**ANIMAL SCIENCE MSc PROGRAMME**

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| **First Year** | | | | | | | |
| **I. Semester** | | | | | | | |
| Code | Course Title | ECTS | | T+P | Credit | C/E | Language |
| 501011101 | [THE SCIENTIFIC RESEARCH METHODS AND ITS ETHICS](#EN18) | 7.5 | | 3+0+0 | 3 | **C** | Turkish |
| 505102510 | [BIOSECURITY IN ANIMAL BREEDING](#EN24) | | 7.5 | 3+0+0 | 3 | **C** | Turkish | |
|  | Elective Course-1 | 7.5 | | 3+0+0 | 3 | E | Turkish |
|  | Elective Course-2 | 7.5 | | 3+0+0 | 3 | E | Turkish |
|  | Total of I. Semester | 30 | |  | 12 |  |  |
| **II. Semester** | | | | | | | |
| Code | Course Title | ECTS | | T+P | Credit | C/E | Language |
|  | Elective Course-3 | 7.5 | | 3+0+0 | 3 | E | Turkish |
|  | Elective Course-4 | 7.5 | | 3+0+0 | 3 | E | Turkish |
|  | Elective Course-5 | 7.5 | | 3+0+0 | 3 | E | Turkish |
| 505102001 | Seminar | 7.5 | | 0+1+0 | - | **C** | Turkish |
|  | Total of II. Semester | 30 | |  | 9 |  |  |
|  | TOTAL OF FIRST YEAR | 60 | |  | 21 |  |  |

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| **Second Year** | | | | | | | | |
| **III. Semester** | | | | | | | | | |
| Code | Course Title | | ECTS | | T+P | Credit | C/E | Language |
| 505101702 | MSc THESIS STUDY | | 25 | | 0+1+0 | - | **C** | Turkish |
| 505101703 | SPECIALIZATION FIELD COURSE | | 5 | | 3+0+0 | - | **C** | Turkish |
|  | | Total of III. Semester | 30 |  | |  |  |  | |
| **IV. Semester** | | | | | | | | | |
| Code | | Course Title | ECTS | T+P | | Credit | C/E | Language | |
| 505101702 | | MSc THESIS STUDY | 25 | 0+1+0 | | - | **C** | Turkish | |
| 505101703 | | SPECIALIZATION FIELD COURSE | 5 | 3+0+0 | | - | **C** | Turkish | |
|  | | Total of IV. Semester | 30 |  | |  |  |  | |
|  | | TOTAL OF SECOND YEAR | 60 |  | |  |  |  | |

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| **Elective Courses** | | | | | | |
| Code | Course Title | ECTS | T+P | Credit | C/E | Language |
| 505101518 | [Alternative Feed Sources in Animal Nutrition](#EN33) | 7.5 | 3+0+0 | 3 | E | Turkish |
| 505102511 | [AMIN AACIDS IN ANIMAL NUTRITION](#EN25) | 7.5 | 3+0+0 | 3 | E | Turkish |
| 505102504 | [ANIMAL NUTRITION AND REPRODUCTION](#EN3) | 7.5 | 3+0+0 | 3 | E | Turkish |
| 505101521 | [Animal Behaviour](#EN35) | 7.5 | 3+0+0 | 3 | E | Turkish |
| 505101522 | [Animal Welfare](#EN34) | 7.5 | 3+0+0 | 3 | E | Turkish |
| 505101509 | [ARTIFICIAL INS. IN CATTLE AND BUFFALO BREEDING](#EN4) | 7.5 | 3+0+0 | 3 | E | Turkish |
| 505102516 | [Basic Genetics](#EN29) | 7.5 | 3+0+0 | 3 | E | Turkish |
| 505101505 | [BEEF CATTLE BREEDING](#EN5) | 7.5 | 3+0+0 | 3 | E | Turkish |
| 505102502 | [BIOTECHNOLOGY IN ANIMAL BREEDING](#EN6) | 7.5 | 3+0+0 | 3 | E | Turkish |
| 505102512 | [CATTLE BEHAVİOR AND WELFARE](#EN23) | 7.5 | 3+0+0 | 3 | E | Turkish |
| 505101501 | [DAIRY CATTLE BREEDING](#EN7) | 7.5 | 3+0+0 | 3 | E | Turkish |
| 505102507 | [EXPERIMENTAL DESIGN](#EN2) | 7.5 | 3+0+0 | 3 | E | Turkish |
| 505101504 | [FEED ADDITIVES IN ANIMAL NUTRITION](#EN8) | 7.5 | 3+0+0 | 3 | E | Turkish |
| 505101515 | [FEEDING SYSTEMS IN ANIMAL NUTRITION](#EN19) | 7.5 | 3+0+0 | 3 | E | Turkish |
| 505102513 | [FETAL PROGRAMMİNG](#EN26) | 7.5 | 3+0+0 | 3 | E | Turkish |
| 505102515 | [Genetic Diversity Analysis with Molecular Marker Data](#EN36) | 7.5 | 3+0+0 | 3 | E | Turkish |
| 505101502 | [MANAGEMENT OF REPRODUCTION](#EN9) | 7.5 | 3+0+0 | 3 | E | Turkish |
| 505101516 | [METABOLIC DISEASE](#EN28) | 7.5 | 3+0+0 | 3 | E | Turkish |
| 505102508 | [MILKING AND MASTITIS](#EN22) | 7.5 | 3+0+0 | 3 | E | TurkiIsh |
| 505101517 | [MINERAL SUBSTANCES AND IMPORTANCE OF MINERALS IN ANIMAL NUTRITION.](#EN27) | 7.5 | 3+0+0 | 3 | E | Turkish |
| 505102505 | [Molecular Genetics Applications in Livestock](#EN32) | 7.5 | 3+0+0 | 3 | E | Turkish |
| 505102514 | [Molecular Markers and their use in animal husbandry](#EN31) | 7.5 | 3+0+0 | 3 | E | Turkish |
| 505101513 | [MULTIVARIATE ANALYSIS](#EN17) | 7.5 | 3+0+0 | 3 | E | Turkish |
| 505101511 | [NEW DEVELOPMENT OF POULTRY NUTRITION](#EN10) | 7.5 | 3+0+0 | 3 | E | Turkish |
| 505102506 | [NUTRITION OF ORGANIC ANIMAL](#EN11) | 7.5 | 3+0+0 | 3 | E | Turkish |
| 505101519 | [Population Genetics in Animal Breeding](#EN30) | 7.5 | 3+0+0 | 3 | E | Turkish |
| 505101514 | [PROTEIN EVALUATION SYSTEMS](#EN20) | 7.5 | 3+0+0 | 3 | E | Turkish |
| 505101503 | [RECENT DEVELOPMENTS RUMINANT NUTRITION](#EN12) | 7.5 | 3+0+0 | 3 | E | Turkish |
| 505101512 | [RED MEAT SCIENCE](#EN16) | 7.5 | 3+0+0 | 3 | E | Turkish |
| 505101510 | [REPROD. AND EFFEC. REPROD. MAN. IN DAIRY CATTLE](#EN13) | 7.5 | 3+0+0 | 3 | E | Turkish |
| 505101506 | [REPRODUCTIVE ENDOCRINOLOGY](#EN1) | 7.5 | 3+0+0 | 3 | E | Turkish |
| 505102503 | [SMALL RUMINANT MEAT PRODUCTION](#EN14) | 7.5 | 3+0+0 | 3 | E | Turkish |
| 505102501 | [SMALL RUMINANT MILK PRODUCTION](#EN15) | 7.5 | 3+0+0 | 3 | E | Turkish |
| 505102509 | [UDDER HEALTH IN DAIRY COWS](#EN21) | 7.5 | 3+0+0 | 3 | E | Turkish |

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**ESKISEHIR OSMANGAZI UNIVERSITY**

**GRADUATE SCHOOL OF NATURAL AND APPLIED SCIENCES**

**COURSE INFORMATION FORM**

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| **DEPARTMENT** | **ANIMAL SCIENCE (MSc)** | **SEMESTER** |  |

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| **COURSE** | | | |
| **CODE** | 505101506 | **TITLE** | Reproductive Endocrinology |

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| **LEVEL** | **HOUR/WEEK** | | | | | | **Credit** | **ECTS** | **TYPE** | | | **LANGUAGE** |
| **Theory** | | **Practice** | **Laboratory** | | |
| **MSc** | 3 | | 0 | 0 | | | 3 | 7.5 | COMPULSORY  ( x ) | | ELECTIVE  (   ) | Turkish |
| **CREDIT DISTRIBUTION** | | | | | | | | | | | | |
| **Basic Science** | | **Basic Engineering** | | | | **Knowledge in the discipline**  **[if it contains considerable design content, mark with (√)]** | | | | | | |
|  | |  | | | |  | | | | | | |
| **ASSESSMENT CRITERIA** | | | | | | | | | | | | |
| **SEMESTER ACTIVITIES** | | | | | **Evaluation Type** | | | | | **Number** | | **Contribution**  **( % )** |
| Midterm | | | | | 5 | | 35 |
| Quiz | | | | |  | |  |
| Homework | | | | | 1 | | 25 |
| Project | | | | |  | |  |
| Report | | | | |  | |  |
| Seminar | | | | |  | |  |
| Other (     ) | | | | |  | | 40 |
| **Final Examination** | | | | | | |  |
| **PREREQUISITE(S)** | | | | |  | | | | | | | |
| **SHORT COURSE CONTENT** | | | | | Hypothalamic-pituitary-gonadal axis, reproductive hormones, hormone analysis, spermatogenesis, oogenesis, ovulation, estrous cycle, pregnancy, endocrine (gamete transfer, fertilization, implantation, embryogenesis, placenta, pregnancy determination, the corpus luteum, miscarriage, childbirth, development of the mammary gland ), type of farm animals, maturity, reproductive endocrinology and implementation of assisted reproductive techniques. | | | | | | | |
| **COURSE OBJECTIVES** | | | | | The objective of the course is to teach endocrine system and controlling reproduction in mammals especially in farm animals. In addition, to teach control of the endocrine system in order to use it in assisted reproductive techniques. | | | | | | | |
| **COURSE CONTRIBUTION TO THE PROFESSIONAL EDUCATION** | | | | | To learn physiological processes and functions of hormones related to reproduction. | | | | | | | |
| **LEARNING OUTCOMES OF THE COURSE** | | | | | To learn reproductive endocrine system, the roles of reproductive hormones and the mechanism of assisted reproductive techniques. | | | | | | | |
| **TEXTBOOK** | | | | | Current articles and lecture notes prepared from other resources transferred to the electronic environment. | | | | | | | |
| **OTHER REFERENCES** | | | | | 1- ESE Hafez B. Hafez (2000) Reproduction in Farm Animals. Baltimore, Maryland.2- Jimmy D. Neill (2006) Physiology of Reproduction St. | | | | | | | |

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| **COURSE SCHEDULE (Weekly)** | |
| **WEEK** | **TOPICS** |
| 1 | Hypothalamic-pituitary-gonadal axis |
| 2 | Reproductive hormones. |
| 3 | hormone analysis |
| 4 | Spermatogenesis, oogenesis, ovulation, on |
| 5 | Estrus cycle, |
| 6 | Midterm Examination 1 |
| 7 | Endocrinology of Pregnancy (gamete transfer, fertilization, implantation), |
| 8 | Embryogenesis, Placenta |
| 9 | Pregnancy determination, |
| 10 | Miscarriage |
| 11 | Midterm Examination 2 |
| 12 | Birth, development of the mammary gland |
| 13 | Maturity |
| 14 | Application of assisted reproductive techniques |
| 15,16 | Final Examination |

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| **CONTRIBUTION OF THE COURSE LEARNING OUTCOMES TO THE ANIMAL SCIENCE MSc PROGRAM LEARNING OUTCOMES** | | **CONTRIBUTION LEVEL** | | |
| **NO** | **LEARNING OUTCOMES (MSc)** | **3**  High | **2**  Mid | **1**  Low |
| **LO 1** | Graduate student should specialize in one of animal nutrition, animal breeding or biometry and genetics disciplines in addition to bachelor's degree qualifications. |  |  |  |
| **LO 2** | Be able to identify problems in the area of expertise, do research, analyze and interpret the results, develop solutions, entrepreneurs and becomes the router in this area. |  |  |  |
| **LO 3** | Be able to generate new knowledge in the field of scientific expertise by using scientific methods, use and transfer this information to stakeholders through social and ethical responsibility. |  |  |  |
| **LO 4** | Be able to develop strategic approaches to the field of expertise and produce regional, national or international solutions by taking responsibility. |  |  |  |
| **LO 5** | To gain the ability of effective communication orally and in writing, to be conscious in the continuity of learning and self-renewal, to monitor the developments in science and technology. |  |  |  |
| **LO 6** | To gain skills for self-study for disciplinary and interdisciplinary teamwork. |  |  |  |
| **LO 7** | Be able to use the acquired knowledge and skills in interdisciplinary studies. |  |  |  |
| **LO 8** | To be able to use computer and information technology effectively in the field of expertise. |  |  |  |
| **LO 9** | Be able to reflect the knowledge and skills gained in the program in practice of animal production. |  |  |  |

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| **Prepared by :** | . Prof. Dr. Zekeriya KIYMA | **Date:** | 15-5-2015 |

**Signature**:

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**ESKISEHIR OSMANGAZI UNIVERSITY**

**GRADUATE SCHOOL OF NATURAL AND APPLIED SCIENCES**

**COURSE INFORMATION FORM**

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| **DEPARTMENT** | **ANIMAL SCIENCE (MSc)** | **SEMESTER** |  |

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| **COURSE** | | | |
| **CODE** |  | **TITLE** | Experimental Design |

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| **LEVEL** | **HOUR/WEEK** | | | | | | **Credit** | **ECTS** | **TYPE** | | | **LANGUAGE** |
| **Theory** | | **Practice** | **Laboratory** | | |
| **MSc** | 2 | | 2 | 0 | | | 3 | 7.5 | COMPULSORY  (   ) | | ELECTIVE  ( X ) | Turkish |
| **CREDIT DISTRIBUTION** | | | | | | | | | | | | |
| **Basic Science** | | **Basic Engineering** | | | | **Knowledge in the discipline**  **[if it contains considerable design content, mark with (√)]** | | | | | | |
|  | |  | | | |  | | | | | | |
| **ASSESSMENT CRITERIA** | | | | | | | | | | | | |
| **SEMESTER ACTIVITIES** | | | | | **Evaluation Type** | | | | | **Number** | | **Contribution**  **( % )** |
| Midterm | | | | | 1 | | 40 |
| Quiz | | | | |  | |  |
| Homework | | | | |  | |  |
| Project | | | | |  | |  |
| Report | | | | |  | |  |
| Seminar | | | | |  | |  |
| Other (     ) | | | | |  | |  |
| **Final Examination** | | | | | | | 60 |
| **PREREQUISITE(S)** | | | | |  | | | | | | | |
| **SHORT COURSE CONTENT** | | | | | The issues to be considered for experimental design, Completely Randomized Design, Randomized Complete Block Design, Latin Square Design, Factorial Designs, Split-Plot Design, Repeated Measures | | | | | | | |
| **COURSE OBJECTIVES** | | | | | To teach scientific and practical informations about Experimental Design | | | | | | | |
| **COURSE CONTRIBUTION TO THE PROFESSIONAL EDUCATION** | | | | | Be able to identify problems in area of agriculture, do research, analyze and interpret the results, develop solutions. | | | | | | | |
| **LEARNING OUTCOMES OF THE COURSE** | | | | | To learn the research and experimental design concepts and the general principles of experimental planning, and to gain ability of designing an experiment, and to be able to analyze the data obtained from experiments and to interpret the results. | | | | | | | |
| **TEXTBOOK** | | | | | Düzgüneş, O., Kesici, T., Kavuncu, O., Gürbüz, F., 1987. Araştırma ve Deneme Metotları, Ankara Üniv. Ziraat Fakültesi Yayın No: 1021, Ankara. | | | | | | | |
| **OTHER REFERENCES** | | | | | 1) Yıldız, N., Bircan, H., 2003. Araştırma ve Deneme Metotları, Atatürk Üniv. Yayın No: 697, Ziraat Fakültesi No: 305, Ders Kitapları Serisi No: 57, Erzurum.2) Douglas C. Montgomery, 2012. Design and Analysis of Experiments, 8th Edition. John Wiley & Sons, Inc. | | | | | | | |

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| **COURSE SCHEDULE (Weekly)** | |
| **WEEK** | **TOPICS** |
| 1 | Intoduction |
| 2 | The issues to be considered for experimental design |
| 3 | hypothesis testing, model concepts in hypothesis testing, Random, Fixed and Mixed models |
| 4 | Completely Randomized Design |
| 5 | Multiple comparison tests and Orthogonal comparisons |
| 6 | Midterm Examination 1 |
| 7 | Randomized Complete Block Design |
| 8 | Latin Square Design |
| 9 | Factorial Designs |
| 10 | Split-Plot Design |
| 11 | Midterm Examination 2 |
| 12 | Split Split-Plot Design |
| 13 | Nested Design |
| 14 | Repeated Measures |
| 15,16 | Final Examination |

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| **CONTRIBUTION OF THE COURSE LEARNING OUTCOMES TO THE ANIMAL SCIENCE MSc PROGRAM LEARNING OUTCOMES** | | **CONTRIBUTION LEVEL** | | |
| **NO** | **LEARNING OUTCOMES (MSc)** | **3**  High | **2**  Mid | **1**  Low |
| **LO 1** | Graduate student should specialize in one of animal nutrition, animal breeding or biometry and genetics disciplines in addition to bachelor's degree qualifications. |  |  |  |
| **LO 2** | Be able to identify problems in the area of expertise, do research, analyze and interpret the results, develop solutions, entrepreneurs and becomes the router in this area. |  |  |  |
| **LO 3** | Be able to generate new knowledge in the field of scientific expertise by using scientific methods, use and transfer this information to stakeholders through social and ethical responsibility. |  |  |  |
| **LO 4** | Be able to develop strategic approaches to the field of expertise and produce regional, national or international solutions by taking responsibility. |  |  |  |
| **LO 5** | To gain the ability of effective communication orally and in writing, to be conscious in the continuity of learning and self-renewal, to monitor the developments in science and technology. |  |  |  |
| **LO 6** | To gain skills for self-study for disciplinary and interdisciplinary teamwork. |  |  |  |
| **LO 7** | Be able to use the acquired knowledge and skills in interdisciplinary studies. |  |  |  |
| **LO 8** | To be able to use computer and information technology effectively in the field of expertise. |  |  |  |
| **LO 9** | Be able to reflect the knowledge and skills gained in the program in practice of animal production. |  |  |  |

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| **Prepared by :** | Dr. Amir OROJPOUR MARAGHI | **Date:** | 17/11/2015 |

**Signature**:

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**ESKISEHIR OSMANGAZI UNIVERSITY**

**GRADUATE SCHOOL OF NATURAL AND APPLIED SCIENCES**

**COURSE INFORMATION FORM**

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| **DEPARTMENT** | **ANIMAL SCIENCE (MSc)** | **SEMESTER** |  |

