTICAL AGENDA UNIT

- Mahasiswa diberikan bimbingan yang berkaitan dengan kegiatan praktikum lapangan tentang permasalahan dan bagaimana menyusun SKEP yang dapat dikerjakan sebagai tugas.

#### F. EVALUATION :

|                            |               |
|----------------------------|---------------|
| 1. Assignment and Practice | : 40 %        |
| 2. MIDTest                 | : 30 %        |
| 3. Final Exam              | <u>: 30 %</u> |
| Total                      | : 100%        |

#### E. BIBLIOGRAPHY :

1. Clive Gray, Payaman Simanjuntak, Lien K. Sabur, PFL Maspaitela dan RCG Varley. 1997. Pengantar Evaluasi Proyek. Gramedia Jakarta.
2. Ellen Christina, M. Fuad, Sugiyanto dan E. Sukarno. 2002. Anggaran Perusahaan Suatu Pendekatan Praktis. PT Gramedia Pustaka Utama, Jakarta.
3. Iman Suharto. 1995. Manajemen Proyek. Dari Konseptual sampai Operasional. Penerbit Erlangga, Surabaya.
4. Indriyo Gitosudarmo dan Muhamad Najnudin. 2003. Anggaran Perusahaan Teori dan Soal Jawab. BPFE, Yogyakarta
5. J. Price Gittinger. 1992. Analisa Ekonomi Proyek-Proyek Pertanian. UI Press, Jakarta. (Terjemahan)

6. Kadariah, Lien Karlina dan Clive Gray. 1978. Pengantar Evaluasi Proyek. FE UI, Jakarta.
7. Siswanto Sutojo. 1989. Studi Kelayakan Proyek. PT Pustaka Binaman Pressindo. Jakarta.
8. Soetrisno PH. 1995. Dasar-Dasar Evaluasi dan Manajemen Proyek. Andi Offset. Yogyakarta.
9. Suad Husnan dan Suwarsono Muhammad. 2000. Studi Kelayakan Proyek. UKPN Yogyakarta.
10. Yakob Ibrahim. 2003. Studi Kelayakan Bisnis. Rineka Cipta. Jakarta.

## LECTURING AGENDA UNIT I

Subject Studied : **FEASIBILITY STUDY AND PROJECT EVALUATION**  
 Code of Subject : PTE 308 / 2-1  
 System of Credit : 3 SCS (2-1)  
 Semester  
 Time of Meeting : 1 x 100 munit  
 Meeting Schedule : 1

- A. AIM
1. Aim of General Instruction :
    - At the end of study, the student can understand and explain the component, definition and meaning of livestock FSPE
    - Student can understand and compose the livestock farm business FSPE proposal
  2. Aim of Special Instruction : Student can understand and explain the definition and meaning, benefit and project cycle of FSPE
- B. Topic : Introduction
- C. Sub Topic :
  - Definition and meaning of Feasibility Study and Project Evaluation (FSPE) and its application for livestock farm business.
  - Benefit, scope and project cycle of FSPE

### D. Teaching and Learning Activities

| Phase                      | Lecturer Activities  | Student Activities  | Media and teaching equipment   |
|----------------------------|--|---|--|
| 1                          | 2  | 3   | 4  |
| Introduction               | Describe and explain : <ul style="list-style-type: none"> <li>• The competence of topics and sub topic</li> <li>• the lectured content and textbook for FSPE</li> </ul>  | <ul style="list-style-type: none"> <li>▪ Take note of</li> <li>▪ written and discussion</li> <li>▪ Take note of</li> </ul>  | White board, OHP / LCD, board maker.   |
| Presentation               | Describe and explain <ul style="list-style-type: none"> <li>• Definition and meaning of Feasibility Study and Project Evaluation (FSPE) and its application for livestock farm business, benefit, scope and project cycle of FSPE</li> </ul>                     | <ul style="list-style-type: none"> <li>▪ give suggestion</li> <li>▪ discussion</li> <li>▪ written</li> </ul>  | White board, OHP / LCD, board maker.   |
| The closing of the session | <ol style="list-style-type: none"> <li>a. closing of session</li> <li>b. give the conclusion of topic, sub topic and discussion result</li> <li>c. give an assignment related to introduction material</li> <li>d. describe the next subject lectured</li> </ol> | <ul style="list-style-type: none"> <li>▪ presentation</li> <li>▪ give comment or question related to introduction and scope of FSPE</li> <li>▪ doing an assignment</li> <li>▪ take note of</li> </ul> | <ul style="list-style-type: none"> <li>▪ group report</li> <li>▪ written the comment and question</li> </ul> |

**E. Evaluation :**

The Instrument usage : check list for evaluating an assignment student capability and student class activity

**F. BIBLIOGRAPHY**

1. Clive Gray, Payaman Simanjuntak, Lien K. Sabur, PFL Maspaitela dan RCG Varley. 1997. Pengantar Evaluasi Proyek. Gramedia Jakarta.
2. Iman Suharto. 1995. Manajemen Proyek. Dari Konseptual sampai Operasional. Penerbit Erlangga, Surabaya.
3. J. Price Gittinger. 1992. Analisa Ekonomi Proyek-Proyek Pertanian. UI Press, Jakarta.
4. Kadariah, Lien Karlina dan Clive Gray. 1978. Pengantar Evaluasi Proyek. FE UI, Jakarta.
5. Suad Husnan dan Suwarsono Muhammad. 2000. Studi Kelayakan Proyek. UKPN Yogyakarta.

## LECTURING AGENDA UNIT II

Subject Studied : **FEASIBILITY STUDY AND PROJECT EVALUATION**  
 Code of Subject : PTE 308 / 2-1  
 System of Credit Semester : 3 SCS (2-1)  
 Time of Meeting : 2 x 100 munite  
 Meeting Schedule : 2, 3 and 4

- A. AIM
1. Aim of General Instruction :
    - At the end of study, the student can understand and explain the component, definition and meaning of livestock FSPE
    - Student can understand and compose the livestock farm business FSPE proposal
  2. Aim of Special Instruction : Student can understand and explain some aspects of FSPE, such technical aspect, managerial and administration aspect, commercial aspect, financial and economic aspect, legal aspect and environmental aspect
- B. Topic : Some aspects of FSPE
- C. Sub Topic :
  - Technical aspect,
  - Managerial and administration aspect,
  - Commercial aspect,
  - Financial and economic aspect,
  - Legal aspect
  - Environmental aspect

### D. Teaching and Learning Activities

| Phase        | Lecturer Activities   | Student Activities   | Media and teaching equipment         |
|--------------|---|--|--------------------------------------|
| 1            | 2   | 3  | 4                                    |
| Introduction | Describe and explain : <ul style="list-style-type: none"> <li>• The competence of topics and sub topic</li> <li>• Some aspects of FSPE</li> </ul>   | <ul style="list-style-type: none"> <li>▪ Take note of written and discussion</li> <li>▪ Take note of</li> </ul>  | White board, OHP / LCD, board maker. |
| Presentation | Describe and explain <ul style="list-style-type: none"> <li>▪ Technical aspect,</li> <li>▪ Managerial and administration aspect,</li> <li>▪ Commercial aspect,</li> <li>▪ Financial and economic aspect,</li> <li>▪ Legal aspect</li> <li>▪ Environmental aspect</li> <li>▪ Group discussion</li> <li>▪ randomly point toward the student to present the group discussion report</li> <li>▪ describe the next subject lectured</li> </ul> | <ul style="list-style-type: none"> <li>▪ give suggestion</li> <li>▪ discussion and presentation</li> <li>▪ written and submit of group report</li> </ul> | White board, OHP / LCD, board maker. |

|                            |   |   |  |
|----------------------------|---|---|--|
| The closing of the session | <ul style="list-style-type: none"> <li>a. closing of session</li> <li>b. give the conclusion of topic, sub topic and discussion result</li> <li>c. give an assignment related to some aspects of FSPE</li> <li>d. describe the next subject lectured</li> </ul> | <ul style="list-style-type: none"> <li>▪ presentation</li> <li>▪ give comment or question related to some aspects of FSPE</li> <li>▪ doing an assignment</li> <li>▪ take note of</li> </ul> | <ul style="list-style-type: none"> <li>▪ group report</li> <li>▪ written the comment and question</li> </ul> |
|----------------------------|---|---|--|

**E. EVALUATION :**

The Instrument usage : check list for evaluating an assignment student capability and student class activity

**F. BIBLIOGRAPHY :**

1. Clive Gray, Payaman Simanjuntak, Lien K. Sabur, PFL Maspaitela dan RCG Varley. 1997. Pengantar Evaluasi Proyek. Gramedia Jakarta.
2. Iman Suharto. 1995. Manajemen Proyek. Dari Konseptual sampai Operasional. Penerbit Erlangga, Surabaya.
3. J. Price Gittinger. 1992. Analisa Ekonomi Proyek-Proyek Pertanian. UI Press, Jakarta.
4. Kadariah, Lien Karlina dan Clive Gray. 1978. Pengantar Evaluasi Proyek. FE UI, Jakarta.
5. Soetrisno PH. 1995. Dasar-Dasar Evaluasi dan Manajemen Proyek. Andi Offset. Yogyakarta.
6. Suad Husnan dan Suwarsono Muhammad. 2000. Studi Kelayakan Proyek. UKPN Yogyakarta

### LECTURING AGENDA UNIT III

Subject Studied : **FEASIBILITY STUDY AND PROJECT EVALUATION**  
 Code of Subject : PTE 308 / 2-1  
 System of Credit : 3 SCS (2-1)  
 Semester  
 Time of Meeting : 2 x 100 munit  
 Schedule Meeting : 5, 6 and 7

- a. AIM
1. Aim of General Instruction :
    - At the end of study, the student can understand and explain the component, definition and meaning of livestock FSPE
    - Student can understand and compose the livestock farm business FSPE proposal
  2. Aim of Special Instruction : Student can understand and explain the financial and economic aspects consist of input factors utilizing for livestock farm business, livestock product, opportunity cost and, the differences between financial and economic analysis.
- B. Topic :
  - Financial and economic aspect for livestock farm business
  - Shadow prices
- C. Sub Topic :
  - Input – output livestock farm business
  - Opportunity cost
  - The concept, determination and evaluation of shadow price for livestock farm business
  - the differences between financial and economic analysis.
  - Determination of financial and economic analysis

#### D. Teaching and Learning Activities

| Phase        | Lecturer Activities  | Student Activities   | Media and teaching equipment         |
|--------------|--|--|--------------------------------------|
| 1            | 2  | 3  | 4                                    |
| Introduction | Describe and explain : <ul style="list-style-type: none"> <li>• The competence of topics and sub topic</li> <li>• Financial and economic analysis and shadow prices</li> </ul>   | <ul style="list-style-type: none"> <li>▪ Take note of written and discussion</li> <li>▪ Take note of</li> </ul>  | White board. OHP / LCD. board maker. |
| Presentation | Describe and explain : <ul style="list-style-type: none"> <li>• Input – output livestock farm business</li> <li>• Opportunity cost</li> <li>• The concept, determination and evaluation of shadow price for livestock farm business</li> <li>• the differences between financial and economic analysis.</li> <li>• Determination of financial and economic analysis</li> <li>• Group discussion</li> </ul> | <ul style="list-style-type: none"> <li>▪ give suggestion</li> <li>▪ discussion and presentation</li> <li>▪ written and submit of group report</li> <li>▪ submit an assignment</li> </ul> | White board. OHP / LCD. board maker. |

|                            |  |  |  |
|----------------------------|--|--|--|
|                            | <ul style="list-style-type: none"> <li>• Randomly point toward the student to present group discussion report</li> <li>• Describe next subject lectured</li> </ul>   |  |  |
| The closing of the session | <ol style="list-style-type: none"> <li>a. closing of session</li> <li>b. give the conclusion of topic, sub topic and discussion result</li> <li>c. give an assignment related to financial and economic analysis</li> <li>d. describe the next subject lectured</li> </ol> | <ul style="list-style-type: none"> <li>▪ presentation</li> <li>▪ give comment or question related to financial and economic analysis of FSPE</li> <li>▪ doing an assignment</li> <li>▪ take note of</li> </ul> | <ul style="list-style-type: none"> <li>▪ group report</li> <li>▪ written the comment and question</li> </ul> |

**E. EVALUATION :**

The Instrument usage : check list for evaluating an assignment student capability and student class activity

**F. BIBLIOGRAPHY :**

1. Clive Gray, Payaman Simanjuntak, Lien K. Sabur, PFL Maspaitela dan RCG Varley. 1997. Pengantar Evaluasi Proyek. Gramedia Jakarta.
2. Iman Suharto. 1995. Manajemen Proyek. Dari Konseptual sampai Operasional. Penerbit Erlangga, Surabaya.
3. J. Price Gittinger. 1992. Analisa Ekonomi Proyek-Proyek Pertanian. UI Press, Jakarta.
4. Kadariah, Lien Karlina dan Clive Gray. 1978. Pengantar Evaluasi Proyek. FE UI, Jakarta.
5. Suad Husnan dan Suwarsono Muhammad. 2000. Studi Kelayakan Proyek. UKPN Yogyakarta

## LECTURING AGENDA UNIT IV

Subject Studied : **FEASIBILITY STUDY AND PROJECT EVALUATION**  
 Code of Subject : PTE 308 / 2-1  
 System of Credit : 3 SCS (2-1)  
 Semester :  
 Time of Meeting : 1 x 100 munit  
 Schedule Meeting : 8

- A. AIM
1. Aim of General Instruction :
    - At the end of study, the student can understand and explain the component, definition and meaning of livestock FSPE
    - Student can understand and compose the livestock farm business FSPE proposal
  2. Aim of Special Instruction : Student can understand and explain the concept of discounting and undiscounting computation and application of time value of money for livestock farm business investment analysis.
- B. Topic : Discounting and undiscounting analysis, time value of money
- C. Sub Topic :
  - Compounding interest factor
  - Annuity and deferred annuity

### D. Teaching and Learning Activities

| Phase                      | Lecturer Activities   | Student Activities  | Media and teaching equipment   |
|----------------------------|---|---|--|
| 1                          | 2   | 3   | 4  |
| Introduction               | Describe and explain : <ul style="list-style-type: none"> <li>• The competence of topics and sub topic</li> <li>• Discounting and undiscounting factor</li> </ul>   | <ul style="list-style-type: none"> <li>▪ Take note of written and discussion</li> <li>▪ Take note of</li> </ul>   | White board, OHP / LCD, board maker.   |
| Presentation               | <ul style="list-style-type: none"> <li>• Compounding interest factor</li> <li>• Annuity and deferred annuity</li> <li>• Group discussion</li> <li>• Randomly point toward the student to present group discussion report</li> <li>• Describe next subject lectured</li> </ul>   | <ul style="list-style-type: none"> <li>▪ Take note of</li> <li>▪ give suggestion</li> <li>▪ discussion and presentation</li> <li>▪ written and submit of group report submit an assignment</li> </ul> | White board, OHP / LCD, board maker.   |
| The closing of the session | <ol style="list-style-type: none"> <li>a. closing of session</li> <li>b. give the conclusion of topic, sub topic and discussion result</li> <li>c. give an assignment related to discounting and undiscounting factor</li> <li>d. describe the next subject lectured</li> </ol> | <ul style="list-style-type: none"> <li>▪ presentation</li> <li>▪ give comment or question related to discounting, undiscounting</li> <li>▪ doing an assignment</li> <li>▪ take note of</li> </ul>     | <ul style="list-style-type: none"> <li>▪ group report</li> <li>▪ written the comment and question</li> </ul> |

### E. EVALUATION :

The Instrument usage : check list for evaluating an assignment student capability and student class activity

## F. BIBLIOGRAPHY :

1. Clive Gray, Payaman Simanjuntak, Lien K. Sabur, PFL Maspaitela dan RCG Varley. 1997. Pengantar Evaluasi Proyek. Gramedia Jakarta.
2. Iman Suharto. 1995. Manajemen Proyek. Dari Konseptual sampai Operasional. Penerbit Erlangga, Surabaya.
3. J. Price Gittinger. 1992. Analisa Ekonomi Proyek-Proyek Pertanian. UI Press, Jakarta.
4. Kadariah, Lien Karlina dan Clive Gray. 1978. Pengantar Evaluasi Proyek. FE UI, Jakarta.
5. Soetrisno PH. 1995. Dasar-Dasar Evaluasi dan Manajemen Proyek. Andi Offset. Yogyakarta.
6. Suad Husnan dan Suwarsono Muhammad. 2000. Studi Kelayakan Proyek. UKPN Yogyakarta

## LECTURING AGENDA UNIT V

Subject Studied : **FEASIBILITY STUDY AND PROJECT EVALUATION**  
 Code of Subject : PTE 308 / 2-1  
 System of Credit : 3 SCS (2-1)  
 Semester :  
 Time of Meeting : 6 x 100 munite  
 Schedule Meeting : 9, 10, 11, 12, 13, and 14

- A. AIM
1. Aim of General Instruction :
    - At the end of study, the student can understand and explain the component, definition and meaning of livestock FSPE
    - Student can understand and compose the livestock farm business FSPE proposal
  2. Aim of Special Instruction : Student can understand and explain the investment criteria concept consist of NPV, IRR, Gross BC, Net BC and influencing inflation for inevestment
- B. Topic : Investment criteria for livestock farm business
- C. Sub Topic : Investment concept and investment criteria, such :
- Net Present Value (NPV)
  - Internal Reate of Return (IRR)
  - Gross Benefit Cost Ratio (Gross BC)
  - Net Benefit Cost Ratio (Net BC)
  - Inflation focuss on the investment

### D. Teaching and Learning Activities

| Phase        | Lecturer Activities  | Student Activities  | Media and teaching equipment         |
|--------------|--|---|--------------------------------------|
| 1            | 2  | 3   | 4                                    |
| Introduction | Describe and explain : <ul style="list-style-type: none"> <li>• The competence of topis and sub topic</li> <li>• Investment criteria</li> </ul>  | <ul style="list-style-type: none"> <li>▪ Take note of written and discussion</li> <li>▪ Take note of</li> </ul>   | White board, OHP / LCD, board maker. |
| Presentation | Describe and explain relation to Investment concept and investment criteria, such : <ul style="list-style-type: none"> <li>• Net Present Value (NPV)</li> <li>• Internal Reate of Return (IRR)</li> <li>• Gross Benefit Cost Ratio (Gross BC)</li> <li>• Net Benefit Cost Ratio (Net BC)</li> <li>• Inflation focuss on the investment</li> </ul> Group discussion<br>Randomly point toward the student to present group discussion report | <ul style="list-style-type: none"> <li>▪ Take note of</li> <li>▪ give suggestion</li> <li>▪ discussion and presentation</li> <li>▪ written and submit of group report submit an assignment</li> </ul> | White board, OHP / LCD, board maker. |

|                            |  |  |  |
|----------------------------|--|--|--|
|                            | Describe next subject lectured   |  |  |
| The closing of the session | <ul style="list-style-type: none"> <li>a. closing of session</li> <li>b. give the conclusion of topic, sub topic and discussion result</li> <li>c. give an assignment related to investment criteria</li> <li>d. describe the next subject lectured</li> </ul> | <ul style="list-style-type: none"> <li>▪ presentation</li> <li>▪ give comment or question related to investment criteria</li> <li>▪ doing an assignment</li> <li>▪ take note of</li> </ul> | <ul style="list-style-type: none"> <li>▪ group report</li> <li>▪ written the comment and question</li> </ul> |

**E. EVALUATION :**

The Instrument usage : check list for evaluating an assignment student capability and student class activity

**F. BIBLIOGRAPHY :**

1. Clive Gray, Payaman Simanjuntak, Lien K. Sabur, PFL Maspaitela dan RCG Varley. 1997. Pengantar Evaluasi Proyek. Gramedia Jakarta.
2. Iman Suharto. 1995. Manajemen Proyek. Dari Konseptual sampai Operasional. Penerbit Erlangga, Surabaya.
3. J. Price Gittinger. 1992. Analisa Ekonomi Proyek-Proyek Pertanian. UI Press, Jakarta.
4. Kadariah, Lien Karlina dan Clive Gray. 1978. Pengantar Evaluasi Proyek. FE UI, Jakarta.
5. Soetrisno PH. 1995. Dasar-Dasar Evaluasi dan Manajemen Proyek. Andi Offset. Yogyakarta.
6. Suad Husnan dan Suwarsono Muhammad. 2000. Studi Kelayakan Proyek. UKPN Yogyakarta

## LECTURING AGENDA UNIT VI

Subject Studied : **FEASIBILITY STUDY AND PROJECT EVALUATION**  
 Code of Subject : PTE 308 / 2-1  
 System of Credit : 3 SCS (2-1)  
 Semester :  
 Time of Meeting : 1 x 100 munit  
 Schedule Meeting : 15

- A. AIM
1. Aim of General Instruction :
    - At the end of study, the student can understand and explain the component, definition and meaning of livestock FSPE
    - Student can understand and compose the livestock farm business FSPE proposal
  2. Aim of Special Instruction : Student can understand and explain investment criteria utilizing for choosing livestock farm business investment possibility
- B. Topic : Investment criteria utilizing for choosing livestock farm business investment possibility
- C. Sub Topic :
  - IRR and Net BC comparison
  - Cross over discount rate

### D. Teaching and Learning Activities

| Phase                      | Lecturer Activities   | Student Activities   | Media and teaching equipment   |
|----------------------------|---|--|--|
| 1                          | 2   | 3  | 4  |
| Introduction               | Describe and explain : <ul style="list-style-type: none"> <li>• The competence of topics and sub topic</li> <li>• Investment criteria utilizing for choosing investment possibility</li> </ul>  | <ul style="list-style-type: none"> <li>▪ Take note of written and discussion</li> <li>▪ Take note of</li> </ul>  | White board, OHP / LCD, board maker.   |
| Presentation               | Describe and explain : <ul style="list-style-type: none"> <li>• IRR and Net BC comparison</li> <li>• Cross over discount rate</li> </ul> Group discussion<br>Randomly point toward the student to present group discussion report<br>Describe next subject lectured         | <ul style="list-style-type: none"> <li>▪ Take note of</li> <li>▪ give suggestion</li> <li>▪ discussion and presentation</li> <li>▪ written and submit of group report submit an assignment</li> </ul>  | White board, OHP / LCD, board maker.   |
| The closing of the session | <ol style="list-style-type: none"> <li>a. closing of session</li> <li>b. give the conclusion of topic, sub topic and discussion result</li> <li>c. give an assignment related to utilizing investment possibility</li> <li>d. describe the next subject lectured</li> </ol> | <ul style="list-style-type: none"> <li>▪ presentation</li> <li>▪ give comment or question related to investment criteria possibility</li> <li>▪ doing an assignment</li> <li>▪ take note of</li> </ul> | <ul style="list-style-type: none"> <li>▪ group report</li> <li>▪ written the comment and question</li> </ul> |

**E. EVALUATION :**

The Instrument usage : check list for evaluating an assignment student capability and student class activity

**F. BIBLIOGRAPHY :**

1. Clive Gray, Payaman Simanjuntak, Lien K. Sabur, PFL Maspaitela dan RCG Varley. 1997. Pengantar Evaluasi Proyek. Gramedia Jakarta.
2. Iman Suharto. 1995. Manajemen Proyek. Dari Konseptual sampai Operasional. Penerbit Erlangga, Surabaya.
3. J. Price Gittinger. 1992. Analisa Ekonomi Proyek-Proyek Pertanian. UI Press, Jakarta.
4. Kadariah, Lien Karlina dan Clive Gray. 1978. Pengantar Evaluasi Proyek. FE UI, Jakarta.
5. Soetrisno PH. 1995. Dasar-Dasar Evaluasi dan Manajemen Proyek. Andi Offset. Yogyakarta.
6. Suad Husnan dan Suwarsono Muhammad. 2000. Studi Kelayakan Proyek. UKPN Yogyakarta

## LECTURING AGENDA UNIT VI

Subject Studied : **FEASIBILITY STUDY AND PROJECT EVALUATION**  
 Code of Subject : PTE 308 / 2-1  
 System of Credit : 3 SCS (2-1)  
 Semester  
 Time of Meeting : 1 x 100 munit  
 Schedule Meeting : 16

- A. AIM
1. Aim of General Instruction :
    - At the end of study, the student can understand and explain the component, definition and meaning of livestock FSPE
    - Student can understand and compose the livestock farm business FSPE proposal
  2. Aim of Special Instruction : Student can understand, explain and compose the Livestock farm business FSPE Proposal
- B. Topic : Composing the FSPE Proposal
- C. Sub Topic :
  - Composing the FSPE Proposal of livestock farm business
  - Evaluating method of livestock Investment Criteria

### D. Teaching and Learning Activities

| Phase                      | Lecturer Activities  | Student Activities   | Media and teaching equipment   |
|----------------------------|--|--|--|
| 1                          | 2  | 3  | 4  |
| Introduction               | Describe and explain : <ul style="list-style-type: none"> <li>• The competence of topics and sub topic</li> <li>• Composing the FSPE Proposal</li> </ul>   | <ul style="list-style-type: none"> <li>▪ Take note of written and discussion</li> <li>▪ Take note of</li> </ul>  | White board, OHP / LCD, board maker.   |
| Presentation               | Describe and explain : <ul style="list-style-type: none"> <li>• Composing the FSPE Proposal of livestock farm business</li> <li>• Evaluating method of livestock Investment Criteria</li> </ul> Group discussion<br>Randomly point toward the student to present group discussion report<br>Describe next subject lectured | <ul style="list-style-type: none"> <li>▪ Take note of give suggestion</li> <li>▪ discussion and presentation</li> <li>▪ written and submit of group report submit an assignment</li> </ul> | White board, OHP / LCD, board maker.   |
| The closing of the session | <ol style="list-style-type: none"> <li>a. closing of session</li> <li>b. give the conclusion of topic, sub topic and discussion result</li> <li>c. describe the final exam</li> </ol>  | <ul style="list-style-type: none"> <li>▪ presentation</li> <li>▪ give comment or question related to composing FSPE Proposal</li> <li>▪ take note of</li> </ul>                            | <ul style="list-style-type: none"> <li>▪ group report</li> <li>▪ written the comment and question</li> </ul> |

### E. EVALUATION :

The Instrument usage : check list for evaluating an assignment student capability and student class activity

## F. BIBLIOGRAPHY :

1. Clive Gray, Payaman Simanjuntak, Lien K. Sabur, PFL Maspaitela dan RCG Varley. 1997. Pengantar Evaluasi Proyek. Gramedia Jakarta.
2. Iman Suharto. 1995. Manajemen Proyek. Dari Konseptual sampai Operasional. Penerbit Erlangga, Surabaya.
3. J. Price Gittinger. 1992. Analisa Ekonomi Proyek-Proyek Pertanian. UI Press, Jakarta.
4. Kadariah, Lien Karlina dan Clive Gray. 1978. Pengantar Evaluasi Proyek. FE UI, Jakarta.
5. Soetrisno PH. 1995. Dasar-Dasar Evaluasi dan Manajemen Proyek. Andi Offset. Yogyakarta.
6. Suad Husnan dan Suwarsono Muhammad. 2000. Studi Kelayakan Proyek. UKPN Yogyakarta.

## PRACTICAL AGENDA UNIT I

Subject Studied : **FEASIBILITY STUDY AND PROJECT EVALUATION**  
 Code of Subject : PTE 308 / 2-1  
 Time of Meeting : 1 x 100 munit  
 Meeting Schedule : 1

- A. AIM
1. Aim of General Instruction :
    - At the end of practical, the student can compute interest rate, Payback Period, BC ratio, Profitability Indeks, IRR, NPV, Financial and Economis Analisis Ekonomi and compose FSPE proposal.
    -
  2. Aim of Special Instruction : Student can understand and explain present value and future value and interest of rate
- B. Topic : Time value of money
- C. Sub Topic : Present value and future value and interest of rate

### D. Teaching and Learning Activities

| Phase                        | Lecturer Activities  | Student Activities   | Media and teaching equipment                            |
|------------------------------|--|--|---|
| 1                            | 2  | 3  | 4   |
| Introduction                 | Describe and give an example of present value, future value and interest rate calculation  | <ul style="list-style-type: none"> <li>▪ Take note of written and discussion</li> </ul>  | White board, OHP / LCD, board maker. Prcatical guidance |
| Presentation                 | Describe and give an example of present value, future value and interest rate calculation  | <ul style="list-style-type: none"> <li>▪ Take note of</li> <li>▪ Give an answer</li> <li>▪ Give suggestion</li> </ul>  | White board, OHP / LCD, board maker. Prcatical guidance |
| The closing of the practical | <ol style="list-style-type: none"> <li>a. give the conclusion of topic, sub topic and discussion result</li> <li>b. give an assignment related to time value of money</li> <li>c. describe the next subject practical</li> </ol> | <ul style="list-style-type: none"> <li>▪ give comment or question related to time value of money</li> <li>▪ doing an assignment</li> <li>▪ take note of</li> </ul> | written the comment and question                        |

E. EVALUATION : doing an assignment and give next an assignment

### F. BIBLIOGRAPHY

1. Clive Gray, Payaman Simanjuntak, Lien K. Sabur, PFL Maspaitela dan RCG Varley. 1997. Pengantar Evaluasi Proyek. Gramedia Jakarta.
2. Iman Suharto. 1995. Manajemen Proyek. Dari Konseptual sampai Operasional. Penerbit Erlangga, Surabaya.
3. J. Price Gittinger. 1992. Analisa Ekonomi Proyek-Proyek Pertanian. UI Press, Jakarta.

4. Kadariah, Lien Karlina dan Clive Gray. 1978. Pengantar Evaluasi Proyek. FE UI, Jakarta.
5. Kadarsan, 1996. Evaluasi Proyek-proyek Pertanian, UI Press, Jakarta
6. Suad Husnan dan Suwarsono Muhammad. 2000. Studi Kelayakan Proyek. UKPN Yogyakarta.

## PRACTICAL AGENDA UNIT II

Subject Studied : **FEASIBILITY STUDY AND PROJECT EVALUATION**  
 Code of Subject : PTE 308 / 2-1  
 Time of Meeting : 1 x 100 munite  
 Meeting Schedule : 2

- A. AIM
1. Aim of General Instruction :
    - At the end of practical, the student can compute interest rate, Payback Period, BC ratio, Profitability Indeks, IRR, NPV, Financial and Economis Analisis Ekonomi and compose FSPE proposal.
  2. Aim of Special Instruction : Student can understand, explain and calculate of depreciation method
- B. Topic : Depreciation Method
- C. Sub Topic : Depreciation Method

### D. Teaching and Learning Activities

| Phase                        | Lecturer Activities  | Student Activities   | Media and teaching equipment                            |
|------------------------------|--|--|---|
| 1                            | 2  | 3  | 4   |
| Introduction                 | <ul style="list-style-type: none"> <li>▪ Describe and explain depreciation method</li> <li>▪ Calculation of depreciation method</li> </ul>   | <ul style="list-style-type: none"> <li>▪ Take note of written and discussion</li> </ul>  | White board, OHP / LCD, board maker. Prcatical guidance |
| Presentation                 | Describe, explain and calculate of livestock farm business depreciation  | calculate of livestock farm business depreciation  | White board, OHP / LCD, board maker. Prcatical guidance |
| The closing of the practical | <ol style="list-style-type: none"> <li>a. give the conclusion of topic, sub topic and discussion result</li> <li>b. give an assignment related to depreciation method</li> <li>c. describe the next subject practical</li> </ol> | <ul style="list-style-type: none"> <li>▪ give comment or question related to depreciation method</li> <li>▪ doing an assignment</li> <li>▪ take note of</li> </ul> | written the comment and question                        |

E. EVALUATION : doing an assignment and give next an assignment

### F. BIBLIOGRAPHY :

1. Clive Gray, Payaman Simanjuntak, Lien K. Sabur, PFL Maspaitela dan RCG Varley. 1997. Pengantar Evaluasi Proyek. Gramedia Jakarta.
2. Iman Suharto. 1995. Manajemen Proyek. Dari Konseptual sampai Operasional. Penerbit Erlangga, Surabaya.
3. J. Price Gittinger. 1992. Analisa Ekonomi Proyek-Proyek Pertanian. UI Press, Jakarta.

