Appendix 4.1

Module Name	**Breeding and Hatchery Management**
Module Level, if applicable	Advance
Code if Applicable	320355012
Subtitle, if applicable	-
Courses, if applicable	320355012, Breeding and Hatchery Management
Semester(s) in which the module is taught	Semester VI
Person responsible for the module	Dr. Ir. Aris Winaya, M.Si.
Lecturer	Dr. Ir. Aris Winaya, M.Si.
Language	Indonesian
Relation to curriculum	Compulsory Courses for undergraduate program in Department of Animal Science Faculty of Agriculture and Animal Science
Type of teaching, contact hours	Type of teaching: Face to face, Practical, Reporting, and Presentation Contact hours : 3 hours x 14 weeks
Workload	Class : 2 hours x 14 weeks = 28 hours Practical class : 1 hours x 14 weeks = 14 hours Examination 2 hours x 2 time = 4 hours Total: 46 hours
Credit points	SKS 3 SCH x (1.4) = 4.2 ECTS
Requirements according to the examination regulations	1. Registered in this course 2. Minimum 80% attendance in this course
Recommended prerequisites	No Recommended prerequisites
Module Objectives (Intended learning outcomes)	On successful completion the Master Thesis, students should be able to: 1. Students are able to explain and understand poultry industry model 2. Students are able to explain and understand genetical chicken selection 3. Students are able to explain breeding management 4. Students are able to explain production management 5. Students elaborate determination hierarchy and genealogy 6. Students are able to understand and explain hatching management 7. Students are able to understand and explain the management of local genetic chicken conservation
Module Content	This course discusses large scale poultry industry, vertical integration, management starting from CKI DOC parent stock management starter, grower to

	parent to produce hatching eggs, hatching, post-hatching until distributions and DOC supply chain unseparated from animal welfare.
Study and examination requirements and forms of examination	**Cognitive:** Midterm exam, Final exam, Quizzes, Assignments **Psychomotor:** Practice **Affective:** Assessed from the element /variables achievement, namely (a) Contributions (attendance, active, role, initiative, and language), (b) Being on time, (c) Effort.
Media employed	Classical teaching tools with white board and power point presentation
Recommended Literature	For Class A. Compulsory 1. APA. 2001a. Plymouth rock. In: American Standard of Perfection, pp: 40-45. 2001 edition, Published by American Poultry Association, Inc. Mendon, Massachusetts, USA. 2. APA. 2001b. Cornish. In: American Standard of Perfection, pp: 96-99. 2001 edition, Published by American Poultry Association, Inc. Mendon, Massachusetts, USA. 3. APA. 2001c. Leghorn. In: American Standard of Perfection, pp: 114-120. 2001 edition, Published by American Poultry Association, Inc. Mendon, Massachusetts, USA B. Option 1. Crawford, R.D. 1990a. Poultry Biology: Origin and History of Poultry Species. In: Poultry Breeding and Genetics (Ed. Crawford, R.D.). Elsevier Science Publishing Company, Amsterdam and New York, pp: 1-42 2. Crawford, RD. 1990b. Poultry genetic resources: evolution, diversity, and conservation. In: Poultry Breeding and Genetics (Ed. Crawford, R.D.). Elsevier Science Publishing Company, Amsterdam and New York, pp: 43-60. 3. Dunnington, EA. 1992. Jungle fowl – domestic fowl relationships: a use of DNA fingerprinting. World's Poultry Science Journal 48: 147-155 4. Dunnington, EA., Stallard, LC., Hillel, J. and Siegel, PB. 1994. Genetic diversity among commercial chicken populations estimated from DNA fingerprints. Poultry Science 73:1218- 1225. 5. Hillel, J., Groenen, MA., Tixier-Boichard, M., Korol, AB., David, L., Kirzhner, VM., Burke, T., BarreDirie, A., Crooijmans, RP., Elo, K., Feldman, MW., Freidlin, PJ., Maki-Tanila, A., Oortwijn, M., Thomson, P., Vignal, A., Wimmers, K. and Weigend, S. 2003. Biodiversity of 52 chicken populations assessed by microsatellite typing of DNA pools. Genetics, Selection, Evolution, 35: 533-557 6. Hunton, P. 1990. Industrial breeding and selection. In: Poultry Breeding and Genetics, (Ed. Crawford R.D.). Elsevier Science Publishing Company, Amsterdam and New York, pp: 985- 1028 7. Hunton, P. 1990. Industrial breeding and selection. In: Poultry Breeding and Genetics, (Ed. Crawford R.D.). Elsevier Science Publishing Company, Amsterdam and New York, pp: 985- 1028. 8. Mark, T. 2021. Applied Animal Breeding for Different Species - with a focus on Danish circumstances. Quantitative and Systems Genetics. Faculty of Life Sciences, University of Copenhagen. http://www.husdyr.kvl.dk/htm/kc/popgen/lecnotes.htm#_Toc291828156. Diakses 21 Juni 2021. 9. Nicol, CJ., Brown, SN., Glen, E., Pope, SJ., Short, FJ., Warriss, PD., Zimmerman, PH and Wilkins, LJ. 2006. Effects of stocking density, flock size and management on the welfare of laying hens in single-tier aviaries. Br. Poult. Sci. 47:135-146. Pagala, MA., Takdir Saili, Nafiu, LO., Sandiah, N., Baa,