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| **COURSE** | | | |
| **CODE** | 505102504 | **TITLE** | Animal Nutrition and Reproduction |

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| **LEVEL** | **HOUR/WEEK** | | | | | | **Credit** | **ECTS** | **TYPE** | | | **LANGUAGE** |
| **Theory** | | **Practice** | **Laboratory** | | |
| **MSc** | 3 | | 0 | 0 | | | 3 | 7.5 | COMPULSORY  (   ) | | ELECTIVE  ( x ) | Turkish |
| **CREDIT DISTRIBUTION** | | | | | | | | | | | | |
| **Basic Science** | | **Basic Engineering** | | | | **Knowledge in the discipline**  **[if it contains considerable design content, mark with (√)]** | | | | | | |
|  | |  | | | |  | | | | | | |
| **ASSESSMENT CRITERIA** | | | | | | | | | | | | |
| **SEMESTER ACTIVITIES** | | | | | **Evaluation Type** | | | | | **Number** | | **Contribution**  **( % )** |
| Midterm | | | | | 1 | | 35 |
| Quiz | | | | |  | |  |
| Homework | | | | | 1 | | 25 |
| Project | | | | |  | |  |
| Report | | | | |  | |  |
| Seminar | | | | |  | |  |
| Other (     ) | | | | |  | |  |
| **Final Examination** | | | | | | | 40 |
| **PREREQUISITE(S)** | | | | |  | | | | | | | |
| **SHORT COURSE CONTENT** | | | | | Relations between nutrition feeding and breeding, nutrition and changing the relationship between metabolic hormones and reproductive hormones, diet content (energy, protein, vitamins and minerals) breeding age, the development of the male and female reproductive organs, ovulation and sperm quality and pregnancy, fetal development, birth, milk yield, effect on breast tissue development, and service period, issues to be aware of at different nutritional periods. | | | | | | | |
| **COURSE OBJECTIVES** | | | | | The purpose of this course is to teach the effects of nutrition on reproduction and the relationship between nutrition and reproduction in farm animals before puberty, pregnancy and postnatal period. ht. | | | | | | | |
| **COURSE CONTRIBUTION TO THE PROFESSIONAL EDUCATION** | | | | | To learn nutritional factors and their affects on reproduction of farm animals. | | | | | | | |
| **LEARNING OUTCOMES OF THE COURSE** | | | | | To understand how nutrition affects fertility and endocrine system controlling fertility to learn nutritional application applications to improve reproduction. | | | | | | | |
| **TEXTBOOK** | | | | | Current articles and lecture notes prepared from other resources transferred to the electronic environment. | | | | | | | |
| **OTHER REFERENCES** | | | | |  | | | | | | | |

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| **COURSE SCHEDULE (Weekly)** | |
| **WEEK** | **TOPICS** |
| 1 | The importance of nutrition |
| 2 | Nutrition at different periods |
| 3 | Nutrition and metabolic hormones |
| 4 | Nutrition and reproductive hormones |
| 5 | Nutrition and breeding age |
| 6 | Midterm Examination 1 |
| 7 | Nutrition and development of the reproductive organs |
| 8 | Nutrition and pregnancy |
| 9 | Nutrition and fetal development |
| 10 | Nutrition and delivery |
| 11 | Midterm Examination 2 |
| 12 | Nutrition and oestrus cycle |
| 13 | Feeding strategies to improve fertility |
| 14 | Feeding strategies to improve fertility |
| 15,16 | Final Examination |

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| **CONTRIBUTION OF THE COURSE LEARNING OUTCOMES TO THE ANIMAL SCIENCE MSc PROGRAM LEARNING OUTCOMES** | | **CONTRIBUTION LEVEL** | | |
| **NO** | **LEARNING OUTCOMES (MSc)** | **3**  High | **2**  Mid | **1**  Low |
| **LO 1** | Graduate student should specialize in one of animal nutrition, animal breeding or biometry and genetics disciplines in addition to bachelor's degree qualifications. |  |  |  |
| **LO 2** | Be able to identify problems in the area of expertise, do research, analyze and interpret the results, develop solutions, entrepreneurs and becomes the router in this area. |  |  |  |
| **LO 3** | Be able to generate new knowledge in the field of scientific expertise by using scientific methods, use and transfer this information to stakeholders through social and ethical responsibility. |  |  |  |
| **LO 4** | Be able to develop strategic approaches to the field of expertise and produce regional, national or international solutions by taking responsibility. |  |  |  |
| **LO 5** | To gain the ability of effective communication orally and in writing, to be conscious in the continuity of learning and self-renewal, to monitor the developments in science and technology. |  |  |  |
| **LO 6** | To gain skills for self-study for disciplinary and interdisciplinary teamwork. |  |  |  |
| **LO 7** | Be able to use the acquired knowledge and skills in interdisciplinary studies. |  |  |  |
| **LO 8** | To be able to use computer and information technology effectively in the field of expertise. |  |  |  |
| **LO 9** | Be able to reflect the knowledge and skills gained in the program in practice of animal production. |  |  |  |

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| **Prepared by :** | Assist. Prof. Dr. Zekeriya KIYMA | **Date:** | 15-5-2015 |

**Signature**:

**T.R.**

**ESKISEHIR OSMANGAZI UNIVERSITY**

**GRADUATE SCHOOL OF NATURAL AND APPLIED SCIENCES**

**COURSE INFORMATION FORM**

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| **DEPARTMENT** | **ANIMAL SCIENCE (MSc)** | **SEMESTER** |  |

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| **COURSE** | | | |
| **CODE** | 505101509 | **TITLE** | Artificial ins. in cattle and buffalo breeding |

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| **LEVEL** | **HOUR/WEEK** | | | | | | **Credit** | **ECTS** | **TYPE** | | | **LANGUAGE** |
| **Theory** | | **Practice** | **Laboratory** | | |
| **MSc** | 3 | | 0 | 0 | | | 3 | 7,5 | COMPULSORY  (   ) | | ELECTIVE  ( X ) | Turkish |
| **CREDIT DISTRIBUTION** | | | | | | | | | | | | |
| **Basic Science** | | **Basic Engineering** | | | | **Knowledge in the discipline**  **[if it contains considerable design content, mark with (√)]** | | | | | | |
|  | | x | | | |  | | | | | | |
| **ASSESSMENT CRITERIA** | | | | | | | | | | | | |
| **SEMESTER ACTIVITIES** | | | | | **Evaluation Type** | | | | | **Number** | | **Contribution**  **( % )** |
| Midterm | | | | | 2 | | 50 |
| Quiz | | | | |  | |  |
| Homework | | | | |  | |  |
| Project | | | | |  | |  |
| Report | | | | |  | |  |
| Seminar | | | | |  | |  |
| Other (     ) | | | | |  | |  |
| **Final Examination** | | | | | | | 50 |
| **PREREQUISITE(S)** | | | | |  | | | | | | | |
| **SHORT COURSE CONTENT** | | | | | Improving dairy cattle quality, Bull testing programmes, AI use in beef cows, Natural versus artificial insemination, Non-return rates, Frozen semen, Developments in cattle AI technology, Insemination procedures, Do-it-yourself artificial insemination, The inseminator a n d oestrus detection, Bull fertility testing in the laboratory, Artificial insemination in the tropics, Factors Affecting Semen Quality and Fertility in Bulls, Rearing and management of bulls, Environmental factors in the growing period, Puberty and the production of semen, Evaluation of bull fertility, Environment and bull fertility, Endocrine factors in sperm production.  Artificial Insemination as the Breeding Method in Buffalo: Factors influencing uptake of AI, Semen collection and evaluation, Fresh (chilled) semen and diluents employed, Freezing of buffalo semen, Methods employed in AI, Conception rates after insemination with fresh and frozen semen. | | | | | | | |
| **COURSE OBJECTIVES** | | | | | Artificial insemination is a tool to have a rapid genetic progress in animal breeding and farmers don't have to keep bulls as they use this technology. The aim of this course is to teach about this important procedure. | | | | | | | |
| **COURSE CONTRIBUTION TO THE PROFESSIONAL EDUCATION** | | | | | To give information about the content of the course and teach those used as practice and benefit from them via a veterinarian. | | | | | | | |
| **LEARNING OUTCOMES OF THE COURSE** | | | | | 1. The person has knowledge about the improvement of dairy cattle quality  2. The person apprehends the importance of AI  3. The person has knowlwedge about AI and AI procedures  4. The person apprehends the factors effecting semen quality and fertility | | | | | | | |
| **TEXTBOOK** | | | | | Gordon I (1997) Controlled reproduction in cattle and buffaloes. CAB International. | | | | | | | |
| **OTHER REFERENCES** | | | | | Wattaux MA (Translation ed: Ahmet G Önal, Translation: Bayazıt Musal) (2009) Guide of technical dairy cattle breeding (Reproduction and genetic selection). Adnan Menderes Uni. Publication No: 29. | | | | | | | |

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| **COURSE SCHEDULE (Weekly)** | |
| **WEEK** | **TOPICS** |
| 1 | Improving dairy cattle quality, Bull testing programmes, AI use in beef cows, |
| 2 | Improving dairy cattle quality, Bull testing programmes, AI use in beef cows, Natural versus artificial insemination, Non-return rates, Frozen semen, |
| 3 | Developments in cattle AI technology, |
| 4 | Insemination procedures, |
| 5 | The inseminator and oestrus detection, Bull fertility testing in the laboratory, Artificial insemination in the tropics, |
| 6 | Midterm Examination 1 |
| 7 | Factors Affecting Semen Quality and Fertility in Bulls, |
| 8 | Rearing and management of bulls, Environmental factors in the growing period, |
| 9 | Puberty and the production of semen, Evaluation of bull fertility, |
| 10 | Environment and bull fertility, Endocrine factors in sperm production. |
| 11 | Midterm Examination 2 |
| 12 | Artificial Insemination as the Breeding Method in Buffalo: Factors influencing uptake of AI, |
| 13 | Semen collection and evaluation, Fresh (chilled) semen and diluents employed, |
| 14 | Freezing of buffalo semen, Methods employed in AI, Conception rates after insemination with fresh and frozen semen. |
| 15,16 | Final Examination |

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| **CONTRIBUTION OF THE COURSE LEARNING OUTCOMES TO THE ANIMAL SCIENCE MSc PROGRAM LEARNING OUTCOMES** | | **CONTRIBUTION LEVEL** | | |
| **NO** | **LEARNING OUTCOMES (MSc)** | **3**  High | **2**  Mid | **1**  Low |
| **LO 1** | Graduate student should specialize in one of animal nutrition, animal breeding or biometry and genetics disciplines in addition to bachelor's degree qualifications. |  |  |  |
| **LO 2** | Be able to identify problems in the area of expertise, do research, analyze and interpret the results, develop solutions, entrepreneurs and becomes the router in this area. |  |  |  |
| **LO 3** | Be able to generate new knowledge in the field of scientific expertise by using scientific methods, use and transfer this information to stakeholders through social and ethical responsibility. |  |  |  |
| **LO 4** | Be able to develop strategic approaches to the field of expertise and produce regional, national or international solutions by taking responsibility. |  |  |  |
| **LO 5** | To gain the ability of effective communication orally and in writing, to be conscious in the continuity of learning and self-renewal, to monitor the developments in science and technology. |  |  |  |
| **LO 6** | To gain skills for self-study for disciplinary and interdisciplinary teamwork. |  |  |  |
| **LO 7** | Be able to use the acquired knowledge and skills in interdisciplinary studies. |  |  |  |
| **LO 8** | To be able to use computer and information technology effectively in the field of expertise. |  |  |  |
| **LO 9** | Be able to reflect the knowledge and skills gained in the program in practice of animal production. |  |  |  |

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| **Prepared by :** | Prof. Dr. Muhammet Alan | **Date:** | 20.05.2015 |

**Signature**:

**T.R.**

**ESKISEHIR OSMANGAZI UNIVERSITY**

**GRADUATE SCHOOL OF NATURAL AND APPLIED SCIENCES**

**COURSE INFORMATION FORM**

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| **DEPARTMENT** | **ANIMAL SCIENCE (MSc)** | **SEMESTER** |  |

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| **COURSE** | | | |
| **CODE** | 505101505 | **TITLE** | Beef Cattle Breeding |

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| **LEVEL** | **HOUR/WEEK** | | | | | | **Credit** | **ECTS** | **TYPE** | | | **LANGUAGE** |
| **Theory** | | **Practice** | **Laboratory** | | |
| **MSc** | 3 | | 0 | 0 | | | 3 | 7.5 | COMPULSORY  (   ) | | ELECTIVE  ( X ) | Turkish |
| **CREDIT DISTRIBUTION** | | | | | | | | | | | | |
| **Basic Science** | | **Basic Engineering** | | | | **Knowledge in the discipline**  **[if it contains considerable design content, mark with (√)]** | | | | | | |
|  | |  | | | |  | | | | | | |
| **ASSESSMENT CRITERIA** | | | | | | | | | | | | |
| **SEMESTER ACTIVITIES** | | | | | **Evaluation Type** | | | | | **Number** | | **Contribution**  **( % )** |
| Midterm | | | | | 1 | | 35 |
| Quiz | | | | |  | |  |
| Homework | | | | | 1 | | 25 |
| Project | | | | |  | |  |
| Report | | | | |  | |  |
| Seminar | | | | |  | |  |
| Other (     ) | | | | |  | |  |
| **Final Examination** | | | | | | | 40 |
| **PREREQUISITE(S)** | | | | |  | | | | | | | |
| **SHORT COURSE CONTENT** | | | | | Place of cattle in meat production, meat cattle breeds, factors affecting meat production, meat cattle management principles, breeding, feeding, feeding systems, beef cattle shelters, can compatible meat production, economy of beef production. | | | | | | | |
| **COURSE OBJECTIVES** | | | | | To understand the role and importance of beef cattle production in Turkey and in the world and to learn the basic principles of beef cattle production. | | | | | | | |
| **COURSE CONTRIBUTION TO THE PROFESSIONAL EDUCATION** | | | | | To learn the basic principles of beef cattle production and relations between market and production. | | | | | | | |
| **LEARNING OUTCOMES OF THE COURSE** | | | | | Be able to know the concepts related to beef production, beef cattle breeds, nutrition, housing, and body condition score, growth, carcass evaluation methods and economic evaluation of beef production. | | | | | | | |
| **TEXTBOOK** | | | | | Current articles and lecture notes prepared from other resources transferred to the electronic environment. | | | | | | | |
| **OTHER REFERENCES** | | | | | Thomas W. Field, Robert W. Taylor. (5th Eddition) Beef Production and Management Decisions 1- | | | | | | | |

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| **COURSE SCHEDULE (Weekly)** | |
| **WEEK** | **TOPICS** |
| 1 | Meat production in Turkey and in the world |
| 2 | Stock systems |
| 3 | Meat cattle breeds |
| 4 | Shelters |
| 5 | Factors affecting meat production |
| 6 | Midterm Examination 1 |
| 7 | Competitive meat production |
| 8 | Meat quality |
| 9 | Carcass evaluation |
| 10 | Nutrition |
| 11 | Midterm Examination 2 |
| 12 | Nutrition |
| 13 | Feed economy. |
| 14 | Reproduction |
| 15,16 | Final Examination |

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| **CONTRIBUTION OF THE COURSE LEARNING OUTCOMES TO THE ANIMAL SCIENCE MSc PROGRAM LEARNING OUTCOMES** | | **CONTRIBUTION LEVEL** | | |
| **NO** | **LEARNING OUTCOMES (MSc)** | **3**  High | **2**  Mid | **1**  Low |
| **LO 1** | Graduate student should specialize in one of animal nutrition, animal breeding or biometry and genetics disciplines in addition to bachelor's degree qualifications. |  |  |  |
| **LO 2** | Be able to identify problems in the area of expertise, do research, analyze and interpret the results, develop solutions, entrepreneurs and becomes the router in this area. |  |  |  |
| **LO 3** | Be able to generate new knowledge in the field of scientific expertise by using scientific methods, use and transfer this information to stakeholders through social and ethical responsibility. |  |  |  |
| **LO 4** | Be able to develop strategic approaches to the field of expertise and produce regional, national or international solutions by taking responsibility. |  |  |  |
| **LO 5** | To gain the ability of effective communication orally and in writing, to be conscious in the continuity of learning and self-renewal, to monitor the developments in science and technology. |  |  |  |
| **LO 6** | To gain skills for self-study for disciplinary and interdisciplinary teamwork. |  |  |  |
| **LO 7** | Be able to use the acquired knowledge and skills in interdisciplinary studies. |  |  |  |
| **LO 8** | To be able to use computer and information technology effectively in the field of expertise. |  |  |  |
| **LO 9** | Be able to reflect the knowledge and skills gained in the program in practice of animal production. |  |  |  |

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| **Prepared by :** | Assist. Prof. Dr. Zekeriya KIYMA | **Date:** | 15-5-2015 |

**Signature**:

**T.R.**

**ESKISEHIR OSMANGAZI UNIVERSITY**

**GRADUATE SCHOOL OF NATURAL AND APPLIED SCIENCES**

**COURSE INFORMATION FORM**

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| **DEPARTMENT** | **ANIMAL SCIENCE (MSc)** | **SEMESTER** |  |

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| **COURSE** | | | |
| **CODE** | 505102502 | **TITLE** | Biotechnology in Animal Breeding |