4. Kadariah, Lien Karlina dan Clive Gray. 1978. Pengantar Evaluasi Proyek. FE UI, Jakarta.
5. Soetrisno PH. 1995. Dasar-Dasar Evaluasi dan Manajemen Proyek. Andi Offset. Yogyakarta.
6. Suad Husnan dan Suwarsono Muhammad. 2000. Studi Kelayakan Proyek. UKPN Yogyakarta

## PRACTICAL AGENDA UNIT III

Subject Studied : **FEASIBILITY STUDY AND PROJECT EVALUATION**  
 Code of Subject : PTE 308 / 2-1  
 Time of Meeting : 1 x 100 munit  
 Meeting Schedule : 3

- A. AIM
1. Aim of General Instruction :
    - At the end of practical, the student can compute interest rate, Payback Period, BC ratio, Profitability Indeks, IRR, NPV, Financial and Economis Analisis Ekonomi and compose FSPE proposal.
  2. Aim of Special Instruction : Student can understand, explain and analyse of linear and non regression method for investment forecasting
- B. Topic : Analysis of Investment forecasting
- C. Sub Topic : Definition and meaning of regression analysis, usage and computing of linear and non linear regression for investment forecasting

### D. Teaching and Learning Activities

| Phase                        | Lecturer Activities  | Student Activities   | Media and teaching equipment                           |
|------------------------------|--|--|--|
| 1                            | 2  | 3  | 4  |
| Introduction                 | Describe and explain of regression analysis  | <ul style="list-style-type: none"> <li>▪ Take note of</li> <li>▪ written and discussion</li> </ul>   | White board, OHP / LCD, board maker. Prctical guidance |
| The closing of the practical | <ol style="list-style-type: none"> <li>a. give the conclusion of topic, sub topic and discussion result</li> <li>b. give an assignment related to depreciation method</li> <li>c. describe the next subject practical</li> </ol> | <ul style="list-style-type: none"> <li>▪ give comment or question related to regression analysis</li> <li>▪ doing an assignment</li> <li>▪ take note of</li> </ul> | written the comment and question                       |

E. **EVALUATION** : doing an assignment and give next an assignment

### F. BIBLIOGRAPHY :

1. Clive Gray, Payaman Simanjuntak, Lien K. Sabur, PFL Maspaitela dan RCG Varley. 1997. Pengantar Evaluasi Proyek. Gramedia Jakarta.
2. Iman Suharto. 1995. Manajemen Proyek. Dari Konseptual sampai Operasional. Penerbit Erlangga, Surabaya.
3. J. Price Gittinger. 1992. Analisa Ekonomi Proyek-Proyek Pertanian. UI Press, Jakarta.
4. Kadariah, Lien Karlina dan Clive Gray. 1978. Pengantar Evaluasi Proyek. FE UI, Jakarta.
5. Kadarsan, 1996. Evaluasi Proyek-proyek Pertanian, UI Press, Jakarta

6. Suad Husnan dan Suwarsono Muhammad. 2000. Studi Kelayakan Proyek. UKPN Yogyakarta

## PRACTICAL AGENDA UNIT IV

Subject Studied : **FEASIBILITY STUDY AND PROJECT EVALUATION**  
 Code of Subject : PTE 308 / 2-1  
 Time of Meeting : 1 x 100 munite  
 Meeting Schedule : 4

- A. AIM
1. Aim of General Instruction :
    - At the end of practical, the student can compute interest rate, Payback Period, BC ratio, Profitability Indeks, IRR, NPV, Financial and Economis Analisis Ekonomi and compose FSPE proposal.
  2. Aim of Special Instruction : Student can understand and explain some aspects of FSPE
- B. Topic :
  - Some aspects for activity planning
  - Some aspects for activity realization of livestock investment
- C. Sub Topic : Technical aspect, Managerial and administration aspect, Commercial aspect, Financial and economic aspect, Legal aspect Environmental aspect

### D. Teaching and Learning Activities

| Phase                        | Lecturer Activities   | Student Activities  | Media and teaching equipment   |
|------------------------------|---|---|--|
| 1                            | 2   | 3   | 4  |
| Introduction                 | Describe, explain and give an example of some aspects of FSPE   | <ul style="list-style-type: none"> <li>▪ Take note of</li> <li>▪ written and discussion</li> </ul>  | White board, OHP / LCD, board maker. Prcatical guidance  |
| Presentation                 | Describe, explain and give an example of some aspects of FSPE   | <ul style="list-style-type: none"> <li>▪ take note of and compose some aspects related to FSPE</li> </ul>   | <ul style="list-style-type: none"> <li>▪ Board</li> <li>▪ OHP/LCD</li> <li>▪ Petunjuk Praktikum</li> </ul> |
| The closing of the practical | <ol style="list-style-type: none"> <li>a. give the conclusion of topic, sub topic and discussion result</li> <li>b. give an assigment related to depreciation method</li> <li>c. describe the next subject practical</li> </ol> | <ul style="list-style-type: none"> <li>▪ give comment or question related to some aspects of FSPE</li> <li>▪ doing an assignment</li> <li>▪ take note of</li> </ul> | written the comment and question   |

E. EVALUATION : doing an assignment and give next an assignment

### F. BIBLIOGRAPHY :

1. Clive Gray, Payaman Simanjuntak, Lien K. Sabur, PFL Maspaitela dan RCG Varley. 1997. Pengantar Evaluasi Proyek. Gramedia Jakarta.
2. Iman Suharto. 1995. Manajemen Proyek. Dari Konseptual sampai Operasional. Penerbit Erlangga, Surabaya.

3. J. Price Gittinger. 1992. Analisa Ekonomi Proyek-Proyek Pertanian. UI Press, Jakarta.
4. Kadariah, Lien Karlina dan Clive Gray. 1978. Pengantar Evaluasi Proyek. FE UI, Jakarta.
5. Soetrisno PH. 1995. Dasar-Dasar Evaluasi dan Manajemen Proyek. Andi Offset. Yogyakarta.
6. Suad Husnan dan Suwarsono Muhammad. 2000. Studi Kelayakan Proyek. UKPN Yogyakarta

## PRACTICAL AGENDA UNIT V

Subject Studied : **FEASIBILITY STUDY AND PROJECT EVALUATION**  
 Code of Subject : PTE 308 / 2-1  
 Time of Meeting : 1 x 100 munit  
 Meeting Schedule : 5

- A. AIM
- 1. Aim of General Instruction : • At the end of practical, the student can compute interest rate, Payback Period, BC ratio, Profitability Indeks, IRR, NPV, Financial and Economis Analisis Ekonomi and compose FSPE proposal.
  - 2. Aim of Special Instruction : Student can understand and explain the investment criteria of livestock farm business
- B. Topic : ▪ Livestock Investment Criteria
- C. Sub Topic : Some analysis of investment criteria

### D. Teaching and Learning Activities

| Phase                        | Lecturer Activities  | Student Activities  | Media and teaching equipment   |
|------------------------------|--|---|--|
| 1                            | 2  | 3   | 4  |
| Introduction                 | Describe, explain and give an example of investment calculation  | <ul style="list-style-type: none"> <li>▪ Take note of</li> <li>▪ written and discussion</li> </ul>  | White board, OHP / LCD, board maker. Prcatical guidance  |
| Presentation                 | Describe, explain and give an example of ROI, NPV, IRR, BC ratios calculation and influencing of inflation to FSPE   | <ul style="list-style-type: none"> <li>▪ take note of and calculate the investment criteria</li> </ul>  | <ul style="list-style-type: none"> <li>▪ Board</li> <li>▪ OHP/LCD</li> <li>▪ Petunjuk Praktikum</li> </ul> |
| The closing of the practical | <ul style="list-style-type: none"> <li>a. give the conclusion of topic, sub topic and discussion result</li> <li>b. give an assignment related to depreciation method</li> <li>c. describe the next subject practical</li> </ul> | <ul style="list-style-type: none"> <li>▪ give comment or question related investment criteria</li> <li>▪ doing an assignment</li> <li>▪ take note of</li> </ul> | written the comment and question   |

E. EVALUATION : doing an assignment and give next an assignment

### F. BIBLIOGRAPHY :

1. Clive Gray, Payaman Simanjuntak, Lien K. Sabur, PFL Maspaitela dan RCG Varley. 1997. Pengantar Evaluasi Proyek. Gramedia Jakarta.
2. Iman Suharto. 1995. Manajemen Proyek. Dari Konseptual sampai Operasional. Penerbit Erlangga, Surabaya.
3. J. Price Gittinger. 1992. Analisa Ekonomi Proyek-Proyek Pertanian. UI Press, Jakarta.

4. Kadariah, Lien Karlina dan Clive Gray. 1978. Pengantar Evaluasi Proyek. FE UI, Jakarta.
5. Soetrisno PH. 1995. Dasar-Dasar Evaluasi dan Manajemen Proyek. Andi Offset. Yogyakarta.
6. Suad Husnan dan Suwarsono Muhammad. 2000. Studi Kelayakan Proyek. UKPN Yogyakarta

## PRACTICAL AGENDA UNIT VI

Subject Studied : **FEASIBILITY STUDY AND PROJECT EVALUATION**  
 Code of Subject : PTE 308 / 2-1  
 Time of Meeting : 1 x 100 munit  
 Meeting Schedule : 6

- A. AIM
1. Aim of General Instruction :
    - At the end of practical, the student can compute interest rate, Payback Period, BC ratio, Profitability Indeks, IRR, NPV, Financial and Economic Analisis Ekonomi and compose FSPE proposal.
  2. Aim of Special Instruction : Student can understand, explain and compose the FSPE Proposal and calculate livestock farm business in term of financial and economic analysis
- B. Topic : Composing Livestock FSPE Proposal
- C. Sub Topic : Data collecting from farm business or small scale of farming

### D. Teaching and Learning Activities

| Phase                        | Lecturer Activities  | Student Activities  | Media and teaching equipment   |
|------------------------------|--|---|--|
| 1                            | 2  | 3   | 4  |
| Introduction                 | Describe, explain and give an example of FSPE usage for farm business livestock  | <ul style="list-style-type: none"> <li>▪ Take note of written and discussion</li> </ul> | White board, OHP / LCD, board maker. Prctical guidance   |
| Presentation                 | Student visitation to livestock farm business or livestock small farm scale  | <ul style="list-style-type: none"> <li>▪ visitation and practical to farm</li> </ul>    | <ul style="list-style-type: none"> <li>▪ Board</li> <li>▪ OHP/LCD</li> <li>▪ Petunjuk Praktikum</li> </ul> |
| The closing of the practical | <ol style="list-style-type: none"> <li>a. give the conclusion of topic, sub topic and discussion result</li> <li>d. the result of FSPE proposal composing description</li> </ol> | <ul style="list-style-type: none"> <li>▪ presentation of FSPE Report</li> </ul>         | Practical report   |

E. EVALUATION : doing an assignment and give next an assignment

### F. BIBLIOGRAPHY :

1. Clive Gray, Payaman Simanjuntak, Lien K. Sabur, PFL Maspaitela dan RCG Varley. 1997. Pengantar Evaluasi Proyek. Gramedia Jakarta.
2. Iman Suharto. 1995. Manajemen Proyek. Dari Konseptual sampai Operasional. Penerbit Erlangga Surabaya.
3. J. Price Gittinger. 1992. Analisa Ekonomi Proyek-Proyek Pertanian. UI Press, Jakarta.
4. Kadariah, Lien Karlina dan Clive Gray. 1978. Pengantar Evaluasi Proyek. FE UI, Jakarta.

5. Soetrisno PH. 1995. Dasar-Dasar Evaluasi dan Manajemen Proyek. Andi Offset. Yogyakarta.
6. Suad Husnan dan Suwarsono Muhammad. 2000. Studi Kelayakan Proyek. UKPN Yogyakarta

COURSE : Basic of Chemistry

COURSE CODE : PF 102 p

CREDIT : 3 (2-1)

## TEACHING PROGRAM OUTLINE

- Title of Subject** : Basic of Chemistry
- Number Code /CSS** : PF 102 P/ 3 (2-1) CSS
- Brief Description** : This subject explains about organic and an organic chemistry. Organic chemistry is carbohydrate, protein, lipid, and vitamins, mineral about definition, classification, structure, utilization and compound. An organic chemistry is study about titration, quantitative chemical material and counting its.
- General Instructional Object** : After following this subject student can explain student can explain about percentage of material, acidity, the spectra's photocopy, and chromatography. Student can also explain about the definition, classification, structure, utilization and compound of carbohydrate, protein, lipid, and vitamins, mineral.
- References** : 1. Brady, James E., and Holum, John R., *Fundamentals of Chemistry*, 3<sup>rd</sup>., John Willey and Sons, Inc., 1988.  
 2. Ebbing, Darrell D., *General Chemistry*, Houghton Mifflin Company, 1984.  
 3. Petrucci, Ralph H., *General Chemistry, Principles and Modern Application*, 4th ed., Collier - McMillan, 1985.  
 4. O'Connor, P. R., et. al., *Chemistry, Experiments and Principles*, 4<sup>th</sup>. ed., D.C. Heath and Company, 1982.

| NO. | SPECIFIC INSTRUCTIONAL OBJECT   | MAIN DISCUSSION             | SUB DISCUSSION   | TIME ESTIMATION | REFERENCES |
|-----|---|-----------------------------|--|-----------------|------------|
| 1.  | By the course and example about the topics, the student can explain about definition, character, classification and differences of inorganic matter, minimum 90 % correctness.  | Material and the characters | Mixture<br>Compound<br>Elements  | 2 x 50 minutes  | 1,2,3      |
| 2.  | By the course and formula calculation, the student will be able to explain concepts about concentration and calculation, minimum 80 % correctness.  | Concentration of solution   | Mass Percentage and Volume<br>Molarities<br>Molality<br>Normality<br>Mole fraction   | 2 x 50 minutes  | 1,3,4      |
| 3.  | By the course and calculation formulas, the student will be able to explain concepts and calculation about vapor pressure drop, boiling point elevation, minimum depression of freezing point and solution osmotic pressure, minimum 80 % correctness | Solution Colligate Property | Solution-Non-Electrolyte (vapor pressure drop, boiling point elevation, depression of freezing point and osmotic pressure) | 2-x-50-minutes  | 1,3,4      |

|    |  |                                       |  |                |       |
|----|--|---------------------------------------|--|----------------|-------|
| 4. | By the course and calculation formulas, the student will be able to explain concepts and does calculation about vapor pressure drop, boiling point elevation, depression of freezing point and solution osmotic pressure minimum 80 % correctness.       | Solution Colligate Property           | Solution Non Electrolyte ( vapor pressure drop, boiling point elevation, depression of freezing point and osmotic pressure)                            | 2 x 50 minutes | 1,3,4 |
| 5. | By the course and calculation formulas, the student will be able to explain, know, differentiate and calculate about an acidity and salinity of solution, minimum 80 correct %   | Acid solution and Alkaline solution   | Water Equilibrium Constant<br>The Alkaline Acid theory<br>Acid strength<br>Alkaline Strength<br>Degree Of Acidity ( hydrogen ion exponent)<br>Solution | 4x 50 minutes  | 1,3,4 |
| 6. | By the course and calculation formulas, the student will be able to explain the meaning and function of buffer solution either in body and also in everyday life and can do calculation about minimum buffer solution hydrogen ion exponent 80 correct % | Buffer solution ( Solution of Buffer) | Buffer solution Component<br>Buffer solution Character<br>Function Of Buffer solution<br>Calculates Buffer solution hydrogen ion exponent              | 2 x 50 minutes | 1,3,4 |
| 7. | By the course and calculation formulas, the student will understand and able to explain the function of spectroscopy and chromatography and can operate the equipment, minimum 80 correct %  | Spectroscopy and Chromatography       | Understand the Function<br>Principal and Mode of action<br>Instrumentation<br>Result Counting  | 4x 50 minutes  | 1,3,4 |
| 8. | By the discourse and example about organic reaction concepts, the student will be able to explain about kinds of organocompound bounding, substrate change, some organic reactants and reaction type, minimized 90 %                                     | Organic reaction                      | Organocompound bounding<br>The substrate and changing<br>Reactant in compound organic  | 2 x 50 minutes | 1,2,3 |

|     | correctness.   |              | Organic reaction type   |                |       |
|-----|--|--------------|---|----------------|-------|
| 9.  | By given the course and examples, the student will be able to explain about the classification, nomenclature, structural and source of carbohydrate, identify physical and chemical properties, minimum 80 % correctness.          | Carbohydrate | Clasiffication of Carbohydrate<br>Nomenclatur of Carbohydrate<br>Structure and source of Carbohydrate<br>Physical and chemical properties of Carbohydrate                                     | 4x 50 minutes  | 1,3,4 |
| 10. | By given the course and examples, the student will be able to explain about the classification, nomenclature, structural and source of lipid, identify physical and chemical properties, minimum 80 % correctness.                 | Lipid        | Clasiffication of Lipid<br>Nomenclatur of Lipid<br>Structure and source of Lipid<br>Physical and chemical properties of Lipid   | 4x 50 minutes  |       |
| 11. | By given the course and examples, the student will be able to explain about the classification, nomenclature, structural and source of protein, identify physical and chemical properties, minimum 80 % correctness                | Protein      | Clasiffication of protein<br>Nomenclatur of protein<br>Structure and source of protein<br>Physical and chemical properties of protein   | 4x 50 minutes  | 1,3,4 |
| 12. | By given the course and examples, the student will be able to explain about the classification, nomenclature, structural and source of vitamins and minerals, identify physical and chemical properties, minimum 80 % correctness. | Protein      | Clasiffication of vitamins and minerals<br>Nomenclatur of vitamins and minerals<br>Structure and source of vitamins and minerals<br>Physical and chemical properties of vitamins and minerals | 2 x 50 minutes | 1,3,4 |
|     |  |              |   |                |       |

COURSE : Inorganic Chemistry

COURSE CODE : PFF 102 P

CREDIT : (2-1)3

## SET OF TEACHING SCHEDULE

TEACHING SUBJECT : INORGANIC CHEMISTRY  
TEACHING SUBJECT CODE / SCS : PFF 102P / 3 SCS ( 2-1)  
MEETING TIME : 2 x 50 minutes  
MEETING : 1

### A. OBJECT OF TEACHING SUBJECT

#### 1. General Instructional Object :

After following lecture, the student will be able to explain inorganic chemistry concepts in quantitatively and qualitatively, so that student will be able to analyse the functions. In its relation the body and an abiotic environment.

#### 2. Specific Instructional Object :

By the course and example about the topics, the student can explain about definition, character, classification and differences of inorganic matter, minimum 90 % correctness.

**B. MAIN DISCUSSION** : Material and the characters

**C. SUB DISCUSSION** : - Elements  
- Compound  
- Mixture

**D. CLASS ACTIVITY** :

| PHASE              | TEACHING ACTIVITY  | STUDENTS ACTIVITY                               | TOOLS  |
|--------------------|--|---|--|
| Introduction       | Explains about main topic  | Listens<br>Write<br>Ask                         |  |
| Topic presentation | 1. Explains Inorganic reaction concepts<br>2. Explains about elements.<br>3. Explains about compounds<br>4. Explains about mixture | Listens<br>Write<br>Ask<br>Answer the questions | OHP<br>Transparat<br>Hand out<br>White board |
| Conclusions        | Topic review<br>Ask<br>Explains main topic later   | Observe<br>Discussion                           |  |

### E. EVALUATION :

Gives question to the student to know the understanding of the student about the topics.

### F. REFERENCES :

Brady, James E., and Holum, John R., Fundamentals of Chemistry, 3<sup>rd</sup>., John Willey and Sons, Inc., 1988.  
Ebbing, Darrell D., General Chemistry, Houghton Mifflin Company, 1984.  
Petrucci, Ralph H., General Chemistry, Principles and Modern Application, 4th ed., Collier - McMillan, 1985.

## SET OF TEACHING SCHEDULE

### A. OBJECT OF TEACHING SUBJECT

TEACHING SUBJECT : INORGANIC CHEMISTRY  
 TEACHING SUBJECT CODE / SCS : PF 102P / 3SCS (2-1)  
 MEETING TIME : 2 x 50 minutes  
 MEETING : 2

### A. OBJECT

1. General Instructional Object : After following lecture, the student will be able to explain inorganic chemistry concepts, in quantitatively and qualitatively, so that student will be able to analyse the functions. In its relation the body and an abiotic environment
2. Specific Instructional Object : By the course and formula calculation, the student will be able to explain concepts about concentration and calculation, minimum 80 % correctness.

B. MAIN SUBJECT : Concentration of solution

C. SUB SUBJECT : Mass Percentage and Volume  
 Molarity  
 Molality  
 Normality  
 Mole fraction

### D. CLASS ACTIVITY:

| PHASE              | TEACHING ACTIVITY   | STUDENTS ACTIVITY                               | TOOLS  |
|--------------------|---|---|--|
| Introduction       | Explains about main topic   | Listens<br>Write<br>Ask                         |  |
| Topic presentation | <ol style="list-style-type: none"> <li>1. Explains concentration of solution concepts</li> <li>2. Explains the formulas of concentration of solution</li> <li>3. Give an example of counting concentration of solution</li> </ol> | Listens<br>Write<br>Ask<br>Answer the questions | OHP<br>Transparency<br>Hand out<br>White board<br>Exercise paper |
| Conclusions        | Topic review<br>Give homework   | Answer the questions<br>Note the questions      |  |

### E. EVALUATION :

Gives question to the student to know the understanding of the student about the topics.

### F. REFERENCES :

Brady, James E., and Holum, John R., *Fundamentals of Chemistry*, 3<sup>rd</sup>., John Wiley and Sons, Inc., 1988.  
 O'Connor, P. R., et. al., *Chemistry, Experiments and Principles*, 4<sup>th</sup>. ed., D.C. Heath and Company, 1982.  
 Petrucci, Ralph H., *General Chemistry, Principles and Modern Application*, 4<sup>th</sup> ed., Collier – McMillan, 1985.

## SET OF TEACHING SCHEDULE

### A. OBJECT OF TEACHING SUBJECT

TEACHING SUBJECT : INORGANIC CHEMISTRY  
 TEACHING SUBJECT CODE / SCS : PF 102P / 3SCS (2-1)  
 MEETING TIME : 2 x 50 minutes  
 MEETING : 3

### A. OBJECT

1. General Instructional Object : After following lecture, the student will be able to explain inorganic chemistry concepts in quantitatively and qualitatively, so that student will be able to analyse the functions. In its relation the body and an abiotic environment
  2. Specific Instructional Object : By the course and calculation formulas, the student will be able to explain concepts and calculation about vapour pressure drop, boiling point elevation, minimum depression of freezing point and solution osmotic pressure, minimum 80 % correctness
- B. MAIN SUBJECT : Solution Colligative Property  
 C. SUB SUBJECT : Solution Non Electrolyte ( vapour pressure drop, boiling point elevation, depression of freezing point and osmotic pressure)

### D. CLASS ACTIVITY:

| PHASE              | TEACHING ACTIVITY  | STUDENTS ACTIVITY                               | TOOLS  |
|--------------------|--|---|--|
| Introduction       | Explains about main topic  | Listens<br>Write<br>Ask                         |  |
| Topic presentation | 1. Explains Solution colligative property concept<br>2. Explains kinds of solution colligative property<br>3. Gives formula calculation some solution colligative properties<br>4. Practice calculates | Listens<br>Write<br>Ask<br>Answer the questions | OHP<br>Transparency<br>Hand out<br>White board<br>Exercise paper |
| Conclusions        | Topic review<br>Give homework  | Answer the questions<br>Note the questions      |  |

### E. EVALUATION

Gives question to the student to know the understanding of the student about the topics.

### F. REFERENCES

Brady, James E., and Holum, John R., *Fundamentals of Chemistry*, 3<sup>rd</sup>., John Wiley and Sons, Inc., 1988.  
 O'Connor, P. R., et. al., *Chemistry, Experiments and Principles*, 4<sup>th</sup>. ed., D.C. Heath and Company, 1982.  
 Petrucci, Ralph H., *General Chemistry, Principles and Modern Application*, 4<sup>th</sup> ed., Collier – McMillan, 1985.

## SET OF TEACHING SCHEDULE

### A. OBJECT OF TEACHING SUBJECT

TEACHING SUBJECT : INORGANIC CHEMISTRY  
 TEACHING SUBJECT CODE / SCS : PF 102P / 3SCS (2-1)  
 MEETING TIME : 2 x 50 minutes  
 MEETING : 4

#### A. OBJECT

1. General Instructional Object : After following lecture, the student will be able to explain inorganic chemistry concepts in quantitatively and qualitatively, so that student will be able to analyse the functions. In its relation the body and an abiotic environment
2. Specific Instructional Object : By the course and calculation formulas, the student will be able to explain concepts and does calculation about vapour pressure drop, boiling point elevation, depression of freezing point and solution osmotic pressure minimum 80 % correctness.

#### B. MAIN SUBJECT

: Solution Colligative Property

#### C. SUB SUBJECT

: Solution Non Electrolyte ( vapour pressure drop, boiling point elevation, depression of freezing point and osmotic pressure)

#### D. CLASS ACTIVITY:

| PHASE              | TEACHING ACTIVITY  | STUDENTS ACTIVITY                               | TOOLS  |
|--------------------|--|---|--|
| Introduction       | Explains about main topic  | Listens<br>Write<br>Ask                         |  |
| Topic presentation | <ol style="list-style-type: none"> <li>1. Explains Solution colligative property concept</li> <li>2. Explains kinds of solution colligative property</li> <li>3. Gives formula calculation some solution colligative properties</li> <li>4. Practice calculates</li> </ol> | Listens<br>Write<br>Ask<br>Answer the questions | OHP<br>Transparency<br>Hand out<br>White board<br>Exercise paper |
| Conclusions        | Topic review<br>Give homework  | Answer the questions<br>Note the questions      |  |

#### E. EVALUATION

: Gives question to the student to know the understanding of the student about the topics.

#### F. REFERENCES

Brady, James E., and Holum, John R., *Fundamentals of Chemistry*, 3<sup>rd</sup>., John Wiley and Sons, Inc., 1988.  
 O'Connor, P. R. et. al., *Chemistry, Experiments and Principles*, 4<sup>th</sup>. ed., D.C. Heath and Company, 1982.  
 Petrucci, Ralph H., *General Chemistry, Principles and Modern Application*, 4<sup>th</sup> ed., Collier – McMillan, 1985.

## SET OF TEACHING SCHEDULE

### A. OBJECT OF TEACHING SUBJECT

TEACHING SUBJECT : INORGANIC CHEMISTRY  
 TEACHING SUBJECT CODE / SCS : PF 102P / 3SCS (2-1)  
 MEETING TIME : 2 x 50 minutes  
 MEETING : 5

#### A. OBJECT

1. General Instructional Object : After following lecture, the student will be able to explain inorganic chemistry concepts in quantitatively and qualitatively, so that student will be able to analyse the functions. In its relation the body and an abiotic environment
2. Specific Instructional Object : By the course and calculation formulas, the student will be able to explain, know, differentiate and calculate about an acidity and salinity of solution, minimum 80 correct %

#### B. MAIN SUBJECT

: Acid solution and Alkaline solution

#### C. SUB SUBJECT

: Water Equilibrium Constant  
 The Alkaline Acid theory  
 Acid strength  
 Alkaline Strength  
 Degree Of Acidity ( hydrogen ion exponent) Solution

#### D. CLASS ACTIVITY:

| PHASE              | TEACHING ACTIVITY   | STUDENTS ACTIVITY                               | TOOLS  |
|--------------------|---|---|--|
| Introduction       | Explains about main topic   | Listens<br>Write<br>Ask                         |  |
| Topic presentation | <ol style="list-style-type: none"> <li>1. Explains reaction of ionization and water equilibrium constant and temperature influence</li> <li>2. Explains acid base indicator</li> <li>3. Gives formula to calculate the concentration or strong of acid/salinity</li> <li>4. Explains hydrogen ion exponent concept</li> </ol> | Listens<br>Write<br>Ask<br>Answer the questions | OHP<br>Transparency<br>Hand out<br>White board<br>Exercise paper |
| Conclusions        | Topic review<br>Give homework   | Answer the questions<br>Note the questions      |  |

#### E. EVALUATION

: Gives question to the student to know the understanding of the student about the topics.

#### F. REFERENCES

:  
 Brady, James E., and Holum, John R., *Fundamentals of Chemistry*, 3<sup>rd</sup>., John Wiley and Sons, Inc., 1988.  
 O'Connor, P. R., et. al., *Chemistry. Experiments and Principles*, 4<sup>th</sup>. ed., D.C. Heath and Company, 1982.  
 Petrucci, Ralph H., *General Chemistry, Principles and Modern Application*, 4<sup>th</sup> ed., Collier – McMillan, 1985.

## SET OF TEACHING SCHEDULE

### A. OBJECT OF TEACHING SUBJECT

TEACHING SUBJECT : INORGANIC CHEMISTRY  
 TEACHING SUBJECT CODE / SCS : PF 102P / 3SCS (2-1)  
 MEETING TIME : 2 x 50 minutes  
 MEETING : 6

### A. OBJECT

1. General Instructional Object : After following lecture, the student will be able to explain inorganic chemistry concepts in quantitatively and qualitatively, so that student will be able to analyse the functions. In its relation the body and an abiotic environment
2. Specific Instructional Object : By the course and calculation formulas, the student will be able to explain the meaning and function of buffer solution either in body and also in everyday life and can do calculation about minimum buffer solution hydrogen ion exponent 80 correct %

B. MAIN SUBJECT : Buffer solution ( Solution of Buffer)

C. SUB SUBJECT : Buffer solution Component  
 Buffer solution Character  
 Function Of Buffer solution  
 Calculates Buffer solution hydrogen ion exponent

### D. CLASS ACTIVITY:

| PHASE              | TEACHING ACTIVITY  | STUDENTS ACTIVITY                              | TOOLS   |
|--------------------|--|--|---|
| Introduction       | Explains about main topic  | Listens<br>Write<br>Ask                        |   |
| Topic presentation | <ol style="list-style-type: none"> <li>1. Explains understanding and buffer solution principle</li> <li>2. Explains function of buffer solution in everyday mortal body and life</li> <li>3. Gives formula to calculate concentration and buffer solution hydrogen ion exponent</li> <li>4. Gives practice the problem of calculation</li> </ol> | Listens<br>Write<br>Ask<br>Answer the quetions | OHP<br>Ttransparency<br>Hand out<br>White board<br>Exercise paper |
| Conclutions        | Topic review<br>Give homework  | Answer the quetions<br>Note the quetions       |   |

### E. EVALUATION

: Gives question to the student to know the understanding of the student about the topics.

### F. REFERENCES

:  
 Brady, James E., and Holum, John R., *Fundamentals of Chemistry*, 3<sup>rd</sup>., John Wiley and Sons, Inc., 1988.  
 O'Connor, P. R., et. al., *Chemistry. Experiments and Principles*, 4<sup>th</sup>. ed., D.C. Heath and Company, 1982.  
 Petrucci, Ralph H., *General Chemistry. Principles and Modem Application*, 4<sup>th</sup> ed., Collier – McMillan, 1985

## SET OF TEACHING SCHEDULE

### A. OBJECT OF TEACHING SUBJECT

TEACHING SUBJECT : INORGANIC CHEMISTRY  
 TEACHING SUBJECT CODE / SCS : PF 102P / 3SCS (2-1)  
 MEETING TIME : 2 x 50 minutes  
 MEETING : 7

### A. OBJECT

1. General Instructional Object : After following lecture, the student will be able to explain inorganic chemistry concepts in quantitatively and qualitatively, so that student will be able to analyse the functions. In its relation the body and an abiotic environment

2. Spesific Instructional Object : By the course and calculation formulas, the student will understand and able to explain the function of spectroscopy and chromatography and can operate the equipment, minimum 80 correct %

B. MAIN SUBJECT : Spectroscopy and Chromatography

C. SUB SUBJECT : Understand the Function  
 Principal and Mode of action  
 Instrumentation  
 Result Counting

### D. CLASS ACTIVITY:

| PHASE              | TEACHING ACTIVITY   | STUDENTS ACTIVITY                              | TOOLS   |
|--------------------|---|--|---|
| Introduction       | Explains about main topic   | Listens<br>Write<br>Ask                        |   |
| Topic presentation | 1. Explains the activity principle<br>2. Explains mode of action<br>3. Explains part of instrument<br>Menjelaskan way of calculating result | Listens<br>Write<br>Ask<br>Answer the quetions | OHP<br>Ttransparancy<br>Hand out<br>White board<br>Exercise paper |
| Conclutions        | Topic review<br>Give homework   | Answer the quetions<br>Note the quetions       |   |

### E. EVALUATION

: Gives question to the student to know the understanding of the student about the topics.

### F. REFERENCES

:  
 Brady, James E., and Holum, John R., *Fundamentals of Chemistry*, 3<sup>rd</sup>., John Wiley and Sons, Inc., 1988.  
 O'Connor, P. R., et. al., *Chemistry, Experiments and Principles*, 4<sup>th</sup>. ed., D.C. Heath and Company, 1982.  
 Petrucci, Ralph H., *General Chemistry, Principles and Modern Application*, 4<sup>th</sup> ed., Collier – McMillan, 1985.

## SET OF TEACHING SCHEDULE

TEACHING SUBJECT : Farming Area Management  
 TEACHING SUBJECT CODE / SCS : PTP 525P / 3 (2-1) SCS  
 MEETING TIME : 2 x 50 minutes  
 MEETING : 1

### A. OBJECT OF TEACHING SUBJECT

#### 1. General Instructional Object :

After following this lecture, student will be able to explain about physical area, chemical and biological, so that they can interrogate the area to produce livestock optimally and manage area to be safe for farming.

#### 2. Spesific Instructional Object :

After attending the lecture about domestication and bioindustry, student can explain the role of area for expansion the farming industry.

**B. MAIN DISCUSSION** : Introduction

**C. SUB DISCUSSION** : Domestication, urgency of bioindustry

**D. CLASS ACTIVITY** :

| PHASE              | TEACHING ACTIVITY  | STUDENTS ACTIVITY  | TOOLS  |
|--------------------|--|--|--|
| Introduction       | Explains about main topic  | Pay attention<br>Write<br>Ask  |  |
| Topic presentation | Explain about :<br>history of domestication of livestock<br>The relation of livestock with area<br>Area component ( physical, chemistry, biology, social)<br>Minimize area influence | Pay attention<br>Pay attentions<br>Write<br>Ask<br>Answer the quetions | OHP<br>Transparancy<br>Hand out<br>White board |
| Conclutions        | Topic review<br>Ask<br>Explains main topic later   | Observe<br>Discussion  |  |

### E. EVALUATION :

Gives question to the student to know the understanding of the student about the topics.

### F. REFERENCES :

Cole, D.J.A. and GC. Brander. 1986. Bioindustrial Ecosystem. Elsevier, Amsterdam  
 Curtis, ES., 1981. Environmental Management indium Animal Agriculture. Iowa State Univ. Press. Ames, Iowa.  
 Hafez, E.S.E. Adaptation of Domestic Animias. Lea and Febiger, Philadelphia.