LO., Aku, AS., Zulkarnaen, D., and Widhi Kurniawan, 2017. Polymorphism of Mx|Hpy81 Genes in Native Chickens Observed using the PCR-RFLP Technique. International Journal of Poultry Science, 16: 364-368. DOI: 10.3923/ijps.2017.364.368.

For Practical Class

A. Compulsory

1. APA. 2001a. Plymouth rock. In: American Standard of Perfection, pp: 40-45. 2001 edition, Published by American Poultry Association, Inc. Mendon, Massachusetts, USA.

C. APA. 2001b. Cornish. In: American Standard of Perfection, pp: 96-99. 2001 edition, Published by American Poultry Association, Inc. Mendon, Massachusetts, USA.

D. APA. 2001c. Leghorn. In: American Standard of Perfection, pp: 114-120. 2001 edition, Published by American Poultry Association, Inc. Mendon, Massachusetts, USA

B. Option

1. Crawford, R.D. 1990a. Poultry Biology: Origin and History of Poultry Species. In: Poultry Breeding and Genetics (Ed. Crawford, R.D.). Elsevier Science Publishing Company, Amsterdam and New York, pp: 1-42
2. Crawford, RD. 1990b. Poultry genetic resources: evolution, diversity, and conservation. In: Poultry Breeding and Genetics (Ed. Crawford, R.D.). Elsevier Science Publishing Company, Amsterdam and New York, pp: 43-60.
3. Dunnington, EA. 1992. Jungle fowl – domestic fowl relationships: a use of DNA fingerprinting. World's Poultry Science Journal 48: 147-155
4. Dunnington, EA., Stallard, LC., Hillel, J. and Siegel, PB. 1994. Genetic diversity among commercial chicken populations estimated from DNA fingerprints. Poultry Science 73:1218- 1225.
5. Hillel, J., Groenen, MA., Tixier-Boichard, M., Korol, AB., David, L., Kirzhner, VM., Burke, T., BarreDirie, A., Crooijmans, RP., Elo, K., Feldman, MW., Freidlin, PJ., Maki-Tanila, A., Oortwijn, M., Thomson, P., Vignal, A., Wimmers, K. and Weigend, S. 2003. Biodiversity of 52 chicken populations assessed by microsatellite typing of DNA pools. Genetics, Selection, Evolution, 35: 533-557
6. Hunton, P. 1990. Industrial breeding and selection. In: Poultry Breeding and Genetics, (Ed. Crawford R.D.). Elsevier Science Publishing Company, Amsterdam and New York, pp: 985- 1028
7. Hunton, P. 1990. Industrial breeding and selection. In: Poultry Breeding and Genetics, (Ed. Crawford R.D.). Elsevier Science Publishing Company, Amsterdam and New York, pp: 985- 1028.
8. Mark, T. 2021. Applied Animal Breeding for Different Species - with a focus on Danish circumstances. Quantitative and Systems Genetics. Faculty of Life Sciences, University of Copenhagen. http://www.husdyr.kvl.dk/htm/kc/popgen/lecnotes.htm#_Toc291828156. Diakses 21 Juni 2021.
9. Nicol, CJ., Brown, SN., Glen, E., Pope, SJ., Short, FJ., Warriss, PD., Zimmerman, PH and Wilkins, LJ. 2006. Effects of stocking density, flock size and management on the welfare of laying hens in single-tier aviaries. Br. Poult. Sci. 47:135-146. Pagala, MA., Takdir Saili, Nafiu, LO., Sandiah, N., Baa, LO., Aku, AS., Zulkarnaen, D., and Widhi Kurniawan, 2017. Polymorphism of Mx|Hpy81 Genes in Native Chickens Observed using the PCR-RFLP Technique. International Journal of Poultry Science, 16: 364-368. DOI: 10.3923/ijps.2017.364.368.

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