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| **LEVEL** | **HOUR/WEEK** | | | | | | **Credit** | **ECTS** | **TYPE** | | | **LANGUAGE** |
| **Theory** | | **Practice** | **Laboratory** | | |
| **MSc** | 3 | | 0 | 0 | | | 3 | 7,5 | COMPULSORY  (   ) | | ELECTIVE  ( X ) | Turkish |
| **CREDIT DISTRIBUTION** | | | | | | | | | | | | |
| **Basic Science** | | **Basic Engineering** | | | | **Knowledge in the discipline**  **[if it contains considerable design content, mark with (√)]** | | | | | | |
|  | | X | | | |  | | | | | | |
| **ASSESSMENT CRITERIA** | | | | | | | | | | | | |
| **SEMESTER ACTIVITIES** | | | | | **Evaluation Type** | | | | | **Number** | | **Contribution**  **( % )** |
| Midterm | | | | | 2 | | 50 |
| Quiz | | | | |  | |  |
| Homework | | | | |  | |  |
| Project | | | | |  | |  |
| Report | | | | |  | |  |
| Seminar | | | | |  | |  |
| Other (     ) | | | | |  | |  |
| **Final Examination** | | | | | | | 50 |
| **PREREQUISITE(S)** | | | | | None | | | | | | | |
| **SHORT COURSE CONTENT** | | | | | Reproductive technologies, Reproduction control, Impact t of artificial insemination technology, Embryo transfer and associated techniques, Artificial Insemination as the Breeding Method, Oestrus in the Cow and Techniques Used in its Detection, Suppression of Sexual Activity in Cattle, Reproductive Management Programs, Ultrasound Imaging in Monitoring Ovarian Activity, Artificial Control of Oestrus and Ovulation, Pregnancy Testing, Control of Calving, Controlling the Calving Interval, Embryo Transfer and Associated Techniques, In Vitro Production of Embryos, Sex Control by Separation of Spermatozoa, Embryo Sexing Procedures, Cloning, Production of Transgenic organisms, Induction of Twin Births, Hormonal Induction of Puberty, Controlled Reproduction in Sheep, Advancing the Sheep Breeding Season, More Frequent Lambing in Sheep, Induction of Multiple Births, Controlled Breeding in Goats, Artificial Control of Estrus and Breeding Activity in Goats | | | | | | | |
| **COURSE OBJECTIVES** | | | | | The objective of the course is to teach topics and concepts of which short contents are given above. | | | | | | | |
| **COURSE CONTRIBUTION TO THE PROFESSIONAL EDUCATION** | | | | | Additive of course is very important | | | | | | | |
| **LEARNING OUTCOMES OF THE COURSE** | | | | | 1. The person has knowledge about Reproductive technologies, Reproduction control, Impact t of artificial insemination technology, Embryo transfer and associated techniques, Artificial Insemination as the Breeding Method,  2. The person can apply Techniques Used in estrus Detection in cows, Suppression of Sexual Activity in Cattle and Reproductive Management Programs,  3. The person comprehends the importance of Pregnancy Testing, Control of Calving, Controlling the Calving Interval,  4. The person has knowledge obout Embryo Transfer and Associated Techniques, In Vitro Production of Embryos, Sex Control by Separation of Spermatozoa, Embryo Sexing Procedures, Cloning, Production of Transgenic organisms, Induction of Twin Births, Hormonal Induction of Puberty, Controlled Reproduction in Sheep, Advancing the Sheep Breeding Season, More Frequent Lambing in Sheep, Induction of Multiple Births, Controlled Breeding in Goats, Artificial Control of Estrus and Breeding Activity in Goats | | | | | | | |
| **TEXTBOOK** | | | | | Alaçam E (Edit), 1999, Evcil Hayvanlarda Doğum ve İnfertilite. Medisan, Ankara. | | | | | | | |
| **OTHER REFERENCES** | | | | | Gordon I., 1996, CONTROLLED REPRODUCTION in Cattle and Buffaloes. CAB INTERNATIONAL, UK.Gordon I., 1997, CONTROLLED REPRODUCTION in Sheep and Goats. CAB INTERNATIONAL, UK.Hafez B, Hafez E.S.E. (Editors), 2000, REPRODUCTION IN FARM ANIMALS. 7th Edition, Lippincott Williams & Wilkins, USA.Houdebine, L-M., 2003, Animal Transgenesis and Cloning. John Wiley & Sons Ltd, England. | | | | | | | |

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| **COURSE SCHEDULE (Weekly)** | |
| **WEEK** | **TOPICS** |
| 1 | Reproductive technologies, Reproduction control |
| 2 | Impact of artificial insemination technology |
| 3 | Embryo transfer and associated techniques |
| 4 | Artificial Insemination as the Breeding Method |
| 5 | Estrus in the Cow and Techniques Used in its Detection |
| 6 | Midterm Examination 1 |
| 7 | Suppression of Sexual Activity in Cattle, Reproductive Management Programs |
| 8 | Ultrasound Imaging in Monitoring Ovarian Activity, Artificial Control of Estrus and Ovulation |
| 9 | Pregnancy Testing, Control of Calving, Controlling the Calving Interval |
| 10 | In Vitro Production of Embryos, Sex Control by Separation of Spermatozoa |
| 11 | Midterm Examination 2 |
| 12 | Embryo Sexing Procedures, Cloning, Production of Transgenic organisms |
| 13 | Induction of Twin Births, Hormonal Induction of Puberty, Controlled Reproduction in Sheep, Advancing the Sheep Breeding Season, More Frequent Lambing in Sheep, Induction of Multiple Births |
| 14 | Controlled Breeding in Goats, Artificial Control of Estrus and Breeding Activity in Goats |
| 15,16 | Final Examination |

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| **CONTRIBUTION OF THE COURSE LEARNING OUTCOMES TO THE ANIMAL SCIENCE MSc PROGRAM LEARNING OUTCOMES** | | **CONTRIBUTION LEVEL** | | |
| **NO** | **LEARNING OUTCOMES (MSc)** | **3**  High | **2**  Mid | **1**  Low |
| **LO 1** | Graduate student should specialize in one of animal nutrition, animal breeding or biometry and genetics disciplines in addition to bachelor's degree qualifications. |  |  |  |
| **LO 2** | Be able to identify problems in the area of expertise, do research, analyze and interpret the results, develop solutions, entrepreneurs and becomes the router in this area. |  |  |  |
| **LO 3** | Be able to generate new knowledge in the field of scientific expertise by using scientific methods, use and transfer this information to stakeholders through social and ethical responsibility. |  |  |  |
| **LO 4** | Be able to develop strategic approaches to the field of expertise and produce regional, national or international solutions by taking responsibility. |  |  |  |
| **LO 5** | To gain the ability of effective communication orally and in writing, to be conscious in the continuity of learning and self-renewal, to monitor the developments in science and technology. |  |  |  |
| **LO 6** | To gain skills for self-study for disciplinary and interdisciplinary teamwork. |  |  |  |
| **LO 7** | Be able to use the acquired knowledge and skills in interdisciplinary studies. |  |  |  |
| **LO 8** | To be able to use computer and information technology effectively in the field of expertise. |  |  |  |
| **LO 9** | Be able to reflect the knowledge and skills gained in the program in practice of animal production. |  |  |  |

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| **Prepared by :** | Prof. Dr. Muhammet ALAN | **Date:** | 15.05.2015 |

**Signature**:

**T.R.**

**ESKISEHIR OSMANGAZI UNIVERSITY**

**GRADUATE SCHOOL OF NATURAL AND APPLIED SCIENCES**

**COURSE INFORMATION FORM**

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| **DEPARTMENT** | **ANIMAL SCIENCE (MSc)** | **SEMESTER** |  |

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| **COURSE** | | | |
| **CODE** | 505101501 | **TITLE** | Dairy Cattle Breeding |

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| **LEVEL** | **HOUR/WEEK** | | | | | | **Credit** | **ECTS** | **TYPE** | | | **LANGUAGE** |
| **Theory** | | **Practice** | **Laboratory** | | |
| **MSc** | 3 | | 0 | 0 | | | 3 | 7,5 | COMPULSORY  (   ) | | ELECTIVE  ( X ) | Turkish |
| **CREDIT DISTRIBUTION** | | | | | | | | | | | | |
| **Basic Science** | | **Basic Engineering** | | | | **Knowledge in the discipline**  **[if it contains considerable design content, mark with (√)]** | | | | | | |
|  | | X | | | |  | | | | | | |
| **ASSESSMENT CRITERIA** | | | | | | | | | | | | |
| **SEMESTER ACTIVITIES** | | | | | **Evaluation Type** | | | | | **Number** | | **Contribution**  **( % )** |
| Midterm | | | | | 2 | | 50 |
| Quiz | | | | |  | |  |
| Homework | | | | |  | |  |
| Project | | | | |  | |  |
| Report | | | | |  | |  |
| Seminar | | | | |  | |  |
| Other (     ) | | | | |  | |  |
| **Final Examination** | | | | | | | 50 |
| **PREREQUISITE(S)** | | | | | None | | | | | | | |
| **SHORT COURSE CONTENT** | | | | | Milk and its importance, dairy cattle breeds, dairy cattle stables, udder development, lactation and milking, factors affecting lactogenesis and galactopoiesis, quality in milk, mastitis, mammary oedema, feeding, reproduction, foot and reproductive problems. | | | | | | | |
| **COURSE OBJECTIVES** | | | | | The objective of the course is to teach topics and concepts of which short contents are given above. | | | | | | | |
| **COURSE CONTRIBUTION TO THE PROFESSIONAL EDUCATION** | | | | | Additive of course is very important | | | | | | | |
| **LEARNING OUTCOMES OF THE COURSE** | | | | | 1. The person has knowledge about milk and its importance,  2. The person comprehends dairy cattle breeds, dairy cattle stables, udder development, lactation and milking,  3. The person can form an estimate of factors affecting lactogenesis and galactopoiesis,  4. The person has knowledge about quality of milk, mastitis, mammary oedema, feeding, reproduction, foot and reproductive problems. | | | | | | | |
| **TEXTBOOK** | | | | | Wattaux MA (Çeviri editörü : Ahmet G Önal, Çeviri: Bayazıt Musal) (2009) Teknik Süt Sığırcılığı Rehberi (Üreme ve genetik seleksiyon). Adnan Menderes Üniversitesi Yayın No: 29.Wattaux MA (Çeviri editörü : Ahmet G Önal, Çeviri: Bayazıt Musal) (2009) Teknik Süt Sığırcılığı Rehberi (Laktasyon ve sağım). Adnan Menderes Üniversitesi Yayın No: 29. | | | | | | | |
| **OTHER REFERENCES** | | | | | Tuncel E, Ak İ, Şahan Ü, Koyuncu M (1997) Hayvan Yetiştirme. Uludağ Üni. Ziraat Fak. Ders Notları, No 71, Bursa.Alaçam E (Editör)(1997) Evcil hayvanlarda doğum ve infertilite. Medisan, Ankara.Blowey R, Edmondson P (2000) Mastitis control in dairy herds. Farming press, United Kingdom. | | | | | | | |

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| **COURSE SCHEDULE (Weekly)** | |
| **WEEK** | **TOPICS** |
| 1 | milk and its importance, |
| 2 | dairy cattle breeds, |
| 3 | dairy cattle stables, |
| 4 | udder development, |
| 5 | lactation and milking, |
| 6 | Midterm Examination 1 |
| 7 | factors affecting lactogenesis and galactopoiesis, |
| 8 | quality in milk, |
| 9 | mastitis and mammary edema |
| 10 | maintenance |
| 11 | Midterm Examination 2 |
| 12 | feeding, |
| 13 | reproduction |
| 14 | foot and reproductive problems. |
| 15,16 | Final Examination |

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| **CONTRIBUTION OF THE COURSE LEARNING OUTCOMES TO THE ANIMAL SCIENCE MSc PROGRAM LEARNING OUTCOMES** | | **CONTRIBUTION LEVEL** | | |
| **NO** | **LEARNING OUTCOMES (MSc)** | **3**  High | **2**  Mid | **1**  Low |
| **LO 1** | Graduate student should specialize in one of animal nutrition, animal breeding or biometry and genetics disciplines in addition to bachelor's degree qualifications. |  |  |  |
| **LO 2** | Be able to identify problems in the area of expertise, do research, analyze and interpret the results, develop solutions, entrepreneurs and becomes the router in this area. |  |  |  |
| **LO 3** | Be able to generate new knowledge in the field of scientific expertise by using scientific methods, use and transfer this information to stakeholders through social and ethical responsibility. |  |  |  |
| **LO 4** | Be able to develop strategic approaches to the field of expertise and produce regional, national or international solutions by taking responsibility. |  |  |  |
| **LO 5** | To gain the ability of effective communication orally and in writing, to be conscious in the continuity of learning and self-renewal, to monitor the developments in science and technology. |  |  |  |
| **LO 6** | To gain skills for self-study for disciplinary and interdisciplinary teamwork. |  |  |  |
| **LO 7** | Be able to use the acquired knowledge and skills in interdisciplinary studies. |  |  |  |
| **LO 8** | To be able to use computer and information technology effectively in the field of expertise. |  |  |  |
| **LO 9** | Be able to reflect the knowledge and skills gained in the program in practice of animal production. |  |  |  |

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| **Prepared by :** | Prof. Dr. Muhammet ALAN | **Date:** | 15.05.2015 |

**Signature**:

**T.R.**

**ESKISEHIR OSMANGAZI UNIVERSITY**

**GRADUATE SCHOOL OF NATURAL AND APPLIED SCIENCES**

**COURSE INFORMATION FORM**

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| **DEPARTMENT** | **ANIMAL SCIENCE (MSc)** | **SEMESTER** |  |

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| **COURSE** | | | |
| **CODE** | 505101504 | **TITLE** | Feed Additives in Animal Nutrition |

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| **LEVEL** | **HOUR/WEEK** | | | | | | **Credit** | **ECTS** | **TYPE** | | | **LANGUAGE** |
| **Theory** | | **Practice** | **Laboratory** | | |
| **MSc** | 3 | | 0 | 0 | | | 3 | 7.5 | COMPULSORY  (   ) | | ELECTIVE  ( x ) | Turkish |
| **CREDIT DISTRIBUTION** | | | | | | | | | | | | |
| **Basic Science** | | **Basic Engineering** | | | | **Knowledge in the discipline**  **[if it contains considerable design content, mark with (√)]** | | | | | | |
|  | |  | | | |  | | | | | | |
| **ASSESSMENT CRITERIA** | | | | | | | | | | | | |
| **SEMESTER ACTIVITIES** | | | | | **Evaluation Type** | | | | | **Number** | | **Contribution**  **( % )** |
| Midterm | | | | | 1 | | 35 |
| Quiz | | | | |  | |  |
| Homework | | | | | 1 | | 25 |
| Project | | | | |  | |  |
| Report | | | | |  | |  |
| Seminar | | | | |  | |  |
| Other (     ) | | | | |  | | 40 |
| **Final Examination** | | | | | | |  |
| **PREREQUISITE(S)** | | | | |  | | | | | | | |
| **SHORT COURSE CONTENT** | | | | | The student will learn the using feed additives in animal production and important effect of it also characteristic properties of feed additives. They will be taken the using cases of attention about feed additives. | | | | | | | |
| **COURSE OBJECTIVES** | | | | | The student will learn the using feed additives in animal production and important effect of it also characteristic properties of feed additives. They will be taken the using cases of attention about feed additives. | | | | | | | |
| **COURSE CONTRIBUTION TO THE PROFESSIONAL EDUCATION** | | | | | To learn feed additives and use in animal nutrition | | | | | | | |
| **LEARNING OUTCOMES OF THE COURSE** | | | | | To learn feed additives and functions of promoter related to nutrition | | | | | | | |
| **TEXTBOOK** | | | | | Current articles and lecture notes prepared from other resources transferred to the electronic environment. | | | | | | | |
| **OTHER REFERENCES** | | | | |  | | | | | | | |

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| **COURSE SCHEDULE (Weekly)** | |
| **WEEK** | **TOPICS** |
| 1 | Definition and classification of feed additives |
| 2 | Food source additives, aminoacids; Minerals, Vitamins, Lipids, Urea |
| 3 | Non-food additives; Antioxidants |
| 4 | Flavourings and aromatic compounts |
| 5 | Preservatives, homogenising agents and emulsifiers |
| 6 | Midterm Examination 1 |
| 7 | Using hormones as feed additives |
| 8 | Probiotics and prebiotics |
| 9 | Using enzymes as feed additives |
| 10 | Herbal extracts and essential oils |
| 11 | Midterm Examination 2 |
| 12 | Enhancing additives pellet quality |
| 13 | Anticoccidials |
| 14 | Feed additives and premixes |
| 15,16 | Final Examination |

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| **CONTRIBUTION OF THE COURSE LEARNING OUTCOMES TO THE ANIMAL SCIENCE MSc PROGRAM LEARNING OUTCOMES** | | **CONTRIBUTION LEVEL** | | |
| **NO** | **LEARNING OUTCOMES (MSc)** | **3**  High | **2**  Mid | **1**  Low |
| **LO 1** | Graduate student should specialize in one of animal nutrition, animal breeding or biometry and genetics disciplines in addition to bachelor's degree qualifications. |  |  |  |
| **LO 2** | Be able to identify problems in the area of expertise, do research, analyze and interpret the results, develop solutions, entrepreneurs and becomes the router in this area. |  |  |  |
| **LO 3** | Be able to generate new knowledge in the field of scientific expertise by using scientific methods, use and transfer this information to stakeholders through social and ethical responsibility. |  |  |  |
| **LO 4** | Be able to develop strategic approaches to the field of expertise and produce regional, national or international solutions by taking responsibility. |  |  |  |
| **LO 5** | To gain the ability of effective communication orally and in writing, to be conscious in the continuity of learning and self-renewal, to monitor the developments in science and technology. |  |  |  |
| **LO 6** | To gain skills for self-study for disciplinary and interdisciplinary teamwork. |  |  |  |
| **LO 7** | Be able to use the acquired knowledge and skills in interdisciplinary studies. |  |  |  |
| **LO 8** | To be able to use computer and information technology effectively in the field of expertise. |  |  |  |
| **LO 9** | Be able to reflect the knowledge and skills gained in the program in practice of animal production. |  |  |  |

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| **Prepared by :** | Assoc. Dr. Kamil KÜÇÜKYILMAZ | **Date:** | 15-5-2015 |

**Signature**:

**T.R.**

**ESKISEHIR OSMANGAZI UNIVERSITY**

**GRADUATE SCHOOL OF NATURAL AND APPLIED SCIENCES**

**COURSE INFORMATION FORM**

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| **DEPARTMENT** | **ANIMAL SCIENCE (MSc)** | **SEMESTER** |  |

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| **COURSE** | | | |
| **CODE** | 505101502 | **TITLE** | Management of reproduction |

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| **LEVEL** | **HOUR/WEEK** | | | | | | **Credit** | **ECTS** | **TYPE** | | | **LANGUAGE** |
| **Theory** | | **Practice** | **Laboratory** | | |
| **MSc** | 3 | | 0 | 0 | | | 3 | 7,5 | COMPULSORY  (   ) | | ELECTIVE  ( X ) | Turkish |
| **CREDIT DISTRIBUTION** | | | | | | | | | | | | |
| **Basic Science** | | **Basic Engineering** | | | | **Knowledge in the discipline**  **[if it contains considerable design content, mark with (√)]** | | | | | | |
|  | | X | | | |  | | | | | | |
| **ASSESSMENT CRITERIA** | | | | | | | | | | | | |
| **SEMESTER ACTIVITIES** | | | | | **Evaluation Type** | | | | | **Number** | | **Contribution**  **( % )** |
| Midterm | | | | | 2 | | 50 |
| Quiz | | | | |  | |  |
| Homework | | | | |  | |  |
| Project | | | | |  | |  |
| Report | | | | |  | |  |
| Seminar | | | | |  | |  |
| Other (     ) | | | | |  | |  |
| **Final Examination** | | | | | | | 50 |
| **PREREQUISITE(S)** | | | | | None | | | | | | | |
| **SHORT COURSE CONTENT** | | | | | Reproductive technologies, reproduction control, impact of artificial insemination technology, embryo transfer and associated techniques, artificial insemination, estrus and techniques used in its detection, suppression of sexual activity, reproductive management programs, artificial control of estrus and ovulation, induction of twin or multiple births, breeding at younger ages. | | | | | | | |
| **COURSE OBJECTIVES** | | | | | The objective of the course is to teach topics and concepts of which short contents are given above. | | | | | | | |
| **COURSE CONTRIBUTION TO THE PROFESSIONAL EDUCATION** | | | | | Additive of course is very important | | | | | | | |
| **LEARNING OUTCOMES OF THE COURSE** | | | | | 1. The person has knowledge about reproductive technonolgy,  2. The person can perform controlled breeding,  3. The person apprehends the importance of controlled breeding,  4. The person can evaluate the advantage and disadvantage between natural and controlled breeding. | | | | | | | |
| **TEXTBOOK** | | | | | Alaçam E (Editor)(1997) Obstetrics and infertility in domestic animals. Medisan, Ankara. | | | | | | | |
| **OTHER REFERENCES** | | | | | Wattaux MA (Translation ed: Ahmet G Önal, Translation: Bayazıt Musal) (2009) Guide of technical dairy cattle breeding (Reproduction and genetic selection). Adnan Menderes Uni. Publication No: 29.Gordon I (1997) Controlled reproduction in cattle and buffaloes. CAB International, UK.Gordon I (1997) Controlled reproduction in sheep and goat. CAB International, UK. | | | | | | | |