COURSE : Slaughterhouse and Slaughter  
Process

COURSE CODE : PTF 404 P

CREDIT : 3 (2-1)

## LECTURING PROGRAM OUTLINE

|                                 |   |
|---------------------------------|---|
| Subject                         | : <b>Meat and Draught Animal Production</b>   |
| Code / Semester<br>Credit Unit  | : <b>PTF 305P/3 (2-1)</b>   |
| Syllabus                        | : This lecture discusses breeds, animal response of production and environment factors to develop meat animal production  |
| General Instructional Objective | : At the end of the lecturing program, students are expected to be able to understand breeds of meat and draught animal, physiology system, animal response to environment factor, animal housing, feeding, growth and development, matting system, and animal management |

### LECTURING PROGRAM

| Meeting | Topic of Discussion                   | Sub-topic of Discussion   | Duration (minutes) |
|---------|---------------------------------------|---|--------------------|
| 1       | Introduction                          | General description of subject lecture, explaining lecture contract, practical, and assignment  | 50                 |
| 1-2     | Breeds                                | Types and breeds of meat and draught animal   | 150                |
| 3       | Balance of physiology system          | Thermal balance, thermoregulation, heart rate, body temperature, comfort zone, and effect of environment to animal production   | 100                |
| 4       | Animal response to climate            | The effect of climate to animal production  | 100                |
| 5-6     | Animal housing and equipment          | Location of animal barn, function, lay out, type of construction, type of barn  | 200                |
| 7-8     | Animal Growth and Development         | Definition of growth and development, compensatory growth, growth of bone, meat and fat, factors affecting growth and development, and manipulation growth to production                        | 200                |
| 9.      | EVALUATION I                          |   | 100                |
| 10.     | Digestive system of meat animal       | Digestive system and process of feed digestive on meat animal   | 100                |
| 11-12.  | Feedstuff and animal response to feed | Kind of feed, factors affecting feed consumption, feed requirement, feeding management, and feed evaluation (feed conversion ratio, feed efficiency)  | 200                |
| 13.     | Matting management of meat animal     | Matting time, methods of matting, sex ratio, post partum matting  | 100                |
| 14-15.  | Care of meat animal                   | Care of animal at parturition, care of animal (sheep, goat, cattle, buffalo, pig and horse) from birth to mature, handling, dehorning, recording, identification, shearing, hoof trimming, etc. | 200                |
| 16.     | EVALUATION II                         |   | 100                |

## LECTURING AGENDA UNITS

|  |   |
|--|---|
| <b>Subject</b>                               | : <b>Meat and Draught Animal Production</b>   |
| <b>Code / Semester</b><br><b>Credit Unit</b> | : <b>PTF 305P/3 (2-1)</b>   |
| <b>Syllabus</b>                              | : This lecture discusses breeds, animal response of production and environment factors to develop meat animal production  |
| <b>General Instructional Objective</b>       | : At the end of the lecturing program, students are expected to be able to understand breeds of meat and draught animal, physiology system, animal response to environment factor, animal housing, feeding, growth and development, matting system, and animal management |

|   |   |
|---|---|
| <b>Topic</b>                            | : <b>Introduction</b>   |
| <b>Sub Topics</b>                       | : - Greetings and introducing the lecturers<br>- General Explanation about the Subject Materials<br>- Conditions  |
| <b>Meeting No.</b>                      | : 1   |
| <b>Duration</b>                         | : 50 minutes  |
| <b>General Instructional Objective</b>  | : At the end of the lecturing program, students are expected to be able to understand and explain thoroughly the mechanism and interaction of factors affecting meat animal production. |
| <b>Specific Instructional Objective</b> | : After joining the lecture, students understand the scope of the subject, conditions to fulfill, obligations to do and right to obtain.  |

### Lecture Activities

| <b>Phase</b> | <b>Lecturer's Activities</b>  | <b>Students' Activities</b>  | <b>Lecturing Media and Facilities</b> |
|--------------|---|--|---------------------------------------|
| Introduction | 1. Introducing lecturers themselves   | Paying attention   | Whiteboard                            |
| Presentation | 2. Distributing Lecture Contract<br>3. Explaining general description of the lecture,<br>4. Explaining lecture contract,<br>5. Explaining practical, and<br>6. Explaining assignments | Paying attention, making notes, delivering responses and questions | OHP                                   |
| Conclusion   | 7. Explaining briefly the subject content of next meeting   | Paying attention, making notes                                     | -                                     |

|                                  |   |
|----------------------------------|---|
| Topic                            | : Breeds  |
| Sub Topics                       | : Types and breeds of meat and draught animal   |
| Meeting No.                      | : 1, 2  |
| Duration                         | : 150 minutes   |
| General Instructional Objective  | : At the end of the lecturing program, students are expected to be able to understand breeds of meat and draught animal, physiology system, animal response to environment factor, animal housing, feeding, growth and development, matting system, and animal management |
| Specific Instructional Objective | : At the end of the lecture, students are able to understand and explain breeds of meat and draught animal (cattle, buffalo, goat, sheep, pig, and horse)   |

### Class Activities

| Phase        | Lecturer's Activities   | Students' Activities  | Lecturing Media and Facilities     |
|--------------|---|---|------------------------------------|
| Introduction | 1. Explaining the scope of the subject  | Paying attention  | Whiteboard                         |
| Presentation | 2. Explaining breeds of meat and draught animal:<br>- Cattle<br>- Buffalo<br>- Sheep<br>- Goat<br>- Pig<br>- Horse<br>3. Delivering questions | Paying attention, making notes, delivering responses and questions<br><br>Answering questions | OHP, transparent sheet, whiteboard |
| Conclusion   | 3. Concluding the meeting<br>- Delivering summary<br>- Giving assignment  | - Paying attention and making notes.  | -                                  |

|                                  |   |
|----------------------------------|---|
| Topic                            | : Balance of physiology system  |
| Sub Topics                       | : Thermal balance, thermoregulation, heart rate, body temperature, comfort zone, and effect of environment to animal production   |
| Meeting No.                      | : 3   |
| Duration                         | : 100 minutes   |
| General Instructional Objective  | : At the end of the lecturing program, students are expected to be able to understand breeds of meat and draught animal, physiology system, animal response to environment factor, animal housing, feeding, growth and development, matting system, and animal management |
| Specific Instructional Objective | : At the end of the lecture, students are able to understand and explain thermal balance, thermoregulation, heart rate, body temperature, comfort zone, and effect of environment on production   |

### Class Activities

| Phase        | Lecturer's Activities  | Students' Activities  | Lecturing Media and Facilities          |
|--------------|--|---|---|
| Introduction | 1. Explaining the scope of subject   | Paying attention  | Whiteboard,                             |
| Presentation | 2. Explaining thermal balance, thermoregulation, heart rate, body temperature, comfort zone, and effect of environment to animal production<br>3. Delivering questions | Paying attention, making notes, delivering responses and questions<br>Answering questions | Computer, projector, screen, whiteboard |
| Conclusion   | 4. Concluding the meeting<br>- Summarizing materials<br>- Giving assignment  | - Paying attention, making notes,   | Whiteboard                              |

|                                  |   |
|----------------------------------|---|
| Topic                            | : <b>Animal response to climate</b>   |
| Sub Topics                       | : The effect of climate to animal production  |
| Meeting No.                      | : 4   |
| Duration                         | : 100 minutes   |
| General Instructional Objective  | : At the end of the lecturing program, students are expected to be able to understand breeds of meat and draught animal, physiology system, animal response to environment factor, animal housing, feeding, growth and development, matting system, and animal management |
| Specific Instructional Objective | : At the end of the lecture, students are able to explain the effect of climate to animal production  |

### Class Activities

| Phase        | Lecturer's Activities   | Students' Activities  | Lecturing Media and Facilities          |
|--------------|---|---|---|
| Introduction | 1. Explaining the scope of subject  | Paying attention  | Whiteboard,                             |
| Presentation | 2. Explaining the effect of climate to animal production<br>3. Delivering questions | Paying attention, making notes, delivering responses and questions<br>Answering questions | Computer, projector, screen, whiteboard |
| Conclusion   | 4. Concluding the meeting<br>- Summarizing materials<br>- Giving assignment         | - Paying attention, making notes,   | Whiteboard                              |

|                                  |   |
|----------------------------------|---|
| Topic                            | : <b>Animal housing and equipment</b>   |
| Sub Topics                       | : Location of animal barn, function, lay out, type of construction, type of barn  |
| Meeting No.                      | : 5-6   |
| Duration                         | : 200 minutes   |
| General Instructional Objective  | : At the end of the lecturing program, students are expected to be able to understand breeds of meat and draught animal, physiology system, animal response to environment factor, animal housing, feeding, growth and development, matting system, and animal management |
| Specific Instructional Objective | : At the end of the lecture, students are able to explain location of animal barn, function, lay out, type of construction, type of barn of meat animal   |

### Class Activities

| Phase        | Lecturer's Activities  | Students' Activities  | Lecturing Media and Facilities          |
|--------------|--|---|---|
| Introduction | 1. Explaining the scope of subject   | Paying attention  | Whiteboard,                             |
| Presentation | 2. Explaining Location of animal barn, function, lay out, type of construction, type of barn of animal production<br>3. Delivering questions | Paying attention, making notes, delivering responses and questions<br>Answering questions | Computer, projector, screen, whiteboard |
| Conclusion   | 4. Concluding the meeting<br>- Summarizing materials<br>- Giving assignment  | - Paying attention, making notes,   | Whiteboard                              |

|                                  |   |
|----------------------------------|---|
| Topic                            | : <b>Animal growth and development</b>  |
| Sub Topics                       | : Definition of growth and development, compensatory growth, growth of bone, meat and fat, factors affecting growth and development, and manipulation growth to production  |
| Meeting No.                      | : 7-8   |
| Duration                         | : 200 minutes   |
| General Instructional Objective  | : At the end of the lecturing program, students are expected to be able to understand breeds of meat and draught animal, physiology system, animal response to environment factor, animal housing, feeding, growth and development, matting system, and animal management |
| Specific Instructional Objective | : At the end of the lecture, students are able to explain definition of growth and development, compensatory growth, growth of bone, meat and fat, factors affecting growth and development, and manipulation growth to production  |

### Class Activities

| Phase        | Lecturer's Activities  | Students' Activities   | Lecturing Media and Facilities          |
|--------------|--|--|---|
| Introduction | 1. Explaining the scope of subject   | Paying attention   | Whiteboard,                             |
| Presentation | 2. Explaining definition of growth and development, compensatory growth, growth of bone, meat and fat, factors affecting growth and development, and manipulation growth to production | Paying attention, making notes, delivering responses and questions | Computer, projector, screen, whiteboard |
|              | 3. Delivering questions  | Answering questions  |   |
| Conclusion   | 4. Concluding the meeting<br>- Summarizing materials<br>- Giving assignment  | - Paying attention, making notes,                                  | Whiteboard                              |

|                                  |   |
|----------------------------------|---|
| Topic                            | : Digestive system of meat animal   |
| Sub Topics                       | : Digestive system and process of feed digestive on meat animal   |
| Meeting No.                      | : 10  |
| Duration                         | : 100 minutes   |
| General Instructional Objective  | : At the end of the lecturing program, students are expected to be able to understand breeds of meat and draught animal, physiology system, animal response to environment factor, animal housing, feeding, growth and development, matting system, and animal management |
| Specific Instructional Objective | : At the end of the lecture, students are able to understand and explain digestive system and process of feed digestive on meat animal  |

### Class Activities

| Phase        | Lecturer's Activities   | Students' Activities   | Lecturing Media and Facilities          |
|--------------|---|--|---|
| Introduction | 1. Explaining the scope of subject  | Paying attention   | Whiteboard,                             |
| Presentation | 2. Explaining digestive system and process of feed digestive on meat animal | Paying attention, making notes, delivering responses and questions | Computer, projector, screen, whiteboard |
|              | 3. Delivering questions   | Answering questions  |   |
| Conclusion   | 4. Concluding the meeting<br>- Summarizing materials<br>- Giving assignment | - Paying attention, making notes,                                  | Whiteboard                              |

|                                  |   |
|----------------------------------|---|
| Topic                            | : <b>Feedstuff and animal response to feed</b>  |
| Sub Topics                       | : Kind of feed, factors affecting feed consumption, feed requirement, feeding management, and feed evaluation (feed conversion ratio, feed efficiency)  |
| Meeting No.                      | : 11-12   |
| Duration                         | : 200 minutes   |
| General Instructional Objective  | : At the end of the lecturing program, students are expected to be able to understand breeds of meat and draught animal, physiology system, animal response to environment factor, animal housing, feeding, growth and development, matting system, and animal management |
| Specific Instructional Objective | : At the end of the lecture, students are able to understand and explain kind of feed, factors affecting feed consumption, feed requirement, feeding management, and feed evaluation (feed conversion ratio, feed efficiency)   |

### Class Activities

| Phase        | Lecturer's Activities   | Students' Activities  | Lecturing Media and Facilities          |
|--------------|---|---|---|
| Introduction | 1. Explaining the scope of subject  | Paying attention  | Whiteboard,                             |
| Presentation | 2. Explaining kind of feed, factors affecting feed consumption, feed requirement, feeding management, and feed evaluation (feed conversion ratio, feed efficiency)<br>3. Delivering questions | Paying attention, making notes, delivering responses and questions<br><br>Answering questions | Computer, projector, screen, whiteboard |
| Conclusion   | 4. Concluding the meeting<br>- Summarizing materials<br>- Giving assignment   | - Paying attention, making notes,   | Whiteboard                              |

|                                  |   |
|----------------------------------|---|
| Topic                            | : <b>Matting management of meat animal</b>  |
| Sub Topics                       | : Matting time, methods of matting, sex ratio, post partum matting  |
| Meeting No.                      | : 13  |
| Duration                         | : 100 minutes   |
| General Instructional Objective  | : At the end of the lecturing program, students are expected to be able to understand breeds of meat and draught animal, physiology system, animal response to environment factor, animal housing, feeding, growth and development, matting system, and animal management |
| Specific Instructional Objective | : At the end of the lecture, students are able to understand and explain matting time, methods of matting, sex ratio, post partum matting   |

### Class Activities

| Phase        | Lecturer's Activities  | Students' Activities   | Lecturing Media and Facilities          |
|--------------|--|--|---|
| Introduction | 1. Explaining the scope of subject   | Paying attention   | Whiteboard,                             |
| Presentation | 2. Explaining matting time, methods of matting, sex ratio, post partum matting | Paying attention, making notes, delivering responses and questions | Computer, projector, screen, whiteboard |
|              | 3. Delivering questions  | Answering questions  |   |
| Conclusion   | 4. Concluding the meeting<br>- Summarizing materials<br>- Giving assignment    | - Paying attention, making notes,                                  | Whiteboard                              |

|                                  |   |
|----------------------------------|---|
| Topic                            | : <b>Care of meat animal</b>  |
| Sub Topics                       | : Care of animal at parturition, care of animal (sheep, goat, cattle, buffalo, pig and horse) from birth to mature, handling, dehorning, recording, identification, shearing, hoof trimming, etc.   |
| Meeting No.                      | : 14-15   |
| Duration                         | : 200 minutes   |
| General Instructional Objective  | : At the end of the lecturing program, students are expected to be able to understand breeds of meat and draught animal, physiology system, animal response to environment factor, animal housing, feeding, growth and development, matting system, and animal management |
| Specific Instructional Objective | : At the end of the lecture, students are able to understand and explain care of animal at parturition, care of animal (sheep, goat, cattle, buffalo, pig and horse) from birth to mature, handling, dehorning, recording, identification, shearing, hoof trimming, etc.  |

### Class Activities

| Phase        | Lecturer's Activities   | Students' Activities   | Lecturing Media and Facilities          |
|--------------|---|--|---|
| Introduction | 1. Explaining the scope of subject  | Paying attention   | Whiteboard,                             |
| Presentation | 2. Explaining care of animal at parturition, care of animal (sheep, goat, cattle, buffalo, pig and horse) from birth to mature, handling, dehorning, recording, identification, shearing, hoof trimming, etc. | Paying attention, making notes, delivering responses and questions | Computer, projector, screen, whiteboard |
|              | 3. Delivering questions   | Answering questions  |   |
| Conclusion   | 4. Concluding the meeting<br>- Summarizing materials<br>- Giving assignment   | - Paying attention, making notes,                                  | Whiteboard                              |

### **Evaluation:**

Evaluations are taken 3 times, i.e.

1. on the 9<sup>th</sup> meeting; evaluating the students' understanding on the subjects delivered from the 1<sup>st</sup> to the 8<sup>th</sup> meetings
2. on the 16<sup>th</sup> meeting; evaluating the students' understanding on the subjects delivered from the 10<sup>th</sup> to the 15<sup>th</sup> meetings.
3. on the semester examination; evaluating the students' overall understanding on the subjects of lecture.

### **References**

1. Battaglia, R.A., dan V.B. Mayrose. 1981. Handbook of Livestock Management Techniques. Prentice Hall, Inc. New Jersey.
2. Edey, T.N. 1983. Tropical Sheep and Goat Production. Australian Vice-Chancellor' Committee-AUIDP, Canberra.
3. Goodwin, D.H., 1977. Beef Management and Production. A practical guide for farmers and students. 1<sup>st</sup> Ed. Hutchinson & Co. Ltd, London
4. Haresign, W. 1983. Sheep Production. Butterworths, London
5. Pond, W.G., D.C. Church, dan K.R. Pond. 1995. Basic Animal Nutrition and Feeding. 4<sup>th</sup> Ed. John Wiley and Sons, New York.
6. Pond, W.G. dan J.H. Maner. 1974. Swine Production in Temperate and Tropical Environments. W.H. Freeman and Company, San Francisco.
7. Preston, T.R., dan M.B. Willis. 1979. Intensif Beef Production. 2<sup>nd</sup>. Pergamon Press, Oxford.
8. Ross, C.V. 1989. Sheep Production and Management. Prentice Hall, Englewood Cliffs.
9. MacDonald, I. and J. Low. 1994. Livestock Rearing in The Tropics. The Macmillan Press LTD, London

## LECTURING PROGRAM OUTLINE

|  |  |
|--|--|
| <b>Subject</b>                                 | <b>: SLAUGHTERHOUSE AND SLAUGHTER PROCESS</b>  |
| <b>Code / Semester<br/>Credit Unit</b>         | <b>: PTF 404 P / 3 (2-1)</b>   |
| <b>General<br/>Instructional<br/>Objective</b> | <b>: At the end of the lecturing program, students are expected to be able to understand and explain thoroughly about the function of slaughterhouse, slaughter process, <i>ante mortem</i> and <i>post mortem</i> inspection, preservation and storage of meat, conversion of muscle to meat, and also meat judging and evaluation.</b> |

### LECTURING PROGRAM

| Meeting | Topic of Discussion                                      | Sub-topic of Discussion  | Duration (minutes) |
|---------|--|--|--------------------|
| 1       | INTRODUCTION   | General description of subject lecture, explaining lecture contract, practical, and assignment evaluation, and other obligations to do | 100                |
| 2-3     | SLAUGHTERHOUSE   | definition, function, and classification of slaughterhouse, and also HACCP concept   | 200                |
| 4       | THE ANTE MORTEM PROCESS                                  | The process of <i>ante mortem</i> in relation to the product, and <i>ante mortem</i> inspection  | 100                |
| 5       | ANIMAL GRADING   | Animal grading criteria including muscle scores, frame scores, and body condition scores   | 100                |
| 6       | RUMINANT SLAUGHTER                                       | cattle/buffalo slaughter and goat/sheep/lamb slaughter   | 100                |
| 7       | HOG SLAUGHTER  | hog slaughter and hog carcass type   | 100                |
| 8       | EVALUATION I   |  | 100                |
| 9       | POST MORTEM INSPECTION, PRESERVATION AND STORAGE OF MEAT | <i>post mortem</i> inspection, dispositions, preservation and storage of meat  | 100                |
| 10      | CONVERSION OF MUSCLE TO MEAT                             | Changes in physycal and chemical properties of muscles. Rigor mortis process. DFD, PSE, <i>cold shortening</i> , <i>thaw rigor</i> .   | 100                |
| 11      | CARCASS AND BY-PRODUCTS                                  | carcass and by-products of cattle/ buffalo, goat/sheep/lamb, and pig   | 100                |
| 12      | MEAT JUDGING AND EVALUATION                              | dressing percentage, meat-bone ratio, yield grade, and quality grade   | 100                |
| 13      | POULTRY PROCESSING PLANT                                 | Definition and the function of poultry processing plant  | 100                |

| Meeting | Topic of Discussion             | Sub-topic of Discussion  | Duration (minutes) |
|---------|---------------------------------|--|--------------------|
|         | PROCESSING PLANT                |  |                    |
| 14      | POULTRY PROCESSING              | Selection of poultry for dressing and poultry processing                                     | 100                |
| 15      | POULTRY PRODUCT AND BY-PRODUCTS | poultry product and by-products, preservation and storage of poultry, and carcass evaluation | 100                |
| 16      | EVALUATION II                   |  | 100                |

## LECTURING AGENDA UNITS

Subject : **SLAUGHTERHOUSE AND SLAUGHTER PROCESS**

Code : **PTF 404 P**

Semester Credit Unit : **3 (2-1)**

Duration : 100 minutes

Meeting No. : 1

### A. Objectives:

1. General Instructional Objective : At the end of the lecturing program, students are expected to be able to understand and explain thoroughly about the function of slaughterhouse, slaughter process, *ante mortem* and *post mortem* inspection, preservation and storage of meat, conversion of muscle to meat, and also meat judging and evaluation.
2. Specific Instructional Objective : After joining the first meeting, students understand the scope of the subject, assignments, evaluation, and other obligations to do and right to obtain.

B. Topic : **INTRODUCTION**

- C. Sub Topics :
- Greetings and introducing the lecturers.
  - General explanation about the course outline, assignments, evaluation, and other obligations to do.

### D. Class Activities

| Phase        | Lecturer's Activities   | Students' Activities   | Lecturing Media and Facilities |
|--------------|---|--|--------------------------------|
| Introduction | <ol style="list-style-type: none"> <li>1. Introducing team teaching</li> <li>2. Explaining course relevartion</li> <li>3. Explaining course objectives</li> </ol>   | Paying attention   | Whiteboard and OHP             |
| Presentation | <ol style="list-style-type: none"> <li>1. Explaining the course outline</li> <li>2. Explaining practical work and the location</li> <li>3. Explaining assignments</li> <li>4. Explaining the evaluation</li> <li>5. Explaining the textbook that will be used in this course</li> </ol> | Paying attention, making notes, delivering responses and questions | OHP                            |
| Conclusion   | <ol style="list-style-type: none"> <li>1. Giving time to the students if there are some questions to explain</li> <li>2. Explaining briefly the subject content of the next meeting</li> </ol>  | Paying attention, making notes                                     | -                              |

## LECTURING AGENDA UNITS

Subject : **SLAUGHTERHOUSE AND SLAUGHTER PROCESS**

Code : **PTF 404 P**

Semester Credit Unit : **3 (2-1)**

Duration : 100 minutes

Meeting No. : 2 and 3

**A. Objectives:**

1. General Instructional Objective : At the end of the lecturing program, students are expected to be able to understand and explain thoroughly about the function of slaughterhouse, slaughter process, *ante mortem* and *post mortem* inspection, preservation and storage of meat, conversion of muscle to meat, and also meat judging and evaluation.
2. Specific Instructional Objective : After joining the second and third meeting, students understand the definition, function, and classification of slaughterhouse, and also HACCP concept.

B. Topic : **SLAUGHTERHOUSE**

C. Sub Topics : definition, function, and classification of slaughterhouse, and also HACCP concept

**D. Class Activities**

| Phase        | Lecturer's Activities   | Students' Activities  | Lecturing Media and Facilities |
|--------------|---|---|--------------------------------|
| Introduction | 1. Explaining the scope of the subject.<br>2. Pre test (giving some questions)  | Paying attention and answer the question  | OHP                            |
| Presentation | 1. Explaining the slaughterhouse definition<br>2. Explaining the function of slaughterhouse<br>3. Explaining the slaughterhouse classification<br>4. Explaining the regulation<br>5. Explaining the HACCP concept<br>6. Asking the comment about "ternak glonggongan"<br>7. Explaining animal handling and animal welfare in relation to "ternak glonggongan" | Paying attention, making notes, delivering responses and questions<br><br>Watching video about "ternak glonggongan" | OHP<br><br>Notebook & LCD      |
| Conclusion   | 1. Giving time to the students if there are some questions to explain   | Paying attention, making notes, delivering responses  | -                              |

| Phase | Lecturer's Activities   | Students' Activities | Lecturing Media and Facilities |
|-------|---|----------------------|--------------------------------|
|       | 2. Giving assignments about PSE and DFD meat<br>3. Explaining briefly the subject content of the next meeting | and questions        |                                |

E. Evaluation : -

F. Referens :

1. SK Menteri Pertanian No. 555/Kpts/TN.240/9/1986 tentang Syarat-syarat Rumah Pemotongan Hewan dan Usaha Pemotongan Hewan.
2. Direktorat Kesehatan Hewan, Dirjen Peternakan. 1984. Pembinaan Rumah Potong Hewan (RPH). Manual Kesmavet II No. 32.

## LECTURING AGENDA UNITS

Subject : **SLAUGHTERHOUSE AND SLAUGHTER PROCESS**  
 Code : **PTF 404 P**  
 Semester Credit Unit : **3 (2-1)**  
 Duration : 100 minutes  
 Meeting No. : 4

**A. Objectives:**

1. General Instructional Objective : At the end of the lecturing program, students are expected to be able to understand and explain thoroughly about the function of slaughterhouse, slaughter process, *ante mortem* and *post mortem* inspection, preservation and storage of meat, conversion of muscle to meat, and also meat judging and evaluation.
2. Specific Instructional Objective : After joining the fourth meeting, students understand the *ante mortem* process.

- B. Topic : **THE ANTE MORTEM PROCESS**
- C. Sub Topics : The process of *ante mortem* in relation to the product, and *ante mortem* inspection

**D. Class Activities**

| Phase        | Lecturer's Activities  | Students' Activities   | Lecturing Media and Facilities |
|--------------|--|--|--------------------------------|
| Introduction | 1. Review the course of the last meeting<br>2. Explaining the scope of the subject.<br>3. Pre test (giving some questions)   | Paying attention and answer the question   | OHP                            |
| Presentation | 1. Explaining the need of animal to be rested prior to slaughter<br>2. Explaining the need of animal to be fasted prior to slaughter<br>3. Explaining the effect of handling process to the meat product<br>4. Explaining <i>ante mortem</i> inspection<br>5. Student's presenting the assignment about PSE and DFD meat<br>6. Explaining about PSE and DFD meat | Paying attention, making notes, delivering responses and questions<br><br>Presentation<br><br>Paying attention, making notes | OHP                            |
| Conclusion   | 1. Giving time to the students if there are some questions to  | Paying attention, making notes,  | -                              |

| Phase | Lecturer's Activities  | Students' Activities               | Lecturing Media and Facilities |
|-------|--|------------------------------------|--------------------------------|
|       | explain<br>2. Explaining briefly the subject content of the next meeting | delivering responses and questions |                                |

E. Evaluation : -

F. Referens :

1. Judge, M.D., E.D. Aberle, J.C. Forrest, H.B. Hedrick, dan R.A. Merkel. 1989. Principles of Meat Science. Kendall / Hunt Publishing Co., Dubuque.
2. Mitchell, J.R. 1980. Guide to Meat Inspection in the Tropics. Commonwealth Agricultural Bureaux, England.
3. Romans J.R., W.J. Costello, C.W. Carlson, M.L. Greaser, K.W. Jones. 1994. The Meat We Eat. Interstate Publishers, Inc., Danville.
4. Soeparno. 1994. Ilmu dan Teknologi Daging. Gadjah Mada University Press, Yogyakarta.

## LECTURING AGENDA UNITS

- Subject : **SLAUGHTERHOUSE AND SLAUGHTER PROCESS**
- Code : **PTF 404 P**
- Semester Credit Unit : **3 (2-1)**
- Duration : 100 minutes
- Meeting No. : 5
- A. Objectives:
1. General Instructional Objective : At the end of the lecturing program, students are expected to be able to understand and explain thoroughly about the function of slaughterhouse, slaughter process, *ante mortem* and *post mortem* inspection, preservation and storage of meat, conversion of muscle to meat, and also meat judging and evaluation.
  2. Specific Instructional Objective : After joining the fifth meeting, students understand how to judge and grade animal prior to slaughter.
- B. Topic : **ANIMAL GRADING**
- C. Sub Topics : Animal grading criteria including muscle scores, frame scores, and body condition scores
- D. Class Activities

| Phase        | Lecturer's Activities  | Students' Activities   | Lecturing Media and Facilities |
|--------------|--|--|--------------------------------|
| Introduction | <ol style="list-style-type: none"> <li>1. Review the course of the last meeting</li> <li>2. Review the breeds of beef cattle, sheep, and pig.</li> <li>3. Explaining the scope of the subject.</li> </ol>  | Paying attention and discussion                                    | OHP                            |
| Presentation | <ol style="list-style-type: none"> <li>1. Explaining the muscle scores</li> <li>2. Explaining the frame scores</li> <li>3. Explaining the body condition scores</li> <li>4. Animal grading simulation (discussion using animal picture)</li> </ol> | Paying attention, making notes, delivering responses and questions | OHP                            |
| Conclusion   | <ol style="list-style-type: none"> <li>1. Giving time to the students if there are some questions to explain</li> <li>2. Explaining briefly the subject content of the next meeting</li> </ol>   | Paying attention, making notes, delivering responses and questions | -                              |

## LECTURING AGENDA UNITS

Subject : **SLAUGHTERHOUSE AND SLAUGHTER PROCESS**

Code : **PTF 404 P**

Semester Credit Unit : **3 (2-1)**

Duration : 100 minutes

Meeting No. : 6

**A. Objectives:**

1. General Instructional Objective : At the end of the lecturing program, students are expected to be able to understand and explain thoroughly about the function of slaughterhouse, slaughter process, *ante mortem* and *post mortem* inspection, preservation and storage of meat, conversion of muscle to meat, and also meat judging and evaluation.
2. Specific Instructional Objective : After joining the sixth meeting, students understand cattle & buffalo slaughter process and goat, sheep & lamb slaughter process.

B. Topic : **RUMINANT SLAUGHTER**

C. Sub Topics : cattle/buffalo slaughter and goat/sheep/lamb slaughter

**D. Class Activities**

| Phase        | Lecturer's Activities  | Students' Activities   | Lecturing Media and Facilities |
|--------------|--|--|--------------------------------|
| Introduction | <ol style="list-style-type: none"> <li>1. Review the course of the last meeting</li> <li>2. Explaining the scope of the subject.</li> </ol>  | Paying attention and discussion                                    | OHP                            |
| Presentation | <ol style="list-style-type: none"> <li>1. Explaining the process of cattle/buffalo slaughter</li> <li>2. Explaining the process of goat/sheep/lamb slaughter</li> </ol>                        | Paying attention, making notes, delivering responses and questions | OHP                            |
| Conclusion   | <ol style="list-style-type: none"> <li>1. Giving time to the students if there are some questions to explain</li> <li>2. Explaining briefly the subject content of the next meeting</li> </ol> | Paying attention, making notes, delivering responses and questions | -                              |

E. Evaluation : -

F. Referens :

1. Judge, M.D., E.D. Aberle, J.C. Forrest, H.B. Hedrick, dan R.A. Merkel. 1989. Principles of Meat Science. Kendall / Hunt Publishing Co., Dubuque.

2. Romans J.R., W.J. Costello, C.W. Carlson, M.L. Greaser, K.W. Jones. 1994.  
The Meat We Eat. Interstate Publishers, Inc., Danville.
3. Soeparno. 1994. Ilmu dan Teknologi Daging. Gadjah Mada University Press,  
Yogyakarta.

## LECTURING AGENDA UNITS

Subject : **SLAUGHTERHOUSE AND SLAUGHTER PROCESS**  
 Code : **PTF 404 P**  
 Semester Credit Unit : **3 (2-1)**  
 Duration : **100 minutes**  
 Meeting No. : **7**

**A. Objectives:**

1. General Instructional Objective : At the end of the lecturing program, students are expected to be able to understand and explain thoroughly about the function of slaughterhouse, slaughter process, *ante mortem* and *post mortem* inspection, preservation and storage of meat, conversion of muscle to meat, and also meat judging and evaluation.
2. Specific Instructional Objective : After joining the seventh meeting, students understand hog slaughter process.

B. Topic : **HOG SLAUGHTER**  
 C. Sub Topics : hog slaughter and hog carcass type

**D. Class Activities**

| Phase        | Lecturer's Activities  | Students' Activities   | Lecturing Media and Facilities |
|--------------|--|--|--------------------------------|
| Introduction | 1. Review the course of the last meeting<br>2. Explaining the scope of the subject.  | Paying attention and discussion                                    | OHP                            |
| Presentation | 1. Explaining the process of hog slaughter<br>2. Explaining hog carcass type   | Paying attention, making notes, delivering responses and questions | OHP                            |
| Conclusion   | 1. Giving time to the students if there are some questions to explain<br>2. Explaining briefly the subject content of the next meeting | Paying attention, making notes, delivering responses and questions | -                              |

E. Evaluation : -

F. Referens :

1. Judge, M.D., E.D. Aberle, J.C. Forrest, H.B. Hedrick, dan R.A. Merkel. 1989. Principles of Meat Science. Kendall / Hunt Publishing Co., Dubuque.
2. Romans J.R., W.J. Costello, C.W. Carlson, M.L. Greaser, K.W. Jones. 1994. The Meat We Eat. Interstate Publishers, Inc., Danville.

3. Soeparno. 1994. Ilmu dan Teknologi Daging. Gadjah Mada University Press, Yogyakarta.

## LECTURING AGENDA UNITS

Subject : **SLAUGHTERHOUSE AND SLAUGHTER PROCESS**

Code : **PTF 404 P**

Semester Credit Unit : **3 (2-1)**

Duration : 100 minutes

Meeting No. : 8

**A. Objectives:**

1. General Instructional Objective : At the end of the lecturing program, students are expected to be able to understand and explain thoroughly about the function of slaughterhouse, slaughter process, *ante mortem* and *post mortem* inspection, preservation and storage of meat, conversion of muscle to meat, and also meat judging and evaluation.

2. Specific Instructional Objective : After joining the eighth meeting, students understand *post mortem* inspection, preservation and storage of meat.

**B. Topic : POST MORTEM INSPECTION, PRESERVATION AND STORAGE OF MEAT**

**C. Sub Topics : *post mortem* inspection, dispositions, preservation and storage of meat**

**D. Class Activities**

| Phase        | Lecturer's Activities   | Students' Activities   | Lecturing Media and Facilities |
|--------------|---|--|--------------------------------|
| Introduction | <ol style="list-style-type: none"> <li>1. Review the course of the last meeting</li> <li>2. Explaining the scope of the subject.</li> </ol>   | Paying attention and discussion                                    | OHP                            |
| Presentation | <ol style="list-style-type: none"> <li>1. Explaining the aim of <i>post mortem</i> inspection</li> <li>2. Explaining <i>post mortem</i> inspection procedures</li> <li>3. Explaining the dispositions of the <i>post mortem</i> inspection results</li> <li>4. Explaining preservation and storage of meat and their relationship with carcass quality</li> </ol> | Paying attention, making notes, delivering responses and questions | OHP                            |
| Conclusion   | <ol style="list-style-type: none"> <li>1. Giving time to the students if there are some questions to explain</li> <li>2. Explaining briefly the subject content of the next meeting</li> </ol>  | Paying attention, making notes, delivering responses and questions | -                              |

E. Evaluation : -

F. Referens :

1. Judge, M.D., E.D. Aberle, J.C. Forrest, H.B. Hedrick, dan R.A. Merkel. 1989. Principles of Meat Science. Kendall / Hunt Publishing Co., Dubuque.
2. Romans, J.R., W.J. Costello, C.W. Carlson, M.L. Greaser, K.W. Jones. 1994. The Meat We Eat. Interstate Publishers, Inc., Danville.
3. Soeparno. 1994. Ilmu dan Teknologi Daging. Gadjah Mada University Press, Yogyakarta.
4. Mitchell, J.R. 1980. Guide to Meat Inspection in the Tropics. Commonwealth Agricultural Bureaux, England.