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| **COURSE SCHEDULE (Weekly)** | |
| **WEEK** | **TOPICS** |
| 1 | reproductive technologies |
| 2 | reproduction control |
| 3 | impact of artificial insemination technology |
| 4 | embryo transfer and associated techniques |
| 5 | artificial insemination |
| 6 | Midterm Examination 1 |
| 7 | estrus and techniques used in its detection |
| 8 | suppression of sexual activity |
| 9 | reproductive management program |
| 10 | reproductive management programs (continued) |
| 11 | Midterm Examination 2 |
| 12 | artificial control of estrus and ovulation |
| 13 | induction of twin or multiple births |
| 14 | breeding at younger ages |
| 15,16 | Final Examination |

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| **CONTRIBUTION OF THE COURSE LEARNING OUTCOMES TO THE ANIMAL SCIENCE MSc PROGRAM LEARNING OUTCOMES** | | **CONTRIBUTION LEVEL** | | |
| **NO** | **LEARNING OUTCOMES (MSc)** | **3**  High | **2**  Mid | **1**  Low |
| **LO 1** | Graduate student should specialize in one of animal nutrition, animal breeding or biometry and genetics disciplines in addition to bachelor's degree qualifications. |  |  |  |
| **LO 2** | Be able to identify problems in the area of expertise, do research, analyze and interpret the results, develop solutions, entrepreneurs and becomes the router in this area. |  |  |  |
| **LO 3** | Be able to generate new knowledge in the field of scientific expertise by using scientific methods, use and transfer this information to stakeholders through social and ethical responsibility. |  |  |  |
| **LO 4** | Be able to develop strategic approaches to the field of expertise and produce regional, national or international solutions by taking responsibility. |  |  |  |
| **LO 5** | To gain the ability of effective communication orally and in writing, to be conscious in the continuity of learning and self-renewal, to monitor the developments in science and technology. |  |  |  |
| **LO 6** | To gain skills for self-study for disciplinary and interdisciplinary teamwork. |  |  |  |
| **LO 7** | Be able to use the acquired knowledge and skills in interdisciplinary studies. |  |  |  |
| **LO 8** | To be able to use computer and information technology effectively in the field of expertise. |  |  |  |
| **LO 9** | Be able to reflect the knowledge and skills gained in the program in practice of animal production. |  |  |  |

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| **Prepared by :** | Prof. Dr. Muhammet ALAN | **Date:** | 15.05.2015 |

**Signature**:

**T.R.**

**ESKISEHIR OSMANGAZI UNIVERSITY**

**GRADUATE SCHOOL OF NATURAL AND APPLIED SCIENCES**

**COURSE INFORMATION FORM**

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| **DEPARTMENT** | **ANIMAL SCIENCE (MSc)** | **SEMESTER** |  |

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| **COURSE** | | | |
| **CODE** | 505101511 | **TITLE** | New Development of Poultry Nutrition |

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| **LEVEL** | **HOUR/WEEK** | | | | | | **Credit** | **ECTS** | **TYPE** | | | **LANGUAGE** |
| **Theory** | | **Practice** | **Laboratory** | | |
| **MSc** | 3 | | 0 | 0 | | | 3 | 7.5 | COMPULSORY  (   ) | | ELECTIVE  ( x ) | Turkish |
| **CREDIT DISTRIBUTION** | | | | | | | | | | | | |
| **Basic Science** | | **Basic Engineering** | | | | **Knowledge in the discipline**  **[if it contains considerable design content, mark with (√)]** | | | | | | |
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| **ASSESSMENT CRITERIA** | | | | | | | | | | | | |
| **SEMESTER ACTIVITIES** | | | | | **Evaluation Type** | | | | | **Number** | | **Contribution**  **( % )** |
| Midterm | | | | | 1 | | 35 |
| Quiz | | | | |  | |  |
| Homework | | | | | 1 | | 25 |
| Project | | | | |  | |  |
| Report | | | | |  | |  |
| Seminar | | | | |  | |  |
| Other (     ) | | | | |  | | 40 |
| **Final Examination** | | | | | | |  |
| **PREREQUISITE(S)** | | | | |  | | | | | | | |
| **SHORT COURSE CONTENT** | | | | | This course gives recent advances in broiler and laying hens nutrition such as enrgy, protein, minerals and vitamins requirements, feeds and feed additive and feeding programs. | | | | | | | |
| **COURSE OBJECTIVES** | | | | | This course gives recent advances in (broiler and laying hens) nutrition such as nutrient requirements, feeds and feed additive and feeding programs . | | | | | | | |
| **COURSE CONTRIBUTION TO THE PROFESSIONAL EDUCATION** | | | | | To learn recent advances about poultry nutrition particularly economic and pratical application. | | | | | | | |
| **LEARNING OUTCOMES OF THE COURSE** | | | | | To understand the recent advances in broiler and laying hens nutririton.To follow scientific and technological developments . Having knowledge about feedstuffs and feeding programs used in layer and broiler nutrition. To have the ability to prepare projects | | | | | | | |
| **TEXTBOOK** | | | | | Current articles and lecture notes prepared by utilizing a variety of sources and electronic media and transferred to the presentation. | | | | | | | |
| **OTHER REFERENCES** | | | | |  | | | | | | | |

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| **COURSE SCHEDULE (Weekly)** | |
| **WEEK** | **TOPICS** |
| 1 | Digestive system and physiology |
| 2 | Energy requirements of broiler and layer |
| 3 | Protein and aminoacid requirements of broiler and layer |
| 4 | Minerals requirements of broiler and layer |
| 5 | Vitamins requirements of broiler and layer |
| 6 | Midterm Examination 1 |
| 7 | Feedstuffs |
| 8 | Feed additives |
| 9 | Feed additives |
| 10 | Feeding methods |
| 11 | Midterm Examination 2 |
| 12 | Feeding programs |
| 13 | Effect of nutrition on egg quality |
| 14 | Effect of nutrition on broiler meat quality |
| 15,16 | Final Examination |

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| **CONTRIBUTION OF THE COURSE LEARNING OUTCOMES TO THE ANIMAL SCIENCE MSc PROGRAM LEARNING OUTCOMES** | | **CONTRIBUTION LEVEL** | | |
| **NO** | **LEARNING OUTCOMES (MSc)** | **3**  High | **2**  Mid | **1**  Low |
| **LO 1** | Graduate student should specialize in one of animal nutrition, animal breeding or biometry and genetics disciplines in addition to bachelor's degree qualifications. |  |  |  |
| **LO 2** | Be able to identify problems in the area of expertise, do research, analyze and interpret the results, develop solutions, entrepreneurs and becomes the router in this area. |  |  |  |
| **LO 3** | Be able to generate new knowledge in the field of scientific expertise by using scientific methods, use and transfer this information to stakeholders through social and ethical responsibility. |  |  |  |
| **LO 4** | Be able to develop strategic approaches to the field of expertise and produce regional, national or international solutions by taking responsibility. |  |  |  |
| **LO 5** | To gain the ability of effective communication orally and in writing, to be conscious in the continuity of learning and self-renewal, to monitor the developments in science and technology. |  |  |  |
| **LO 6** | To gain skills for self-study for disciplinary and interdisciplinary teamwork. |  |  |  |
| **LO 7** | Be able to use the acquired knowledge and skills in interdisciplinary studies. |  |  |  |
| **LO 8** | To be able to use computer and information technology effectively in the field of expertise. |  |  |  |
| **LO 9** | Be able to reflect the knowledge and skills gained in the program in practice of animal production. |  |  |  |

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| **Prepared by :** | Assoc. Dr. Kamil KÜÇÜKYILMAZ | **Date:** | 15-5-2015 |

**Signature**:

**T.R.**

**ESKISEHIR OSMANGAZI UNIVERSITY**

**GRADUATE SCHOOL OF NATURAL AND APPLIED SCIENCES**

**COURSE INFORMATION FORM**

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| **DEPARTMENT** | **ANIMAL SCIENCE (MSc)** | **SEMESTER** |  |

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| **COURSE** | | | |
| **CODE** | 505102506 | **TITLE** | Nutrition of Organic Animal |

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| **LEVEL** | **HOUR/WEEK** | | | | | | **Credit** | **ECTS** | **TYPE** | | | **LANGUAGE** |
| **Theory** | | **Practice** | **Laboratory** | | |
| **MSc** | 3 | | 0 | 0 | | | 3 | 7.5 | COMPULSORY  (   ) | | ELECTIVE  ( x ) | Turkish |
| **CREDIT DISTRIBUTION** | | | | | | | | | | | | |
| **Basic Science** | | **Basic Engineering** | | | | **Knowledge in the discipline**  **[if it contains considerable design content, mark with (√)]** | | | | | | |
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| **ASSESSMENT CRITERIA** | | | | | | | | | | | | |
| **SEMESTER ACTIVITIES** | | | | | **Evaluation Type** | | | | | **Number** | | **Contribution**  **( % )** |
| Midterm | | | | | 1 | | 35 |
| Quiz | | | | |  | |  |
| Homework | | | | | 1 | | 25 |
| Project | | | | |  | |  |
| Report | | | | |  | |  |
| Seminar | | | | |  | |  |
| Other (     ) | | | | |  | | 40 |
| **Final Examination** | | | | | | |  |
| **PREREQUISITE(S)** | | | | |  | | | | | | | |
| **SHORT COURSE CONTENT** | | | | | This course gives theoretical and practical information basic criteria of organic animal rearing and nutririton, nutrient requirements of organic animal feed and feed additives, feeding programs, basic nutritional principles in organic animal . | | | | | | | |
| **COURSE OBJECTIVES** | | | | | To teach scientific, current and practical informations about organic animal nutrition. To follow scientific and technological developments related organic animal nutrition and to gain the ability to transfer them to animal production | | | | | | | |
| **COURSE CONTRIBUTION TO THE PROFESSIONAL EDUCATION** | | | | | To learn nutrition related to organic animal production. | | | | | | | |
| **LEARNING OUTCOMES OF THE COURSE** | | | | | To understand the organic farming rules and organic rations.Having knowledge about feedstuffs and feeding programs used in organic animal nutrition.To have the ability to prepare organic animal projects | | | | | | | |
| **TEXTBOOK** | | | | | Current articles and lecture notes prepared from other resources transferred to the electronic environment. | | | | | | | |
| **OTHER REFERENCES** | | | | | Regulations with organic agriculture and organic animal procuction | | | | | | | |

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| **COURSE SCHEDULE (Weekly)** | |
| **WEEK** | **TOPICS** |
| 1 | What is organic agriculture and organic animal production? |
| 2 | Organic agriculture legislation |
| 3 | General principles of organic animal procuction |
| 4 | Organic feed |
| 5 | Feed additives in organic animal nutrition |
| 6 | Midterm Examination 1 |
| 7 | Organic poultry nutrition |
| 8 | Organic poultry nutrition |
| 9 | Organic ruminant nutrition |
| 10 | Organic ruminant nutrition |
| 11 | Midterm Examination 2 |
| 12 | Effect of organic animal nutrition on product quality |
| 13 | Effect of organic animal nutrition on product quality |
| 14 | Problems in organic animal production |
| 15,16 | Final Examination |

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| **CONTRIBUTION OF THE COURSE LEARNING OUTCOMES TO THE ANIMAL SCIENCE MSc PROGRAM LEARNING OUTCOMES** | | **CONTRIBUTION LEVEL** | | |
| **NO** | **LEARNING OUTCOMES (MSc)** | **3**  High | **2**  Mid | **1**  Low |
| **LO 1** | Graduate student should specialize in one of animal nutrition, animal breeding or biometry and genetics disciplines in addition to bachelor's degree qualifications. |  |  |  |
| **LO 2** | Be able to identify problems in the area of expertise, do research, analyze and interpret the results, develop solutions, entrepreneurs and becomes the router in this area. |  |  |  |
| **LO 3** | Be able to generate new knowledge in the field of scientific expertise by using scientific methods, use and transfer this information to stakeholders through social and ethical responsibility. |  |  |  |
| **LO 4** | Be able to develop strategic approaches to the field of expertise and produce regional, national or international solutions by taking responsibility. |  |  |  |
| **LO 5** | To gain the ability of effective communication orally and in writing, to be conscious in the continuity of learning and self-renewal, to monitor the developments in science and technology. |  |  |  |
| **LO 6** | To gain skills for self-study for disciplinary and interdisciplinary teamwork. |  |  |  |
| **LO 7** | Be able to use the acquired knowledge and skills in interdisciplinary studies. |  |  |  |
| **LO 8** | To be able to use computer and information technology effectively in the field of expertise. |  |  |  |
| **LO 9** | Be able to reflect the knowledge and skills gained in the program in practice of animal production. |  |  |  |

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| **Prepared by :** | Assoc. Dr. Kamil KÜÇÜKYILMAZ | **Date:** | 15-5-2015 |

**Signature**:

**T.R.**

**ESKISEHIR OSMANGAZI UNIVERSITY**

**GRADUATE SCHOOL OF NATURAL AND APPLIED SCIENCES**

**COURSE INFORMATION FORM**

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| **DEPARTMENT** | **ANIMAL SCIENCE (MSc)** | **SEMESTER** |  |

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| **COURSE** | | | |
| **CODE** | 505101503 | **TITLE** | Recent Developments Ruminant Nutrition |

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| **LEVEL** | **HOUR/WEEK** | | | | | | **Credit** | **ECTS** | **TYPE** | | | **LANGUAGE** |
| **Theory** | | **Practice** | **Laboratory** | | |
| **MSc** | 3 | | 0 | 0 | | | 3 | 7.5 | COMPULSORY  (   ) | | ELECTIVE  ( x ) | Turkish |
| **CREDIT DISTRIBUTION** | | | | | | | | | | | | |
| **Basic Science** | | **Basic Engineering** | | | | **Knowledge in the discipline**  **[if it contains considerable design content, mark with (√)]** | | | | | | |
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| **ASSESSMENT CRITERIA** | | | | | | | | | | | | |
| **SEMESTER ACTIVITIES** | | | | | **Evaluation Type** | | | | | **Number** | | **Contribution**  **( % )** |
| Midterm | | | | | 1 | | 35 |
| Quiz | | | | |  | |  |
| Homework | | | | | 1 | | 25 |
| Project | | | | |  | |  |
| Report | | | | |  | |  |
| Seminar | | | | |  | |  |
| Other (     ) | | | | |  | | 40 |
| **Final Examination** | | | | | | |  |
| **PREREQUISITE(S)** | | | | |  | | | | | | | |
| **SHORT COURSE CONTENT** | | | | | This course gives theoretical and practical information in digestive system and physiology, nutrient requirements, feeding programs, basic nutritional principles in ruminant animals and recent advances these subject. | | | | | | | |
| **COURSE OBJECTIVES** | | | | | This course gives recent advances in ruminant animal nutrition such as nutrient requirements, feeds and feed additive and feeding programs . | | | | | | | |
| **COURSE CONTRIBUTION TO THE PROFESSIONAL EDUCATION** | | | | | To follow scientific and technological developments related ruminant animal nutrition and to gain the ability to transfer them to animal production. | | | | | | | |
| **LEARNING OUTCOMES OF THE COURSE** | | | | | To understand the recent advances in ruminant animal nutririton.To have the ability to determine, define and solve problems in relation to ruminant animal nutrition.To have the ability to prepare projects | | | | | | | |
| **TEXTBOOK** | | | | | Current articles and lecture notes prepared from other resources transferred to the electronic environment. | | | | | | | |
| **OTHER REFERENCES** | | | | |  | | | | | | | |

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| **COURSE SCHEDULE (Weekly)** | |
| **WEEK** | **TOPICS** |
| 1 | Digestive system and physiology of ruminant animals |
| 2 | Digestive system and physiology of ruminant animals |
| 3 | Energy requirements of ruminants |
| 4 | Protein requirements of ruminants |
| 5 | Minerals requirements of ruminants |
| 6 | Midterm Examination 1 |
| 7 | Vitamins requirements of ruminants |
| 8 | Feedstuffs |
| 9 | Feed Additives |
| 10 | Feeding Methods |
| 11 | Midterm Examination 2 |
| 12 | Feeding programs |
| 13 | Effect of nutrition on milk quality |
| 14 | Effect of nutrition on meat quality |
| 15,16 | Final Examination |

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| **CONTRIBUTION OF THE COURSE LEARNING OUTCOMES TO THE ANIMAL SCIENCE MSc PROGRAM LEARNING OUTCOMES** | | **CONTRIBUTION LEVEL** | | |
| **NO** | **LEARNING OUTCOMES (MSc)** | **3**  High | **2**  Mid | **1**  Low |
| **LO 1** | Graduate student should specialize in one of animal nutrition, animal breeding or biometry and genetics disciplines in addition to bachelor's degree qualifications. |  |  |  |
| **LO 2** | Be able to identify problems in the area of expertise, do research, analyze and interpret the results, develop solutions, entrepreneurs and becomes the router in this area. |  |  |  |
| **LO 3** | Be able to generate new knowledge in the field of scientific expertise by using scientific methods, use and transfer this information to stakeholders through social and ethical responsibility. |  |  |  |
| **LO 4** | Be able to develop strategic approaches to the field of expertise and produce regional, national or international solutions by taking responsibility. |  |  |  |
| **LO 5** | To gain the ability of effective communication orally and in writing, to be conscious in the continuity of learning and self-renewal, to monitor the developments in science and technology. |  |  |  |
| **LO 6** | To gain skills for self-study for disciplinary and interdisciplinary teamwork. |  |  |  |
| **LO 7** | Be able to use the acquired knowledge and skills in interdisciplinary studies. |  |  |  |
| **LO 8** | To be able to use computer and information technology effectively in the field of expertise. |  |  |  |
| **LO 9** | Be able to reflect the knowledge and skills gained in the program in practice of animal production. |  |  |  |

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| **Prepared by :** | Assoc. Dr. Kamil KÜÇÜKYILMAZ | **Date:** | 15-5-2015 |

**Signature**:

**T.R.**

**ESKISEHIR OSMANGAZI UNIVERSITY**

**GRADUATE SCHOOL OF NATURAL AND APPLIED SCIENCES**

**COURSE INFORMATION FORM**

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| **DEPARTMENT** | **ANIMAL SCIENCE (MSc)** | **SEMESTER** |  |