## LECTURING AGENDA UNITS

Subject : **SLAUGHTERHOUSE AND SLAUGHTER PROCESS**  
 Code : **PTF 404 P**  
 Semester Credit Unit : **3 (2-1)**  
 Duration : 100 minutes  
 Meeting No. : 9

**A. Objectives:**

1. General Instructional Objective : At the end of the lecturing program, students are expected to be able to understand and explain thoroughly about the function of slaughterhouse, slaughter process, *ante mortem* and *post mortem* inspection, preservation and storage of meat, conversion of muscle to meat, and also meat judging and evaluation.
2. Specific Instructional Objective : After joining the ninth meeting, students understand conversion of muscle to meat.

B. Topic : **CONVERSION OF MUSCLE TO MEAT**  
 C. Sub Topics : Changes in physycal and chemical properties of muscles. Rigor mortis process. DFD, PSE, *cold shortening*, *thaw rigor*.

**D. Class Activities**

| Phase        | Lecturer's Activities  | Students' Activities   | Lecturing Media and Facilities |
|--------------|--|--|--------------------------------|
| Introduction | 1. Review the course of the last meeting<br>2. Explaining the scope of the subject.  | Paying attention and discussion                                    | OHP                            |
| Presentation | 1. Explaining the changes in physycal and chemical properties of muscles<br>2. Explaining rigor mortis process<br>3. Explaining DFD, PSE, <i>cold shortening</i> , <i>thaw rigor</i> | Paying attention, making notes, delivering responses and questions | OHP                            |
| Conclusion   | 1. Giving time to the students if there are some questions to explain<br>2. Explaining briefly the subject content of the next meeting   | Paying attention, making notes, delivering responses and questions | -                              |

E. Evaluation : -

F. Referens :

1. Judge, M.D., E.D. Aberle, J.C. Forrest, H.B. Hedrick, dan R.A. Merkel. 1989. Principles of Meat Science. Kendall / Hunt Publishing Co., Dubuque.

2. Romans J.R., W.J. Costello, C.W. Carlson, M.L. Greaser, K.W. Jones. 1994. The Meat We Eat. Interstate Publishers, Inc., Danville.
3. Soeparno. 1994. Ilmu dan Teknologi Daging. Gadjah Mada University Press, Yogyakarta.
4. Mitchell, J.R. 1980. Guide to Meat Inspection in the Tropics. Commonwealth Agricultural Bureaux, England.

## LECTURING AGENDA UNITS

Subject : **SLAUGHTERHOUSE AND SLAUGHTER PROCESS**  
 Code : **PTF 404 P**  
 Semester Credit Unit : **3 (2-1)**  
 Duration : 100 minutes  
 Meeting No. : 10

**A. Objectives:**

1. General Instructional Objective : At the end of the lecturing program, students are expected to be able to understand and explain thoroughly about the function of slaughterhouse, slaughter process, *ante mortem* and *post mortem* inspection, preservation and storage of meat, conversion of muscle to meat, and also meat judging and evaluation.
2. Specific Instructional Objective : After joining the tenth meeting, students understand carcass and by-products of cattle/ buffalo, goat/sheep/lamb, and pig

**B. Topic : CARCASS AND BY-PRODUCTS**

**C. Sub Topics :** carcass and by-products of cattle/ buffalo, goat/sheep/lamb, and pig

**D. Class Activities**

| Phase        | Lecturer's Activities  | Students' Activities   | Lecturing Media and Facilities |
|--------------|--|--|--------------------------------|
| Introduction | 1. Review the course of the last meeting<br>2. Explaining the scope of the subject.  | Paying attention and discussion                                    | OHP                            |
| Presentation | 1. Explaining carcass and by-products of cattle/ buffalo<br>2. Explaining carcass and by-products of goat/sheep/lamb<br>3. Explaining carcass and by-products of pig | Paying attention, making notes, delivering responses and questions | OHP                            |
| Conclusion   | 1. Giving time to the students if there are some questions to explain<br>2. Explaining briefly the subject content of the next meeting                               | Paying attention, making notes, delivering responses and questions | -                              |

**E. Evaluation : -**

**F. Referens :**

1. Judge, M.D., E.D. Aberle, J.C. Forrest, H.B. Hedrick, dan R.A. Merkel. 1989. Principles of Meat Science. Kendall / Hunt Publishing Co., Dubuque.

2. Romaris J.R., W.J. Costello, C.W. Carlson, M.L. Greaser, K.W. Jones. 1994. The Meat We Eat. Interstate Publishers, Inc., Danville.
3. Soeparno. 1994. Ilmu dan Teknologi Daging. Gadjah Mada University Press, Yogyakarta.
4. Mitchell, J.R. 1980. Guide to Meat Inspection in the Tropics. Commonwealth Agricultural Bureaux, England.

## LECTURING AGENDA UNITS

Subject : **SLAUGHTERHOUSE AND SLAUGHTER PROCESS**  
 Code : **PTF 404 P**  
 Semester Credit Unit : **3 (2-1)**  
 Duration : 100 minutes  
 Meeting No. : 11

**A. Objectives:**

1. General Instructional Objective : At the end of the lecturing program, students are expected to be able to understand and explain thoroughly about the function of slaughterhouse, slaughter process, *ante mortem* and *post mortem* inspection, preservation and storage of meat, conversion of muscle to meat, and also meat judging and evaluation.
2. Specific Instructional Objective : After joining the eleventh meeting, students understand meat judging and evaluation

**B. Topic : MEAT JUDGING AND EVALUATION**

**C. Sub Topics :** dressing percentage, meat-bone ratio, yield grade, and quality grade

**D. Class Activities**

| Phase        | Lecturer's Activities  | Students' Activities   | Lecturing Media and Facilities |
|--------------|--|--|--------------------------------|
| Introduction | 1. Review the course of the last meeting<br>2. Explaining the scope of the subject.  | Paying attention and discussion                                    | OHP                            |
| Presentation | 1. Explaining dressing percentage<br>2. Explaining meat-bone ratio<br>3. Explaining yield grade<br>4. Explaining quality grade         | Paying attention, making notes, delivering responses and questions | OHP                            |
| Conclusion   | 1. Giving time to the students if there are some questions to explain<br>2. Explaining briefly the subject content of the next meeting | Paying attention, making notes, delivering responses and questions | -                              |

**E. Evaluation :-**

**F. Referens :**

1. Judge, M.D., E.D. Aberle, J.C. Forrest, H.B. Hedrick, dan R.A. Merkel. 1989. Principles of Meat Science. Kendall / Hunt Publishing Co., Dubuque.

2. Romans J.R., W.J. Costello, C.W. Carlson, M.L. Greaser, K.W. Jones. 1994. The Meat We Eat. Interstate Publishers, Inc., Danville.
3. Soeparno. 1994. Ilmu dan Teknologi Daging. Gadjah Mada University Press, Yogyakarta.
4. Mitchell, J.R. 1980. Guide to Meat Inspection in the Tropics. Commonwealth Agricultural Bureaux, England.

## LECTURING AGENDA UNITS

Subject : **SLAUGHTERHOUSE AND SLAUGHTER PROCESS**  
 Code : **PTF 404 P**  
 Semester Credit Unit : **3 (2-1)**  
 Duration : 100 minutes  
 Meeting No. : 12

**A. Objectives:**

1. General Instructional Objective : At the end of the lecturing program, students are expected to be able to understand and explain thoroughly about the function of slaughterhouse, slaughter process, *ante mortem* and *post mortem* inspection, preservation and storage of meat, conversion of muscle to meat, and also meat judging and evaluation.
2. Specific Instructional Objective : After joining the twelfth meeting, students understand about the poultry processing plant

**B. Topic** : **POULTRY PROCESSING PLANT**  
**C. Sub Topics** : Definition and the function of poultry processing plant

**D. Class Activities**

| Phase        | Lecturer's Activities  | Students' Activities   | Lecturing Media and Facilities |
|--------------|--|--|--------------------------------|
| Introduction | 1. Explaining the scope of the subject.  | Paying attention   | OHP                            |
| Presentation | 1. Explaining definition and the function of poultry processing plant<br>2. Explaining the regulation                                  | Paying attention, making notes, delivering responses and questions | OHP                            |
| Conclusion   | 1. Giving time to the students if there are some questions to explain<br>2. Explaining briefly the subject content of the next meeting | Paying attention, making notes, delivering responses and questions | -                              |

**E. Evaluation** : -

**F. Referens** :

1. Romans J.R., W.J. Costello, C.W. Carlson, M.L. Greaser, K.W. Jones. 1994. *The Meat We Eat*. Interstate Publishers, Inc., Danville.

## LECTURING AGENDA UNITS

Subject : **SLAUGHTERHOUSE AND SLAUGHTER PROCESS**  
 Code : **PTF 404 P**  
 Semester Credit Unit : **3 (2-1)**  
 Duration : 100 minutes  
 Meeting No. : 13

**A. Objectives:**

1. General Instructional Objective : At the end of the lecturing program, students are expected to be able to understand and explain thoroughly about the function of slaughterhouse, slaughter process, *ante mortem* and *post mortem* inspection, preservation and storage of meat, conversion of muscle to meat, and also meat judging and evaluation.
2. Specific Instructional Objective : After joining the thirteenth meeting, students understand poultry processing

B. Topic : **POULTRY PROCESSING**  
 C. Sub Topics : Selection of poultry for dressing and poultry processing  
 D. Class Activities

| Phase        | Lecturer's Activities  | Students' Activities   | Lecturing Media and Facilities |
|--------------|--|--|--------------------------------|
| Introduction | 1. Review the course of the last meeting<br>2. Explaining the scope of the subject.  | Paying attention   | OHP                            |
| Presentation | 1. Explaining the selection of poultry for dressing<br>2. Explaining poultry processing  | Paying attention, making notes, delivering responses and questions | OHP                            |
| Conclusion   | 1. Giving time to the students if there are some questions to explain<br>2. Explaining briefly the subject content of the next meeting | Paying attention, making notes, delivering responses and questions | -                              |

E. Evaluation : -  
 F. Referens :

1. Romans J.R., W.J. Costello, C.W. Carlson, M.L. Greaser, K.W. Jones. 1994. *The Meat We Eat*. Interstate Publishers, Inc., Danville.

## LECTURING AGENDA UNITS

- Subject : **SLAUGHTERHOUSE AND SLAUGHTER PROCESS**
- Code : **PTF 404 P**
- Semester Credit Unit : **3 (2-1)**
- Duration : 100 minutes
- Meeting No. : 14
- A. Objectives:
1. General Instructional Objective : At the end of the lecturing program, students are expected to be able to understand and explain thoroughly about the function of slaughterhouse, slaughter process, *ante mortem* and *post mortem* inspection, preservation and storage of meat, conversion of muscle to meat, and also meat judging and evaluation.
  2. Specific Instructional Objective : After joining the fourteenth meeting, students understand poultry product and by-products
- B. Topic : **POULTRY PRODUCT AND BY-PRODUCTS**
- C. Sub Topics : poultry product and by-products, preservation and storage of poultry, and carcass evaluation
- D. Class Activities

| Phase        | Lecturer's Activities  | Students' Activities   | Lecturing Media and Facilities |
|--------------|--|--|--------------------------------|
| Introduction | 1. Review the course of the last meeting<br>2. Explaining the scope of the subject.  | Paying attention   | OHP                            |
| Presentation | 1. Explaining poultry product and by-products<br>2. Explaining preservation and storage of poultry<br>3. Explaining carcass evaluation | Paying attention, making notes, delivering responses and questions | OHP                            |
| Conclusion   | 1. Giving time to the students if there are some questions to explain<br>2. Explaining briefly the subject content of the next meeting | Paying attention, making notes, delivering responses and questions | -                              |

E. Evaluation : -

F. Referens :

1. Romans J.R., W.J. Costello, C.W. Carlson, M.L. Greaser, K.W. Jones. 1994. *The Meat We Eat*. Interstate Publishers, Inc., Danville.

COURSE : Basic of Livestock Physiology

COURSE CODE : PTF 201 P

CREDIT : 3 (2-1)

### SET OF TEACHING SCHEDULE

- Title of Subject** : Basic of Livestock Physiology  
**Number Code /CSS** : PTF 201P 3(2-1)  
**Brief Description** : After following the lecture of Basic of Livestock Physiology, It is expected able to analyse life phenomenon of livestock physiologically causing can give alternative for the phenomenon.  
**General Instructional Object** : After following lecture the Basic of Livestock Physiology, especially in first chapter, it is expected able to explain truly : Meaning of physiology, Scope ( manner) physiology process in livestock body, Functional relation between physiology processes, and the relation of physiological process with production process.  
**References**  
 1. Frandson, R.D. 1996. Anatomi dan Fsiologi Ternak, Gadjah Mada University Press, Yogyakarta  
 2. Strukie, P.D. 1976. Avian Physiologi , Springer Verlag  
 3. Schmid. K Nielsen, 1986. Animal Physiolygy, Adaptation and Environment, Cambrige University Press.  
 4. Heat, E. & S. Olusanya. 1985. Anatomy and Physiology of Tropical Livestock. Loungman, Singapore.

| NO. | SPECIFIC INSTRUCTIONAL OBJECT   | MAIN DISCUSSION         | SUB DISCUSSION  | TIME ESTIMATION | REFERENCES |
|-----|---|-------------------------|---|-----------------|------------|
| 1.  | After following lecture the Basic of Livestock Physiology, especially in first chapter, it is expected able to explain truly : Meaning of physiology, Scope (manner) physiology process in livestock body, Functional relation between physiology processes, and the relation of physiological process with production process. | Introduction            | Physiology concept<br>Physiology scope<br>Functional relation between physiology processes<br>The relation of physiology process and production process | 2x50 minutes    |            |
| 2.  | After following the lecture the student are expected able to explain truly : Meaning of digestion, Digestion supporter organ system, digestion mechanism manner, result of digestion process, mechanism of absorbs and digestion regulator hormone.   | Physiology Is digestion | Digestion supporter system<br>Mechanism and digestion product<br>Products digestion<br>Imbibition   | 4x50 minutes    |            |

|    |  |                       |   |              |  |
|----|--|-----------------------|---|--------------|--|
|    |  |                       | Regulation of Digestion   |              |  |
| 3. | After following the lecture the student will be able to explain truly : transportation mechanism, blood structure, function of blood, and blood stream factor  | Distribution particle | Cardiovascularic organ and blood system<br>Blood stream mechanism<br>Transportation mechanism<br>System respiratoria<br>Particle career<br>Factor distribution<br>Other function of blood | 2x50 minutes |  |
| 4. | After following the class the student will be able to explain about definition of metabolism, metabolism manner, metabolism of energy product, biosynthesis, factor metabolism, and example of phenomenon metabolic. | Metabolism            | Metabolism concept<br>Metabolism manner<br>Metabolism of energy product<br>Biosynthesis<br>Metabolism factor  | 6x50 minutes |  |

|    |  |                           |   |              |  |
|----|--|---------------------------|---|--------------|--|
| 5. | After following the lecture student are expected able to explain truly : difinition of endocrine, definition of hormone, endocrine manner and hormone manner, glands master, mechanism of hormone job (activity, hormone system, and example of process hormonal | Hormone physiology        | Endocrine and hormone<br>Hypophysis<br>Mechanism of hormone<br>job(activity<br>Process hormonal                         | 4x50 minutes |  |
| 6. | After following this class student are expected student can explain truly : excretion and homeostasis, excretion of sweat, metabolite, and urine, homeostasis principle, temperature homeostasis, CO <sub>2</sub> , body fluids osmosis,                         | Excretion and Homeostasis | excretion metabolism<br>homeostasis principle<br>use of excretion and homeostasis<br>excretion and homeostasis concepts | 4x50 minutes |  |

|    |  |          |  |              |  |
|----|--|----------|--|--------------|--|
|    | and glucose  |          |  |              |  |
| 7. | After this class student will be able to explain about growth definition, growth chart, the process of growing, growth optimize principle  | Growth   | Growth concepts<br>Growth parameter<br>Growth process shceme<br>Growth optimization principle.     | 4x50 minutes |  |
| 8. | After this class student will be able to explain the definition of reproduction, reproduction organ, sexual reproduction type, spermatogenesis, oogenesis, copulasi, fertilization, gravidity, partus, dan reproduction factors. | Neonatal | Embrional growth<br>Fertilization<br>Gametogenesis<br>reproduction system<br>reproduction concepts | 4x50 minutes |  |

## SET OF TEACHING SCHEDULE

TEACHING SUBJECT : Basic of Livestock Physiology  
 TEACHING SUBJECT CODE / SCS : PTF 201P 3(2-1)  
 MEETING TIME : 2 x 50 minutes  
 MEETING : 1

### A. OBJECT OF TEACHING SUBJECT

#### 1. General Instructional Object :

After following the lecture of Basic of Livestock Physiology, It is expected able to analyse life phenomenon of livestock physiologically causing can give alternative for the phenomenon.

#### 2. Spesific Instructional Object :

After following lecture the Basic of Livestock Physiology, especially in first chapter, it is expected able to explain truly : Meaning of physiology, Scope ( manner) physiology process in livestock body, Functional relation between physiology processes, and the relation of physiological process with production process.

**B. MAIN DISCUSSION** : Introduction

**C. SUB DISCUSSION** : Physiology concept  
 Physiology scope  
 Functional relation between physiology processes  
 The relation of physiology process and production process

### D. CLASS ACTIVITY :

| PHASE              | TEACHING ACTIVITY  | STUDENTS ACTIVITY   | TOOLS  |
|--------------------|--|---|--|
| Introduction       | Explains about main topic  | Listens<br>Write<br>Ask   |  |
| Topic presentation | 1. Discussion fundamental topics<br>2. Physiology concept<br>3. Physiology process scheme<br>4. Production process scheme<br>5. Explains the next discussion fundamental | Listens<br>Pay attentions<br>Write<br>Ask<br>Answer the questions | OHP<br>Transparancy<br>Hand out<br>White board |
| Conclutions        | Topic review<br>Ask<br>Explains main topic later   | Observe<br>Discussion   |  |

### E. EVALUATION :

Gives question to the student to know the understanding of the student about the topics.

## SET OF TEACHING SCHEDULE

### A. OBJECT OF TEACHING SUBJECT

TEACHING SUBJECT : Basic of Livestock Physiology  
 TEACHING SUBJECT CODE / SCS : PTF 201P 3(2-1)  
 MEETING TIME : 2 x 50 minutes  
 MEETING : 2 & 3

### A. OBJECT

1. General Instructional Object : After following the lecture of Basic of Livestock Physiology, It is expected able to analyse life phenomenon of livestock physiologically causing can give alternative for the phenomenon.
  2. Spesific Instructional Object : After following the lecture the student are expected able to explain truly : Meaning of digestion, Digestion supporter organ system, digestion mechanism manner, result of digestion process, mechanism of absorbsi and digestion regulator hormone.
- B. MAIN SUBJECT** : Physiology Is digestion  
**C. SUB SUBJECT** : Digestion supporter system  
 Mechanism and digestion product  
 Products digestion  
 Imbibition  
 Regulation of Digestion

### D. CLASS ACTIVITY:

| PHASE              | TEACHING ACTIVITY  | STUDENTS ACTIVITY                              | TOOLS   |
|--------------------|--|--|---|
| Introduction       | Explains the position of digestion process at life process   | Listens<br>Write<br>Ask                        |   |
| Topic presentation | Explains of :<br>Meaning of digestion<br>Digestion organ system<br>Digestion mechanism<br>Digestion product<br>Imbibition of regulation of Digestion | Listens<br>Write<br>Ask<br>Answer the quetions | OHP<br>Ttransparancy<br>Hand out<br>White board<br>Exercise paper |
| Conclutions        | Topic review<br>Give homework  | Answer the quetions<br>Note the quetions       |   |

### E. EVALUATION :

Gives question to the student to know the understanding of the student about the topics.

## SET OF TEACHING SCHEDULE

### A. OBJECT OF TEACHING SUBJECT

TEACHING SUBJECT : Basic of Livestock Physiology  
 TEACHING SUBJECT CODE / SCS : PTF 201P 3(2-1)  
 MEETING TIME : 2 x 50 minutes  
 MEETING : 4

### B. OBJECT

1. General Instructional Object : After following the lecture of Basic of Livestock Physiology, It is expected able to analyse life phenomenon of livestock physiologically causing can give alternative for the phenomenon.
2. Spesific Instructional Object : After following the lecture the student will be able to explain truly : transportation mechanism, blood structure, function of blood, and blood stream factor

### B. MAIN SUBJECT

### C. SUB SUBJECT

: Distribution particle  
 : Cardiovascularic organ and blood system  
 Blood stream mechanism  
 Transportation mechanism  
 System respiratoria  
 Particle career  
 Factor distribution  
 Other function of blood

### D. CLASS ACTIVITY:

| PHASE              | TEACHING ACTIVITY   | STUDENTS ACTIVITY                              | TOOLS   |
|--------------------|---|--|---|
| Introduction       | Explains the relation of digestion and distribution pertikel  | Listens<br>Write<br>Ask                        |   |
| Topic presentation | Explains about :<br>System kardiovaskuler<br>Blood system<br>Blood stream mechanism<br>Respiration system<br>Particle career<br>Distribution nutrient is Distribusi [by] oxygen | Listens<br>Write<br>Ask<br>Answer the quetions | OHP<br>Ttransparancy<br>Hand out<br>White board<br>Exercise paper |
| Conclutions        | Topic review<br>Give homework   | Answer the quetions<br>Note the quetions       |   |

### E. EVALUATION

: Gives question to the student to know the understanding of the student about the topics.

## SET OF TEACHING SCHEDULE

### A. OBJECT OF TEACHING SUBJECT

TEACHING SUBJECT : Basic of Livestock Physiology  
 TEACHING SUBJECT CODE / SCS : PTF 201P 3(2-1)  
 MEETING TIME : 2 x 50 minutes  
 MEETING : 5,6 &7

### C. OBJECT

1. General Instructional Object : After following the lecture of Basic of Livestock Physiology, It is expected able to analyse life phenomenon of livestock physiologically causing can give alternative for the phenomenon.
2. Specific Instructional Object : After following the class the student will be able to explain about definition of metabolism, metabolism manner, metabolism of energy product, biosynthesis, factor metabolism, and example of phenomenon metabolic.

### B. MAIN SUBJECT

### C. SUB SUBJECT

: Metabolism  
 : Metabolism concept  
 Metabolism manner  
 Metabolism of energy product  
 Biosynthesis  
 Metabolism factor

### D. CLASS ACTIVITY:

| PHASE              | TEACHING ACTIVITY   | STUDENTS ACTIVITY                               | TOOLS  |
|--------------------|---|---|--|
| Introduction       | Explains relationship : digestion - distribution - metabolism   | Listens<br>Write<br>Ask                         |  |
| Topic presentation | Explains about :<br>definition of Metabolism<br>Metabolism manner<br>Energy product<br>Biosynthesis<br>Factor metabolism of Metabolism phenomenon | Listens<br>Write<br>Ask<br>Answer the questions | OHP<br>Transparency<br>Hand out<br>White board<br>Exercise paper |
| Conclusions        | Topic review<br>Give homework   | Answer the questions<br>Note the questions      |  |

### E. EVALUATION

: Gives question to the student to know the understanding of the student about the topics.

## SET OF TEACHING SCHEDULE

### A. OBJECT OF TEACHING SUBJECT

TEACHING SUBJECT : Basic of Livestock Physiology  
 TEACHING SUBJECT CODE / SCS : PTF 201P 3(2-1)  
 MEETING TIME : 2 x 50 minutes  
 MEETING : 8 & 9

### D. OBJECT

1. General Instructional Object : After following the lecture of Basic of Livestock Physiology, It is expected able to analyse life phenomenon of livestock physiologically causing can give alternative for the phenomenon.
2. Specific Instructional Object : After following the lecture student are expected able to explain truly : definition of endocrine, definition of hormone, endocrine manner and hormone manner, glands master, mechanism of hormone job (activity, hormone system, and example of process hormonal

B. MAIN SUBJECT :

C. SUB SUBJECT : Endocrine and hormone

Hypophysis

Mechanism of hormone job(activity

Process hormonal

### D. CLASS ACTIVITY:

| PHASE              | TEACHING ACTIVITY  | STUDENTS ACTIVITY                               | TOOLS  |
|--------------------|--|---|--|
| Introduction       | Explains about Hormone interrelationship, metabolism, and other physiological process  | Listens<br>Write<br>Ask                         |  |
| Topic presentation | Explains :<br>Endocrine concept<br>Hormone concept<br>Endocrine manner<br>Hormone manner<br>Hypophysis<br>Mechanism of hormone job(activity<br>Contoh process hormonal | Listens<br>Write<br>Ask<br>Answer the questions | OHP<br>Transparency<br>Hand out<br>White board<br>Exercise paper |
| Conclutions        | Topic review<br>Give homework  | Answer the questions<br>Note the questions      |  |

### E. EVALUATION :

Gives question to the student to know the understanding of the student about the topics.

## SET OF TEACHING SCHEDULE

### A. OBJECT OF TEACHING SUBJECT

TEACHING SUBJECT : Basic of Livestock Physiology  
 TEACHING SUBJECT CODE / SCS : PTF 201P 3(2-1)  
 MEETING TIME : 2 x 50 minutes  
 MEETING : 10 & 11

### E. OBJECT

1. General Instructional Object : After following the lecture of Basic of Livestock Physiology, It is expected able to analyse life phenomenon of livestock physiologically causing can give alternative for the phenomenon.
2. Specific Instructional Object : After following this class student are expected student can explain truly : excretion and homeostasis, excretion of sweat, metabolite, and urine, homeostasis principle, temperature homeostasis, CO<sub>2</sub>, body fluids osmosis, and glucose

B. MAIN SUBJECT : Excretion and Homeostasis

C. SUB SUBJECT : excretion metabolism  
 homeostasis principle  
 use of excretion and homeostasis  
 excretion and homeostasis concepts

### D. CLASS ACTIVITY:

| PHASE              | TEACHING ACTIVITY  | STUDENTS ACTIVITY                              | TOOLS   |
|--------------------|--|--|---|
| Introduction       | Explains about proses of Excretion and Homeostasis   | Listens<br>Write<br>Ask                        |   |
| Topic presentation | Explains :<br>Excretion concept and homeostasis<br>The relation of excretion and homeostasis excretion of sweat, metabolite, and urine, homeostasis principle, temperature homeostasis, CO <sub>2</sub> , body fluids osmosis, and glucose | Listens<br>Write<br>Ask<br>Answer the quetions | OHP<br>Ttransparancy<br>Hand out<br>White board<br>Exercise paper |
| Conclutions        | Topic review<br>Give homework  | Answer the quetions<br>Note the quetions       |   |

### E. EVALUATION

Gives question to the student to know the understanding of the student about the topics.

## SET OF TEACHING SCHEDULE

### A. OBJECT OF TEACHING SUBJECT

TEACHING SUBJECT : Basic of Livestock Physiology  
 TEACHING SUBJECT CODE / SCS : PTF 201P 3(2-1)  
 MEETING TIME : 2 x 50 minutes  
 MEETING : 12 & 13

### F. OBJECT

1. General Instructional Object : After following the lecture of Basic of Livestock Physiology, It is expected able to analyse life phenomenon of livestock physiologically causing can give alternative for the phenomenon.
2. Spesific Instructional Object : After this class student will be able to explain about growth definition, growth chart, the process of growing, growth optimization principle.

### B. MAIN SUBJECT

: Growth

### C. SUB SUBJECT

: Growth concepts  
 Growth parameter  
 Growth process shceme  
 Growth optimization principle.

### D. CLASS ACTIVITY:

| PHASE              | TEACHING ACTIVITY   | STUDENTS ACTIVITY                              | TOOLS   |
|--------------------|---|--|---|
| Introduction       | Explains about relation of growing and metabolisme  | Listens<br>Write<br>Ask                        |   |
| Topic presentation | Explains :<br>growth definition<br>growth chart<br>Growth parameter<br>Growth process shceme<br>the process of growing<br>growth optimization principle<br>Growth factors | Listens<br>Write<br>Ask<br>Answer the quetions | OHP<br>Ttransparancy<br>Hand out<br>White board<br>Exercise paper |
| Conclutions        | Topic review<br>Give homework   | Answer the quetions<br>Note the quetions       |   |

### E. EVALUATION

: Gives question to the student to know the understanding of the student about the topics.

## SET OF TEACHING SCHEDULE

### A. OBJECT OF TEACHING SUBJECT

TEACHING SUBJECT : Basic of Livestock Physiology  
 TEACHING SUBJECT CODE / SCS : PTF 201P 3(2-1)  
 MEETING TIME : 2 x 50 minutes  
 MEETING : 14 & 15

### G. OBJECT

1. General Instructional Object : After following the lecture of Basic of Livestock Physiology, It is expected able to analyse life phenomenon of livestock physiologically causing can give alternative for the phenomenon.
2. Spesific Instructional Object : After this class student will be able to explain the definition of reproduction, reproduction organ, sexual reproduction type, spermatogenesis, oogenesis, copulasi, fertilization, gravidity, partus, dan reproduction factors.

### B. MAIN SUBJECT

: Reproduction

### C. SUB SUBJECT

: Neonatal  
 Embrional growth  
 Fertilization  
 Gametogenesis  
 reproduction system  
 reproduction concepts

### D. CLASS ACTIVITY:

| PHASE              | TEACHING ACTIVITY   | STUDENTS ACTIVITY                              | TOOLS   |
|--------------------|---|--|---|
| Introduction       | Explains about relation of metabolisme, reproduction and growth   | Listens<br>Write<br>Ask                        |   |
| Topic presentation | Explains :<br>Definition of reproduction<br>Reproduction system<br>Gametogenesis (Spermatogenesis & oogenesis)<br>Fertilization<br>Gravidity<br>Partus<br>Neonatal<br>Reproduction factors. | Listens<br>Write<br>Ask<br>Answer the quetions | OHP<br>Ttransparancy<br>Hand out<br>White board<br>Exercise paper |
| Conclutions        | Topic review<br>Give homework   | Answer the quetions<br>Note the quetions       |   |

### E. EVALUATION

: Gives question to the student to know the understanding of the student about the topics.

## SET OF TEACHING SCHEDULE

### A. OBJECT OF TEACHING SUBJECT

TEACHING SUBJECT : Basic of Livestock Physiology  
 TEACHING SUBJECT CODE / SCS : PTF 201P 3(2-1)  
 MEETING TIME : 2 x 50 minutes  
 MEETING : 2 & 3

### A. OBJECT

1. General Instructional Object : After following the lecture of Basic of Livestock Physiology, It is expected able to analyse life phenomenon of livestock physiologically causing can give alternative for the phenomenon.
2. Specific Instructional Object : After following the lecture the student are expected able to explain truly : Meaning of digestion, Digestion supporter organ system, digestion mechanism manner, result of digestion process, mechanism of absorpsi and digestion regulator hormone.

### B. MAIN SUBJECT

: Physiology Is digestion

### C. SUB SUBJECT

: Digestion supporter system  
 Mechanism and digestion product  
 Products digestion  
 Imbibition  
 Regulation of Digestion

### D. CLASS ACTIVITY:

| PHASE              | TEACHING ACTIVITY  | STUDENTS ACTIVITY                               | TOOLS   |
|--------------------|--|---|---|
| Introduction       | Explains the position of digestion process at life process   | Listens<br>Write<br>Ask                         |   |
| Topic presentation | Explains of :<br>Meaning of digestion<br>Digestion organ system<br>Digestion mechanism<br>Digestion product<br>Imbibition of regulation of Digestion | Listens<br>Write<br>Ask<br>Answer the questions | OHP<br>Ttransparancy<br>Hand out<br>White board<br>Exercise paper |
| Conclutions        | Topic review<br>Give homework  | Answer the questions<br>Note the questions      |   |

### E. EVALUATION

: Gives question to the student to know the understanding of the student about the topics.

## SET OF TEACHING SCHEDULE

### A. OBJECT OF TEACHING SUBJECT

TEACHING SUBJECT : Basic of Livestock Physiology  
 TEACHING SUBJECT CODE / SCS : PTF 201P 3(2-1)  
 MEETING TIME : 2 x 50 minutes  
 MEETING : 4

### B. OBJECT

1. General Instructional Object : After following the lecture of Basic of Livestock Physiology, It is expected able to analyse life phenomenon of livestock physiologically causing can give alternative for the phenomenon.

2. Spesific Instructional Object : After following the lecture the student will be able to explain truly : transportation mechanism, blood structure, function of blood, and blood stream factor

B. MAIN SUBJECT : Distribution particle

C. SUB SUBJECT : Cardiovascularic organ and blood system  
 Blood stream mechanism  
 Transportation mechanism  
 System respiratoria  
 Particle career  
 Factor distribution  
 Other function of blood

### D. CLASS ACTIVITY:

| PHASE              | TEACHING ACTIVITY   | STUDENTS ACTIVITY                              | TOOLS   |
|--------------------|---|--|---|
| Introduction       | Explains the relation of digestion and distribution pertikel  | Listens<br>Write<br>Ask                        |   |
| Topic presentation | Explains about :<br>System kardiovaskuler<br>Blood system<br>Blood stream mechanism<br>Respiration system<br>Particle career<br>Distribution nutrient is Distribusi [by] oxygen | Listens<br>Write<br>Ask<br>Answer the quetions | OHP<br>Ttransparancy<br>Hand out<br>White board<br>Exercise paper |
| Conclutions        | Topic review<br>Give homework   | Answer the quetions<br>Note the quetions       |   |

### E. EVALUATION :

Gives question to the student to know the understanding of the student about the topics.

## SET OF TEACHING SCHEDULE

### A. OBJECT OF TEACHING SUBJECT

TEACHING SUBJECT : Basic of Livestock Physiology  
 TEACHING SUBJECT CODE / SCS : PTF 201P 3(2-1)  
 MEETING TIME : 2 x 50 minutes  
 MEETING : 5,6 &7

### C. OBJECT

1. General Instructional Object : After following the lecture of Basic of Livestock Physiology, It is expected able to analyse life phenomenon of livestock physiologically causing can give alternative for the phenomenon.
2. Spesific Instructional Object : After following the class the student will be able to explain about definition of metabolism, metabolism manner, metabolism of energy product, biosynthesis, factor metabolism, and example of phenomenon metabolic.

### B. MAIN SUBJECT

: Metabolism

### C. SUB SUBJECT

: Metabolism concept  
 Metabolism manner  
 Metabolism of energy product  
 Biosynthesis  
 Metabolism factor

### D. CLASS ACTIVITY:

| PHASE              | TEACHING ACTIVITY   | STUDENTS ACTIVITY                              | TOOLS   |
|--------------------|---|--|---|
| Introduction       | Explains relationship : digestion - distribution - metabolism   | Listens<br>Write<br>Ask                        |   |
| Topic presentation | Explains about :<br>definition of Metabolism<br>Metabolism manner<br>Energy product<br>Biosynthesis<br>Factor metabolism of Metabolism phenomenon | Listens<br>Write<br>Ask<br>Answer the quetions | OHP<br>Ttransparency<br>Hand out<br>White board<br>Exercise paper |
| Conclutions        | Topic review<br>Give homework   | Answer the quetions<br>Note the quetions       |   |

### E. EVALUATION

: Gives question to the student to know the understanding of the student about the topics.

## SET OF TEACHING SCHEDULE

### A. OBJECT OF TEACHING SUBJECT

TEACHING SUBJECT : Basic of Livestock Physiology  
 TEACHING SUBJECT CODE / SCS : PTF 201P 3(2-1)  
 MEETING TIME : 2 x 50 minutes  
 MEETING : 8 & 9

### D. OBJECT

1. General Instructional Object : After following the lecture of Basic of Livestock Physiology, It is expected able to analyse life phenomenon of livestock physiologically causing can give alternative for the phenomenon.
  2. Spesific Instructional Object : After following the lecture student are expected abel to explain truly : difinition of endocrine, definition of hormone, endocrine manner and hormone manner, glands master, mechanism of hormone job (activity, hormone system, and example of process hormonal
- B. MAIN SUBJECT : Hormone physiology  
 C. SUB SUBJECT : Endocrine and hormone  
 Hypophysis  
 Mechanism of hormone job(activity  
 Process hormonal

### D. CLASS ACTIVITY:

| PHASE              | TEACHING ACTIVITY  | STUDENTS ACTIVITY                              | TOOLS   |
|--------------------|--|--|---|
| Introduction       | Explains about Hormone interrelationship, metabolism, and other physiological process  | Listens<br>Write<br>Ask                        |   |
| Topic presentation | Explains :<br>Endocrine concept<br>Hormone concept<br>Endocrine manner<br>Hormone manner<br>Hypophysis<br>Mechanism of hormone job(activity<br>Contoh process hormonal | Listens<br>Write<br>Ask<br>Answer the quetions | OHP<br>Ttransparancy<br>Hand out<br>White board<br>Exercise paper |
| Conclutions        | Topic review<br>Give homework  | Answer the quetions<br>Note the quetions       |   |

### E. EVALUATION

Gives question to the student to know the understanding of the student about the topics.

## SET OF TEACHING SCHEDULE

### A. OBJECT OF TEACHING SUBJECT

TEACHING SUBJECT : Basic of Livestock Physiology  
 TEACHING SUBJECT CODE / SCS : PTF 201P 3(2-1)  
 MEETING TIME : 2 x 50 minutes  
 MEETING : 10 & 11

### E. OBJECT

1. General Instructional Object : After following the lecture of Basic of Livestock Physiology, It is expected able to analyse life phenomenon of livestock physiologically causing can give alternative for the phenomenon.
  2. Specific Instructional Object : After following this class student are expected student can explain truly : excretion and homeostasis, excretion of sweat, metabolite, and urine, homeostasis principle, temperature homeostasis, CO<sub>2</sub>, body fluids osmosis, and glucose
- B. MAIN SUBJECT : Excretion and Homeostasis  
 C. SUB SUBJECT : excretion metabolism  
 homeostasis principle  
 use of excretion and homeostasis  
 excretion and homeostasis concepts

### D. CLASS ACTIVITY:

| PHASE              | TEACHING ACTIVITY  | STUDENTS ACTIVITY                               | TOOLS   |
|--------------------|--|---|---|
| Introduction       | Explains about proses of Excretion and Homeostasis   | Listens<br>Write<br>Ask                         |   |
| Topic presentation | Explains :<br>Excretion concept and homeostasis<br>The relation of excretion and homeostasis excretion of sweat, metabolite, and urine, homeostasis principle, temperature homeostasis, CO <sub>2</sub> , body fluids osmosis, and glucose | Listens<br>Write<br>Ask<br>Answer the questions | OHP<br>Ttransparency<br>Hand out<br>White board<br>Exercise paper |
| Conclutions        | Topic review<br>Give homework  | Answer the questions<br>Note the questions      |   |

### E. EVALUATION

: Gives question to the student to know the understanding of the student about the topics.

## SET OF TEACHING SCHEDULE

### A. OBJECT OF TEACHING SUBJECT

TEACHING SUBJECT : Basic of Livestock Physiology  
 TEACHING SUBJECT CODE / SCS : PTF 201P 3(2-1)  
 MEETING TIME : 2 x 50 minutes  
 MEETING : 12 & 13

### F. OBJECT

1. General Instructional Object : After following the lecture of Basic of Livestock Physiology, It is expected able to analyse life phenomenon of livestock physiologically causing can give alternative for the phenomenon.
2. Specific Instructional Object : After this class student will be able to explain about growth definition, growth chart, the process of growing, growth optimization principle.

### B. MAIN SUBJECT

: Growth

### C. SUB SUBJECT

: Growth concepts  
 Growth parameter  
 Growth process scheme  
 Growth optimization principle.

### D. CLASS ACTIVITY:

| PHASE              | TEACHING ACTIVITY   | STUDENTS ACTIVITY                               | TOOLS  |
|--------------------|---|---|--|
| Introduction       | Explains about relation of growing and metabolisme  | Listens<br>Write<br>Ask                         |  |
| Topic presentation | Explains :<br>growth definition<br>growth chart<br>Growth parameter<br>Growth process scheme<br>the process of growing<br>growth optimization principle<br>Growth factors | Listens<br>Write<br>Ask<br>Answer the questions | OHP<br>Transparency<br>Hand out<br>White board<br>Exercise paper |
| Conclusions        | Topic review<br>Give homework   | Answer the questions<br>Note the questions      |  |

### E. EVALUATION

: Gives question to the student to know the understanding of the student about the topics.

## SET OF TEACHING SCHEDULE

### A. OBJECT OF TEACHING SUBJECT

TEACHING SUBJECT : Basic of Livestock Physiology  
 TEACHING SUBJECT CODE / SCS : PTF 201P 3(2-1)  
 MEETING TIME : 2 x 50 minutes  
 MEETING : 14 & 15

### G. OBJECT

1. General Instructional Object : After following the lecture of Basic of Livestock Physiology, It is expected able to analyse life phenomenon of livestock physiologically causing can give alternative for the phenomenon.
2. Specific Instructional Object : After this class student will be able to explain the definition of reproduction, reproduction organ, sexual reproduction type, spermatogenesis, oogenesis, copulasi, fertilization, gravidity, partus, dan reproduction factors.

B. MAIN SUBJECT : Reproduction

C. SUB SUBJECT : Neonatal  
 Embrional growth  
 Fertilization  
 Gametogenesis  
 reproduction system  
 reproduction concepts

### D. CLASS ACTIVITY:

| PHASE              | TEACHING ACTIVITY   | STUDENTS ACTIVITY                              | TOOLS   |
|--------------------|---|--|---|
| Introduction       | Explains about relation of metabolisme, reproduction and growth   | Listens<br>Write<br>Ask                        |   |
| Topic presentation | Explains :<br>Definition of reproduction<br>Reproduction system<br>Gametogenesis (Spermatogenesis & oogenesis)<br>Fertilization<br>Gravidity<br>Partus<br>Neonatal<br>Reproduction factors. | Listens<br>Write<br>Ask<br>Answer the quetions | OHP<br>Ttransparancy<br>Hand out<br>White board<br>Exercise paper |
| Conclutions        | Topic review<br>Give homework   | Answer the quetions<br>Note the quetions       |   |

### E. EVALUATION :

Gives question to the student to know the understanding of the student about the topics.

## SET OF EVENT OF TEACHING ( SAP)

Eye Kuliah : Science Area Of Code Livestock Matakuliah : PTP 228  
/ 2(2-0) Meeting Time : 1 x 120 minutes Pertemuan to : 1

### A. Purpose Of Instruksional

- a. Public : After following this lecturing expected student can explain again understanding of climate in general and tropical climate especially and its(the influence to livestock and can do elimination effort of its(the negativity influence.
- b. Special : After following this lecturing expected student has knowledge and explains again truly interrelationship between climates and livestock in an ecosystem

B. Discussion Fundamental : Antecedent

C. Discussion Fundamental Sub: - D. School activity

Activity Phase of Students' activity Lecturer Media and equipment of teaching  
Pendahuluan Explains :

Discussion fundamental manner

Pays Attention To Log

presentation of Matter Explains :

1. Understanding of ecosystem base
2. Interrelationship of ecosystem component Bertanya Listens

Log

Enquires In reply to question OHP Transparency

Blackboard

Hand out

Cover?conclusion Rewiew matter

Enquires

in reply to question

## SET OF EVENT OF TEACHING

Eye Kuliah : Science Area Of Code Livestock Matakuliah : PTP 228  
/ 2(2-0) Meeting Time : 1 x 120 minutes Pertemuan to : 2

### A. Purpose Of Instruksional

- a. Public : After following this lecturing expected student can explain again understanding of climate in general and tropical climate especially and its(the influence to livestock and can do elimination effort of its(the negativity influence.

b. Special : After following this lecturing expected student has understanding and explains again truly environmental understanding and mortal in ecosystem

B. Discussion Fundamental : Bioclimate

C. Discussion Fundamental Sub: 1. Area Of Abiotic and biotic

## TEACHING PROGRAM OUTLINE

**Title Subject** : Basic of Livestock Physiology Practicum  
**Number Code /CSS** : PTF 201P 3(2-1)

**Brief Description** : Basic of Livestock Physiology Practicum aim to give skilled practicum of measuring physiological parameter at student, include; covers : digestion process parameter, parameter hematologist, growth parameter

**General Instructional Object** : After following Basic of Livestock Physiology Practicum student can measure a physiological parameter at livestock.

**Book material :**

1. Frandson, RD. 1986. Anatomy and Physiology of farm Animals. Lea & Febiger, Philadelphia.
2. Heath, E. and S. its(the Olusa. 1981. Anatomy and Physiology of Tropical Livestock. Longman Book, Singapore.
3. Tharp[, GD. 1972. Experiments indium Physiology. 2nd Ed. Burgess Pub. Cobalt. Minneapolis.
4. Keele, CA. daan Neil, e. 1971. Samson Wrigt'S Applied Physiology. 12th Ed. Oxford University Press.

| No. | Specific Instructional Object  | Main Discussion               | Sub Discussion            | Time Estimation | Books Material |
|-----|--|-------------------------------|---------------------------|-----------------|----------------|
| 1.  | After following this practicum student is hoped can do truly :<br>Digestion stripper, digestion step examine   | Digestion enzymatic           |                           | 1x 180 minutes  | 1, 2, 3, 4     |
| 2.  | After following this practicum student is hoped can do measurement truly :<br>Number of erythrocytes<br>Hemoglobin rate<br>blood PH<br>Glucose blood | Status hematologist           |                           | 2x 180 minutes  | 1, 3, 4        |
| 3.  | After following this practicum student is hoped can do measurement truly :<br>Body weight<br>Growth rate   | Feed consumption              | Feed Conversion<br>Growth | 4 x 180 minutes | 1, 3, 4        |
| 4.  | After following this practicum student is hoped can do truly :<br>Diffuse<br>Osmosis   | Cell permeability<br>Tonicity | Physiology base principle | 2 x 100 minutes | 1, 3, 4        |

COURSE : Microbiology

COURSE CODE : PTF 203 P

CREDIT : 3 (2-1)

## SET OF TEACHING SCHEDULE

- Title of Subject** : Microbiology
- Number Code /CSS** : PTF 203P/ 3 CSS
- Brief Description** : The definition of protysta, classification and the function, growth model, and multiplication, nutrient need and metabolism, the effect nutrient and environment to growing, isolation, microbe selection and the role of microbe for preservation and increasing the quality of legume, the role of microbe to soil/land, vegetation, and food.
- General Instructional Object** : After following lecture, the student will know and understand about microbe in general in all aspect. So the student will know about classification, the role microbe in general, growth pattern and dissemination, nutrient, metabolism, effect of nutrient and environment to grow, isolation, selection, the role in improving of the quality of feedstuff, soil and food.
- References** :
1. Sutejo, M.M; Kartasapoetra, A.G; dan Sastroatmodjo. 1991. Mikrobiologi Tanah. Rineka Cipta, Jakarta
  2. Rosenberg. E & I. R.Cohen. 1983. Microbial Biology. CBS College. America
  3. Rao. N. S 1982 Advances In Agricultural Microbiology. Studies In The agricultural and Food Sciences Butterwoth Scientific.Toronto.
  4. Dhingra & Sinclair, 1985. Basic Plant Pathology Methods. CRC Press, Florida.
  5. Arora, S.P. 1989. Pencernakan Mikroba pada Ruminansia. Gajah Mada University Press, Yogyakarta. (Penterjemah: R. Murwani dan B Srigandono).
  6. Fardiaz, S. 1988. Fisiologi Fermentasi. PAU-IPB Bogor
  7. McDonald, P. 1981. The Biochemistry of Silage. John Wiley and Sons, Ltd, New York.
  8. deMan, J.M. 1997. Kimia Makanan. ITP, Bandung (diterjemahkan oleh K. Padmawinata
  9. Fardiaz, S. 1989. Mikrobiologi Pangan. PAU Pangan dan Gizi. IPB, Bogor.
  10. Fardiaz, S. 1989. Analisis Mikrobiologi Pangan. PAU Pangan dan Gizi. IPB, Bogor.
  11. Frazier, W.C. dan D.C. Westhoof. 1988. Food Microbioogy. McGraw-Hill Book Co., Singapore
  12. Nurwantoro dan A.S. Djarijah. 1997. Mikrobiologi Pangan Hewani-Nabati. Kanisius, Yogyakarta

| NO. | SPECIFIC INSTRUCTIONAL OBJECT  | MAIN DISCUSSION | SUB DISCUSSION                        | TIME ESTIMATION | REFERENCES |
|-----|--|-----------------|---------------------------------------|-----------------|------------|
| 1.  | By the course and examples about the topics, the student can explain | Introduction    | Classification<br>The role of microbe | 4x50 minutes    | 1          |

|    |   |                              |  |              |              |
|----|---|------------------------------|--|--------------|--------------|
|    | classification and the role microbe in general, minimum 80% correctness.  |                              |  |              |              |
| 2. | By the course and examples about the topics, the student can explain growth pattern and dissemination, nutrient, metabolism, effect of nutrient and environment to grow, minimum 80% correctness. | The grow of microbe          | Grow and dissemination<br>Nutrient and the effect to grow<br>The effect of environment to grow   | 4x50 minutes | 2,3          |
| 3. | By the course and examples about the topics, the student can explain nutrient, metabolism in microbe, minimum 80% correctness   | Nutrient metabolism          | Nutrient of microbe<br>Transfer Nutrient<br>Metabolism process   | 2x50 minutes | 2,3          |
| 4. | By the course and examples about the topics, the student can cultivate microbe, , minimum 80% correctness   | Microbe cultivation          | Isolation and selection<br>Culture cultivation   | 4x50 minutes | 2,3,4        |
| 5. | By the course and examples about the topics, the student can microbe, and animal ecosystem, minimum 80% correctness.  | Microbe and animal ecosystem | Symbioses between microbe and animal livestock<br>The role of microbe in processing feedstuff<br>The role of microbe in preserving feedstuff | 6x50 minutes | 5,6,7        |
| 6. | By the course and examples about the topics, the student will be able to explain about the effect of intrinsic factor to grow of microbe in food, minimum 80% correctness                         | Ecology of food Microbe      | Intrinsic factor   | 2x50 minutes | 8,9,10,11,12 |
| 7. | By the course and examples about the topics, the student will be able to explain about extrinsic factor, minimum 80%  | Ecology of food Microbe      | Extrinsic  |              |              |

|    |   |                          |                                      |              |              |
|----|---|--------------------------|--------------------------------------|--------------|--------------|
|    | correctness   |                          |                                      |              |              |
| 8. | By the course and examples about the topics, the student will be able to explain about implicit and processing factor, minimum 80% correctness. | The grow of food Microbe | Implicit factor<br>Processing factor | 2x50 minutes | 8,9,10,11,12 |
| 9. | By the course and examples about the topics, the student will be able to explain about the growth of microbe in foods, minimum 80% correctness. | The grow of food Microbe | Curve of growth<br>Growth phase      | 2x50 minutes | 8,9,10,11,12 |

## SET OF THEACHING SCHEDULE

TEACHING SUBJECT : MICROBIOLOGY  
TEACHING SUBJECT CODE/SCS : PTF 203P/ 3SCS (2-1)  
MEETING TIME : 4 x 50 minutes  
MEETING : 1 & 2

### A. OBJECT OF TEACHING SUBJECT

#### 1. General Instructional Object :

After following lecture, the student will know and understand about microbe in general in all aspect. So the student will know about classification, the role microbe in general, growth pattern and dissemination, nutrient, metabolism, effect of nutrient and environment to grow, isolation, selection, the role in improving of the quality of feedstuff, soil and food.

#### 2. Specific Instructional Object :

By the course and examples about the topics, the student can explain classification and the role microbe in general, minimum 80% correctness.

**B. MAIN DISCUSSION** : Introduction

**C. SUB DISCUSSION** : 1. Classification  
2. The role of microbe

### D. CLASS ACTIVITY :

| PHASE              | TEACHING ACTIVITY  | STUDENT ACTIVITY                                | TOOLS  |
|--------------------|--|---|--|
| Introduction       | Explain about main topics  | Listens<br>Write<br>Ask                         |  |
| Topic Presentaiton | Explain about classification of microbe, and the role of microbe | Listens<br>Write<br>Ask<br>Answer the questions | OHP<br>Transpaiancy<br>Hand out<br>White board |
| Conclutions        | Topics review<br>Ask<br>Explain main topics later                | Answer the Questions<br>Note the qestions       |  |

### E. EVALUASI

Gives homework to the students to help remain the topics

### F. REFERENSI

Sutejo, M.M; Kartasapoetra, A.G; dan Sastroatmodjo. 1991. Mikrobiologi Tanah. Rineka Cipta, Jakarta.

## SET OF THEACHING SCHEDULE

TEACHING SUBJECT : MICROBIOLOGY  
TEACHING SUBJECT CODE/SCS : PTF 203P/ 3 SCS (2-1)  
MEETING TIME : 4x 50 minutes  
MEETING : 3 & 4

### A. OBJECT OF TEACHING SUBJECT

#### 1. General Instructional Object :

After following lecture, the student will know and understand about microbe in general in all aspect. So the student will know about classification, the role microbe in general, growth pattern and dissemination, nutrient, metabolism, effect of nutrient and environment to grow, isolation, selection, the role in improving of the quality of feedstuff, soil and food.

#### 2. Specific Instructional Object :

By the course and examples about the topics, the student can explain growth pattern and dissemination, nutrient, metabolism, effect of nutrient and environment to grow, minimum 80% correctness.

**B. MAIN DISCUSSION** : The grow of microbe

**C. SUB DISCUSSION** : 1. Grow and dissemination  
2. Nutrient and the effect to grow  
3. The effect of environment to grow

### D. CLASS ACTIVITY :

| PHASE              | TEACHING ACTIVITY  | STUDENT ACTIVITY                                | TOOLS  |
|--------------------|--|---|--|
| Introduction       | Explain about main topics  | Listens<br>Write<br>Ask                         |  |
| Topic Presentaiton | Explain about grow and dissemination, nutrient and the effect to grow, and the effect of environment to grow | Listens<br>Write<br>Ask<br>Answer the questions | OHP<br>Transparancy<br>Hand out<br>White board |
| Conclutions        | Topics review<br>Ask<br>Explain main topics later  | Answer the Questions<br>Note the questions      |  |

### E. EVALUASI

Gives homework to the students to help remain the topics

### F. REFERENSI

- Rao, 1982. Advanes in Agricultural Microbiology. Butterworth & Co Ltd, New Delhi.
- Rosenberg, E & Cohen, I. R. 1983. Microbial Biology. CBS College, USA

## SET OF THEACHING SCHEDULE

TEACHING SUBJECT : MICROBIOLOGY  
TEACHING SUBJECT CODE/SCS : PTF 203P/ 3 SCS (2-1)  
MEETING TIME : 2 x 50 minutes  
MEETING : 6

### A. OBJECT OF TEACHING SUBJECT

#### 1. General Instructional Object :

After following lecture, the student will know and understand about microbe in general in all aspect. So the student will know about classification, the role microbe in general, growth pattern and dissemination, nutrient, metabolism, effect of nutrient and environment to grow, isolation, selection, the role in improving of the quality of feedstuff, soil and food.

#### 2. Specific Instructional Object :

By the course and examples about the topics, the student can explain nutrient, metabolism in microbe, , minimum 80% correctness.

**B. MAIN DISCUSSION** : Nutrient metabolism

**C. SUB DISCUSSION** : 1. Nutrient of microbe  
2. Transfer Nutrient  
3. Metabolism process

### D. CLASS ACTIVITY :

| PHASE              | TEACHING ACTIVITY  | STUDENT ACTIVITY                                | TOOLS  |
|--------------------|--|---|--|
| Introduction       | Explain about main topics  | Listens<br>Write<br>Ask                         |  |
| Topic Presentaiton | Explain about nutrient of microbe, transfer nutrient, metabolism process | Listens<br>Write<br>Ask<br>Answer the questions | OHP<br>Transparancy<br>Hand out<br>White board |
| Conclutions        | Topics review<br>Ask<br>Explain main topics later                        | Answer the Questions<br>Note the questions      |  |

### E. EVALUASI

Gives homework to the students to help remain the topics

### F. REFERENSI

- Rao, 1982. Advanes in Agricultural Microbiology. Butterworth & Co Ltd, New Delhi.
- Rosenberg, E & Cohen, I. R. 1983. Microbial Biology. CBS College, USA

## SET OF THEACHING SCHEDULE

TEACHING SUBJECT : MICROBIOLOGY  
TEACHING SUBJECT CODE/SCS : PTF 203P/ 3 SCS (2-1)  
MEETING TIME : 4 x 50 minutes  
MEETING : 7 & 8

### A. OBJECT OF TEACHING SUBJECT

#### 1. General Instructional Object :

After following lecture, the student will know and understand about microbe in general in all aspect. So the student will know about classification, the role microbe in general, growth pattern and dissemination, nutrient, metabolism, effect of nutrient and environment to grow, isolation, selection, the role in improving of the quality of feedstuff, soil and food.

#### 2. Specific Instructional Object :

By the course and examples about the topics, the student can cultivate microbe, , minimum 80% correctness.

**B. MAIN DISCUSSION** : Microbe cultivation

**C. SUB DISCUSSION** : 1. Isolation and selection  
2. Culture cultivation

### D. CLASS ACTIVITY :

| PHASE               | TEACHING ACTIVITY  | STUDENT ACTIVITY                                | TOOLS  |
|---------------------|--|---|--|
| Introduction        | Explain about main topics                                  | Listens<br>Write<br>Ask                         |  |
| Topic Presentaition | Explain about isolation and selection, culture cultivation | Listens<br>Write<br>Ask<br>Answer the questions | OHP<br>Transparancy<br>Hand out<br>White board |
| Conclutions         | Topics review<br>Ask<br>Explain main topics later          | Answer the Questions<br>Note the questions      |  |

### E. EVALUASI

Gives Mid test

### F. REFERENSI

- Rao, 1982. Advanes in Agricultural Microbiology. Butterworth & Co Ltd, New Delhi.
- Rosenberg, E & Cohen, I. R. 1983. Microbial Biology. CBS College, USA
- Dhingra & Sinclair, 1985. Basic Plant Pathology Methods. CRC Press, Florida.

## SET OF THEACHING SCHEDULE

TEACHING SUBJECT : MICROBIOLOGY  
TEACHING SUBJECT CODE/SCS : PTF 203P/ 3 SCS (2-1)  
MEETING TIME : 6 x 50 minutes  
MEETING : 9, 10 & 11

### A. OBJECT OF TEACHING SUBJECT

#### 1. General Instructional Object :

After following lecture, the student will know and understand about microbe in general in all aspect. So the student will know about classification, the role microbe in general, growth pattern and dissemination, nutrient, metabolism, effect of nutrient and environment to grow, isolation, selection, the role in improving of the quality of feedstuff, soil and food.

#### 2. Specific Instructional Object :

By the course and examples about the topics, the student can microbe, and animal ecosystem, minimum 80% correctness.

**B. MAIN DISCUSSION** : Microbe and animal ecosystem

**C. SUB DISCUSSION** : 1. Symbiose between microbe and animal livestock  
2. The role of microbe in processing feedstuff  
3. The role of microbe in preserving feedstuff

### D. CLASS ACTIVITY :

| PHASE               | TEACHING ACTIVITY   | STUDENT ACTIVITY                                | TOOLS  |
|---------------------|---|---|--|
| Introduction        | Explain about main topics   | Listens<br>Write<br>Ask                         |  |
| Topic Presentaition | Explain about symbiose between microbe and animal livestock, the role of microbe in processing feedstuff, the role of microbe in preserving feedstuff | Listens<br>Write<br>Ask<br>Answer the questions | OHP<br>Transparancy<br>Hand out<br>White board |
| Conclutions         | Topics review<br>Ask<br>Explain main topics later   | Answer the Questions<br>Note the questions      |  |

### E. EVALUASI

Gives Mid test

### F. REFERENSI

- ♦ Arora, S.P. 1989. Pencernakan Mikroba pada Ruminansia. Gadjah Mada University Press, Yogyakarta. (Penterjemah: R. Murwani dan B Srigandono).
- ♦ Fardiaz, S. 1988. Fisiologi Fermentasi. PAU-IPB Bogor
- ♦ McDonald, P. 1981. The Biochemistry of Silage. John Wiley and Sons, Ltd, New York.

## SET OF THEACHING SCHEDULE

TEACHING SUBJECT : MICROBIOLOGY  
TEACHING SUBJECT CODE/SCS : PTF 203P/ 3 SCS (2-1)  
MEETING TIME : 2 x 50 minutes  
MEETING : 12

### A. OBJECT OF TEACHING SUBJECT

#### 1. General Instructional Object :

After following lecture, the student will know and understand about microbe in general in all aspect. So the student will know about classification, the role microbe in general, growth pattern and dissemination, nutrient, metabolism, effect of nutrient and environment to grow, isolation, selection, the role in improving of the quality of feedstuff, soil and food.

#### 2. Specific Instructional Object :

By the course and examples about the topics, the student will be able to explain about the effect of intrinsic factor to grow of microbe in food, minimum 80% correctness.

**B. MAIN DISCUSSION** : Ecology of food Microbe

**C. SUB DISCUSSION** : Intrinsic factor

### D. CLASS ACTIVITY :

| PHASE               | TEACHING ACTIVITY                                 | STUDENT ACTIVITY                                | TOOLS  |
|---------------------|---|---|--|
| Introduction        | Explain about main topics                         | Listens<br>Write<br>Ask                         |  |
| Topic Presentaition | Explain about instrinsic factor                   | Listens<br>Write<br>Ask<br>Answer the questions | OHP<br>Transparancy<br>Hand out<br>White board |
| Conclutions         | Topics review<br>Ask<br>Explain main topics later | Answer the Questions<br>Note the questions      |  |

### E. EVALUASI

Gives homework to the student to know why meat and milk are easier damage than other food

### F. REFERENSI

1. deMan, J.M. 1997. Kimia Makanan. ITP, Bandung (diterjemahkan oleh K. Padmawinata
2. Fardiaz, S. 1989. Mikrobiologi Pangan. PAU Pangan dan Gizi. IPB, Bogor.
3. Fardiaz, S. 1989. Analisis Mikrobiologi Pangan. PAU Pangan dan Gizi. IPB, Bogor.
4. Frazier, W.C. dan D.C. Westhoof. 1988. Food Microbioogy. McGraw-Hill Book Co., S'ngapore
5. Nurvantoro dan A.S. Djarijah. 1997. Mikrobiologi Pangan Hewani-Nabati. Kanisius, Yogyakarta.

## SET OF THEACHING SCHEDULE

TEACHING SUBJECT : MICROBIOLOGY  
TEACHING SUBJECT CODE/SCS : PTF 203P/ 3 SCS (2-1)  
MEETING TIME : 2 x 50 minutes  
MEETING : 13

### A. OBJECT OF TEACHING SUBJECT

#### 1. General Instructional Object :

After following lecture, the student will know and understand about microbe in general in all aspect. So the student will know about classification, the role microbe in general, growth pattern and dissemination, nutrient, metabolism, effect of nutrient and environment to grow, isolation, selection, the role in improving of the quality of feedstuff, soil and food.

#### 2. Specific Instructional Object :

By the course and examples about the topics, the student will be able to explain about exstrinsic factor, minimum 80% correctness.

**B. MAIN DISCUSSION** : Ecology of food Microbe

**C. SUB DISCUSSION** : Extrinsic

### D. CLASS ACTIVITY :

| PHASE               | TEACHING ACTIVITY                                 | STUDENT ACTIVITY                                | TOOLS  |
|---------------------|---|---|--|
| Introduction        | Explain about main topics                         | Listens<br>Write<br>Ask                         |  |
| Topic Presentaition | Explain about extrinsic                           | Listens<br>Write<br>Ask<br>Answer the questions | OHP<br>Transparancy<br>Hand out<br>White board |
| Conclutions         | Topics review<br>Ask<br>Explain main topics later | Answer the Questions<br>Note the questions      |  |

### E. EVALUASI

Gives homework to the student to know what the same and the different between processing and preservation foods.

### F. REFERENSI

- deMan, J.M. 1997. Kimia Makanan. ITP, Bandung (diterjemahkan oleh K. Padmawinata
- Fardiaz, S. 1989. Mikrobiologi Pangan. PAU Pangan dan Gizi. IPB, Bogor.
- Fardiaz, S. 1989. Analisis Mikrobiologi Pangan. PAU Pangan dan Gizi. IPB, Bogor.
- Frazier, W.C. dan D.C. Westhoof. 1988. Food Microbioogy. McGraw-Hill Book Co., Singapore
- Nurwantoro dan A.S. Djarijah. 1997. Mikrobiologi Pangan Hewani-Nabati. Kanisius, Yogyakarta

SET OF THEACHING SCHEDULE

TEACHING SUBJECT : MICROBIOLOGY  
 TEACHING SUBJECT CODE/SCS : PTF 203P/ 3 SCS (2-1)  
 MEETING TIME : 2 x 50 minutes  
 MEETING : 14

**A. OBJECT OF TEACHING SUBJECT**

**1. General Instructional Object :**

After following lecture, the student will know and understand about microbe in general in all aspect. So the student will know about classification, the role microbe in general, growth pattern and dissemination, nutrient, metabolism, effect of nutrient and environment to grow, isolation, selection, the role in improving of the quality of feedstuff, soil and food.

**2. Specific Instructional Object :**

By the course and examples about the topics, the student will be able to explain about implicit and processing factor, minimum 80% correctness.

**B. MAIN DISCUSSION** : The grow of food Microbe

**C. SUB DISCUSSION** : 1. Implicit factor  
 2. Processing factor

**D. CLASS ACTIVITY :**

| PHASE               | TEACHING ACTIVITY                                    | STUDENT ACTIVITY                                | TOOLS  |
|---------------------|--|---|--|
| Introduction        | Explain about main topics                            | Listens<br>Write<br>Ask                         |  |
| Topic Presentaition | Explain about implicit factor, and processing factor | Listens<br>Write<br>Ask<br>Answer the questions | OHP<br>Transparancy<br>Hand out<br>White board |
| Conclutions         | Topics review<br>Ask<br>Explain main topics later    | Answer the Questions<br>Note the questions      |  |

**E. EVALUASI**

Gives homework to the student to know the different between growth curve of fresh food and peserved food .

**F. REFERENSI**

11. deMan, J.M. 1997. Kimia Makanan. ITP, Bandung (diterjemahkan oleh K. Padmawinata
12. Fardiaz, S. 1989. Mikrobiologi Pangan. PAU Pangan dan Gizi. IPB, Bogor.
13. Fardiaz, S. 1989. Analisis Mikrobiologi Pangan. PAU Pangan dan Gizi. IPB, Bogor.
14. Frazier, W.C. dan D.C. Westhoof. 1988. Food Microbioogy. McGraw-Hill Book Co., Singapore
15. Nurwantoro dan A.S. Djarijah. 1997. Mikrobiologi Pangan Hewani-Nabati. Kanisius, Yogyakarta

SET OF THEACHING SCHEDULE

TEACHING SUBJECT : MICROBIOLOGY  
 TEACHING SUBJECT CODE/SCS : PTF 203P/ 3 SCS (2-1)  
 MEETING TIME : 2 x 50 minutes  
 MEETING : 15

**A. OBJECT OF TEACHING SUBJECT**

**1. General Instructional Object :**

After following lecture, the student will know and understand about microbe in general in all aspect. So the student will know about classification, the role microbe in general, growth pattern and dissemination, nutrient, metabolism, effect of nutrient and environment to grow, isolation, selection, the role in improving of the quality of feedstuff, soil and food.

**2. Specific Instructional Object :**

By the course and examples about the topics, the student will be able to explain about the grow of microbe in foods, minimum 80% correctness.

**B. MAIN DISCUSSION** : The grow of food Microbe

**C. SUB DISCUSSION** : 1. Curve of growth  
 2. Growth phase

**D. CLASS ACTIVITY :**

| PHASE               | TEACHING ACTIVITY                                 | STUDENT ACTIVITY                                | TOOLS  |
|---------------------|---|---|--|
| Introduction        | Explain about main topics                         | Listens<br>Write<br>Ask                         |  |
| Topic Presentaition | Explain about Curva of growth, and growth phase   | Listens<br>Write<br>Ask<br>Answer the questions | OHP<br>Transparancy<br>Hand out<br>White board |
| Conclutions         | Topics review<br>Ask<br>Explain main topics later | Answer the Questions<br>Note the questions      |  |

**E. EVALUASI**

Gives homework to the student to know the different between the growth curve of fresh food and peserved food .