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| **COURSE** | | | |
| **CODE** | 505101510 | **TITLE** | Reprod. and effec. reprod. man. in dairy cattle |

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| **LEVEL** | **HOUR/WEEK** | | | | | | **Credit** | **ECTS** | **TYPE** | | | **LANGUAGE** |
| **Theory** | | **Practice** | **Laboratory** | | |
| **MSc** | 3 | | 0 | 0 | | | 3 | 7,5 | COMPULSORY  (   ) | | ELECTIVE  ( X ) | Turkish |
| **CREDIT DISTRIBUTION** | | | | | | | | | | | | |
| **Basic Science** | | **Basic Engineering** | | | | **Knowledge in the discipline**  **[if it contains considerable design content, mark with (√)]** | | | | | | |
|  | | x | | | |  | | | | | | |
| **ASSESSMENT CRITERIA** | | | | | | | | | | | | |
| **SEMESTER ACTIVITIES** | | | | | **Evaluation Type** | | | | | **Number** | | **Contribution**  **( % )** |
| Midterm | | | | | 2 | | 50 |
| Quiz | | | | |  | |  |
| Homework | | | | |  | |  |
| Project | | | | |  | |  |
| Report | | | | |  | |  |
| Seminar | | | | |  | |  |
| Other (     ) | | | | |  | |  |
| **Final Examination** | | | | | | | 50 |
| **PREREQUISITE(S)** | | | | |  | | | | | | | |
| **SHORT COURSE CONTENT** | | | | | Reproductive organs of domestic cattle, reproductive life of the cattle, estrus cycle, the right time to inseminate an estrus cow, repeat breeders, other reasons of low pregnancy rates, mating, pregnancy and parturition, postpartum period, ovulation and resumption of ovarian activity, the effective management of herd reproduction. | | | | | | | |
| **COURSE OBJECTIVES** | | | | | The aim of this course is to teach about reproduction and effective management of it. Because the basis of meet and milk production is offspring yield. It can not be talked about other yields without reproduction. | | | | | | | |
| **COURSE CONTRIBUTION TO THE PROFESSIONAL EDUCATION** | | | | | The contribution is very important | | | | | | | |
| **LEARNING OUTCOMES OF THE COURSE** | | | | | 1. The person understands the reproductive organs and reproductive life of domestic cattle  2. The person analises optimal insemination time for an oestrous cow  3. The person evaluates repeet breeder cows and the other infertility reasons  4. The person has knowledge about management of herd reproductive efficiency | | | | | | | |
| **TEXTBOOK** | | | | | 1- Wattaux MA (Translation ed: Ahmet G Önal, Translation: Bayazıt Musal) (2009) Guide of technical dairy cattle breeding (Reproduction and genetic selection). Adnan Menderes Uni. Publication No: 29. | | | | | | | |
| **OTHER REFERENCES** | | | | | 2-Gordon I (1997) Controlled reproduction in cattle and buffaloes. CAB International, UK. | | | | | | | |

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| **COURSE SCHEDULE (Weekly)** | |
| **WEEK** | **TOPICS** |
| 1 | Reproductive organs of domestic cattle, |
| 2 | reproductive life of the cattle, |
| 3 | estrus cycle, |
| 4 | the right time to inseminate an estrus cow, |
| 5 | repeat breeders, |
| 6 | Midterm Examination 1 |
| 7 | repeat breeders, |
| 8 | other reasons of low pregnancy rates, |
| 9 | mating, |
| 10 | pregnancy and parturition, |
| 11 | Midterm Examination 2 |
| 12 | postpartum period, |
| 13 | ovulation and resumption of ovarian activity, |
| 14 | the effective management of herd reproduction. |
| 15,16 | Final Examination |

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| **CONTRIBUTION OF THE COURSE LEARNING OUTCOMES TO THE ANIMAL SCIENCE MSc PROGRAM LEARNING OUTCOMES** | | **CONTRIBUTION LEVEL** | | |
| **NO** | **LEARNING OUTCOMES (MSc)** | **3**  High | **2**  Mid | **1**  Low |
| **LO 1** | Graduate student should specialize in one of animal nutrition, animal breeding or biometry and genetics disciplines in addition to bachelor's degree qualifications. |  |  |  |
| **LO 2** | Be able to identify problems in the area of expertise, do research, analyze and interpret the results, develop solutions, entrepreneurs and becomes the router in this area. |  |  |  |
| **LO 3** | Be able to generate new knowledge in the field of scientific expertise by using scientific methods, use and transfer this information to stakeholders through social and ethical responsibility. |  |  |  |
| **LO 4** | Be able to develop strategic approaches to the field of expertise and produce regional, national or international solutions by taking responsibility. |  |  |  |
| **LO 5** | To gain the ability of effective communication orally and in writing, to be conscious in the continuity of learning and self-renewal, to monitor the developments in science and technology. |  |  |  |
| **LO 6** | To gain skills for self-study for disciplinary and interdisciplinary teamwork. |  |  |  |
| **LO 7** | Be able to use the acquired knowledge and skills in interdisciplinary studies. |  |  |  |
| **LO 8** | To be able to use computer and information technology effectively in the field of expertise. |  |  |  |
| **LO 9** | Be able to reflect the knowledge and skills gained in the program in practice of animal production. |  |  |  |

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| **Prepared by :** | Prof. Dr. Muhammet Alan | **Date:** | 20.05.2015 |

**Signature**:

**T.R.**

**ESKISEHIR OSMANGAZI UNIVERSITY**

**GRADUATE SCHOOL OF NATURAL AND APPLIED SCIENCES**

**COURSE INFORMATION FORM**

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| **DEPARTMENT** | **ANIMAL SCIENCE (MSc)** | **SEMESTER** |  |

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| **COURSE** | | | |
| **CODE** | 505102503 | **TITLE** | Small Ruminant Meat Production |

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| **LEVEL** | **HOUR/WEEK** | | | | | | **Credit** | **ECTS** | **TYPE** | | | **LANGUAGE** |
| **Theory** | | **Practice** | **Laboratory** | | |
| **MSc** | 3 | | 0 | 0 | | | 3 | 7.5 | COMPULSORY  (   ) | | ELECTIVE  ( x ) | Turkish |
| **CREDIT DISTRIBUTION** | | | | | | | | | | | | |
| **Basic Science** | | **Basic Engineering** | | | | **Knowledge in the discipline**  **[if it contains considerable design content, mark with (√)]** | | | | | | |
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| **ASSESSMENT CRITERIA** | | | | | | | | | | | | |
| **SEMESTER ACTIVITIES** | | | | | **Evaluation Type** | | | | | **Number** | | **Contribution**  **( % )** |
| Midterm | | | | | 1 | | 35 |
| Quiz | | | | |  | |  |
| Homework | | | | | 1 | | 25 |
| Project | | | | |  | |  |
| Report | | | | |  | |  |
| Seminar | | | | |  | |  |
| Other (     ) | | | | |  | |  |
| **Final Examination** | | | | | | | 40 |
| **PREREQUISITE(S)** | | | | |  | | | | | | | |
| **SHORT COURSE CONTENT** | | | | | Place of small ruminant in meat production, the basic principles of breeding small ruminants for meat production, scientific applications, small ruminant nutrition , getting ready for fattening lambs and kids, fertility, biological basis of meat production, beef economics, breeds, selection, carcass evaluation, sheep and goats health problems, sheep shelters, competitive and high quality production. | | | | | | | |
| **COURSE OBJECTIVES** | | | | | Objective of the course is to teach the importance of small ruminant meat production, small animal husbandry and the basic principles and scientific applications. | | | | | | | |
| **COURSE CONTRIBUTION TO THE PROFESSIONAL EDUCATION** | | | | | The basic principles of breeding small ruminants for meat production, production and market relationships. | | | | | | | |
| **LEARNING OUTCOMES OF THE COURSE** | | | | | To know meat breed of sheep and goats ,to calculate their nutritional needs and diet preparation, physiological, technical, economic and social aspects of sheep breeding | | | | | | | |
| **TEXTBOOK** | | | | | Current articles and lecture notes prepared from other resources transferred to the electronic environment. | | | | | | | |
| **OTHER REFERENCES** | | | | | Kellems, R.O.; and Church, D.C. ‘Livestock feeds and feeding. Prentice-Hall, Inc., UK, ISBN 0-13-241795-2, (1998) | | | | | | | |

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| **COURSE SCHEDULE (Weekly)** | |
| **WEEK** | **TOPICS** |
| 1 | Small ruminant meat production in the world and in Turkey, |
| 2 | Meat breeds |
| 3 | Feeding systems |
| 4 | Shelters |
| 5 | Factors affecting meat production |
| 6 | Midterm Examination 1 |
| 7 | Competitive meat production |
| 8 | Meat quality |
| 9 | Carcass evaluation |
| 10 | Nutrition |
| 11 | Midterm Examination 2 |
| 12 | Nutrition |
| 13 | Economics of lamb production |
| 14 | Reproduction |
| 15,16 | Final Examination |

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| **CONTRIBUTION OF THE COURSE LEARNING OUTCOMES TO THE ANIMAL SCIENCE MSc PROGRAM LEARNING OUTCOMES** | | **CONTRIBUTION LEVEL** | | |
| **NO** | **LEARNING OUTCOMES (MSc)** | **3**  High | **2**  Mid | **1**  Low |
| **LO 1** | Graduate student should specialize in one of animal nutrition, animal breeding or biometry and genetics disciplines in addition to bachelor's degree qualifications. |  |  |  |
| **LO 2** | Be able to identify problems in the area of expertise, do research, analyze and interpret the results, develop solutions, entrepreneurs and becomes the router in this area. |  |  |  |
| **LO 3** | Be able to generate new knowledge in the field of scientific expertise by using scientific methods, use and transfer this information to stakeholders through social and ethical responsibility. |  |  |  |
| **LO 4** | Be able to develop strategic approaches to the field of expertise and produce regional, national or international solutions by taking responsibility. |  |  |  |
| **LO 5** | To gain the ability of effective communication orally and in writing, to be conscious in the continuity of learning and self-renewal, to monitor the developments in science and technology. |  |  |  |
| **LO 6** | To gain skills for self-study for disciplinary and interdisciplinary teamwork. |  |  |  |
| **LO 7** | Be able to use the acquired knowledge and skills in interdisciplinary studies. |  |  |  |
| **LO 8** | To be able to use computer and information technology effectively in the field of expertise. |  |  |  |
| **LO 9** | Be able to reflect the knowledge and skills gained in the program in practice of animal production. |  |  |  |

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| **Prepared by :** | Assist. Prof. Dr. Zekeriya KIYMA | **Date:** | 15-5-2015 |

**Signature**:

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**ESKISEHIR OSMANGAZI UNIVERSITY**

**GRADUATE SCHOOL OF NATURAL AND APPLIED SCIENCES**

**COURSE INFORMATION FORM**

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| **DEPARTMENT** | **ANIMAL SCIENCE (MSc)** | **SEMESTER** |  |

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| **COURSE** | | | |
| **CODE** | 505102501 | **TITLE** | Small ruminant milk production |

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| **LEVEL** | **HOUR/WEEK** | | | | | | **Credit** | **ECTS** | **TYPE** | | | **LANGUAGE** |
| **Theory** | | **Practice** | **Laboratory** | | |
| **MSc** | 3 | | 0 | 0 | | | 3 | 7,5 | COMPULSORY  (   ) | | ELECTIVE  ( X ) | Turkish |
| **CREDIT DISTRIBUTION** | | | | | | | | | | | | |
| **Basic Science** | | **Basic Engineering** | | | | **Knowledge in the discipline**  **[if it contains considerable design content, mark with (√)]** | | | | | | |
|  | | X | | | |  | | | | | | |
| **ASSESSMENT CRITERIA** | | | | | | | | | | | | |
| **SEMESTER ACTIVITIES** | | | | | **Evaluation Type** | | | | | **Number** | | **Contribution**  **( % )** |
| Midterm | | | | | 2 | | 50 |
| Quiz | | | | |  | |  |
| Homework | | | | |  | |  |
| Project | | | | |  | |  |
| Report | | | | |  | |  |
| Seminar | | | | |  | |  |
| Other (     ) | | | | |  | |  |
| **Final Examination** | | | | | | | 50 |
| **PREREQUISITE(S)** | | | | | None | | | | | | | |
| **SHORT COURSE CONTENT** | | | | | Goat breeding and management, goat breeding and goat product production in our country and the World, goat breeds, wished body characteristics in goats , the composition of goat milk, the importance of goat milk in human feeding, the advantages of goat milk, the breeding of dairy goats, accommodation, divisions in pens , other pen units , health protection, body form evaluation in dairy goats, food substance requirements, foods used in goat feeding, the important points in preparing food mixture, practices in goat feeding, feeding diseases. Sheep milk production, economic importance of sheep breeding, classification of domestic sheep breeds, sheep breeding in Turkey, principal problems of sheep breeding, dairy sheep breeds, and sheep breeding techniques. | | | | | | | |
| **COURSE OBJECTIVES** | | | | | The objective of the course is to teach topics and concepts of which short contents are given above. | | | | | | | |
| **COURSE CONTRIBUTION TO THE PROFESSIONAL EDUCATION** | | | | | Additive of course is very important | | | | | | | |
| **LEARNING OUTCOMES OF THE COURSE** | | | | | 1. The person has knowledge about goat breeding and management, goat product production in our country and the World, goat breeds, wished body characteristics in goats , the composition of goat milk,  2. The person comprehends the importance of goat milk in human feeding, the advantages of goat milk,  3. The person can apply the breeding and housing of dairy goats,  4. The person comprehends the importance of sheep breeding, | | | | | | | |
| **TEXTBOOK** | | | | | Aytuğ ve ark., 1990, Koyun-Keçi Hastalıkları ve yetiştiriciliği. Tüm Vet Hayvancılık Hizmetleri yayını, No 2, Bursa.Taşkın ve ark., 2010, Keçi yetiştirme ve besleme. Hasad Yayıncılık, İstanbul.Soysal ve Soysal, 2009, Keçi Üretimi, Tekirdağ. | | | | | | | |
| **OTHER REFERENCES** | | | | | Akman ve ark., 2001, Koyunculuk, Çamlıca Kültür ve Yardım Vakfı Yayınları 4, İstanbul.Soysal ve Soysal, 2009, Keçi Üretimi, Tekirdağ. | | | | | | | |

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| **COURSE SCHEDULE (Weekly)** | |
| **WEEK** | **TOPICS** |
| 1 | goat breeding and management |
| 2 | goat breeding and goat product production in our country and the World |
| 3 | goat breeds, wished body characteristics in goats |
| 4 | the composition of goat milk, the importance of goat milk in human feeding, the advantages of goat milk |
| 5 | the breeding of dairy goats, accommodation, divisions in pens , other pen units |
| 6 | Midterm Examination 1 |
| 7 | health protection, body form evaluation in dairy goats |
| 8 | food substance requirements |
| 9 | foods used in goat feeding, the important points in preparing food mixture |
| 10 | practices in goat feeding, feeding diseases |
| 11 | Midterm Examination 2 |
| 12 | sheep milk production, economic importance of sheep breeding |
| 13 | classification of domestic sheep breeds, sheep breeding in Turkey |
| 14 | principal problems of sheep breeding, dairy sheep breeds, sheep breeding techniques |
| 15,16 | Final Examination |

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| **CONTRIBUTION OF THE COURSE LEARNING OUTCOMES TO THE ANIMAL SCIENCE MSc PROGRAM LEARNING OUTCOMES** | | **CONTRIBUTION LEVEL** | | |
| **NO** | **LEARNING OUTCOMES (MSc)** | **3**  High | **2**  Mid | **1**  Low |
| **LO 1** | Graduate student should specialize in one of animal nutrition, animal breeding or biometry and genetics disciplines in addition to bachelor's degree qualifications. |  |  |  |
| **LO 2** | Be able to identify problems in the area of expertise, do research, analyze and interpret the results, develop solutions, entrepreneurs and becomes the router in this area. |  |  |  |
| **LO 3** | Be able to generate new knowledge in the field of scientific expertise by using scientific methods, use and transfer this information to stakeholders through social and ethical responsibility. |  |  |  |
| **LO 4** | Be able to develop strategic approaches to the field of expertise and produce regional, national or international solutions by taking responsibility. |  |  |  |
| **LO 5** | To gain the ability of effective communication orally and in writing, to be conscious in the continuity of learning and self-renewal, to monitor the developments in science and technology. |  |  |  |
| **LO 6** | To gain skills for self-study for disciplinary and interdisciplinary teamwork. |  |  |  |
| **LO 7** | Be able to use the acquired knowledge and skills in interdisciplinary studies. |  |  |  |
| **LO 8** | To be able to use computer and information technology effectively in the field of expertise. |  |  |  |
| **LO 9** | Be able to reflect the knowledge and skills gained in the program in practice of animal production. |  |  |  |

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| **Prepared by :** | Prof. Dr. Muhammet ALAN | **Date:** | 15.05.2015 |

**Signature**:

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**ESKISEHIR OSMANGAZI UNIVERSITY**

**GRADUATE SCHOOL OF NATURAL AND APPLIED SCIENCES**

**COURSE INFORMATION FORM**

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| **DEPARTMENT** | **ANIMAL SCIENCE (MSc)** | **SEMESTER** |  |

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| **COURSE** | | | |
| **CODE** |  | **TITLE** | Red Meat Science |

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| **LEVEL** | **HOUR/WEEK** | | | | | | **Credit** | **ECTS** | **TYPE** | | | **LANGUAGE** |
| **Theory** | | **Practice** | **Laboratory** | | |
| **MSc** | 3 | | 0 | 0 | | | 3 | 7.5 | COMPULSORY  (   ) | | ELECTIVE  ( X ) | Turkish |
| **CREDIT DISTRIBUTION** | | | | | | | | | | | | |
| **Basic Science** | | **Basic Engineering** | | | | **Knowledge in the discipline**  **[if it contains considerable design content, mark with (√)]** | | | | | | |
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| **ASSESSMENT CRITERIA** | | | | | | | | | | | | |
| **SEMESTER ACTIVITIES** | | | | | **Evaluation Type** | | | | | **Number** | | **Contribution**  **( % )** |
| Midterm | | | | | 1 | | 40 |
| Quiz | | | | |  | |  |
| Homework | | | | |  | |  |
| Project | | | | |  | |  |
| Report | | | | |  | |  |
| Seminar | | | | |  | |  |
| Other (     ) | | | | |  | |  |
| **Final Examination** | | | | | | | 60 |
| **PREREQUISITE(S)** | | | | |  | | | | | | | |
| **SHORT COURSE CONTENT** | | | | | Red meat production and consumption, value of red meat in human nutrition, classification of meats, muscle convertion to meat, Pre and post mortem factors affecting meat quality, physical, chemical, histology and microbiology of meat, carcass and meat defects, presentation and marketing techniques of meat,adulteration in meat | | | | | | | |
| **COURSE OBJECTIVES** | | | | | Producing quality raw materiel to meat industry in detail. | | | | | | | |
| **COURSE CONTRIBUTION TO THE PROFESSIONAL EDUCATION** | | | | | be able to identify problems in meat industry, develop solutions and  specialize the basic principles of the producing quality raw materials to the red meat industry | | | | | | | |
| **LEARNING OUTCOMES OF THE COURSE** | | | | | 1) Learn meat quality defect, presentation and marketing technics  2) Learn pre and post slaughter factors and their relation with meat quality  3) Learn carcass disection  4) Know the meat classification | | | | | | | |
| **TEXTBOOK** | | | | | Cañeque, V., Sañudo, C. 2000. Metodología Para El Estudio De La Calidad De La Canal Y De La Carne En Rumiantes Monografías. INIA Ganadera N.1Ministerio de Ciencia y Tecnología, Madrid, España | | | | | | | |
| **OTHER REFERENCES** | | | | | 1) Öztan, A. 2015. Meat Science and Technology. Ankara;2) Önenç, A. 2012. Meat Science and Carcass Assesment. Cource notes (unpublished) | | | | | | | |