**F. REFERENSI**

16. deMan, J.M. 1997. Kimia Makanan. ITP, Bandung (diterjemahkan oleh K. Padmawinata
17. Fardiaz, S. 1989. Mikrobiologi Pangan. PAU Pangan dan Gizi. IPB, Bogor.
18. Fardiaz, S. 1989. Analisis Mikrobiologi Pangan. PAU Pangan dan Gizi. IPB, Bogor.
19. Frazier, W.C. dan D.C. Westhoof. 1988. Food Microbioogy. McGraw-Hill Book Co., Singapore
20. Nurwantoro dan A.S. Djarijah. 1997. Mikrobiologi Pangan Hewani-Nabati. Kanisius, Yogyakarta

COURSE : Meat Animal Management

COURSE CODE : PTF 403 P

CREDIT : 3 (2-1)

## LECTURING PROGRAM OUTLINE

|                                 |   |
|---------------------------------|---|
| Name of Lecture                 | : Meat Animal Management  |
| Code / Semester<br>Credit Unit  | : PTF.403P / 3 (2-1)  |
| Syllabus                        | : This lecture discusses interaction and mechanism of affecting factors, and possibilities of manipulation to develop meat animal production, for supporting meat animal farming development.                             |
| General Instructional Objective | : At the end of the lecturing program, students are expected to be able to understand and explain thoroughly the mechanism and interaction of factors affecting meat animal production, and design a meat animal farming. |

## LECTURING PROGRAM

| Meeting | Topic of Discussion   | Sub-topic of Discussion  | Duration (minutes) |
|---------|---|--|--------------------|
| I       | Introduction  | General description of subject lecture, explaining lecture contract, practical, and assignment   | 50                 |
| 1-3     | Feed management to improve its utilization for meat animal production                                     | <ul style="list-style-type: none"> <li>- Concept of feed &amp; its application in meat animal production.</li> <li>- Methods of increasing feed intake</li> <li>- Methods of increasing feed digestibility</li> <li>- Performances of the rumen (A/P ratio, synthesis of rumen microbes)</li> </ul>  | 250                |
|         |   | <ul style="list-style-type: none"> <li>- Feeding methods: full choice, restricted</li> <li>- Feeding frequency</li> <li>- Pro-biotic, feed supplementation</li> <li>- The potential of local feedstuff/ agricultural industrial waste</li> </ul>   |                    |
| 4-5     | Feeding management for meat animal reproduction (provide the basis of mother-offspring production system) | <ul style="list-style-type: none"> <li>- Feed and nutrition requirement by pregnant females, lactating females, young and adult animals.</li> <li>- Effects of feeding management during gestation on offspring condition</li> <li>- Effects of feeding management of lactating animals from giving birth to weaning on the performance of stockers/growers</li> </ul> | 200                |
| 6-7     | Feeding management for growth & carcass quality (provide the basis of grower/fattening production system) | <ul style="list-style-type: none"> <li>- Effects of feeding on carcass quality and meat-bone ratio</li> <li>- Carcass evaluation on live animals</li> <li>- The correlation between live weight and carcass weight</li> </ul>  | 200                |
| 8       | EVALUATION I  |  | 100                |

| Meeting | Topic of Discussion                                   | Sub-topic of Discussion  | Duration (minutes) |
|---------|---|--|--------------------|
| 9-10    | Environmental modification for meat animal production | <ul style="list-style-type: none"> <li>- Effects of ambient temperature and humidity on animal productivity</li> <li>- Environmental manipulation to increase animals' performance (watering, providing mist, fans, shading and housing )</li> </ul>   | 200                |
| 11-13   | Production management                                 | <ul style="list-style-type: none"> <li>- Calculation of feed requirement and provision</li> <li>- Carrying capacity, animal unit</li> <li>- Production scale and continuity</li> <li>- Production system: mother-offspring, growing, fattening, and special programs</li> <li>- Choosing animals to breed and to fatten</li> </ul> | 300                |
| 14-15   | Meat animal production planning                       | <ul style="list-style-type: none"> <li>- Production planning</li> <li>- Product marketing</li> <li>- Product evaluation</li> </ul>   | 200                |
| 16      | EVALUATION II   |  | 100                |

## LECTURING AGENDA UNITS

|  |  |
|--|--|
| <b>Subject</b>                         | : <b>Meat Animal Management</b>  |
| <b>Code / Semester<br/>Credit Unit</b> | : <b>PTF.403P / 3 (2-1)</b>  |
| <b>Syllabus</b>                        | : <b>This lecture discusses interaction and mechanism of affecting factors, and possibilities of manipulation to develop meat animal production, for supporting meat animal farming development.</b>                             |
| <b>General Instructional Objective</b> | : <b>At the end of the lecturing program, students are expected to be able to understand and explain thoroughly the mechanism and interaction of factors affecting meat animal production, and design a meat animal farming.</b> |

|   |   |
|---|---|
| <b>Topic</b>                            | : <b>Introduction</b>   |
| <b>Sub Topics</b>                       | : - Greetings and introducing the lecturers<br>- General Explanation about the Subject Materials<br>- Conditions  |
| <b>Meeting No.</b>                      | : 1   |
| <b>Duration</b>                         | : 50 minutes  |
| <b>General Instructional Objective</b>  | : At the end of the lecturing program, students are expected to be able to understand and explain thoroughly the mechanism and interaction of factors affecting meat animal production, and design a meat animal farming. |
| <b>Specific Instructional Objective</b> | : After joining the lecture, students understand the scope of the subject, conditions to fulfill, obligations to do and right to obtain.  |

### Lecture Activities

| <b>Phase</b> | <b>Lecturer's Activities</b>  | <b>Students' Activities</b>  | <b>Lecturing Media and Facilities</b> |
|--------------|---|--|---------------------------------------|
| Introduction | 1. Introducing lecturers themselves   | Paying attention   | Whiteboard                            |
| Presentation | 2. Distributing Lecture Contract<br>3. Explaining general description of the lecture,<br>4. Explaining lecture contract,<br>5. Explaining practical, and<br>6. Explaining assignments | Paying attention, making notes, delivering responses and questions | OHP                                   |
| Conclusion   | 7. Explaining briefly the subject content of next meeting   | Paying attention, making notes                                     | -                                     |



|   |  |
|---|--|
| <b>Topic</b>                            | : <b>Feeding management for meat animal reproduction (provide the basis of mother-offspring production system)</b>   |
| <b>Sub Topics</b>                       | : - Feed and nutrition requirement by pregnant females, lactating females, young and adult animals.<br>- Effects of feeding management during gestation on offspring condition<br>- Effects of feeding management of lactating animals from giving birth to weaning on the performance of stockers/growers |
| <b>Meeting No.</b>                      | : 4-5  |
| <b>Duration</b>                         | : 200 minutes  |
| <b>General Instructional Objective</b>  | : At the end of the teaching program, students are expected to be able to understand and explain thoroughly the mechanism and interaction of factors affecting meat animal production, and design a meat animal farming.   |
| <b>Specific Instructional Objective</b> | : At the end of the lecture, students are able to understand and explain feed management to improve meat animal reproduction performance   |

### Class Activities

| <b>Phase</b> | <b>Lecturer's Activities</b>   | <b>Students' Activities</b>   | <b>Lecturing Media and Facilities</b>   |
|--------------|--|---|---|
| Introduction | 1. Explaining the scope of subject   | Paying attention  | Whiteboard,                             |
| Presentation | 2. Explaining feeding management for meat animal reproduction (provide the basis of mother-offspring production system)<br>- Feed and nutrition requirement by pregnant females, lactating females, young and adult animals.<br>- Effects of feeding management during gestation on offspring condition<br>- Effects of feeding management of lactating animals from giving birth to weaning on the performance of stockers/growers<br>3. Delivering questions | Paying attention, making notes, delivering responses and questions<br><br>Answering questions | Computer, projector, screen, whiteboard |
| Conclusion   | 4. Concluding the meeting<br>- Summarizing materials<br>- Giving assignment  | - Paying attention, making notes,   | Whiteboard                              |

|   |   |
|---|---|
| <b>Topic</b>                            | : <b>Feeding management for growth &amp; carcass quality (provide the basis of grower/fattening production system)</b>  |
| <b>Sub Topics</b>                       | <ul style="list-style-type: none"> <li>- Effects of feeding on carcass quality and meat-bone ratio</li> <li>- Carcass evaluation on live animals</li> <li>- The correlation between live weight and carcass weight</li> </ul> |
| <b>Meeting No.</b>                      | : 6 - 7   |
| <b>Duration</b>                         | : 200 minutes   |
| <b>General Instructional Objective</b>  | : At the end of the teaching program, students are able to understand and explain thoroughly the mechanism and interaction of factors affecting meat animal production, and design a meat animal farming.                     |
| <b>Specific Instructional Objective</b> | : At the end of the lecture, students are able to explain feed management to improve growth rate and carcass quality of meat animal.  |

### Class Activities

| Phase        | Lecturer's Activities   | Students' Activities  | Lecturing Media and Facilities          |
|--------------|---|---|---|
| Introduction | 1. Menjelaskan cakupan materi   | Paying attention  | Whiteboard,                             |
| Presentation | 2. Explaining feeding management for growth & carcass quality (provide the basis of grower/fattening production system) <ul style="list-style-type: none"> <li>- Effects of feeding on carcass quality and meat-bone ratio</li> <li>- Carcass evaluation on live animals</li> <li>- The correlation between live weight and carcass weight</li> </ul> 3. Delivering questions | Paying attention, making notes, delivering responses and questions<br><br>Answering questions | Computer, projector, screen, whiteboard |
| Conclusion   | 4. Concluding the meeting <ul style="list-style-type: none"> <li>- Summarizing materials</li> <li>- Giving assignment</li> </ul>  | - Paying attention, making notes,   | Whiteboard                              |

|   |  |
|---|--|
| <b>Topic</b>                            | : <b>Environmental modification for meat animal production</b>   |
| <b>Sub Topics</b>                       | : - Effects of ambient temperature and humidity on animal productivity<br>- Environmental manipulation to increase animals' performance (watering, providing mist, fans, shading and housing modification)               |
| <b>Meeting No.</b>                      | : 9 -10  |
| <b>Duration</b>                         | : 200 minutes  |
| <b>General Instructional Objective</b>  | : At the end of the teaching program, students are expected to be able to understand and explain thoroughly the mechanism and interaction of factors affecting meat animal production, and design a meat animal farming. |
| <b>Specific Instructional Objective</b> | : At the end of the lecture, students are able to explain the effects of environment on animal production and the means of environmental modification to improve meat animal production.                                 |

### Class Activities

| Phase        | Lecturer's Activities  | Students' Activities  | Lecturing Media and Facilities          |
|--------------|--|---|---|
| Introduction | 1. Explaining the scope of subject   | Paying attention  | Whiteboard.                             |
| Presentation | 2. Explaining environmental modification for meat animal production<br>- Effects of ambient temperature and humidity on animal productivity<br>- Environmental manipulation to increase animals' performance (watering, providing mist, fans, shading and housing modification)<br>3. Delivering questions | Paying attention, making notes, delivering responses and questions<br><br>Answering questions | Computer, projector, screen, whiteboard |
| Conclusion   | 4. Concluding the meeting<br>- Summarizing materials<br>- Giving assignment  | - Paying attention, making notes,   | Whiteboard                              |

|   |   |
|---|---|
| <b>Topic</b>                            | <b>: Production management</b>  |
| <b>Sub Topics</b>                       | : <ul style="list-style-type: none"> <li>- Calculation of feed requirement and provision</li> <li>- Carrying capacity, animal unit</li> <li>- Production scale and continuity</li> <li>- Production system: mother-offspring, growing, fattening, and special programs</li> <li>- Choosing animals to breed and fatten</li> </ul> |
| <b>Meeting No.</b>                      | : 11 -13  |
| <b>Duration</b>                         | : 200 minutes   |
| <b>General Instructional Objective</b>  | : At the end of the teaching program, students are expected to be able to understand and explain thoroughly the mechanism and interaction of factors affecting meat animal production, and design a meat animal farming.  |
| <b>Specific Instructional Objective</b> | : At the end of the lecture, students are able to calculate feed availability/supply, carrying capacity based on animal unit. Students are also able to explain the function, scale and continuity of production, production system, and choosing young animals for breeding and meat stocking.                                   |

### Class Activities

| <b>Phase</b> | <b>Lecturer's Activities</b>   | <b>Students' Activities</b>   | <b>Lecturing Media and Facilities</b>   |
|--------------|--|---|---|
| Introduction | 1. Explaining the scope of subject   | Paying attention  | Whiteboard,                             |
| Presentation | 2. Explaining production management: <ul style="list-style-type: none"> <li>- Calculation of feed requirement and provision</li> <li>- Carrying capacity, animal unit</li> <li>- Production scale and continuity</li> <li>- Production system: mother-offspring, growing, fattening, and special programs</li> <li>- Choosing animals to breed and fatten</li> </ul> 3. Delivering questions | Paying attention, making notes, delivering responses and questions<br><br>Answering questions | Computer, projector, screen, whiteboard |
| Conclusion   | 4. Concluding the meeting <ul style="list-style-type: none"> <li>- Summarizing materials</li> <li>- Giving assignment</li> </ul>   | - Paying attention, making notes,   | Whiteboard                              |

|   |  |
|---|--|
| <b>Topic</b>                            | : <b>Meat animal production planning:</b>  |
| <b>Sub Topics</b>                       | :<br>- Production planning<br>- Product marketing<br>- Product evaluation  |
| <b>Meeting No.</b>                      | : 14 -15   |
| <b>Duration</b>                         | : 200 minutes  |
| <b>General Instructional Objective</b>  | : At the end of the teaching program, students are expected to be able to understand and explain thoroughly the mechanism and interaction of factors affecting meat animal production, and design a meat animal farming. |
| <b>Specific Instructional Objective</b> | : At the end of the lecture, students are able to make planning on meat animal production, product marketing and product evaluation.   |

### Class Activities

| Phase        | Lecturer's Activities   | Students' Activities  | Lecturing Media and Facilities          |
|--------------|---|---|---|
| Introduction | 1. Explaining the scope of subject  | Paying attention  | Whiteboard,                             |
| Presentation | 2. Explaining meat animal production planning:<br>- Production planning<br>- Product marketing<br>- Product evaluation<br>3. Delivering questions | Paying attention, making notes, delivering responses and questions<br><br>Answering questions | Computer, projector, screen, whiteboard |
| Conclusion   | 4. Concluding the meeting<br>- Summarizing materials<br>- Giving assignment   | - Paying attention, making notes,   | Whiteboard                              |

### Evaluation:

Evaluations are taken 3 times, i.e.

1. on the 8<sup>th</sup> meeting; evaluating the students' understanding on the subjects delivered from the 1<sup>st</sup> to the 7<sup>th</sup> meetings
2. on the 16<sup>th</sup> meeting; evaluating the students' understanding on the subjects delivered from the 9<sup>th</sup> to the 15<sup>th</sup> meetings.
3. on the semester examination; evaluating the students' overall understanding on the subjects of lecture.

### References

- Battaglia, R.A. dan V.B. Mayrose. 1981. *Handbook of Livestock Management Technique*. Buegess Publishing Company. CEPCO Division, Minneapolis.
- Taylor, R.E. 1994. *Beef Production and Management Decision*. Macmillan Publishing Company, New York.
- Ross, C.V. 1989. *Sheep Production and Management*. Prentice Hall, Englewood Cliffs.
- Pond, W.G. dan J.H. Maner. 1974. *Swine Production in Temperate and Tropical Environments*. W.H. Freeman and Company, San Francisco.

## LECTURING PROGRAM OUTLINE

|  |   |
|--|---|
| <b>Subject</b>                         | : <b>Meat Animal Management</b>   |
| <b>Code / Semester<br/>Credit Unit</b> | : <b>PTF.403P / 3 (2-1)</b>   |
| <b>Syllabus</b>                        | : This lecture discusses interaction and mechanism of affecting factors, and possibilities of manipulation to develop meat animal production, for supporting meat animal farming development.                             |
| <b>General Instructional Objective</b> | : At the end of the lecturing program, students are expected to be able to understand and explain thoroughly the mechanism and interaction of factors affecting meat animal production, and design a meat animal farming. |

## LECTURING PROGRAM

| Meeting | Topic of Discussion   | Sub-topic of Discussion  | Duration (minutes) |
|---------|---|--|--------------------|
| 1       | Introduction  | General description of subject lecture, explaining lecture contract, practical, and assignment   | 50                 |
| 1-3     | Feed management to improve its utilization for meat animal production                                     | <ul style="list-style-type: none"> <li>- Concept of feed &amp; its application in meat animal production.</li> <li>- Methods of increasing feed intake</li> <li>- Methods of increasing feed digestibility</li> <li>- Performances of the rumen (A/P ratio, synthesis of rumen microbes)</li> </ul>  | 250                |
|         |   | <ul style="list-style-type: none"> <li>- Feeding methods: full choice, restricted</li> <li>- Feeding frequency</li> <li>- Pro-biotic, feed supplementation</li> <li>- The potential of local feedstuff/ agricultural industrial waste</li> </ul>   |                    |
| 4-5     | Feeding management for meat animal reproduction (provide the basis of mother-offspring production system) | <ul style="list-style-type: none"> <li>- Feed and nutrition requirement by pregnant females, lactating females, young and adult animals.</li> <li>- Effects of feeding management during gestation on offspring condition</li> <li>- Effects of feeding management of lactating animals from giving birth to weaning on the performance of stockers/growers</li> </ul> | 200                |
| 6-7     | Feeding management for growth & carcass quality (provide the basis of grower/fattening production system) | <ul style="list-style-type: none"> <li>- Effects of feeding on carcass quality and meat-bone ratio</li> <li>- Carcass evaluation on live animals</li> <li>- The correlation between live weight and carcass weight</li> </ul>  | 200                |
| 8       | EVALUATION I  |  | 100                |

| Meeting | Topic of Discussion                                   | Sub-topic of Discussion  | Duration (minutes) |
|---------|---|--|--------------------|
| 9-10    | Environmental modification for meat animal production | <ul style="list-style-type: none"> <li>- Effects of ambient temperature and humidity on animal productivity</li> <li>- Environmental manipulation to increase animals' performance (watering, providing mist, fans, shading and housing )</li> </ul>   | 200                |
| 11-13   | Production management                                 | <ul style="list-style-type: none"> <li>- Calculation of feed requirement and provision</li> <li>- Carrying capacity, animal unit</li> <li>- Production scale and continuity</li> <li>- Production system: mother-offspring, growing, fattening, and special programs</li> <li>- Choosing animals to breed and to fatten</li> </ul> | 300                |
| 14-15   | Meat animal production planning                       | <ul style="list-style-type: none"> <li>- Production planning</li> <li>- Product marketing</li> <li>- Product evaluation</li> </ul>   | 200                |
| 16      | EVALUATION II   |  | 100                |

## LECTURING AGENDA UNITS

|  |  |
|--|--|
| <b>Subject</b>                                 | : <b>Meat Animal Management</b>  |
| <b>Code / Semester<br/>Credit Unit</b>         | : <b>PTF.403P / 3 (2-1)</b>  |
| <b>Syllabus</b>                                | : <b>This lecture discusses interaction and mechanism of affecting factors, and possibilities of manipulation to develop meat animal production, for supporting meat animal farming development.</b>                             |
| <b>General<br/>Instructional<br/>Objective</b> | : <b>At the end of the lecturing program, students are expected to be able to understand and explain thoroughly the mechanism and interaction of factors affecting meat animal production, and design a meat animal farming.</b> |

|   |   |
|---|---|
| <b>Topic</b>                                    | : <b>Introduction</b>   |
| <b>Sub Topics</b>                               | : - Greetings and introducing the lecturers<br>- General Explanation about the Subject Materials<br>- Conditions  |
| <b>Meeting No.</b>                              | : 1   |
| <b>Duration</b>                                 | : 50 minutes  |
| <b>General<br/>Instructional<br/>Objective</b>  | : At the end of the lecturing program, students are expected to be able to understand and explain thoroughly the mechanism and interaction of factors affecting meat animal production, and design a meat animal farming. |
| <b>Specific<br/>Instructional<br/>Objective</b> | : After joining the lecture, students understand the scope of the subject, conditions to fulfill, obligations to do and right to obtain.  |

### Lecture Activities

| Phase        | Lecturer's Activities   | Students' Activities   | Lecturing Media and Facilities |
|--------------|---|--|--------------------------------|
| Introduction | 1. Introducing lecturers themselves   | Paying attention   | Whiteboard                     |
| Presentation | 2. Distributing Lecture Contract<br>3. Explaining general description of the lecture,<br>4. Explaining lecture contract,<br>5. Explaining practical, and<br>6. Explaining assignments | Paying attention, making notes, delivering responses and questions | OHP                            |
| Conclusion   | 7. Explaining briefly the subject content of next meeting   | Paying attention, making notes                                     | -                              |

|   |   |
|---|---|
| <b>Topic</b>                            | : <b>Feed management of to improve its utilization for meat animal production.</b>  |
| <b>Sub Topics</b>                       | : - Concept of feed & its application in meat animal production.<br>- Methods of increasing feed intake<br>- Methods of increasing feed digestibility<br>- Performances of the rumen (A/P ratio, synthesis of rumen microbes)<br>- Feeding methods: full choice, restricted<br>- Feeding frequency<br>- Pro-biotic, feed supplementation<br>- The potential of local feedstuff/ agricultural industrial waste |
| <b>Meeting No.</b>                      | : 1, 2, 3.  |
| <b>Duration</b>                         | : 250 minutes   |
| <b>General Instructional Objective</b>  | : At the end of the lecturing program, students are expected to be able to understand and explain thoroughly the mechanism and interaction of factors affecting meat animal production, and design a meat animal farming.   |
| <b>Specific Instructional Objective</b> | : At the end of the lecture, students are able to understand and explain feed management to improve animal productivity.  |

### Class Activities

| Phase        | Lecturer's Activities   | Students' Activities  | Lecturing Media and Facilities     |
|--------------|---|---|------------------------------------|
| Introduction | 1. Explaining the scope of the subject  | Paying attention  | Whiteboard                         |
| Presentation | 2. Explaining feed management to improve its utilization for meat animal production.<br>- Concept of feed & its application in meat animal production.<br>- Methods of increasing feed intake<br>- Methods of increasing feed digestibility<br>- Performances of the rumen (A/P ratio, synthesis of rumen microbes)<br>- Feeding methods: full choice, restricted<br>- Feeding frequency<br>- Pro-biotic, feed supplementation<br>- The potential of local feedstuff/ agricultural industrial waste<br>- Delivering questions | Paying attention, making notes, delivering responses and questions<br><br>Answering questions | OHP, transparent sheet, whiteboard |
| Conclusion   | 3. Concluding the meeting<br>- Delivering summary<br>- Giving assignment  | - Paying attention and making notes.  | -                                  |

|                                  |  |
|----------------------------------|--|
| Topic                            | : <b>Feeding management for meat animal reproduction (provide the basis of mother-offspring production system)</b>   |
| Sub Topics                       | : - Feed and nutrition requirement by pregnant females, lactating females, young and adult animals.<br>- Effects of feeding management during gestation on offspring condition<br>- Effects of feeding management of lactating animals from giving birth to weaning on the performance of stockers/growers |
| Meeting No.                      | : 4-5  |
| Duration                         | : 200 minutes  |
| General Instructional Objective  | : At the end of the teaching program, students are expected to be able to understand and explain thoroughly the mechanism and interaction of factors affecting meat animal production, and design a meat animal farming.   |
| Specific Instructional Objective | : At the end of the lecture, students are able to understand and explain feed management to improve meat animal reproduction performance   |

#### Class Activities

| Phase        | Lecturer's Activities  | Students' Activities  | Lecturing Media and Facilities          |
|--------------|--|---|---|
| Introduction | 1. Explaining the scope of subject   | Paying attention  | Whiteboard.                             |
| Presentation | 2. Explaining feeding management for meat animal reproduction (provide the basis of mother-offspring production system)<br>- Feed and nutrition requirement by pregnant females, lactating females, young and adult animals.<br>- Effects of feeding management during gestation on offspring condition<br>- Effects of feeding management of lactating animals from giving birth to weaning on the performance of stockers/growers<br>3. Delivering questions | Paying attention, making notes, delivering responses and questions<br><br>Answering questions | Computer, projector, screen, whiteboard |
| Conclusion   | 4. Concluding the meeting<br>- Summarizing materials<br>- Giving assignment  | - Paying attention, making notes,   | Whiteboard                              |

|   |   |
|---|---|
| <b>Topic</b>                            | : <b>Feeding management for growth &amp; carcass quality (provide the basis of grower/fattening production system)</b>  |
| <b>Sub Topics</b>                       | :<br>- Effects of feeding on carcass quality and meat-bone ratio<br>- Carcass evaluation on live animals<br>- The correlation between live weight and carcass weight                                      |
| <b>Meeting No.</b>                      | : 6 - 7   |
| <b>Duration</b>                         | : 200 minutes   |
| <b>General Instructional Objective</b>  | : At the end of the teaching program, students are able to understand and explain thoroughly the mechanism and interaction of factors affecting meat animal production, and design a meat animal farming. |
| <b>Specific Instructional Objective</b> | : At the end of the lecture, students are able to explain feed management to improve growth rate and carcass quality of meat animal.  |

#### Class Activities

| Phase        | Lecturer's Activities   | Students' Activities  | Lecturing Media and Facilities          |
|--------------|---|---|---|
| Introduction | 1. Menjelaskan cakupan materi   | Paying attention  | Whiteboard.                             |
| Presentation | 2. Explaining feeding management for growth & carcass quality (provide the basis of grower/fattening production system)<br>- Effects of feeding on carcass quality and meat-bone ratio<br>- Carcass evaluation on live animals<br>- The correlation between live weight and carcass weight<br>3. Delivering questions | Paying attention, making notes, delivering responses and questions<br><br>Answering questions | Computer, projector, screen, whiteboard |
| Conclusion   | 4. Concluding the meeting<br>- Summarizing materials<br>- Giving assignment   | - Paying attention, making notes,   | Whiteboard                              |

|   |  |
|---|--|
| <b>Topic</b>                            | : <b>Environmental modification for meat animal production</b>   |
| <b>Sub Topics</b>                       | : - Effects of ambient temperature and humidity on animal productivity<br>- Environmental manipulation to increase animals' performance (watering, providing mist, fans, shading and housing modification)               |
| <b>Meeting No.</b>                      | : 9 -10  |
| <b>Duration</b>                         | : 200 minutes  |
| <b>General Instructional Objective</b>  | : At the end of the teaching program, students are expected to be able to understand and explain thoroughly the mechanism and interaction of factors affecting meat animal production, and design a meat animal farming. |
| <b>Specific Instructional Objective</b> | : At the end of the lecture, students are able to explain the effects of environment on animal production and the means of environmental modification to improve meat animal production.                                 |

### Class Activities

| Phase        | Lecturer's Activities  | Students' Activities  | Lecturing Media and Facilities          |
|--------------|--|---|---|
| Introduction | 1. Explaining the scope of subject   | Paying attention  | Whiteboard,                             |
| Presentation | 2. Explaining environmental modification for meat animal production<br>- Effects of ambient temperature and humidity on animal productivity<br>- Environmental manipulation to increase animals' performance (watering, providing mist, fans, shading and housing modification)<br>3. Delivering questions | Paying attention, making notes, delivering responses and questions<br><br>Answering questions | Computer, projector, screen, whiteboard |
| Conclusion   | 4. Concluding the meeting<br>- Summarizing materials<br>- Giving assignment  | - Paying attention, making notes,   | Whiteboard                              |

|   |   |
|---|---|
| <b>Topic</b>                            | : <b>Production management</b>  |
| <b>Sub Topics</b>                       | : <ul style="list-style-type: none"> <li>- Calculation of feed requirement and provision</li> <li>- Carrying capacity, animal unit</li> <li>- Production scale and continuity</li> <li>- Production system: mother-offspring, growing, fattening, and special programs</li> <li>- Choosing animals to breed and fatten</li> </ul> |
| <b>Meeting No.</b>                      | : 11 -13  |
| <b>Duration</b>                         | : 200 minutes   |
| <b>General Instructional Objective</b>  | : At the end of the teaching program, students are expected to be able to understand and explain thoroughly the mechanism and interaction of factors affecting meat animal production, and design a meat animal farming.  |
| <b>Specific Instructional Objective</b> | : At the end of the lecture, students are able to calculate feed availability/supply, carrying capacity based on animal unit. Students are also able to explain the function, scale and continuity of production, production system, and choosing young animals for breeding and meat stocking.                                   |

### Class Activities

| Phase        | Lecturer's Activities  | Students' Activities  | Lecturing Media and Facilities          |
|--------------|--|---|---|
| Introduction | 1. Explaining the scope of subject   | Paying attention  | Whiteboard,                             |
| Presentation | 2. Explaining production management: <ul style="list-style-type: none"> <li>- Calculation of feed requirement and provision</li> <li>- Carrying capacity, animal unit</li> <li>- Production scale and continuity</li> <li>- Production system: mother-offspring, growing, fattening, and special programs</li> <li>- Choosing animals to breed and fatten</li> </ul> 3. Delivering questions | Paying attention, making notes, delivering responses and questions<br><br>Answering questions | Computer, projector, screen, whiteboard |
| Conclusion   | 4. Concluding the meeting <ul style="list-style-type: none"> <li>- Summarizing materials</li> <li>- Giving assignment</li> </ul>   | - Paying attention, making notes,   | Whiteboard                              |

|   |  |
|---|--|
| <b>Topic</b>                            | : <b>Meat animal production planning:</b>  |
| <b>Sub Topics</b>                       | :<br>- Production planning<br>- Product marketing<br>- Product evaluation  |
| <b>Meeting No.</b>                      | : 14 -15   |
| <b>Duration</b>                         | : 200 minutes  |
| <b>General Instructional Objective</b>  | : At the end of the teaching program, students are expected to be able to understand and explain thoroughly the mechanism and interaction of factors affecting meat animal production, and design a meat animal farming. |
| <b>Specific Instructional Objective</b> | : At the end of the lecture, students are able to make planning on meat animal production, product marketing and product evaluation.   |

### Class Activities

| Phase        | Lecturer's Activities   | Students' Activities  | Lecturing Media and Facilities                   |
|--------------|---|---|--|
| Introduction | 1. Explaining the scope of subject  | Paying attention  | Whiteboard,                                      |
| Presentation | 2. Explaining meat animal production planning:<br>- Production planning<br>- Product marketing<br>- Product evaluation<br>3. Delivering questions | Paying attention, making notes, delivering responses and questions<br><br>Answering questions | Computer, projector, screen, whiteboard<br><br>- |
| Conclusion   | 4. Concluding the meeting<br>- Summarizing materials<br>- Giving assignment   | - Paying attention, making notes,   | Whiteboard                                       |

### Evaluation:

Evaluations are taken 3 times, i.e.

1. on the 8<sup>th</sup> meeting; evaluating the students' understanding on the subjects delivered from the 1<sup>st</sup> to the 7<sup>th</sup> meetings
2. on the 16<sup>th</sup> meeting; evaluating the students' understanding on the subjects delivered from the 9<sup>th</sup> to the 15<sup>th</sup> meetings.
3. on the semester examination; evaluating the students' overall understanding on the subjects of lecture.

### References

- Battaglia, R.A. dan V.B. Mayrose. 1981. *Handbook of Livestock Management Technique*. Buegess Publishing Company. CEPCO Division, Minneapolis.
- Taylor, R.E. 1994. *Beef Production and Management Decision*. Macmillan Publishing Company, New York.

Ross, C.V. 1989. Sheep Production and Management. Prentice Hall, Englewood Cliffs.

Pond, W.G. dan J.H. Maner. 1974. Swine Production in Temperate and Tropical Environments. W.H. Freeman and Company, San Francisco.

COURSE : Biology

COURSE CODE : PTF 103 P

CREDIT : 3 (2-1)

## TEACHING PROGRAM OUTLINE

- Title of Subject** : Biology
- Number Code /CSS** : PTF103/3 SKS (2-1)
- Brief Description** : This subject study about molecular biology concepts including to living characters, autotrophic organism, heterotrophic organism that study about digest system, cardiovascular system, respiratory system and mechanism, excretion system and mechanism
- General Instructional Object** : After following lecture, the student will know and understand about biology concepts of organism autotrophic and heterotrophic: the meaning of life, cell, tissue organ, and their activity.
- References** :
1. Bern, 1983. Cells. Second Edition. CBS College, New York
  2. Hall, Flower and Robert, 1981. Plant Cell Structure and Metabolism. Second Edition. Longman, New York
  3. Helena Curtis, 1975. Biology. Second Edition. Butterworth & Co Ltd, England
  4. John W. Kimball. 1992; 1996; 1998. Biologi 1,2 dan 3. Erlangga, Jakarta.
  5. Farid, G.H. Schaum's Outline of Theory and Problems of Biology. McGraw-Hills Publishing

| NO. | SPECIFIC INSTRUCTIONAL OBJECT  | MAIN DISCUSSION          | SUB DISCUSSION  | TIME ESTIMATION | REFERENCES |
|-----|--|--------------------------|---|-----------------|------------|
| 1.  | By the course and examples about the topics, the student can explain about biology as science, and life characteristic, minimum 80% correctness  | The life meaning         | Biology as science<br>Life characteristic   | 4 x50 minutes   | 1, 2, 3,4  |
| 2.  | By the course and examples about the topics, the student can explain about cell, the difference between plant and animal cell, energy metabolism product and photosynthesis, minimum 80% correctness | Cell is base of the life | Cell size and shape<br>Cell structure<br>The difference between plant cell and animal cell<br>Energy metabolism product<br>Photosynthesis | 6 x 50 minutes  | 1, 2, 3,4  |
| 3.  | By the course and examples about the topics, the student can explain about respiration, transpiration, vessel,   | Autotrophic organism     | Respiration system<br>Transpiration system<br>Vessel system   | 6 x 50 minutes  | 1, 2, 3,4  |

|    |  |                                       |  |                |        |
|----|--|---------------------------------------|--|----------------|--------|
|    | osmoregulation, and plant movement, minimum 80% correctness.   |                                       | Osmoregulation<br>Plant movement   |                |        |
| 4. | By the course and examples about the topics, the student can explain about cell development, tissue plant and animal, minimum 80% correctness                    | Heterotrophic organism                | Structure, function and kinds of animal tissue.  | 4 x 50 minutes | 2, 3,4 |
| 5. | By the course and examples about the topics, the student can explain about heterotrophic organism, especially about transportation, minimum 80% correctness      | Heterotrophic organism in adult phase | Blood Circulation system   | 2 x 50 minutes | 4,5    |
| 6. | By the course and examples about the topics, the student can explain about heterotrophic organism, especially about directorial system, minimum 80% correctness. | Heterotrophic organism in adult phase | Directorial pattern<br>Contractility mechanism<br>Mechanism of Stomach acid work   | 4 x 50 minutes | 4,5    |
| 7. | By the course and examples about the topics, the student can explain about heterotrophic organism, especially about respiratory system, minimum 80% correctness  | Respiratory system                    | Respiratory pattern, metabolism, and respiration<br>Respiration failed factor<br>Respiration optimize principle and hormone<br>Measure of respiration and hormonal | 4x 50 minutes  | 4,5    |
| 8. | By the course and examples about the topics, the student can explain about growth and development of animal and plant reproduction , minimum 80% correctness.    | Reproduction                          | Animal and plant reproduction<br>Their growth and development  | 2 x 50 minutes | 4,5    |

## SET OF THEACHING SCHEDULE

TEACHING SUBJECT : BIOLOGY  
 TEACHING SUBJECT CODE/SCS : PTF 103P/ 3SCS (2-1)  
 MEETING TIME : 4x 50 minutes  
 MEETING : 1 & 2

### A. OBJECT OF TEACHING SUBJECT

#### 1. General Instructional Object :

After following lecture, the student will know and understand about biology concepts of organism autotrophic and heterotrophic : the meaning of life, cell, tissue organ, and their activity.

#### 2. Specific Instructional Object :

By the course and examples about the topics, the student can explain about biology as science, and life characteristic, minimum 80% correctness.

**B. MAIN DISCUSSION** : The life meaning

**C. SUB DISCUSSION** : 1. Biology as science  
 2. Life characteristic

### D. CLASS ACTIVITY :

| PHASE              | TEACHING ACTIVITY   | STUDENT ACTIVITY                                | TOOLS  |
|--------------------|---|---|--|
| Introduction       | Explain about main topics                                 | Listens<br>Write<br>Ask                         |  |
| Topic Presentation | Explain about biology as science, and life characteristic | Listens<br>Write<br>Ask<br>Answer the questions | OHP<br>Transparancy<br>Hand out<br>White board |
| Conclutions        | Topics review<br>Ask<br>Explain main topics later         | Answer the Questions<br>Note the questions      |  |

### E. EVALUASI

Gives homework to the students to help remain the topics

### F. REFERENSI

- Bern, 1983. Cells. Second Edition. CBS College, New York
- Hall, Flower and Robert, 1981. Plant Cell Structure and Metabolism. Second Edition. Longman, New York
- Helena Curtis, 1975. Biology. Second Edition. Butterworth & Co Ltd, England
- John W. Kimball. 1992; 1996; 1998. Biologi 1,2 dan 3. Erlangga, Jakarta.

## SET OF THEACHING SCHEDULE

**TEACHING SUBJECT** : BIOLOGY  
**TEACHING SUBJECT CODE/SCS** : PTF 103P/ 3SCS (2-1)  
**MEETING TIME** : 6 x 50 minutes  
**MEETING** : 3,4 & 5

### B. OBJECT OF TEACHING SUBJECT

#### 1. General Instructional Object :

After following lecture, the student will know and understand about biology concepts of organism autotrophic and heterotrophic : the meaning of life, cell, tissue, organ, and their activity.

#### 2. Specific Instructional Object :

By the course and examples about the topics, the student can explain about cell, the difference between plant and animal cell, energy metabolism product and photosynthesis, minimum 80% correctness.

**B. MAIN DISCUSSION** : Cell is base of the life

- C. SUB DISCUSSION** :
1. Cell size and shape
  2. Cell structure
  3. The difference between plant cell and animal cell
  4. Energy metabolism product
  5. Photosynthesis

### D. CLASS ACTIVITY :

| PHASE              | TEACHING ACTIVITY  | STUDENT ACTIVITY                                | TOOLS  |
|--------------------|--|---|--|
| Introduction       | Explain about main topics  | Listens<br>Write<br>Ask                         |  |
| Topic Presentaiton | Explain about cell size and shape, cell structure, the difference between plant cell and animal cell, energy metabolism product and photosynthesis | Listens<br>Write<br>Ask<br>Answer the questions | OHP<br>Transparancy<br>Hand out<br>White board |
| Conclutions        | Topics review<br>Ask<br>Explain main topics later  | Answer the Questions<br>Note the questions      |  |

### G. EVALUASI

Gives homework to the students to help remain the topics

### H. REFERENSI

- Bern, 1983. Cells. Second Edition. CBS College, New York
- Hall, Flower and Robert, 1981. Plant Cell Structure and Metabolism. Second Edition. Longman, New York
- Helena Curtis, 1975. Biology. Second Edition. Butterworth & Co Ltd, England
- John W. Kimball. 1992; 1996; 1998. Biologi 1,2 dan 3. Erlangga, Jakarta.

## SET OF THEACHING SCHEDULE

TEACHING SUBJECT : BIOLOGY  
 TEACHING SUBJECT CODE/SCS : PTF 103P/ 3SCS (2-1)  
 MEETING TIME : 6 x 50 minutes  
 MEETING : 6,7 & 8

### C. OBJECT OF TEACHING SUBJECT

#### 1. General Instructional Object :

After following lecture, the student will know and understand about biology concepts of organism autotrophic and heterotrophic : the meaning of life, cell, tissue, organ, and their activity.

#### 2. Specific Instructional Object :

By the course and examples about the topics, the student can explain about respiration, transpiration, vessel, osmoregulation, and plant movement, minimum 80% correctness.

**B. MAIN DISCUSSION** : Autothrophic organism

- C. SUB DISCUSSION** :
1. Respiration system
  2. Transpiration system
  3. Vessel system
  4. Osmoregulation
  5. Plant movement

### D. CLASS ACTIVITY :

| PHASE              | TEACHING ACTIVITY   | STUDENT ACTIVITY                                | TOOLS  |
|--------------------|---|---|--|
| Introduction       | Explain about main topics   | Listens<br>Write<br>Ask                         |  |
| Topic Presentation | Explain about respiration system, transpiration system, vessel system, osmoregulation, plant movement | Listens<br>Write<br>Ask<br>Answer the questions | OHP<br>Transparency<br>Hand out<br>White board |
| Conclutions        | Topics review<br>Ask<br>Explain main topics later   | Answer the Questions<br>Note the qestions       |  |

### I. EVALUASI

Gives mid Semester test

### J. REFERENSI

- Bern, 1983. Cells. Second Edition. CBS College, New York
- Hall, Flower and Robert, 1981. Plant Celi Structure and Metabolism. Second Edition. Longman, New York
- Helena Curtis, 1975. Biology. Second Edition. Butterworth & Co Ltd, England
- John W. Kimball. 1992; 1996; 1998. Biologi 1,2 dan 3. Erlangga, Jakarta.

## SET OF THEACHING SCHEDULE

TEACHING SUBJECT : BIOLOGY  
TEACHING SUBJECT CODE/SCS : PTF 103P/ 3SCS (2-1)  
MEETING TIME : 4 x 50 minutes  
MEETING : 9 & 10

### D. OBJECT OF TEACHING SUBJECT

#### 1. General Instructional Object :

After following lecture, the student will know and understand about biology concepts of organism autotrophic and heterotrophic : the meaning of life, cell, tissue, organ, and their activity.

#### 2. Specific Instructional Object :

By the course and examples about the topics, the student can explain about cell development, tissue plant and animal, minimum 80% correctness.

B. MAIN DISCUSSION : Heterotrophic organism

C. SUB DISCUSSION : Structure, function and kinds of animal tissue .

### D. CLASS ACTIVITY :

| PHASE              | TEACHING ACTIVITY  | STUDENT ACTIVITY                                | TOOLS  |
|--------------------|--|---|--|
| Introduction       | Explain about main topics                                    | Listens<br>Write<br>Ask                         |  |
| Topic Presentaiton | Explain about structure, function and kinds of animal tissue | Listens<br>Write<br>Ask<br>Answer the questions | OHP<br>Transparancy<br>Hand out<br>White board |
| Conclutions        | Topics review<br>Ask<br>Explain main topics later            | Answer the Questions<br>Note the qestions       |  |

### K. EVALUASI

Gives homework to the students to help remain the topics

### L. REFERENSI

- Hall, Flower and Robert, 1981. Plant Cell Structure and Metabolism. Second Edition. Longman, New York
- Helena Curtis, 1975. Biology. Second Edition. Butterworth & Co Ltd, England
- John W. Kimball. 1992; 1996; 1998. Biologi 1,2 dan 3. Erlangga, Jakarta.

## SET OF THEACHING SCHEDULE

TEACHING SUBJECT : BIOLOGY  
 TEACHING SUBJECT CODE/SCS : PTF 103P/ 3SCS (2-1)  
 MEETING TIME : 2 x 50 minutes  
 MEETING : 11

### E. OBJECT OF TEACHING SUBJECT

#### 1. General Instructional Object :

After following lecture, the student will know and understand about biology concepts of organism autotrophic and heterotrophic : the meaning of life, cell, tissue, organ, and their activity.

#### 2. Specific Instructional Object :

By the course and examples about the topics, the student can explain about heterotrophic organism, especially about transportation, minimum 80% correctness.

**B. MAIN DISCUSSION** : Heterotrophic organism in adult phase

**C. SUB DISCUSSION** : Blood Circulation system

### D. CLASS ACTIVITY :

| PHASE              | TEACHING ACTIVITY                                 | STUDENT ACTIVITY                                | TOOLS  |
|--------------------|---|---|--|
| Introduction       | Explain about main topics                         | Listens<br>Write<br>Ask                         |  |
| Topic Presentation | Explain about blood circulation system            | Listens<br>Write<br>Ask<br>Answer the questions | OHP<br>Transparency<br>Hand out<br>White board |
| Conclusions        | Topics review<br>Ask<br>Explain main topics later | Answer the Questions<br>Note the questions      |  |

### M. EVALUASI

Gives homework to the students to help remain the topics

### N. REFERENSI

- Farid, G.H. Schaum's Outline of Theory and Problems of Biology. McGraw-Hills Publishing
- John W. Kimball. 1992; 1996; 1998. Biologi 1,2 dan 3. Erlangga, Jakarta.

## SET OF THEACHING SCHEDULE

TEACHING SUBJECT : BIOLOGY  
TEACHING SUBJECT CODE/SCS : PTF 103P/ 3SCS (2-1)  
MEETING TIME : 4 x 50 minutes  
MEETING : 12 & 13

### F. OBJECT OF TEACHING SUBJECT

#### 1. General Instructional Object :

After following lecture, the student will know and understand about biology concepts of organism autotrophic and heterotrophic : the meaning of life, cell, tissue, organ, and their activity.

#### 2. Specific Instructional Object :

By the course and examples about the topics, the student can explain about heterotrophic organism, especially about digestoria system, minimum 80% correctness.

**B. MAIN DISCUSSION** : Heterotrophic organism in adult phase

**C. SUB DISCUSSION** : Digestoria pattern  
Contractility mechanism  
Mechanism of Stomach acid work

### D. CLASS ACTIVITY :

| PHASE              | TEACHING ACTIVITY   | STUDENT ACTIVITY                                | TOOLS  |
|--------------------|---|---|--|
| Introduction       | Explain about main topics   | Listens<br>Write<br>Ask                         |  |
| Topic Presentation | Explain about digestoria pattern, contractility mechanism, mechanism of Stomach acid work | Listens<br>Write<br>Ask<br>Answer the questions | OHP<br>Transparency<br>Hand out<br>White board |
| Conclusions        | Topics review<br>Ask<br>Explain main topics later   | Answer the Questions<br>Note the questions      |  |

### O. EVALUASI

Gives homework to the students to help remain the topics

### P. REFERENSI

- Farid, G.H. Schaum's Outline of Theory and Problems of Biology. McGraw-Hills Publishing
- John W. Kimball. 1992; 1996; 1998. Biologi jilid 1,2 dan 3. Erlangga, Jakarta.

## SET OF THEACHING SCHEDULE

TEACHING SUBJECT : BIOLOGY  
 TEACHING SUBJECT CODE/SCS : PTF 103P/ 3SCS (2-1)  
 MEETING TIME : 4x 50 minuter  
 MEETING : 14 & 15

### G. OBJECT OF TEACHING SUBJECT

#### 1. General Instructional Object :

After following lecture, the student will know and understand about biology concepts of organism autotrophic and heterotrophic : the meaning of life, cell, tissue, organ, and their activity.

#### 2. Specific Instructional Object :

By the course and examples about the topics, the student can explain about heterotrophic organism, especially about respiratoria system, minimum 80% correctness.

**B. MAIN DISCUSSION** : Respiratoria system

**C. SUB DISCUSSION** : Respiratoria pattern, metabolism, and respiration  
 Respiration failed factor  
 Respiration optimate principle and hormone  
 Measure of respiration and hormonal

### D. CLASS ACTIVITY :

| PHASE              | TEACHING ACTIVITY  | STUDENT ACTIVITY                                | TOOLS  |
|--------------------|--|---|--|
| Introduction       | Explain about main topics  | Listens<br>Write<br>Ask                         |  |
| Topic Presentation | Explain about respiratoria pattern, metabolism, and respiration, respiration failed factor, principle of respiration optimate and hormone, measure of respiration and hormonal | Listens<br>Write<br>Ask<br>Answer the questions | OHP<br>Transparency<br>Hand out<br>White board |
| Conclutions        | Topics review<br>Ask<br>Explain main topics later  | Answer the Questions<br>Note the questions      |  |

### Q. EVALUASI

Gives homework to the students to help remain the topics

### R. REFERENSI

- Farid, G.H. Schaum's Outline of Theory and Problems of Biology. McGraw-Hills Publishing
- John W. Kimball. 1992; 1996; 1998. Biologi 1,2 dan 3. Erlangga, Jakarta.

## SET OF THEACHING SCHEDULE

**TEACHING SUBJECT** : BIOLOGY  
**TEACHING SUBJECT CODE/SCS** : PTF 103P/ 3SCS (2-1)  
**MEETING TIME** : 2 x 50 minutes  
**MEETING** : 16

### H. OBJECT OF TEACHING SUBJECT

#### 1. General Instructional Object :

After following lecture, the student will know and understand about biology concepts of organism autotrophic and heterotrophic : the meaning of life, cell, tissue, organ, and their activity.

#### 2. Specific Instructional Object :

By the course and examples about the topics, the student can explain about growth and development of animal and plant reproduction , minimum 80% correctness.

**B. MAIN DISCUSSION** : Reproduction

**C. SUB DISCUSSION** : Animal and plant reproduction  
 Their growth and development

#### D. CLASS ACTIVITY :

| PHASE               | TEACHING ACTIVITY  | STUDENT ACTIVITY                                | TOOLS  |
|---------------------|--|---|--|
| Introduction        | Explain about main topics  | Listens<br>Write<br>Ask                         |  |
| Topic Presentaition | Explain about animal and plant reproduction , their growth and development | Listens<br>Write<br>Ask<br>Answer the questions | OHP<br>Transparancy<br>Hand out<br>White board |
| Conclutions         | Topics review<br>Ask<br>Explain main topics later                          | Answer the Questions<br>Note the questions      |  |

### S. EVALUASI

Gives some questions to the students about the main discussion

### T. REFERENSI

- Farid, G.H. Schaum's Outline of Theory and Problems of Biology. McGraw-Hills Publishing
- John W. Kimball. 1992; 1996; 1998. Biologi 1,2 dan 3. Erlangga, Jakarta.

COURSE : Management of Farming Area

COURSE CODE :

CREDIT : (2-1)3

### SET OF TEACHING SCHEDULE

- Title of Subject** : Farming Area Management  
**Number Code /CSS** : PTP 525P / 3 (2-1) SCS  
**Brief Description** : By study of basic of Livestock Physiology student expected to be able to analyze life phenomenon of livestock physiologically, can give alternative for the phenomenon.  
**General Instructional Object** : After following this lecture, student will be able to explain about physical area, chemical and biological, so that they can interrogate the area to produce livestock optimally and manage area to be safe for farming.  
**References** : 1. Cole, D.J.A. dan G.C. Brander. 1986. Bioindustrial Ecosystem. Elsevier, Amsterdam  
 2. Curtis, E.S., 1981. Environmental Management in Animal Agriculture. Iowa State Univ. Press. Ames, Iowa.  
 3. Chafid fandeli, 1992. Analisis Mengenai Dampak Lingkungan dalam Pembangunan  
 4. Eti Widayati, dkk., 1996. Limbah Untuk Pakan Ternak  
 5. Hafez, E.S.E. Adaptation of Domestic Animlas. Lea and Febiger, Philadelphia.  
 6. Mc.Roy, 1980. Pengelolaan Padang Rumput  
 7. Suharto, 1980. Hijauan Makanan Ternak. Gadjah Mada University Press, Yogyakarta  
 8. Wisnu Arya Wardhana, 2001. Dampak Pencemaran Lingkungan  
 9. Gunarwan Suratmo, 1998. Analisis Mengenai Dampak Lingkungan.  
 10. Anonim, 2001. Kumpulan Peraturan Perundangan mengenai Lingkungan Hidup

| NO. | SPECIFIC INSTRUCTIONAL OBJECT   | MAIN DISCUSSION    | SUB DISCUSSION                            | TIME ESTIMATION | REFERENCES |
|-----|---|--------------------|---|-----------------|------------|
| 1   | After attending the lecture about domestication and bio industry, student can explain the role of area for expansion the farming industry | Introduction       | Domestication, urgency of bio industry    | 2x50 minutes    | 1,2,5      |
| 2   | After attending the lecture about ecosystem, student can explain about natural resources and farming product market                       | Area of farming    | Climate, season, weather, ecosystem       | 2x50 minutes    | 1          |
| 3   | After attending the lecture, student can explain about the role of social   | Area of demography | Social, cultural, economic and demography | 2x50 minutes    | 1          |

|   |  |                                |  |              |     |
|---|--|--------------------------------|--|--------------|-----|
|   | explain about the role of social, demography, economic, density and culture in development of farming  |                                | and demography   |              |     |
| 4 | After attending the lecture about physical area, student can explain about topography, soil, ground, water and agriculture system  | Area of physic                 | Topography, soil; land; ground and water and agriculture system                  | 2x50 minutes | 7   |
| 5 | After attending the lecture about the respond of livestock to area, student can explain about temperature balance & temperature stream, influence to productivity and durability | Livestock response to area     | Temperature balance, hot stream and the influence to productivity and durability | 2x50 minutes | 5   |
| 6 | After attending the lecture about modification of area, student can explain about solvent and important meaning of utilization vegetation  | Area modification              | vegetation types to modify area  | 2x50 minutes | 7   |
| 7 | After attending the lecture about engineering of feed source, student can explain about manner and rank of feed source   | Feed source engineering        | feed source manner<br>rank of feed source  | 2x50 minutes | 6   |
| 8 | After attending the lecture about modification of Farm, student can explain about management procedure of farm and space   | Farm engineering               | farm as livestock ecosystem  | 2x50 minutes | 5   |
| 9 | After attending the lecture, student can explain area and environmental control  | Physical environmental control | Livestock and environment<br>Modification of primary environment                 | 4x50 minutes | 2,5 |

|    |  |  |  |              |          |
|----|--|--|--|--------------|----------|
|    |  |  | Modification of secondary environment  |              |          |
| 10 | After attending the lecture, student can explain waste type, waste character, waste treatment technology, and utilization of waste | Type, Character, Processing and utilization of waste | Waste & garbage, kinds of waste.<br>Physics, chemical and waste biology<br>Waste treatment in physical, chemistry, biological<br>Energy source, compost, feed, media grows | 4x50 minutes | 4,8      |
| 11 | After attending the lecture, , student can explain the impact of farming waste product and plan to utilization                     | Analysis about environmental impact                  | Understanding about environmental impact analysis<br>Concept, definition, procedure and order<br>Identification method and evaluation                                      | 4x50 minutes | 3,8,9,10 |

## SET OF TEACHING SCHEDULE

### A. OBJECT OF TEACHING SUBJECT

TEACHING SUBJECT : Management of Farming Area  
 TEACHING SUBJECT CODE / SCS : PTP 525P / 3 (2-1) SCS  
 MEETING TIME : 2 x 50 minutes  
 MEETING : 2

### A. OBJECT

1. General Instructional Object : After following this lecture, student will be able to explain about physical area, chemical and biological, so that they can interrogate the area to produce livestock optimally and manage area to be safe for farming.
2. Spesific Instructional Object : After attending the lecture about ecosystem, student can explain about natural resources and farming product market

B. MAIN SUBJECT : Area of farming

C. SUB SUBJECT : Climate, season, weather, ecosystem

### D. CLASS ACTIVITY:

| PHASE              | TEACHING ACTIVITY   | STUDENTS ACTIVITY                                    | TOOLS   |
|--------------------|---|--|---|
| Introduction       | Explain about climate, season, weather                    | Pay attention<br>Write<br>Ask                        |   |
| Topic presentation | Explains about : element of Climate and factor of climate | Pay attention<br>Write<br>Ask<br>Answer the quetions | OHP<br>Ttransparancy<br>Hand out<br>White board<br>Exercise paper |
| Conclutions        | Make a conclusion and gives image of the next lecture     | pays attention                                       |   |

### E. EVALUATION

Gives question to the student to know the understanding of the student about the topics.

### F. REFERENCES

Cole, D.J.A. and GC. Brander. 1986. Bioindustrial Ecosystem. Elsevier, Amsterdam

## SET OF TEACHING SCHEDULE

### A. OBJECT OF TEACHING SUBJECT

TEACHING SUBJECT : Management of Farming Area  
 TEACHING SUBJECT CODE / SCS : PTP 525P / 3 (2-1) SCS  
 MEETING TIME : 2 x 50 minutes  
 MEETING : 3

### B. OBJECT

1. General Instructional Object : After following this lecture, student will be able to explain about physical area, chemical and biological, so that they can interrogate the area to produce livestock optimally and manage area to be safe for farming.
2. Spesific Instructional Object : After attending the lecture, student can explain about the role of social, demography, economic, density and culture in development of farming

B. MAIN SUBJECT : Area of demography

C. SUB SUBJECT : Social, cultural, economic and demography

### D. CLASS ACTIVITY:

| PHASE              | TEACHING ACTIVITY  | STUDENTS ACTIVITY                                    | TOOLS   |
|--------------------|--|--|---|
| Introduction       | Explains about domesticatuon and urgencyof bioindustry                                   | Pay attention<br>Write<br>Ask                        |   |
| Topic presentation | Explains about the influence of social, cultural, economic and demography to bioindustry | Pay attention<br>Write<br>Ask<br>Answer the quetions | OHP<br>Ttransparency<br>Hand out<br>White board<br>Exercise paper |
| Conclutions        | Make a conclusion and gives image of the next lecture                                    | pays attention                                       |   |

### E. EVALUATION

Gives question to the student to know the understanding of the student about the topics.

### F. REFERENCES

Cole, D.J.A. and GC. Brander. 1986. Bioindustrial Ecosystem. Elsevier, Amsterdam

## SET OF TEACHING SCHEDULE

### A. OBJECT OF TEACHING SUBJECT

TEACHING SUBJECT : Management of Farming Area  
TEACHING SUBJECT CODE / SCS : PTP 525P / 3 (2-1) SCS  
MEETING TIME : 2 x 50 minutes  
MEETING : 4

### C. OBJECT

1. General Instructional Object : After following this lecture, student will be able to explain about physical area, chemical and biological, so that they can interrogate the area to produce livestock optimally and manage area to be safe for farming.
2. Spesific Instructional Object : After attending the lecture about physical area, student can explain about topografi, soil, ground , water and agriculture system

B. MAIN SUBJECT : Area of physic

C. SUB SUBJECT : Topography, soil;land;ground and water and agriculture system

### D. CLASS ACTIVITY:

| PHASE              | TEACHING ACTIVITY  | STUDENTS ACTIVITY                                    | TOOLS   |
|--------------------|--|--|---|
| Introduction       | Explains about Area of physic  | Pay attention<br>Write<br>Ask                        |   |
| Topic presentation | Explains about the relation of area of physic and agriculture system | Pay attention<br>Write<br>Ask<br>Answer the quetions | OHP<br>Ttransparancy<br>Hand out<br>White board<br>Exercise paper |
| Conclutions        | Make a conclusion and gives image of the next lecture                | pays attention                                       |   |

### E. EVALUATION

: Gives question to the student to know the understanding of the student about the topics.

### F. REFERENCES

Suharto, 1980. Livestock Food Forage. Gadjah Mada University Press, Yogyakarta

## SET OF TEACHING SCHEDULE

### A. OBJECT OF TEACHING SUBJECT

TEACHING SUBJECT : Management of Farming Area  
 TEACHING SUBJECT CODE / SCS : PTP 525P / 3 (2-1) SCS  
 MEETING TIME : 2 x 50 minutes  
 MEETING : 5

### D. OBJECT

1. General Instructional Object : After following this lecture, student will be able to explain about physical area, chemical and biological, so that they can interrogate the area to produce livestock optimally and manage area to be safe for farming.
2. Specific Instructional Object : After attending the lecture about the respon of livestock to area, student can explain about temperature balance & temperature stream, influence to productivity and durability

B. MAIN SUBJECT : Livestock response to area

C. SUB SUBJECT : Temperature balance, hot stream and the influence to productivity and durability

### D. CLASS ACTIVITY:

| PHASE              | TEACHING ACTIVITY  | STUDENTS ACTIVITY                                    | TOOLS   |
|--------------------|--|--|---|
| Introduction       | Explains about livestock response to area  | Pay attention<br>Write<br>Ask                        |   |
| Topic presentation | Explains about temperature balance, hot stream and the influence to productivity and durability of livestock | Pay attention<br>Write<br>Ask<br>Answer the quetions | OHP<br>Ttransparancy<br>Hand out<br>White board<br>Exercise paper |
| Conclutions        | Make a conclusion and gives image of the next lecture  | pays attention                                       |   |

### E. EVALUATION

: Gives question to the student to know the understanding of the student about the topics.

### F. REFERENCES

Hafez, E.S.E. Adaptation of Domestic Animlas. Lea and Febiger, Philadelphia

## SET OF TEACHING SCHEDULE

### A. OBJECT OF TEACHING SUBJECT

TEACHING SUBJECT : Management of Farming Area  
 TEACHING SUBJECT CODE / SCS : PTP 525P / 3 (2-1) SCS  
 MEETING TIME : 2 x 50 minutes  
 MEETING : 6

### E. OBJECT

1. General Instructional Object : After following this lecture, student will be able to explain about physical area, chemical and biological, so that they can interrogate the area to produce livestock optimally and manage area to be safe for farming.
2. Spesific Instructional Object : After attending the lecture about modification of area, student can explain about solvent and important meaning of utilization vegetation

B. MAIN SUBJECT : Area modification  
 C. SUB SUBJECT : vegetation types to modify area

### D. CLASS ACTIVITY:

| PHASE              | TEACHING ACTIVITY  | STUDENTS ACTIVITY                                    | TOOLS   |
|--------------------|--|--|---|
| Introduction       | Explains about modification of area                              | Pay attention<br>Write<br>Ask                        |   |
| Topic presentation | Explains about several types of vegetation for area modification | Pay attention<br>Write<br>Ask<br>Answer the quetions | OHP<br>Ttransparancy<br>Hand out<br>White board<br>Exercise paper |
| Conclutions        | Make a conclusion and gives image of the next lecture            | pays attention                                       |   |

### E. EVALUATION

Gives question to the student to know the understanding of the student about the topics.

### F. REFERENCES

Suharto, 1980. Livestock Food Forage. Gadjah Mada University Press, Yogyakarta

## SET OF TEACHING SCHEDULE

### A. OBJECT OF TEACHING SUBJECT

TEACHING SUBJECT : Management of Farming Area  
 TEACHING SUBJECT CODE / SCS : PTP 525P / 3 (2-1) SCS  
 MEETING TIME : 2 x 50 minutes  
 MEETING : 7

### F. OBJECT

1. General Instructional Object : After following this lecture, student will be able to explain about physical area, chemical and biological, so that they can interrogate the area to produce livestock optimally and manage area to be safe for farming.
2. Spesific Instructional Object : After attending the lecture about engineering of feed source, student can explain about manner and rank of feed source

B. MAIN SUBJECT : Feed source engineering

C. SUB SUBJECT : feed source manner  
 rank of feed source

### D. CLASS ACTIVITY:

| PHASE              | TEACHING ACTIVITY                                     | STUDENTS ACTIVITY                                    | TOOLS   |
|--------------------|---|--|---|
| Introduction       | Explains about engineering of feed source             | Pay attention<br>Write<br>Ask                        |   |
| Topic presentation | Explains about about manner and rank of feed source   | Pay attention<br>Write<br>Ask<br>Answer the quetions | OHP<br>Ttransparancy<br>Hand out<br>White board<br>Exercise paper |
| Conclutions        | Make a conclusion and gives image of the next lecture | pays attention                                       |   |

### E. EVALUATION :

Gives question to the student to know the understanding of the student about the topics.

### F. REFERENCES

Mcroy, 1980; Management of Grassland

## SET OF TEACHING SCHEDULE

### A. OBJECT OF TEACHING SUBJECT

TEACHING SUBJECT : Management of Farming Area  
 TEACHING SUBJECT CODE / SCS : PTP 525P / 3 (2-1) SCS  
 MEETING TIME : 2 x 50 minutes  
 MEETING : 8

### G. OBJECT

1. General Instructional Object : After following this lecture, student will be able to explain about physical area, chemical and biological, so that they can interrogate the area to produce livestock optimally and manage area to be safe for farming.
2. Specific Instructional Object : After attending the lecture about modification of Farm, student can explain about management procedure of farm and space

B. MAIN SUBJECT : Farm engineering  
 C. SUB SUBJECT : farm as livestock ecosystem  
 D. CLASS ACTIVITY:

| PHASE              | TEACHING ACTIVITY  | STUDENTS ACTIVITY                                    | TOOLS   |
|--------------------|--|--|---|
| Introduction       | Explains about farm engineering                                  | Pay attention<br>Write<br>Ask                        |   |
| Topic presentation | Explains about about the function of farm and management of farm | Pay attention<br>Write<br>Ask<br>Answer the quetions | OHP<br>Ttransparancy<br>Hand out<br>White board<br>Exercise paper |
| Conclutions        | Make a conclusion and gives image of the next lecture            | pays attention                                       |   |

### E. EVALUATION

Gives question to the student to know the understanding of the student about the topics.

### F. REFERENCES

Hafez, E.S.E. Adaptation of Domestic Animlas. Lea and Febiger, Philadelphia

## SET OF TEACHING SCHEDULE

### A. OBJECT OF TEACHING SUBJECT

TEACHING SUBJECT : Management of Farming Area  
 TEACHING SUBJECT CODE / SCS : PTP 525P / 3 (2-1) SCS  
 MEETING TIME : 2 x 50 minutes  
 MEETING : 9-10

### H. OBJECT

1. General Instructional Object : After following this lecture, student will be able to explain about physical area, chemical and biological, so that they can interrogate the area to produce livestock optimally and manage area to be safe for farming.

2. Spesific Instructional Object : After attending the lecture, student can explain area and environmental control

B. MAIN SUBJECT : Physical environmental control

C. SUB SUBJECT : Livestock and environment  
 Modification of primary environment  
 Modification of secondary environment

### D. CLASS ACTIVITY:

| PHASE              | TEACHING ACTIVITY   | STUDENTS ACTIVITY                                    | TOOLS   |
|--------------------|---|--|---|
| Introduction       | Explains about physical environmental control   | Pay attention<br>Write<br>Ask                        |   |
| Topic presentation | Explains about the relation of livestock and environment, modification of primary environment and modification of secondary environment | Pay attention<br>Write<br>Ask<br>Answer the quetions | OHP<br>Ttransparancy<br>Hand out<br>White board<br>Exercise paper |
| Conclutions        | Make a conclusion and gives image of the next lecture   | pays attention                                       |   |

### E. EVALUATION

: Gives question to the student to know the understanding of the student about the topics.

### F. REFERENCES

Hafez, E.S.E. Adaptation of Domestic Animlas. Lea and Febiger, Philadelphia.  
 Curtis, ES., 1981. Environmental Management indium Animal Agriculture. Iowa State Univ. Press.  
 Ames, Iowa.

## SET OF TEACHING SCHEDULE

### A. OBJECT OF TEACHING SUBJECT

TEACHING SUBJECT : Management of Farming Area  
 TEACHING SUBJECT CODE / SCS : PTP 525P / 3 (2-1) SCS  
 MEETING TIME : 2 x 50 minutes  
 MEETING : 11-12

### I. OBJECT

1. General Instructional Object : After following this lecture, student will be able to explain about physical area, chemical and biological, so that they can interrogate the area to produce livestock optimally and manage area to be safe for farming.
2. Specific Instructional Object : After attending the lecture, student can explain waste type, waste character, waste treatment technology, and utilization of waste

B. MAIN SUBJECT : Type, Character, Processing and utilization of waste

C. SUB SUBJECT : Waste & garbage, kinds of waste.  
 Physics, chemical and waste biology  
 Waste treatment in physical, chemistry, biological  
 Energy source, compost, feed, media grows

### D. CLASS ACTIVITY:

| PHASE              | TEACHING ACTIVITY   | STUDENTS ACTIVITY                                     | TOOLS  |
|--------------------|---|---|--|
| Introduction       | Explains about the type, character, processing and utilization of waste   | Pay attention<br>Write<br>Ask                         |  |
| Topic presentation | Explains about Waste & garbage, kinds of wastes. Physical properties, chemical property and biological from waste, Waste treatment in physical, chemistry, biology and waste benefit as Energy source, compost, feed, media grows | Pay attention<br>Write<br>Ask<br>Answer the questions | OHP<br>Transparency<br>Hand out<br>White board<br>Exercise paper |
| Conclusions        | Make a conclusion and gives image of the next lecture   | pays attention  |  |

### E. EVALUATION

Gives question to the student to know the understanding of the student about the topics.