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| **COURSE SCHEDULE (Weekly)** | |
| **WEEK** | **TOPICS** |
| 1 | Intoduction |
| 2 | Meat production and consumption |
| 3 | Value of red meat in human nutrition |
| 4 | Classification of meats |
| 5 | Carcass dissection in cattle |
| 6 | Midterm Examination 1 |
| 7 | Carcass dissection in sheep |
| 8 | Muscle convertion to meat |
| 9 | Pre and post mortem factors affecting meat quality |
| 10 | Physical and chemical composition of meat |
| 11 | Midterm Examination 2 |
| 12 | Microbiological characteristics of meat |
| 13 | Carcass and meat quality defects and meat products, meat presentation and marketing technics |
| 14 | Adulteration in meat |
| 15,16 | Final Examination |

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| **CONTRIBUTION OF THE COURSE LEARNING OUTCOMES TO THE ANIMAL SCIENCE MSc PROGRAM LEARNING OUTCOMES** | | **CONTRIBUTION LEVEL** | | |
| **NO** | **LEARNING OUTCOMES (MSc)** | **3**  High | **2**  Mid | **1**  Low |
| **LO 1** | Graduate student should specialize in one of animal nutrition, animal breeding or biometry and genetics disciplines in addition to bachelor's degree qualifications. |  |  |  |
| **LO 2** | Be able to identify problems in the area of expertise, do research, analyze and interpret the results, develop solutions, entrepreneurs and becomes the router in this area. |  |  |  |
| **LO 3** | Be able to generate new knowledge in the field of scientific expertise by using scientific methods, use and transfer this information to stakeholders through social and ethical responsibility. |  |  |  |
| **LO 4** | Be able to develop strategic approaches to the field of expertise and produce regional, national or international solutions by taking responsibility. |  |  |  |
| **LO 5** | To gain the ability of effective communication orally and in writing, to be conscious in the continuity of learning and self-renewal, to monitor the developments in science and technology. |  |  |  |
| **LO 6** | To gain skills for self-study for disciplinary and interdisciplinary teamwork. |  |  |  |
| **LO 7** | Be able to use the acquired knowledge and skills in interdisciplinary studies. |  |  |  |
| **LO 8** | To be able to use computer and information technology effectively in the field of expertise. |  |  |  |
| **LO 9** | Be able to reflect the knowledge and skills gained in the program in practice of animal production. |  |  |  |

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| **Prepared by :** | Yrd. Doç.Dr. Yüksel AKSOY | **Date:** | 08/04/2016 |

**Signature**:

**T.R.**

**ESKISEHIR OSMANGAZI UNIVERSITY**

**GRADUATE SCHOOL OF NATURAL AND APPLIED SCIENCES**

**COURSE INFORMATION FORM**

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| **DEPARTMENT** | **ANIMAL SCIENCE (MSc)** | **SEMESTER** |  |

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| **COURSE** | | | |
| **CODE** |  | **TITLE** | Multivariate Analysis |

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| **LEVEL** | **HOUR/WEEK** | | | | | | **Credit** | **ECTS** | **TYPE** | | | **LANGUAGE** |
| **Theory** | | **Practice** | **Laboratory** | | |
| **MSc** | 3 | | 0 | 0 | | | 3 | 7.5 | COMPULSORY  (   ) | | ELECTIVE  ( X ) | Turkish |
| **CREDIT DISTRIBUTION** | | | | | | | | | | | | |
| **Basic Science** | | **Basic Engineering** | | | | **Knowledge in the discipline**  **[if it contains considerable design content, mark with (√)]** | | | | | | |
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| **ASSESSMENT CRITERIA** | | | | | | | | | | | | |
| **SEMESTER ACTIVITIES** | | | | | **Evaluation Type** | | | | | **Number** | | **Contribution**  **( % )** |
| Midterm | | | | | 1 | | 40 |
| Quiz | | | | |  | |  |
| Homework | | | | |  | |  |
| Project | | | | |  | |  |
| Report | | | | |  | |  |
| Seminar | | | | |  | |  |
| Other (     ) | | | | |  | |  |
| **Final Examination** | | | | | | | 60 |
| **PREREQUISITE(S)** | | | | |  | | | | | | | |
| **SHORT COURSE CONTENT** | | | | | Matrix and Vectors, Eigenvalues, Eigenvectors, Multivariate Distributions, Multivariate Analysis of Variance, Multivariate Regression Analysis, Principal Component Analysis, Factor Analysis, Cluster Analysis, Discriminant Analysis, Multidimensional Scaling Analysis, Canonical Correlation Analysis | | | | | | | |
| **COURSE OBJECTIVES** | | | | | The course aims at teaching students the Multivariate Techniques in agricultural researchs. | | | | | | | |
| **COURSE CONTRIBUTION TO THE PROFESSIONAL EDUCATION** | | | | | Be able to model multivariate problems, analyze and interpret the results and develop solutions in area of agriculture. | | | | | | | |
| **LEARNING OUTCOMES OF THE COURSE** | | | | | Understand the logic and assumptions of multivariate statistics,  Learn the statistical techniques used to analyze multivariate data,  Learn to model agricultural engineering problems involving multivariate data  Learn to perform multivariate statistical analyses with software packages,  Learn to interpret the results and test the validity of multivariate data analyses. | | | | | | | |
| **TEXTBOOK** | | | | | Alpar R., (2011), Uygulamalı Çok Değişkenli İstatistiksel Yöntemler, Detay Yayıncılık, İstanbul | | | | | | | |
| **OTHER REFERENCES** | | | | | 1) Johnson R.A. and Wichern D.W., (2007), Applied Multivariate Statistical Analysis, 6th edition, Pearson, New Jersey.2) Sharma S., (1996), Applied Multivariate Techniques, New York, John Wiley, | | | | | | | |

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| **COURSE SCHEDULE (Weekly)** | |
| **WEEK** | **TOPICS** |
| 1 | Intoduction |
| 2 | Multivariate Analysis and areas of use |
| 3 | Matrix and Vectors, Eigenvalues and Eigenvectors |
| 4 | Multivariate Normal Distributions |
| 5 | Hotelling T2 Test, Multivariate Analysis of Variance (MANOVA), Multivariate Hypothesis Tests |
| 6 | Midterm Examination 1 |
| 7 | Multivariate Regression Analysis |
| 8 | Principal Component Analysis |
| 9 | Factor Analysis |
| 10 | Canonic Correlations Analysis |
| 11 | Midterm Examination 2 |
| 12 | Discriminate Analysis |
| 13 | Cluster Analysis |
| 14 | Multidimensional Scaling Analysis |
| 15,16 | Final Examination |

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| **CONTRIBUTION OF THE COURSE LEARNING OUTCOMES TO THE ANIMAL SCIENCE MSc PROGRAM LEARNING OUTCOMES** | | **CONTRIBUTION LEVEL** | | |
| **NO** | **LEARNING OUTCOMES (MSc)** | **3**  High | **2**  Mid | **1**  Low |
| **LO 1** | Graduate student should specialize in one of animal nutrition, animal breeding or biometry and genetics disciplines in addition to bachelor's degree qualifications. |  |  |  |
| **LO 2** | Be able to identify problems in the area of expertise, do research, analyze and interpret the results, develop solutions, entrepreneurs and becomes the router in this area. |  |  |  |
| **LO 3** | Be able to generate new knowledge in the field of scientific expertise by using scientific methods, use and transfer this information to stakeholders through social and ethical responsibility. |  |  |  |
| **LO 4** | Be able to develop strategic approaches to the field of expertise and produce regional, national or international solutions by taking responsibility. |  |  |  |
| **LO 5** | To gain the ability of effective communication orally and in writing, to be conscious in the continuity of learning and self-renewal, to monitor the developments in science and technology. |  |  |  |
| **LO 6** | To gain skills for self-study for disciplinary and interdisciplinary teamwork. |  |  |  |
| **LO 7** | Be able to use the acquired knowledge and skills in interdisciplinary studies. |  |  |  |
| **LO 8** | To be able to use computer and information technology effectively in the field of expertise. |  |  |  |
| **LO 9** | Be able to reflect the knowledge and skills gained in the program in practice of animal production. |  |  |  |

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| **Prepared by :** | Dr. Amir OROJPOUR MARAGHI | **Date:** | 14/04/2016 |

**Signature**:

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**T.R.**

**ESKISEHIR OSMANGAZI UNIVERSITY**

**GRADUATE SCHOOL OF NATURAL AND APPLIED SCIENCES**

**COURSE INFORMATION FORM**

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| **DEPARTMENT** | Joint Course for the Institute | **SEMESTER** | Fall-Spring |

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| **COURSE** | | | |
| **CODE** | 501011101 | **TITLE** | The Scientific Research Methods and Its Ethics |

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| **LEVEL** | **HOUR/WEEK** | | | | | | **Credit** | **ECTS** | **TYPE** | | | **LANGUAGE** |
| **Theory** | | **Practice** | **Laboratory** | | |
| MSc-  Ph.D | 3 | | 0 | 0 | | | 3+0 | 7,5 | COMPULSORY  ( X ) | | ELECTIVE  (   ) | Turkish |
| **CREDIT DISTRIBUTION** | | | | | | | | | | | | |
| **Basic Science** | | **Basic Engineering** | | | | **Knowledge in the discipline**  **[if it contains considerable design content, mark with (√)]** | | | | | | |
| 1,5 | | 1,5 | | | |  | | | | | | |
| **ASSESSMENT CRITERIA** | | | | | | | | | | | | |
| **SEMESTER ACTIVITIES** | | | | | **Evaluation Type** | | | | | **Number** | | **Contribution**  **( % )** |
| Midterm | | | | | 1 | | 40 |
| Quiz | | | | |  | |  |
| Homework | | | | |  | |  |
| Project | | | | |  | |  |
| Report | | | | |  | |  |
| Seminar | | | | |  | |  |
| Other (     ) | | | | |  | |  |
| **Final Examination** | | | | | | | 60 |
| **PREREQUISITE(S)** | | | | | None | | | | | | | |
| **SHORT COURSE CONTENT** | | | | | Science, the scientific thought and other fundamental concepts, the scientific research process and its techniques, Methodology: Data Collecting-Analysis-Interpretation, Reporting the scientific research (Preparation of a thesis, oral presentation, article, project), Ethics, Ethics of scientific research and publication. | | | | | | | |
| **COURSE OBJECTIVES** | | | | | The main objectives are: To examine the foundations of scientific research and the scientific research methods, to teach the principles of both the methodology and the ethics, to realize the process on a scientific research and to evaluate the results of research, to teach reporting the results of research (on a thesis, presentation, article). | | | | | | | |
| **COURSE CONTRIBUTION TO THE PROFESSIONAL EDUCATION** | | | | | Applying the scientific research methods and the ethical rules in their professional life. | | | | | | | |
| **LEARNING OUTCOMES OF THE COURSE** | | | | | Gaining awareness on ethical principles at basic research methods, becoming skillful at analyzing and reporting the data obtained in scientific researches, being able to have researcher qualification with occupational sense of responsibility, having the scientific and vocational ethics’ understanding and being able to defend this understanding in every medium. | | | | | | | |
| **TEXTBOOK (Turkish)** | | | | | Karasar, N. (2015). Bilimsel Araştırma Yöntemi. Nobel Akademi Yayıncılık, Ankara. | | | | | | | |
| **OTHER REFERENCES** | | | | | **1-**Büyüköztürk, Ş., Çakmak, E. K., Akgün, Ö. E., Karadeniz, Ş., Demirel, F. (2012). Bilimsel Araştırma Yöntemleri. Pegem Akademi Yayınevi, Ankara.  **2-**Tanrıöğen, A. (Editör). (2014). Bilimsel Araştırma Yöntemleri. Anı Yayıncılık, Ankara.  **3-**Türkiye Bilimler Akademisi Bilim Etiği Komitesi. Bilimsel Araştırmada Etik ve Sorunları, Ankara: TÜBA Yayınları, (2002).  **4-**Ekiz, D. (2009). Bilimsel Araştırma Yöntemleri: Yaklaşım, Yöntem ve Teknikler. Anı Yayıncılık, Ankara.  **5-**Day, Robert A. (Çeviri: G. Aşkay Altay). (1996). Bilimsel Makale Nasıl Yazılır ve Nasıl Yayımlanır?, TÜBİTAK Yayınları, Ankara.  **6-**Özdamar, K. (2003). Modern Bilimsel Araştırma Yöntemleri. Kaan Kitabevi, Eskişehir.  **7-**Cebeci, S. (1997). Bilimsel Araştırma ve Yazma Teknikleri. Alfa Basım Yayım Dağıtım, İstanbul.  **8-**Wilson, E. B. (1990). An Introduction to Scientific Research. Dover Pub. Inc., New York.  **9-**Çömlekçi, N. (2001). Bilimsel Araştırma Yöntemi ve İstatistiksel Anlamlılık Sınamaları. Bilim Teknik Kitabevi, Eskişehir. | | | | | | | |

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| **COURSE SCHEDULE (Weekly)** | |
| **WEEK** | **TOPICS** |
| 1 | Science, scientific thought and other basic concepts (University, history of university, higher education, science, scientific thought and other related concepts) |
| 2 | Science, scientific thought and other basic concepts (University, history of university, higher education, science, scientific thought and other related concepts) |
| 3 | The scientific research and its types (Importance of the scientific research, types of science, scientific approach) |
| 4 | The scientific research process and its techniques (Access to the scientific knowledge, literature search, determining the research issue, definition of the problem, planning) |
| 5 | The scientific research process and its techniques (Access to the scientific knowledge, literature search, determining the research issue, definition of the problem, planning) |
| 6 | The scientific research process and its techniques (Access to the scientific knowledge, literature search, determining the research issue, definition of the problem, planning) |
| 7 | The method and the approach: Collecting, analysis and interpretation of the data (Data, data types, measurement and measurement tools, collecting data, organizing data, summarizing data, analysis and the interpretation of data) |
| 8 | The method and the approach: Collecting, analysis and interpretation of the data (Data, data types, measurement and measurement tools, collecting data, organizing data, summarizing data, analysis and the interpretation of data) |
| 9 | Finalizing the scientific research (Reporting, preparing the thesis, oral presentation, preparing an article and a project) |
| 10 | Finalizing the scientific research (Reporting, preparing the thesis, oral presentation, preparing an article and a project) |
| 11 | Finalizing the scientific research (Reporting, preparing the thesis, oral presentation, preparing an article and a project) |
| 12 | Ethics, scientific research and publication ethics (Ethics, rules of ethics, occupational ethics, non-ethical behaviors) |
| 13 | Ethics, scientific research and publication ethics (Ethics, rules of ethics, occupational ethics, non-ethical behaviors) |
| 14 | Ethics, scientific research and publication ethics (Ethics, rules of ethics, occupational ethics, non-ethical behaviors) |
| 15,16 | Mid-term exam, Final Examination |

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| **CONTRIBUTION OF THE COURSE LEARNING OUTCOMES TO THE INSTITUTE’S GRADUATE PROGRAMME’S LEARNING OUTCOMES** | | | | **CONTRIBUTION LEVEL** | | | |
| **NO** | **LEARNING OUTCOMES (M.Sc.-Ph.D.)** | | | **3**  High | | **2**  Mid | **1**  Low |
| **LO 1** | Having the scientific and vocational ethics’ understanding and being able to defend this understanding in every medium. | | |  | |  |  |
| **LO 2** | Being able to have researcher qualification with occupational sense of responsibility. | | |  | |  |  |
| **LO 3** | Becoming skillful at analyzing and reporting the data obtained in scientific researches. | | |  | |  |  |
| **LO 4** | Gaining awareness on ethical principles at basic research methods. | | |  | |  |  |
| **Prepared by :** | | |  | **Date:** | | 14.06.2016 | | | |

**Signature**:

**T.R.**

**ESKISEHIR OSMANGAZI UNIVERSITY**

**GRADUATE SCHOOL OF NATURAL AND APPLIED SCIENCES**

**COURSE INFORMATION FORM**

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| **DEPARTMENT** | **ANIMAL SCIENCE (MSc)** | **SEMESTER** |  |

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| **COURSE** | | | |
| **CODE** |  | **TITLE** | Feeding Systems in Animal Nutrition |

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| **LEVEL** | **HOUR/WEEK** | | | | | | **Credit** | **ECTS** | **TYPE** | | | **LANGUAGE** |
| **Theory** | | **Practice** | **Laboratory** | | |
| **MSc** | 3 | | 0 | 0 | | | 3 | 7.5 | COMPULSORY  (   ) | | ELECTIVE  ( x ) | Turkish |
| **CREDIT DISTRIBUTION** | | | | | | | | | | | | |
| **Basic Science** | | **Basic Engineering** | | | | **Knowledge in the discipline**  **[if it contains considerable design content, mark with (√)]** | | | | | | |
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| **ASSESSMENT CRITERIA** | | | | | | | | | | | | |
| **SEMESTER ACTIVITIES** | | | | | **Evaluation Type** | | | | | **Number** | | **Contribution**  **( % )** |
| Midterm | | | | | 2 | | 40 |
| Quiz | | | | |  | |  |
| Homework | | | | | 4 | | 20 |
| Project | | | | |  | |  |
| Report | | | | |  | |  |
| Seminar | | | | |  | |  |
| Other (     ) | | | | |  | |  |
| **Final Examination** | | | | | | | 40 |
| **PREREQUISITE(S)** | | | | |  | | | | | | | |
| **SHORT COURSE CONTENT** | | | | | Restricted feeding, choice feeding, strategic feeding, standart feeding, complete feeding, strategic complete feeding. | | | | | | | |
| **COURSE OBJECTIVES** | | | | | To inform graduate students about the feeding systems and also to compare these systems in the light of their disadvantages and advantages.  proteins evaluation of ruminant and monogastric animals. | | | | | | | |
| **COURSE CONTRIBUTION TO THE PROFESSIONAL EDUCATION** | | | | | To authorize on animal feeding systems. | | | | | | | |
| **LEARNING OUTCOMES OF THE COURSE** | | | | | Learning the different feeding systems used in animal nutrition. Learning the disadvantages and advantages of different feeding systems. Gaining ability to choose suitable feeding systems for different regions. | | | | | | | |
| **TEXTBOOK** | | | | | Commercial Poultry Nutrition (S. Leeson; J.D. Summers). Animal Nutrition (P.Mcdonald; R.A. Edwards; J.F.G. Greenhalgh; C.A. Morgan; L.A. Sinclair; R. G. Wilkinson) | | | | | | | |
| **OTHER REFERENCES** | | | | | Academic articles | | | | | | | |