### F. REFERENCES

Eti Widayati, dkk., 1996. Waste For Foodder  
 Wisnu Arya Wardhana, 2001. Contamination Impact Area of

## SET OF TEACHING SCHEDULE

### A. OBJECT OF TEACHING SUBJECT

TEACHING SUBJECT : Management of Farming Area  
 TEACHING SUBJECT CODE / SCS : PTP 525P / 3 (2-1) SCS  
 MEETING TIME : 2 x 50 minutes  
 MEETING : 13-15

### J. OBJECT

1. General Instructional Object : After following this lecture, student will be able to explain about physical area, chemical and biological, so that they can interrogate the area to produce livestock optimally and manage area to be safe for farming.
2. Spesific Instructional Object : After attending the lecture, , student can explain the impact of farming waste product and plan to utilization

B. MAIN SUBJECT : Analysis about environmental impact

C. SUB SUBJECT : Understanding about environmental impact analysis  
 Concept, definition, procedure and order  
 Identification method and evaluation

### D. CLASS ACTIVITY:

| PHASE              | TEACHING ACTIVITY   | STUDENTS ACTIVITY                                    | TOOLS   |
|--------------------|---|--|---|
| Introduction       | Explains about environmental impact analysis  | Pay attention<br>Write<br>Ask                        |   |
| Topic presentation | Explains about environmental impact analysis, Concept, definition, procedure and order applied and Metode of identification and evaluation and explains impact waste product farming and plans to utilization | Pay attention<br>Write<br>Ask<br>Answer the quetions | OHP<br>Ttransparancy<br>Hand out<br>White board<br>Exercise paper |
| Conclutions        | Make a conclusion and gives image of the next lecture   | pays attention                                       |   |

### E. EVALUATION

: Gives question to the student to know the understanding of the student about the topics.

### F. REFERENCES

Chafid fandeli, 1992. Analysis About Environmental impact in Pembangunan  
 Wisnu Arya Wardhana, 2001. Contamination Impact Area of  
 Gunarwan Suratmo, 1998. Analysis About Environmental impact.  
 Anonim, 2001. Gathering Of Environmental regulation Lived.

## SET OF TEACHING SCHEDULE

TEACHING SUBJECT : Farming Area Management  
 TEACHING SUBJECT CODE / SCS : PTP 525P / 3 (2-1) SCS  
 MEETING TIME : 2 x 50 minutes  
 MEETING : 1

### A. OBJECT OF TEACHING SUBJECT

1. General Instructional Object :

After following this lecture, student will be able to explain about physical area, chemical and biological, so that they can interrogate the area to produce livestock optimally and manage area to be safe for farming.

2. Specific Instructional Object :

After attending the lecture about domestication and bioindustry, student can explain the role of area for expansion the farming industry.

**B. MAIN DISCUSSION** : Introduction

**C. SUB DISCUSSION** : Domestication, urgency of bioindustry

### D. CLASS ACTIVITY :

| PHASE              | TEACHING ACTIVITY  | STUDENTS ACTIVITY  | TOOLS  |
|--------------------|--|--|--|
| Introduction       | Explains about main topic  | Pay attention<br>Write<br>Ask  |  |
| Topic presentation | Explain about :<br>history of domestication of livestock<br>The relation of livestock with area<br>Area component ( physical, chemistry, biology, social)<br>Minimize area influence | Pay attention<br>Pay attentions<br>Write<br>Ask<br>Answer the quetions | OHP<br>Transparancy<br>Hand out<br>White board |
| Conclutions        | Topic review<br>Ask<br>Explains main topic later   | Observe<br>Discussion  |  |

### E. EVALUATION :

Gives question to the student to know the understanding of the student about the topics.

### F. REFERENCES :

Cole, D.J.A. and GC. Brander. 1986. Bioindustrial Ecosystem. Elsevier, Amsterdam  
 Curtis, ES., 1981. Environmental Management indium Animal Agriculture. Iowa State Univ. Press. Ames, Iowa.  
 Hafez, E.S.E. Adaptation of Domestic Animlas. Lea and Febiger, Philadelphia.

## SET OF TEACHING SCHEDULE

### A. OBJECT OF TEACHING SUBJECT

TEACHING SUBJECT : Management of Farming Area  
 TEACHING SUBJECT CODE / SCS : PTP 525P / 3 (2-1) SCS  
 MEETING TIME : 2 x 50 minutes  
 MEETING : 2

### A. OBJECT

1. General Instructional Object : After following this lecture, student will be able to explain about physical area, chemical and biological, so that they can interrogate the area to produce livestock optimally and manage area to be safe for farming.
2. Specific Instructional Object : After attending the lecture about ecosystem, student can explain about natural resources and farming product market

B. MAIN SUBJECT : Area of farming

C. SUB SUBJECT : Climate, season, weather, ecosystem

### D. CLASS ACTIVITY:

| PHASE              | TEACHING ACTIVITY   | STUDENTS ACTIVITY                                     | TOOLS  |
|--------------------|---|---|--|
| Introduction       | Explain about climate, season, weather                    | Pay attention<br>Write<br>Ask                         |  |
| Topic presentation | Explains about : element of Climate and factor of climate | Pay attention<br>Write<br>Ask<br>Answer the questions | OHP<br>Transparency<br>Hand out<br>White board<br>Exercise paper |
| Conclusions        | Make a conclusion and gives image of the next lecture     | pays attention  |  |

### E. EVALUATION

: Gives question to the student to know the understanding of the student about the topics.

### F. REFERENCES

Cole, D.J.A. and GC. Brander. 1986. Bioindustrial Ecosystem. Elsevier, Amsterdam

## SET OF TEACHING SCHEDULE

### A. OBJECT OF TEACHING SUBJECT

TEACHING SUBJECT : Management of Farming Area  
 TEACHING SUBJECT CODE / SCS : PTP 525P / 3 (2-1) SCS  
 MEETING TIME : 2 x 50 minutes  
 MEETING : 3

### B. OBJECT

1. General Instructional Object : After following this lecture, student will be able to explain about physical area, chemical and biological, so that they can interrogate the area to produce livestock optimally and manage area to be safe for farming.
2. Specific Instructional Object : After attending the lecture, student can explain about the role of social, demography, economic, density and culture in development of farming

B. MAIN SUBJECT : Area of demography

C. SUB SUBJECT : Social, cultural, economic and demography

### D. CLASS ACTIVITY:

| PHASE              | TEACHING ACTIVITY  | STUDENTS ACTIVITY                                     | TOOLS  |
|--------------------|--|---|--|
| Introduction       | Explains about domestication and urgency of bioindustry                                  | Pay attention<br>Write<br>Ask                         |  |
| Topic presentation | Explains about the influence of social, cultural, economic and demography to bioindustry | Pay attention<br>Write<br>Ask<br>Answer the questions | OHP<br>Transparency<br>Hand out<br>White board<br>Exercise paper |
| Conclusions        | Make a conclusion and gives image of the next lecture                                    | pays attention  |  |

### E. EVALUATION

: Gives question to the student to know the understanding of the student about the topics.

### F. REFERENCES

Cole, D.J.A. and GC. Brander. 1986. Bioindustrial Ecosystem. Elsevier, Amsterdam

## SET OF TEACHING SCHEDULE

### A. OBJECT OF TEACHING SUBJECT

TEACHING SUBJECT : Management of Farming Area  
 TEACHING SUBJECT CODE / SCS : PTP 525P / 3 (2-1) SCS  
 MEETING TIME : 2 x 50 minutes  
 MEETING : 4

### C. OBJECT

1. General Instructional Object : After following this lecture, student will be able to explain about physical area, chemical and biological, so that they can interrogate the area to produce livestock optimally and manage area to be safe for farming.
2. Spesific Instructional Object : After attending the lecture about physical area, student can explain about topografi, soil, ground , water and agriculture system

B. MAIN SUBJECT : Area of physic

C. SUB SUBJECT : Topography, soil,land;ground and water and agriculture system

### D. CLASS ACTIVITY:

| PHASE              | TEACHING ACTIVITY  | STUDENTS ACTIVITY                                    | TOOLS   |
|--------------------|--|--|---|
| Introduction       | Explains about Area of physic  | Pay attention<br>Write<br>Ask                        |   |
| Topic presentation | Explains about the relation of area of physic and agriculture system | Pay attention<br>Write<br>Ask<br>Answer the quetions | OHP<br>Ttransparancy<br>Hand out<br>White board<br>Exercise paper |
| Conclutions        | Make a conclusion and gives image of the next lecture                | pays attention                                       |   |

### E. EVALUATION

Gives question to the student to know the understanding of the student about the topics.

### F. REFERENCES

Suharto, 1980. Livestock Food Forage. Gadjah Mada University Press, Yogyakarta

## SET OF TEACHING SCHEDULE

### A. OBJECT OF TEACHING SUBJECT

TEACHING SUBJECT : Management of Farming Area  
 TEACHING SUBJECT CODE / SCS : PTP 525P / 3 (2-1) SCS  
 MEETING TIME : 2 x 50 minutes  
 MEETING : 5

### D. OBJECT

1. General Instructional Object : After following this lecture, student will be able to explain about physical area, chemical and biological, so that they can interrogate the area to produce livestock optimally and manage area to be safe for farming.
2. Spesific Instructional Object : After attending the lecture about the respon of livestock to area, student can explain about temperature balance & temperature stream, influence to productivity and durability

B. MAIN SUBJECT : Livestock response to area

C. SUB SUBJECT : Temperature balance, hot stream and the influence to productivity and durability

### D. CLASS ACTIVITY:

| PHASE              | TEACHING ACTIVITY  | STUDENTS ACTIVITY                                    | TOOLS   |
|--------------------|--|--|---|
| Introduction       | Explains about livestock response to area  | Pay attention<br>Write<br>Ask                        |   |
| Topic presentation | Explains about temperature balance, hot stream and the influence to productivity and durability of livestock | Pay attention<br>Write<br>Ask<br>Answer the quetions | OHP<br>Ttransparancy<br>Hand out<br>White board<br>Exercise paper |
| Conclutions        | Make a conclusion and gives image of the next lecture  | pays attention                                       |   |

### E. EVALUATION :

Gives question to the student to know the understanding of the student about the topics.

### F. REFERENCES

Hafez, E.S.E. Adaptation of Domestic Animlas. Lea and Febiger, Philadelphia

## SET OF TEACHING SCHEDULE

### A. OBJECT OF TEACHING SUBJECT

TEACHING SUBJECT : Management of Farming Area  
 TEACHING SUBJECT CODE / SCS : PTP 525P / 3 (2-1) SCS  
 MEETING TIME : 2 x 50 minutes  
 MEETING : 6

### E. OBJECT

1. General Instructional Object : After following this lecture, student will be able to explain about physical area, chemical and biological, so that they can interrogate the area to produce livestock optimally and manage area to be safe for farming.
2. Specific Instructional Object : After attending the lecture about modification of area, student can explain about solvent and important meaning of utilization vegetation

B. MAIN SUBJECT : Area modification  
 C. SUB SUBJECT : vegetation types to modify area

### D. CLASS ACTIVITY:

| PHASE              | TEACHING ACTIVITY  | STUDENTS ACTIVITY                                     | TOOLS  |
|--------------------|--|---|--|
| Introduction       | Explains about modification of area                              | Pay attention<br>Write<br>Ask                         |  |
| Topic presentation | Explains about several types of vegetation for area modification | Pay attention<br>Write<br>Ask<br>Answer the questions | OHP<br>Transparency<br>Hand out<br>White board<br>Exercise paper |
| Conclusions        | Make a conclusion and gives image of the next lecture            | pays attention  |  |

### E. EVALUATION :

Gives question to the student to know the understanding of the student about the topics.

### F. REFERENCES

Suharto, 1980. Livestock Food Forage. Gadjah Mada University Press, Yogyakarta

## SET OF TEACHING SCHEDULE

### A. OBJECT OF TEACHING SUBJECT

TEACHING SUBJECT : Management of Farming Area  
 TEACHING SUBJECT CODE / SCS : PTP 525P / 3 (2-1) SCS  
 MEETING TIME : 2 x 50 minutes  
 MEETING : 7

### F. OBJECT

1. General Instructional Object : After following this lecture, student will be able to explain about physical area, chemical and biological, so that they can interrogate the area to produce livestock optimally and manage area to be safe for farming.
2. Specific Instructional Object : After attending the lecture about engineering of feed source, student can explain about manner and rank of feed source

B. MAIN SUBJECT : Feed source engineering

C. SUB SUBJECT : feed source manner  
 rank of feed source

### D. CLASS ACTIVITY:

| PHASE              | TEACHING ACTIVITY                                     | STUDENTS ACTIVITY                                     | TOOLS  |
|--------------------|---|---|--|
| Introduction       | Explains about engineering of feed source             | Pay attention<br>Write<br>Ask                         |  |
| Topic presentation | Explains about about manner and rank of feed source   | Pay attention<br>Write<br>Ask<br>Answer the questions | OHP<br>Transparency<br>Hand out<br>White board<br>Exercise paper |
| Conclusions        | Make a conclusion and gives image of the next lecture | pays attention  |  |

### E. EVALUATION

: Gives question to the student to know the understanding of the student about the topics.

### F. REFERENCES

Mcroy, 1980. Management of Grassland

## SET OF TEACHING SCHEDULE

### A. OBJECT OF TEACHING SUBJECT

TEACHING SUBJECT : Management of Farming Area  
 TEACHING SUBJECT CODE / SCS : PTP 525P / 3 (2-1) SCS  
 MEETING TIME : 2 x 50 minutes  
 MEETING : 8

### G. OBJECT

1. General Instructional Object : After following this lecture, student will be able to explain about physical area, chemical and biological, so that they can interrogate the area to produce livestock optimally and manage area to be safe for farming.
2. Specific Instructional Object : After attending the lecture about modification of Farm, student can explain about management procedure of farm and space

B. MAIN SUBJECT : Farm engineering  
 C. SUB SUBJECT : farm as livestock ecosystem

### D. CLASS ACTIVITY:

| PHASE              | TEACHING ACTIVITY  | STUDENTS ACTIVITY                                    | TOOLS   |
|--------------------|--|--|---|
| Introduction       | Explains about farm engineering                                  | Pay attention<br>Write<br>Ask                        |   |
| Topic presentation | Explains about about the function of farm and management of farm | Pay attention<br>Write<br>Ask<br>Answer the quetions | OHP<br>Ttransparancy<br>Hand out<br>White board<br>Exercise paper |
| Conclutions        | Make a conclusion and gives image of the next lecture            | pays attention                                       |   |

### E. EVALUATION :

Gives question to the student to know the understanding of the student about the topics.

### F. REFERENCES

Hafez, E.S.E. Adaptation of Domestic Animlas. Lea and Febiger, Philadelphia

## SET OF TEACHING SCHEDULE

### A. OBJECT OF TEACHING SUBJECT

TEACHING SUBJECT : Management of Farming Area  
 TEACHING SUBJECT CODE / SCS : PTP 525P / 3 (2-1) SCS  
 MEETING TIME : 2 x 50 minutes  
 MEETING : 9-10

### H. OBJECT

1. General Instructional Object : After following this lecture, student will be able to explain about physical area, chemical and biological, so that they can interrogate the area to produce livestock optimally and manage area to be safe for farming.
2. Specific Instructional Object : After attending the lecture, student can explain area and environmental control

B. MAIN SUBJECT : Physical environmental control

C. SUB SUBJECT : Livestock and environment  
 Modification of primary environment  
 Modification of secondary environment

### D. CLASS ACTIVITY:

| PHASE              | TEACHING ACTIVITY   | STUDENTS ACTIVITY                                     | TOOLS  |
|--------------------|---|---|--|
| Introduction       | Explains about physical environmental control   | Pay attention<br>Write<br>Ask                         |  |
| Topic presentation | Explains about the relation of livestock and environment, modification of primary environment and modification of secondary environment | Pay attention<br>Write<br>Ask<br>Answer the questions | OHP<br>Transparency<br>Hand out<br>White board<br>Exercise paper |
| Conclusions        | Make a conclusion and gives image of the next lecture   | pays attention  |  |

### E. EVALUATION

: Gives question to the student to know the understanding of the student about the topics.

### F. REFERENCES

Hafez, E.S.E. Adaptation of Domestic Animals. Lea and Febiger, Philadelphia.  
 Curtis, E.S. 1981. Environmental Management in Animal Agriculture. Iowa State Univ. Press.  
 Ames, Iowa.

## SET OF TEACHING SCHEDULE

### A. OBJECT OF TEACHING SUBJECT

TEACHING SUBJECT : Management of Farming Area  
 TEACHING SUBJECT CODE / SCS : PTP 525P / 3 (2-1) SCS  
 MEETING TIME : 2 x 50 minutes  
 MEETING : 11-12

### I. OBJECT

1. General Instructional Object : After following this lecture, student will be able to explain about physical area, chemical and biological, so that they can interrogate the area to produce livestock optimally and manage area to be safe for farming.
2. Specific Instructional Object : After attending the lecture, student can explain waste type, waste character, waste treatment technology, and utilization of waste

B. MAIN SUBJECT : Type, Character, Processing and utilization of waste

C. SUB SUBJECT : Waste & garbage, kinds of waste.  
 Physics, chemical and waste biology  
 Waste treatment in physical, chemistry, biological  
 Energy source, compost, feed, media grows

### D. CLASS ACTIVITY:

| PHASE              | TEACHING ACTIVITY   | STUDENTS ACTIVITY                                     | TOOLS  |
|--------------------|---|---|--|
| Introduction       | Explains about the type, character, processing and utilization of waste   | Pay attention<br>Write<br>Ask                         |  |
| Topic presentation | Explains about Waste & garbage, kinds of wastes. Physical properties, chemical property and biological from waste; Waste treatment in physical, chemistry, biology and waste benefit as Energy source, compost, feed, media grows | Pay attention<br>Write<br>Ask<br>Answer the questions | OHP<br>Transparency<br>Hand out<br>White board<br>Exercise paper |
| Conclusions        | Make a conclusion and gives image of the next lecture   | pays attention  |  |

### E. EVALUATION

: Gives question to the student to know the understanding of the student about the topics.

### F. REFERENCES

Eti Widayati, dkk., 1996. Waste For Foodder  
 Wisnu Arya Wardhana, 2001. Contamination Impact Area of

## SET OF TEACHING SCHEDULE

### A. OBJECT OF TEACHING SUBJECT

TEACHING SUBJECT : Management of Farming Area  
 TEACHING SUBJECT CODE / SCS : PTP 525P / 3 (2-1) SCS  
 MEETING TIME : 2 x 50 minutes  
 MEETING : 13-15

### J. OBJECT

1. General Instructional Object : After following this lecture, student will be able to explain about physical area, chemical and biological, so that they can interrogate the area to produce livestock optimally and manage area to be safe for farming.
  2. Specific Instructional Object : After attending the lecture, student can explain the impact of farming waste product and plan to utilization
- B. MAIN SUBJECT : Analysis about environmental impact  
 C. SUB SUBJECT : Understanding about environmental impact analysis  
 Concept, definition, procedure and order  
 Identification method and evaluation

### D. CLASS ACTIVITY:

| PHASE              | TEACHING ACTIVITY   | STUDENTS ACTIVITY                                     | TOOLS  |
|--------------------|---|---|--|
| Introduction       | Explains about environmental impact analysis  | Pay attention<br>Write<br>Ask                         |  |
| Topic presentation | Explains about environmental impact analysis, Concept, definition, procedure and order applied and Metode of identification and evaluation and explains impact waste product farming and plans to utilization | Pay attention<br>Write<br>Ask<br>Answer the questions | OHP<br>Transparancy<br>Hand out<br>White board<br>Exercise paper |
| Conclusions        | Make a conclusion and gives image of the next lecture   | pays attention  |  |

### E. EVALUATION :

Gives question to the student to know the understanding of the student about the topics.

### F. REFERENCES

- Chafid fandeli, 1992. Analysis About Environmental impact in Pembangunan  
 Wisnu Arya Wardhana, 2001. Contamination Impact Area of  
 Gunarwan Suratmo, 1998. Analysis About Environmental impact.  
 Anonim, 2001. Gathering Of Environmental regulation Lived.

## SET OF TEACHING SCHEDULE

TEACHING SUBJECT : Basic of Livestock Physiology  
 TEACHING SUBJECT CODE / SCS : PTF 201P 3(2-1)  
 MEETING TIME : 2 x 50 minutes  
 MEETING : 1

### A. OBJECT OF TEACHING SUBJECT

#### 1. General Instructional Object :

After following the lecture of Basic of Livestock Physiology, It is expected able to analyse life phenomenon of livestock physiologically causing can give alternative for the phenomenon.

#### 2. Spesific Instructional Object :

After following lecture the Basic of Livestock Physiology, especially in first chapter, it is expected able to explain truly : Meaning of physiology, Scope ( manner) physiology process in livestock body, Functional relation between physiology processes, and the relation of physiological process with production process.

**B. MAIN DISCUSSION** : Introduction

**C. SUB DISCUSSION** : Physiology concept  
 Physiology scope  
 Functional relation between physiology processes  
 The relation of physiology process and production process

### D. CLASS ACTIVITY :

| PHASE              | TEACHING ACTIVITY  | STUDENTS ACTIVITY  | TOOLS  |
|--------------------|--|--|--|
| Introduction       | Explains about main topic  | Listens<br>Write<br>Ask  |  |
| Topic presentation | 1. Discussion fundamental topics<br>2. Physiology concept<br>3. Physiology process scheme<br>4. Production process scheme<br>5. Explains the next discussion fundamental | Listens<br>Pay attentions<br>Write<br>Ask<br>Answer the quelions | OHP<br>Transparency<br>Hand out<br>White board |
| Conclutions        | Topic review<br>Ask<br>Explains main topic later   | Observe<br>Discussion  |  |

### E. EVALUATION :

Gives question to the student to know the understanding of the student about the topics.

## TEACHING PROGRAM OUTLINE

**Title of Subject** : Farming Area Management Practicum  
**Number Code /CSS** : PTP 525P / 3(2-1) Choice

**Brief Description** : Farming Area Management Practicum is about the identification of nature potency, recognition and/or way of measuring physical character of nature, evaluation of cage ( animal welfare), evaluation of waste.

**General Instructional Object** : After following this practice, student can identify the nature potency, recognizes and measure physical character of nature, evaluates livestock cage, and evaluates waste produce of breeding.

**Book material :**

1. Cole, D.J.A. and GC. Brander. 1986. Bioindustrial Ecisystem. Elsevier, Amsterdam.
2. Chafid Fandeli. Analysis About Environmental impact in Development.
3. Curtis, ES. 1981. Environmental Management indium Animal Agriculture. Iowa State Univ. Press. Ames, Iowa.
4. Hafez, E.S.E. 1968. Adaptation of Domestic Animals. Lea & Febiger, Philadelphia.
5. McLRoy. ` 1980. Management of Grassland. its(the Prad Paramita, Jakarta.
6. Reksohadiprodjo, S. 1980. Hijaunan Makanan Ternak. Elephant Mada University Press, yogyakarta.
7. Suratmo, G. 1998. Analysis About Environmental impact.

| No. | Specific Instructional Object  | Main Discussion              | Sub Discussion   | Time Estimation | Books Material |
|-----|--|------------------------------|--|-----------------|----------------|
| 1.  | After following this practicum student is hoped can identify nature potency  | Nature potency               | vegetation type<br>feed source<br>system agriculture   | 1x 100 minutes  | 5, 6           |
| 2.  | After following this practicum student hoped to be solvent of recognition and/or way of measuring character physical of nature | Character physical of nature | farm character and topography<br>space temperature,<br>sunshine intensity<br>direction and speed of wind | 1x 100 minutes  | 1, 3, 4        |
| 3.  | After following this practicum student is hoped can evaluate cage ( animal welfare)  | Cage                         | Material<br>location/position<br>ergonomic   | 1 x 100 minutes | 1, 3           |
| 4.  | After following this practicum student is hoped can evaluate waste   | Waste                        | Waste type<br>Way of processing<br>usage of breeding product<br>waste                                    | 2 x 100 minutes | 2, 7           |

COURSE

: Organic Chemistry

COURSE CODE

: PFF 102 P

CREDIT

: (2-1)3

## SET OF TEACHING SCHEDULE

TEACHING SUBJECT : ORGANIC CHEMISTRY  
TEACHING SUBJECT CODE / SCS : PFF 102P / 3 SCS ( 2-1)  
MEETING TIME : 2 x 50 minutes  
MEETING : 9

### A. OBJECT OF TEACHING SUBJECT

#### 1. General Instructional Object :

After following lecture, the student will be able to explain organic chemistry concepts about main substances which is an external environment and an internal of livestock body.

#### 2. Spesific Instructional Object :

By the discourse and example about organic reaction concepts, the student will be able to explain about kinds of organocompound bounding, substrate change, some organic reactants and reaction type, minimized 90 % correctness.

**B. MAIN DISCUSSION** : Organic reaction

**C. SUB DISCUSSION** : - Organocompound bounding  
- The substrate and changing  
- Reactant in compound organic  
- Organic reaction type

**D. CLASS ACTIVITY** :

| ACTIVITY PHASE     | TEACHING ACTIVITY  | STUDENTS ACTIVITY                              | TOOLS  |
|--------------------|--|--|--|
| Introduction       | Explains about main topic  | Listens<br>Write<br>Ask                        |  |
| Topic presentation | 1. Explains organic reaction concepts<br>2. Explains about substrate clasification and changing<br>3. Explains about several reactant and organic reactions type | Listens<br>Write<br>Ask<br>Answer the quetions | OHP<br>Transparat<br>Hand out<br>White board |
| Conclutions        | Topic review<br>Ask<br>Explains main topic later   | Observe<br>Discussion                          |  |

### E. EVALUATION :

Gives question to the student to know the understanding of the student about the topics.

### F. REFERENCE :

Brady, James E., and Holum, John R., Fundamentals of Chemistry, 3<sup>rd</sup>., John Willey and Sons, Inc., 1988.

Ebbing, Darrell D., General Chemistry, Houghton Mifflin Company, 1984.

Petrucci, Ralph H., General Chemistry, Principles and Modern Application, 4th ed., Collier - McMillan, 1985.

## SET OF TEACHING SCHEDULE

### A. OBJECT OF TEACHING SUBJECT

TEACHING SUBJECT : ORGANIC CHEMISTRY  
 TEACHING SUBJECT CODE / SCS : PF 102P / 3SCS (2-1)  
 MEETING TIME : 2 x 50 minutes  
 MEETING : 10 & 11

#### A. object

1. General Instructional Object : After following lecture, the student will be able to explain organic chemistry concepts about main substances which is an external environment and an internal body of livestock.
2. Specific Instructional Object : By given the course and examples, the student will be able to explain about the classification, nomenclature, structural and source of carbohydrate, identify physical and chemical properties, minimum 80 % correctness.

#### B. MAIN SUBJECT

: Carbohydrate

#### C. SUB SUBJECT

: Classification of Carbohydrate  
 Nomenclatur of Carbohydrate  
 Structure and source of Carbohydrate  
 Physical and chemical properties of Carbohydrate

#### D. CLASS ACTIVITY:

| PHASE              | TEACHING ACTIVITY  | STUDENTS ACTIVITY                               | TOOLS  |
|--------------------|--|---|--|
| Introduction       | Explains about main topic  | Listens<br>Write<br>Ask                         |  |
| Topic presentation | <ol style="list-style-type: none"> <li>1. Explains carbohydrate concepts</li> <li>2. Explains about classification, nomenclature, structural and source of carbohydrate</li> <li>3. Explains about identifying physical and chemical properties of carbohydrate</li> </ol> | Listens<br>Write<br>Ask<br>Answer the questions | OHP<br>Transparants<br>Hand out<br>White board<br>Exercise paper |
| Conclutions        | Topic review<br>Give homework  | Answer the questions<br>Note the questions      |  |

#### E. EVALUATION

: Gives question to the student to know the understanding of the student about the topics.

#### F. REFERENCES

:  
 Brady, James E., and Holum, John R., *Fundamentals of Chemistry*, 3<sup>rd</sup>., John Wiley and Sons, Inc., 1988.  
 O'Connor, P. R., et. al., *Chemistry, Experiments and Principles*, 4<sup>th</sup>. ed., D.C. Heath and Company, 1982.  
 Petrucci, Ralph H., *General Chemistry, Principles and Modern Application*, 4<sup>th</sup> ed., Collier – McMillan, 1985.

## SET OF TEACHING SCHEDULE

### A. OBJECT OF TEACHING SUBJECT

TEACHING SUBJECT : ORGANIC CHEMISTRY  
 TEACHING SUBJECT CODE / SCS : PF 102P / 3SCS (2-1)  
 MEETING TIME : 2 x 50 minutes  
 MEETING : 12 & 13

#### A. object

1. General Instructional Object : After following lecture, the student will be able to explain organic chemistry concepts about main substances which is an external environment and an internal body of livestock.
2. Specific Instructional Object : By given the course and examples, the student will be able to explain about the classification, nomenclature, structural and source of lipid, identify physical and chemical properties, minimum 80 % correctness.

B. MAIN SUBJECT : Lipid

C. SUB SUBJECT : Clasiffication of Lipid  
 Nomenclatur of Lipid  
 Structure and source of Lipid  
 Physical and chemical properties of Lipid

### D. CLASS ACTIVITY:

| PHASE              | TEACHING ACTIVITY   | STUDENTS ACTIVITY                               | TOOLS  |
|--------------------|---|---|--|
| Introduction       | Explains about main topic   | Listens<br>Write<br>Ask                         |  |
| Topic presentation | <ol style="list-style-type: none"> <li>1. Explains lipid concepts</li> <li>2. Explains about classification, nomenclature, structural and source of lipid</li> <li>3. Explains about identifying physical and chemical properties of lipid</li> </ol> | Listens<br>Write<br>Ask<br>Answer the questions | OHP<br>Transparants<br>Hand out<br>White board<br>Exercise paper |
| Conclutions        | Topic review<br>Give homework   | Answer the questions<br>Note the questions      |  |

E. EVALUATION :

Gives question to the student to know the understanding of the student about the topics.

F. REFERENCES :

## SET OF TEACHING SCHEDULE

### A. OBJECT OF TEACHING SUBJECT

TEACHING SUBJECT : ORGANIC CHEMISTRY  
 TEACHING SUBJECT CODE / SCS : PF 102P / 3SCS (2-1)  
 MEETING TIME : 2 x 50 minutes  
 MEETING : 14 & 15

#### A. object

1. General Instructional Object : After following lecture, the student will be able to explain organic chemistry concepts about main substances which is an external environment and an internal body of livestock.
2. Specific Instructional Object : By given the course and examples, the student will be able to explain about the classification, nomenclature, structural and source of protein, identify physical and chemical properties, minimum 80 % correctness.

B. MAIN SUBJECT : Protein

C. SUB SUBJECT : Classification of protein  
 Nomenclatur of protein  
 Structure and source of protein  
 Physical and chemical properties of protein

### D. CLASS ACTIVITY:

| PHASE              | TEACHING ACTIVITY   | STUDENTS ACTIVITY                              | TOOLS  |
|--------------------|---|--|--|
| Introduction       | Explains about main topic   | Listens<br>Write<br>Ask                        |  |
| Topic presentation | 1. Explains protein concepts<br>2. Explains about classification, nomenclature, structural and source of protein<br>3. Explains about identifying physical and chemical properties of protein | Listens<br>Write<br>Ask<br>Answer the quetions | OHP<br>Transparants<br>Hand out<br>White board<br>Exercise paper |
| Conclutions        | Topic review<br>Give homework   | Answer the quetions<br>Note the quetions       |  |

### E. EVALUATION

Gives question to the student to know the understanding of the student about the topics.

### F. REFERENCES

Brady, James E., and Holum, John R., *Fundamentals of Chemistry*, 3<sup>rd</sup>., John Wiley and Sons, Inc., 1988.  
 O'Connor, P. R., et. al., *Chemistry, Experiments and Principles*, 4<sup>th</sup>. ed., D.C. Heath and Company, 1982.  
 Petrucci, Ralph H., *General Chemistry, Principles and Modern Application*, 4<sup>th</sup> ed., Collier – McMillan, 1985.

### SET OF TEACHING SCHEDULE

**A. OBJECT OF TEACHING SUBJECT**

TEACHING SUBJECT : ORGANIC CHEMISTRY  
 TEACHING SUBJECT CODE / SCS : PF 102P / 3SCS (2-1)  
 MEETING TIME : 2 x 50 minutes  
 MEETING : 16

**A. object**

1. General Instructional Object : After following lecture, the student will be able to explain organic chemistry concepts about main substances which is an external environment and an internal body of livestock.
2. Specific Instructional Object : By given the course and examples, the student will be able to explain about the classification, nomenclature, structural and source of vitamins and minerals, identify physical and chemical properties, minimum 80 % correctness.

**B. MAIN SUBJECT** : Protein

**C. SUB SUBJECT** : Classification of vitamins and minerals  
 Nomenclature of vitamins and minerals  
 Structure and source of vitamins and minerals  
 Physical and chemical properties of vitamins and minerals

**D. CLASS ACTIVITY:**

| PHASE              | TEACHING ACTIVITY   | STUDENTS ACTIVITY                               | TOOLS  |
|--------------------|---|---|--|
| Introduction       | vitamins  | Listens<br>Write<br>Ask                         |  |
| Topic presentation | 4. Explains vitamins and minerals concepts<br>5. Explains about classification, nomenclature, structural and source of vitamins and minerals<br>6. Explains about identifying physical and chemical properties of vitamins and minerals | Listens<br>Write<br>Ask<br>Answer the questions | OHP<br>Transparants<br>Hand out<br>White board<br>Exercise paper |
| Conclusions        | Topic review<br>Give homework   | Answer the questions<br>Note the questions      |  |

**E. EVALUATION** :

Gives question to the student to know the understanding of the student about the topics.

**F. REFERENCES** :

Brady, James E., and Holum, John R., *Fundamentals of Chemistry*, 3<sup>rd</sup>., John Wiley and Sons, Inc., 1988.  
 O'Connor, P. R., et. al., *Chemistry, Experiments and Principles*, 4<sup>th</sup>. ed., D.C. Heath and Company, 1982.  
 Petrucci, Ralph H., *General Chemistry, Principles and Modern Application*, 4<sup>th</sup> ed., Collier – McMillan, 1985.