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| **COURSE SCHEDULE (Weekly)** | |
| **WEEK** | **TOPICS** |
| 1 | General information |
| 2 | Restricted feeding: Dilution of nutrients in ration |
| 3 | Restricted feeding: Restriction of daily feed consumption |
| 4 | Restricted feeding: Skip feeding |
| 5 | Classification of proteins |
| 6 | Midterm Examination 1 |
| 7 | Choice feeding: Choice feeding based on whole grains |
| 8 | Choice feeding: Choice of energy and protein sources |
| 9 | Choice feeding: Cafeteria type feeding |
| 10 | Strategic feeding |
| 11 | Midterm Examination 2 |
| 12 | Standart feeding |
| 13 | Complete feeding; Standart complete feeding |
| 14 | Range feeding in ruminants; Range/barn feeding in ruminants |
| 15,16 | Final Examination |

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| **CONTRIBUTION OF THE COURSE LEARNING OUTCOMES TO THE ANIMAL SCIENCE MSc PROGRAM LEARNING OUTCOMES** | | **CONTRIBUTION LEVEL** | | |
| **NO** | **LEARNING OUTCOMES (MSc)** | **3**  High | **2**  Mid | **1**  Low |
| **LO 1** | Graduate student should specialize in one of animal nutrition, animal breeding or biometry and genetics disciplines in addition to bachelor's degree qualifications. |  |  |  |
| **LO 2** | Be able to identify problems in the area of expertise, do research, analyze and interpret the results, develop solutions, entrepreneurs and becomes the router in this area. |  |  |  |
| **LO 3** | Be able to generate new knowledge in the field of scientific expertise by using scientific methods, use and transfer this information to stakeholders through social and ethical responsibility. |  |  |  |
| **LO 4** | Be able to develop strategic approaches to the field of expertise and produce regional, national or international solutions by taking responsibility. |  |  |  |
| **LO 5** | To gain the ability of effective communication orally and in writing, to be conscious in the continuity of learning and self-renewal, to monitor the developments in science and technology. |  |  |  |
| **LO 6** | To gain skills for self-study for disciplinary and interdisciplinary teamwork. |  |  |  |
| **LO 7** | Be able to use the acquired knowledge and skills in interdisciplinary studies. |  |  |  |
| **LO 8** | To be able to use computer and information technology effectively in the field of expertise. |  |  |  |
| **LO 9** | Be able to reflect the knowledge and skills gained in the program in practice of animal production. |  |  |  |

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| **Prepared by :** | Asst. Prof. Canan KOP BOZBAY | **Date:** | 28.10.2016 |

**Signature**:

**T.R.**

**ESKISEHIR OSMANGAZI UNIVERSITY**

**GRADUATE SCHOOL OF NATURAL AND APPLIED SCIENCES**

**COURSE INFORMATION FORM**

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| **DEPARTMENT** | **ANIMAL SCIENCE (MSc)** | **SEMESTER** |  |

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| **COURSE** | | | |
| **CODE** |  | **TITLE** | Protein Evaluation Systems |

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| **LEVEL** | **HOUR/WEEK** | | | | | | **Credit** | **ECTS** | **TYPE** | | | **LANGUAGE** |
| **Theory** | | **Practice** | **Laboratory** | | |
| **MSc** | 3 | | 0 | 0 | | | 3 | 7.5 | COMPULSORY  (   ) | | ELECTIVE  ( x ) | Turkish |
| **CREDIT DISTRIBUTION** | | | | | | | | | | | | |
| **Basic Science** | | **Basic Engineering** | | | | **Knowledge in the discipline**  **[if it contains considerable design content, mark with (√)]** | | | | | | |
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| **ASSESSMENT CRITERIA** | | | | | | | | | | | | |
| **SEMESTER ACTIVITIES** | | | | | **Evaluation Type** | | | | | **Number** | | **Contribution**  **( % )** |
| Midterm | | | | | 2 | | 40 |
| Quiz | | | | |  | |  |
| Homework | | | | | 4 | | 20 |
| Project | | | | |  | |  |
| Report | | | | |  | |  |
| Seminar | | | | |  | |  |
| Other (     ) | | | | |  | |  |
| **Final Examination** | | | | | | | 40 |
| **PREREQUISITE(S)** | | | | |  | | | | | | | |
| **SHORT COURSE CONTENT** | | | | | Protein chemistry and the importance of proteinsAmino acidsLimiting and essential amino acidsPeptides (oligo-and macro-peptides)Classification of proteinsProteins evaluation systemsChemical and biological methodsAmino acid indexEgg replacement valueBioloyolojik Value (BV)Net protein utilization (NPU)Protein efficiency ratioProtein Digestibility Corrected Amino Acid Score (PDCAAS) | | | | | | | |
| **COURSE OBJECTIVES** | | | | | To inform graduate students about the proteins evaluation of ruminant and monogastric animals | | | | | | | |
| **COURSE CONTRIBUTION TO THE PROFESSIONAL EDUCATION** | | | | | To authorize on the privileges of nutrients, protein structure, amino acids and protein evaluation system | | | | | | | |
| **LEARNING OUTCOMES OF THE COURSE** | | | | | Examining the details of the structure of amino acids and proteins, informed about nutrients and was authorized on the privilege of protein evaluation system | | | | | | | |
| **TEXTBOOK** | | | | | Hayvan besleme biyokimyası (Nihat ÖZEN, Antalya). Hayvan besleme fizyolojisi ve metabolizması (Nihat ÖZEN, Antalya). | | | | | | | |
| **OTHER REFERENCES** | | | | | Ensminger ME, Oldfield JE, Heinemann WW. Feeds and nutrition. Second edition, California, USA, 1990.McDonald P, Edwards RA, Greenhalgh JFD, Morgan CA. Animal nutrition. Sixth edition, Pearson Prentice Hall, 2001.Kellems RO, Church DC. Livestock feeds and feeding. Fifth edition, Pearson Prentice Hall, USA, 2002. | | | | | | | |

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| **COURSE SCHEDULE (Weekly)** | |
| **WEEK** | **TOPICS** |
| 1 | To inform graduate students about the proteins evaluation of ruminant and monogastric animals |
| 2 | Protein chemistry and the importance of proteins |
| 3 | Amino acids-Limiting and essential amino acids |
| 4 | Peptides (oligo-and macro-peptides) |
| 5 | Classification of proteins |
| 6 | Midterm Examination 1 |
| 7 | Proteins evaluation systems |
| 8 | Chemical and biological methods |
| 9 | Amino acid index and Egg replacement value |
| 10 | Bioloyolojik Value (BV) |
| 11 | Midterm Examination 2 |
| 12 | Net protein utilization (NPU) |
| 13 | Protein efficiency ratio (PER) |
| 14 | Protein Digestibility Corrected Amino Acid Score (PDCAAS) |
| 15,16 | Final Examination |

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| **CONTRIBUTION OF THE COURSE LEARNING OUTCOMES TO THE ANIMAL SCIENCE MSc PROGRAM LEARNING OUTCOMES** | | **CONTRIBUTION LEVEL** | | |
| **NO** | **LEARNING OUTCOMES (MSc)** | **3**  High | **2**  Mid | **1**  Low |
| **LO 1** | Graduate student should specialize in one of animal nutrition, animal breeding or biometry and genetics disciplines in addition to bachelor's degree qualifications. |  |  |  |
| **LO 2** | Be able to identify problems in the area of expertise, do research, analyze and interpret the results, develop solutions, entrepreneurs and becomes the router in this area. |  |  |  |
| **LO 3** | Be able to generate new knowledge in the field of scientific expertise by using scientific methods, use and transfer this information to stakeholders through social and ethical responsibility. |  |  |  |
| **LO 4** | Be able to develop strategic approaches to the field of expertise and produce regional, national or international solutions by taking responsibility. |  |  |  |
| **LO 5** | To gain the ability of effective communication orally and in writing, to be conscious in the continuity of learning and self-renewal, to monitor the developments in science and technology. |  |  |  |
| **LO 6** | To gain skills for self-study for disciplinary and interdisciplinary teamwork. |  |  |  |
| **LO 7** | Be able to use the acquired knowledge and skills in interdisciplinary studies. |  |  |  |
| **LO 8** | To be able to use computer and information technology effectively in the field of expertise. |  |  |  |
| **LO 9** | Be able to reflect the knowledge and skills gained in the program in practice of animal production. |  |  |  |

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| **Prepared by :** | Asst. Prof. Canan KOP BOZBAY | **Date:** | 28.10.2016 |

**Signature**:

**T.R.**

**ESKISEHIR OSMANGAZI UNIVERSITY**

**GRADUATE SCHOOL OF NATURAL AND APPLIED SCIENCES**

**COURSE INFORMATION FORM**

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| **DEPARTMENT** | **ANIMAL SCIENCE (MSc)** | **SEMESTER** |  |

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| **COURSE** | | | |
| **CODE** |  | **TITLE** | Udder health in dairy cows |

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| **LEVEL** | **HOUR/WEEK** | | | | | | **Credit** | **ECTS** | **TYPE** | | | **LANGUAGE** |
| **Theory** | | **Practice** | **Laboratory** | | |
| **MSc** | 3 | | 0 | 0 | | | 3 | 7,5 | COMPULSORY  (   ) | | ELECTIVE  ( X ) | Turkish |
| **CREDIT DISTRIBUTION** | | | | | | | | | | | | |
| **Basic Science** | | **Basic Engineering** | | | | **Knowledge in the discipline**  **[if it contains considerable design content, mark with (√)]** | | | | | | |
|  | | X | | | |  | | | | | | |
| **ASSESSMENT CRITERIA** | | | | | | | | | | | | |
| **SEMESTER ACTIVITIES** | | | | | **Evaluation Type** | | | | | **Number** | | **Contribution**  **( % )** |
| Midterm | | | | | 1 | | 25 |
| Quiz | | | | |  | |  |
| Homework | | | | | 1 | | 25 |
| Project | | | | |  | |  |
| Report | | | | |  | |  |
| Seminar | | | | |  | |  |
| Other (     ) | | | | |  | |  |
| **Final Examination** | | | | | | | 50 |
| **PREREQUISITE(S)** | | | | |  | | | | | | | |
| **SHORT COURSE CONTENT** | | | | | Structure of the teats and udder, development of the udder, suspension of the udder, the teats, milk senthesis and how it is effected by mastitis, teat and udder defences against mastitis, mammary hygiene, teat disinfection(pre-dipping, post-dipping, method of application, preparation and storage of dips, chemicals used in post- and pre-dipping disinfectants), disinfectant residues). | | | | | | | |
| **COURSE OBJECTIVES** | | | | | To educate professionals who know teat and udder anatomy and physiology, milk senthesis mechanisms, mammary hygiene and teat disinfection. | | | | | | | |
| **COURSE CONTRIBUTION TO THE PROFESSIONAL EDUCATION** | | | | | This cource will have very important contribution related to course content. | | | | | | | |
| **LEARNING OUTCOMES OF THE COURSE** | | | | | To apply or have someone applied teat disinfection, to understand mammary anatomy and physiology, to have knowledge about teat and mammary hygiene, to assesment of pre and postmilking disinfections. | | | | | | | |
| **TEXTBOOK** | | | | | 1-Blowey R, Edmondson P (2000) Mastitis control in dairy herds. Farming press, United Kingdom. | | | | | | | |
| **OTHER REFERENCES** | | | | | 1-Wattaux MA (Çeviri editörü : Ahmet G Önal, Çeviri: Bayazıt Musal) (2009) Teknik Süt Sığırcılığı Rehberi (Laktasyon ve sağım). Adnan Menderes Üniversitesi Yayın No: 29.2-Lam TJGM (2008) Mastitis control FROM SCIENCE TO PRACTICE. Wageningen Academic Publishers, The Netherlands. | | | | | | | |

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| **COURSE SCHEDULE (Weekly)** | |
| **WEEK** | **TOPICS** |
| 1 | Structure of the teats |
| 2 | Structure of the udder |
| 3 | Development of the udder |
| 4 | Suspension of the udder |
| 5 | The teats |
| 6 | Midterm Examination 1 |
| 7 | Milk senthesis |
| 8 | How Milk senthesis is effected by mastitis |
| 9 | Teat and udder defences against mastitis |
| 10 | Mammary hygiene |
| 11 | Midterm Examination 2 |
| 12 | Teat disinfection(pre-dipping) |
| 13 | Teat disinfection(post-dipping) |
| 14 | Preparation and storage of dips, chemicals used in post- and pre-dipping disinfectants, disinfectant residues. |
| 15,16 | Final Examination |

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| **CONTRIBUTION OF THE COURSE LEARNING OUTCOMES TO THE ANIMAL SCIENCE MSc PROGRAM LEARNING OUTCOMES** | | **CONTRIBUTION LEVEL** | | |
| **NO** | **LEARNING OUTCOMES (MSc)** | **3**  High | **2**  Mid | **1**  Low |
| **LO 1** | Graduate student should specialize in one of animal nutrition, animal breeding or biometry and genetics disciplines in addition to bachelor's degree qualifications. |  |  |  |
| **LO 2** | Be able to identify problems in the area of expertise, do research, analyze and interpret the results, develop solutions, entrepreneurs and becomes the router in this area. |  |  |  |
| **LO 3** | Be able to generate new knowledge in the field of scientific expertise by using scientific methods, use and transfer this information to stakeholders through social and ethical responsibility. |  |  |  |
| **LO 4** | Be able to develop strategic approaches to the field of expertise and produce regional, national or international solutions by taking responsibility. |  |  |  |
| **LO 5** | To gain the ability of effective communication orally and in writing, to be conscious in the continuity of learning and self-renewal, to monitor the developments in science and technology. |  |  |  |
| **LO 6** | To gain skills for self-study for disciplinary and interdisciplinary teamwork. |  |  |  |
| **LO 7** | Be able to use the acquired knowledge and skills in interdisciplinary studies. |  |  |  |
| **LO 8** | To be able to use computer and information technology effectively in the field of expertise. |  |  |  |
| **LO 9** | Be able to reflect the knowledge and skills gained in the program in practice of animal production. |  |  |  |

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| **Prepared by :** | Prof. Dr. Muhammet Alan | **Date:** |  |

**Signature**:

**T.R.**

**ESKISEHIR OSMANGAZI UNIVERSITY**

**GRADUATE SCHOOL OF NATURAL AND APPLIED SCIENCES**

**COURSE INFORMATION FORM**

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| **DEPARTMENT** | **ANIMAL SCIENCE (MSc)** | **SEMESTER** |  |

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| **COURSE** | | | |
| **CODE** |  | **TITLE** | Milking and mastitis |

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| **LEVEL** | **HOUR/WEEK** | | | | | | **Credit** | **ECTS** | **TYPE** | | | **LANGUAGE** |
| **Theory** | | **Practice** | **Laboratory** | | |
| **MSc** | 3 | | 0 | 0 | | | 3 | 7,5 | COMPULSORY  (   ) | | ELECTIVE  ( X ) | Turkish |
| **CREDIT DISTRIBUTION** | | | | | | | | | | | | |
| **Basic Science** | | **Basic Engineering** | | | | **Knowledge in the discipline**  **[if it contains considerable design content, mark with (√)]** | | | | | | |
|  | | X | | | |  | | | | | | |
| **ASSESSMENT CRITERIA** | | | | | | | | | | | | |
| **SEMESTER ACTIVITIES** | | | | | **Evaluation Type** | | | | | **Number** | | **Contribution**  **( % )** |
| Midterm | | | | | 1 | | 25 |
| Quiz | | | | |  | |  |
| Homework | | | | | 1 | | 25 |
| Project | | | | |  | |  |
| Report | | | | |  | |  |
| Seminar | | | | |  | |  |
| Other (     ) | | | | |  | |  |
| **Final Examination** | | | | | | | 50 |
| **PREREQUISITE(S)** | | | | |  | | | | | | | |
| **SHORT COURSE CONTENT** | | | | | Hand milking, machine milking, Maintenance and Machine Testing, The Milking Machine and its Relationship to Mastitis, simple Machine Checks that can be Carried out Without Testing Equipment, Wash-up Routines, Circulation Cleaning, Acid Boiling Wash, Manual Washing, If a Wash-up Problem is Suspected, Common Faults Found with Milking Machines, pulsation, Pulsators, the milking routine and its effect on mastitis, the environment and mastitis, somatic cell count, total bacterial count; definition, diagnosis and treatment of mastitis, dry cow therapy. | | | | | | | |
| **COURSE OBJECTIVES** | | | | | To educate professionals known the importance of milking, milking manners, mastitis and its importance and relationship between milking and mastitis. | | | | | | | |
| **COURSE CONTRIBUTION TO THE PROFESSIONAL EDUCATION** | | | | | This cource will have very important contribution related to course content. | | | | | | | |
| **LEARNING OUTCOMES OF THE COURSE** | | | | | To apply or have someone applied hand and machine milking, to understand mechanism of machine milking, to have knowledge about milking routins, to assesment of relationship between milking and mastitis. | | | | | | | |
| **TEXTBOOK** | | | | | 1-Blowey R, Edmondson P (2000) Mastitis control in dairy herds. Farming press, United Kingdom. | | | | | | | |
| **OTHER REFERENCES** | | | | | 1-Wattaux MA (Çeviri editörü : Ahmet G Önal, Çeviri: Bayazıt Musal) (2009) Teknik Süt Sığırcılığı Rehberi (Laktasyon ve sağım). Adnan Menderes Üniversitesi Yayın No: 29.2-Lam TJGM (2008) Mastitis control FROM SCIENCE TO PRACTICE. Wageningen Academic Publishers, The Netherlands. | | | | | | | |

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| **COURSE SCHEDULE (Weekly)** | |
| **WEEK** | **TOPICS** |
| 1 | Hand milking |
| 2 | Machine milking |
| 3 | Maintenance and Machine Testing |
| 4 | The Milking Machine and its Relationship to Mastitis |
| 5 | Wash-up Routines |
| 6 | Midterm Examination 1 |
| 7 | Simple Machine Checks, Circulation Cleaning |
| 8 | Acid Boiling Wash, Manual Washing |
| 9 | Common Faults Found with Milking Machines |
| 10 | Pulsation, Pulsators |
| 11 | Midterm Examination 2 |
| 12 | The milking routine and its effect on mastitis, The environment and mastitis |
| 13 | Somatic cell count, total bacterial count |
| 14 | Definition, diagnosis and treatment of mastitis, dry cow therapy. |
| 15,16 | Final Examination |

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| **CONTRIBUTION OF THE COURSE LEARNING OUTCOMES TO THE ANIMAL SCIENCE MSc PROGRAM LEARNING OUTCOMES** | | **CONTRIBUTION LEVEL** | | |
| **NO** | **LEARNING OUTCOMES (MSc)** | **3**  High | **2**  Mid | **1**  Low |
| **LO 1** | Graduate student should specialize in one of animal nutrition, animal breeding or biometry and genetics disciplines in addition to bachelor's degree qualifications. |  |  |  |
| **LO 2** | Be able to identify problems in the area of expertise, do research, analyze and interpret the results, develop solutions, entrepreneurs and becomes the router in this area. |  |  |  |
| **LO 3** | Be able to generate new knowledge in the field of scientific expertise by using scientific methods, use and transfer this information to stakeholders through social and ethical responsibility. |  |  |  |
| **LO 4** | Be able to develop strategic approaches to the field of expertise and produce regional, national or international solutions by taking responsibility. |  |  |  |
| **LO 5** | To gain the ability of effective communication orally and in writing, to be conscious in the continuity of learning and self-renewal, to monitor the developments in science and technology. |  |  |  |
| **LO 6** | To gain skills for self-study for disciplinary and interdisciplinary teamwork. |  |  |  |
| **LO 7** | Be able to use the acquired knowledge and skills in interdisciplinary studies. |  |  |  |
| **LO 8** | To be able to use computer and information technology effectively in the field of expertise. |  |  |  |
| **LO 9** | Be able to reflect the knowledge and skills gained in the program in practice of animal production. |  |  |  |

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| **Prepared by :** | Prof. Dr. Muhammet Alan | **Date:** |  |

**Signature**:

**T.R.**

**ESKISEHIR OSMANGAZI UNIVERSITY**

**GRADUATE SCHOOL OF NATURAL AND APPLIED SCIENCES**

**COURSE INFORMATION FORM**

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| --- | --- | --- | --- |
| **DEPARTMENT** | **ANIMAL SCIENCE (MSc)** | **SEMESTER** |  |

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| **COURSE** | | | |
| **CODE** |  | **TITLE** | Metabolic disease |

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| **LEVEL** | **HOUR/WEEK** | | | | | | **Credit** | **ECTS** | **TYPE** | | | **LANGUAGE** |
| **Theory** | | **Practice** | **Laboratory** | | |
| **MSc** | 3 | | 0 | 0 | | | 3 | 7.5 | COMPULSORY  (   ) | | ELECTIVE  ( X ) | Turkish |
| **CREDIT DISTRIBUTION** | | | | | | | | | | | | |
| **Basic Science** | | **Basic Engineering** | | | | **Knowledge in the discipline**  **[if it contains considerable design content, mark with (√)]** | | | | | | |
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| **ASSESSMENT CRITERIA** | | | | | | | | | | | | |
| **SEMESTER ACTIVITIES** | | | | | **Evaluation Type** | | | | | **Number** | | **Contribution**  **( % )** |
| Midterm | | | | | 2 | | 40 |
| Quiz | | | | |  | |  |
| Homework | | | | | 4 | | 20 |
| Project | | | | |  | |  |
| Report | | | | |  | |  |
| Seminar | | | | |  | |  |
| Other (     ) | | | | |  | |  |
| **Final Examination** | | | | | | | 40 |
| **PREREQUISITE(S)** | | | | |  | | | | | | | |
| **SHORT COURSE CONTENT** | | | | | Nutrition related metabolic disease. The importance, causes, symptoms and treatment of metablic disorders. | | | | | | | |
| **COURSE OBJECTIVES** | | | | | This course aims to increase the knowledge of graduate students in the diagnosis, treatment and prevention of nutritional metabolic diseases. | | | | | | | |
| **COURSE CONTRIBUTION TO THE PROFESSIONAL EDUCATION** | | | | | It recognizes metabolic diseases related to the wrong nutrition in the animal nutrition and may develop a solution to prevent and cure the metabolic disease. | | | | | | | |
| **LEARNING OUTCOMES OF THE COURSE** | | | | | After completing this course, student will be able to;  -The students recognise metabolic disease and makes the classification of its,  -The students determine the importance of metabolic disease at animal nutrition,  -They explain the cause of metabolic diseases,  -They learn to be awere of issuses at animal nutrition,  -They learn symptoms of metabolic disease  - They may develop a solution proposal to treat the metabolic diseases related to Nutrition. | | | | | | | |
| **TEXTBOOK** | | | | | 1) Türkoğlu, M., Sarıca, M. 2009. Poultry Science, Husbandry, Nutrition, Diseases. Mr Ofset Printing House, Ankara.2) Ergün İ, Tuncer Ş D, Çolpan İ, Yalçın S, Yıldız G, Küçükersan M K, Küçükersan S, Şehu, A (2004). Animal Feeding and Nutrition Disorders. Text Book of Ankara University, Veterinary Medicine Faculty, 687p. | | | | | | | |
| **OTHER REFERENCES** | | | | | 1) Leeson, S., Adams, C.A., Summer, J.D. 2013. Metabolic disorders in poultry. Context publisher, 336p. | | | | | | | |

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| **COURSE SCHEDULE (Weekly)** | |
| **WEEK** | **TOPICS** |
| 1 | Explanation of definitions related to the course (nutrition, metabolism, pathogen, acute, chronic,…. etc.) |
| 2 | Causes of disease and disease  -Microorgqanism-borne disease  -Metabolic disease related to nutritional |
| 3 | Disease causing microorganisms  -Bacteria, viruses, protozoa, fungi |
| 4 | Disease enabling capabilities of microorganisms in body  Immunity  Genetic immunity  Acquired immunity |
| 5 | According to the impact of disease  -Viral Diseases  -Bacterial Diseases  -Fungal Diseases  -Parasitic Diseases  -Nutrition Related Diseases |
| 6 | Midterm Examination 1 |
| 7 | Rumen acidosis |
| 8 | Ketosis |
| 9 | Milk fever  Mastitis |
| 10 | Abomasal displacement  Fatty Liver Syndrome |
| 11 | Midterm Examination 2 |
| 12 | Diarrhea (Diarhoea)  Ascites |
| 13 | Undigested faecal disposal (Mal absorption syndrome)  Sticky Feces (Sticky droppings) |
| 14 | Laminitis  Foot dermatitis |
| 15,16 | Final Examination |

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| **CONTRIBUTION OF THE COURSE LEARNING OUTCOMES TO THE ANIMAL SCIENCE MSc PROGRAM LEARNING OUTCOMES** | | **CONTRIBUTION LEVEL** | | |
| **NO** | **LEARNING OUTCOMES (MSc)** | **3**  High | **2**  Mid | **1**  Low |
| **LO 1** | Graduate student should specialize in one of animal nutrition, animal breeding or biometry and genetics disciplines in addition to bachelor's degree qualifications. |  |  |  |
| **LO 2** | Be able to identify problems in the area of expertise, do research, analyze and interpret the results, develop solutions, entrepreneurs and becomes the router in this area. |  |  |  |
| **LO 3** | Be able to generate new knowledge in the field of scientific expertise by using scientific methods, use and transfer this information to stakeholders through social and ethical responsibility. |  |  |  |
| **LO 4** | Be able to develop strategic approaches to the field of expertise and produce regional, national or international solutions by taking responsibility. |  |  |  |
| **LO 5** | To gain the ability of effective communication orally and in writing, to be conscious in the continuity of learning and self-renewal, to monitor the developments in science and technology. |  |  |  |
| **LO 6** | To gain skills for self-study for disciplinary and interdisciplinary teamwork. |  |  |  |
| **LO 7** | Be able to use the acquired knowledge and skills in interdisciplinary studies. |  |  |  |
| **LO 8** | To be able to use computer and information technology effectively in the field of expertise. |  |  |  |
| **LO 9** | Be able to reflect the knowledge and skills gained in the program in practice of animal production. |  |  |  |

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| **Prepared by :** | Assoc. Prof. Dr. Ahmet Tekeli | **Date:** | 29.03.2018 |

**Signature**:

**T.R.**

**ESKISEHIR OSMANGAZI UNIVERSITY**

**GRADUATE SCHOOL OF NATURAL AND APPLIED SCIENCES**

**COURSE INFORMATION FORM**

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| **DEPARTMENT** | **ANIMAL SCIENCE (MSc)** | **SEMESTER** |  |

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| **COURSE** | | | |
| **CODE** |  | **TITLE** | Mineral Substances and importance of minerals in animal nutrition. |

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| **LEVEL** | **HOUR/WEEK** | | | | | | **Credit** | **ECTS** | **TYPE** | | | **LANGUAGE** |
| **Theory** | | **Practice** | **Laboratory** | | |
| **MSc** | 3 | | 0 | 0 | | | 3 | 7.5 | COMPULSORY  (   ) | | ELECTIVE  ( X ) | Turkish |
| **CREDIT DISTRIBUTION** | | | | | | | | | | | | |
| **Basic Science** | | **Basic Engineering** | | | | **Knowledge in the discipline**  **[if it contains considerable design content, mark with (√)]** | | | | | | |
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| **ASSESSMENT CRITERIA** | | | | | | | | | | | | |
| **SEMESTER ACTIVITIES** | | | | | **Evaluation Type** | | | | | **Number** | | **Contribution**  **( % )** |
| Midterm | | | | | 2 | | 40 |
| Quiz | | | | |  | |  |
| Homework | | | | | 4 | | 20 |
| Project | | | | |  | |  |
| Report | | | | |  | |  |
| Seminar | | | | |  | |  |
| Other (     ) | | | | |  | |  |
| **Final Examination** | | | | | | | 40 |
| **PREREQUISITE(S)** | | | | |  | | | | | | | |
| **SHORT COURSE CONTENT** | | | | | Classification of mineral substances, sources and its importance at animal nutrition | | | | | | | |
| **COURSE OBJECTIVES** | | | | | It is an extension of the knowledge of graduate students on the metabolism of mineral substances and its importance at animal nutrition. | | | | | | | |
| **COURSE CONTRIBUTION TO THE PROFESSIONAL EDUCATION** | | | | | The student recognizes the sources of mineral matter and develops solutions for the problems to be encountered in mineral nutrition. | | | | | | | |
| **LEARNING OUTCOMES OF THE COURSE** | | | | | After completing this course, student will be able to;  Identify and classify mineral substances,  Explains the metabolism of minerals,  Learn the symptoms of mineral insufficiency and excess,  Learn the considerations in mineral nutrition,  It determines the importance of mineral substances in animal nutrition, | | | | | | | |
| **TEXTBOOK** | | | | | 1) 1) Lee Rusell McDowell 1992. Minerals in Animal and Human Nutrition. Department of Animal Science University of Florida.2) Kutlu, H.R. 2008. General Animal Nutrition Text book. Çukurova University Agriculture Faculty, Animal Scienced Adana. | | | | | | | |
| **OTHER REFERENCES** | | | | | 1) Ergün İ, Tuncer Ş D, Çolpan İ, Yalçın S, Yıldız G, Küçükersan M K, Küçükersan S, Şehu, A .2004. Animal Feeding and Nutrition Disorders. Text Book of Ankara University, Veterinary Medicine Faculty, 687p. | | | | | | | |

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| **COURSE SCHEDULE (Weekly)** | |
| **WEEK** | **TOPICS** |
| 1 | Classification of mineral substances  a) Macro mineral  b) Micro mineral |
| 2 | General functions of mineral substances  Chemical Properties of mineral substances |
| 3 | Metabolism of mineral substances  Absorption of mineral substances  a) Simple diffusion  b) Ko transport  c) Neutral transport |
| 4 | The issues should be consider at nutrition of mineral substances  Mineral substances deficiency and toxiety  Mineral substances sources |
| 5 | Ca ve P metabolism |
| 6 | Midterm Examination 1 |
| 7 | Zn and I metabolism |
| 8 | Na and Cl metabolism |
| 9 | Fe ve Mo metabolism |
| 10 | F metabolism |
| 11 | Midterm Examination 2 |
| 12 | Co ve Cr metabolism |
| 13 | S ve Mg metabolism |
| 14 | Se ve Si metabolism |
| 15,16 | Final Examination |

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| **CONTRIBUTION OF THE COURSE LEARNING OUTCOMES TO THE ANIMAL SCIENCE MSc PROGRAM LEARNING OUTCOMES** | | **CONTRIBUTION LEVEL** | | |
| **NO** | **LEARNING OUTCOMES (MSc)** | **3**  High | **2**  Mid | **1**  Low |
| **LO 1** | Graduate student should specialize in one of animal nutrition, animal breeding or biometry and genetics disciplines in addition to bachelor's degree qualifications. |  |  |  |
| **LO 2** | Be able to identify problems in the area of expertise, do research, analyze and interpret the results, develop solutions, entrepreneurs and becomes the router in this area. |  |  |  |
| **LO 3** | Be able to generate new knowledge in the field of scientific expertise by using scientific methods, use and transfer this information to stakeholders through social and ethical responsibility. |  |  |  |
| **LO 4** | Be able to develop strategic approaches to the field of expertise and produce regional, national or international solutions by taking responsibility. |  |  |  |
| **LO 5** | To gain the ability of effective communication orally and in writing, to be conscious in the continuity of learning and self-renewal, to monitor the developments in science and technology. |  |  |  |
| **LO 6** | To gain skills for self-study for disciplinary and interdisciplinary teamwork. |  |  |  |
| **LO 7** | Be able to use the acquired knowledge and skills in interdisciplinary studies. |  |  |  |
| **LO 8** | To be able to use computer and information technology effectively in the field of expertise. |  |  |  |
| **LO 9** | Be able to reflect the knowledge and skills gained in the program in practice of animal production. |  |  |  |

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| **Prepared by :** | Assoc. Prof. Dr. Ahmet Tekeli | **Date:** | 29.03.2018 |

**Signature**:

**T.R.**

**ESKISEHIR OSMANGAZI UNIVERSITY**

**GRADUATE SCHOOL OF NATURAL AND APPLIED SCIENCES**

**COURSE INFORMATION FORM**

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| **DEPARTMENT** | **ANIMAL SCIENCE (MSc)** | **SEMESTER** |  |

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| **COURSE** | | | |
| **CODE** |  | **TITLE** | Fetal Programming |

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| **LEVEL** | **HOUR/WEEK** | | | | | | **Credit** | **ECTS** | **TYPE** | | | **LANGUAGE** |
| **Theory** | | **Practice** | **Laboratory** | | |
| **MSc** | 3 | | 0 | 0 | | | 3 | 7.5 | COMPULSORY  (   ) | | ELECTIVE  ( x ) | Turkish |
| **CREDIT DISTRIBUTION** | | | | | | | | | | | | |
| **Basic Science** | | **Basic Engineering** | | | | **Knowledge in the discipline**  **[if it contains considerable design content, mark with (√)]** | | | | | | |
|  | | x | | | |  | | | | | | |
| **ASSESSMENT CRITERIA** | | | | | | | | | | | | |
| **SEMESTER ACTIVITIES** | | | | | **Evaluation Type** | | | | | **Number** | | **Contribution**  **( % )** |
| Midterm | | | | | 1 | | 20 |
| Quiz | | | | |  | |  |
| Homework | | | | | 1 | | 20 |
| Project | | | | |  | |  |
| Report | | | | |  | |  |
| Seminar | | | | |  | |  |
| Other (Scientific paper discussion) | | | | | 1 | | 20 |
| **Final Examination** | | | | | | | 40 |
| **PREREQUISITE(S)** | | | | | None | | | | | | | |
| **SHORT COURSE CONTENT** | | | | | First studies on fetal programming, effects of low or excessive maternal feeding on offspring, fetal development, transference of effects from generation to generation in prenatal programming, effects of uterine environment on gene expression pattern, phenotype change, growth and development, prenatal causes of postnatal changes in production. | | | | | | | |
| **COURSE OBJECTIVES** | | | | | To evaluate the effects of stress conditions in maternal animals on pregnancy, growth and reproductive performance and carcass quality of the offspring. | | | | | | | |
| **COURSE CONTRIBUTION TO THE PROFESSIONAL EDUCATION** | | | | | By learning effects of prenatal conditions of breeding animals on their offsprings, it would be possible to provide appropriate husbandry conditions to achive more healty and productive offsprings. | | | | | | | |
| **LEARNING OUTCOMES OF THE COURSE** | | | | | -To comprehend the term of fetal programming,  - To have information about the correct feeding and management of pregnant animals,  -To be able to perform the appropriate maintenance and feeding conditions,  -To be able to use and synthesize information in the fields of nutrition, genetics and feeding. | | | | | | | |
| **TEXTBOOK** | | | | | Introduction to Epigenetics (Jörn Walter and Anja Hümpel; Springer) | | | | | | | |
| **OTHER REFERENCES** | | | | | Recent scientific articles. | | | | | | | |

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| **COURSE SCHEDULE (Weekly)** | |
| **WEEK** | **TOPICS** |
| 1 | First studies related to fetal programming |
| 2 | Fetal development |
| 3 | Effects of insufficient maternal nutrition on offspring |
| 4 | Effects of excessive maternal nutrition on offspring |
| 5 | Effects of maternal heat stress on offspring |
| 6 | Midterm Examination 1 |
| 7 | Effects of maternal stocking density on offspring |
| 8 | Effects of experimental stress conditions on offspring |
| 9 | Transfer of effects from generation to generation in fetal programming |
| 10 | Gene expression pattern and phenotype change in uterus environment |
| 11 | Midterm Examination 2 |
| 12 | Prenatal origins of postnatal variation in growth, development and productivity |
| 13 | Prenatal origins of postnatal variation in growth, development and productivity |
| 14 | Prenatal origins of postnatal variation in growth, development and productivity |
| 15,16 | Final Examination |

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| **CONTRIBUTION OF THE COURSE LEARNING OUTCOMES TO THE ANIMAL SCIENCE MSc PROGRAM LEARNING OUTCOMES** | | **CONTRIBUTION LEVEL** | | |
| **NO** | **LEARNING OUTCOMES (MSc)** | **3**  High | **2**  Mid | **1**  Low |
| **LO 1** | Graduate student should specialize in one of animal nutrition, animal breeding or biometry and genetics disciplines in addition to bachelor's degree qualifications. |  |  |  |
| **LO 2** | Be able to identify problems in the area of expertise, do research, analyze and interpret the results, develop solutions, entrepreneurs and becomes the router in this area. |  |  |  |
| **LO 3** | Be able to generate new knowledge in the field of scientific expertise by using scientific methods, use and transfer this information to stakeholders through social and ethical responsibility. |  |  |  |
| **LO 4** | Be able to develop strategic approaches to the field of expertise and produce regional, national or international solutions by taking responsibility. |  |  |  |
| **LO 5** | To gain the ability of effective communication orally and in writing, to be conscious in the continuity of learning and self-renewal, to monitor the developments in science and technology. |  |  |  |
| **LO 6** | To gain skills for self-study for disciplinary and interdisciplinary teamwork. |  |  |  |
| **LO 7** | Be able to use the acquired knowledge and skills in interdisciplinary studies. |  |  |  |
| **LO 8** | To be able to use computer and information technology effectively in the field of expertise. |  |  |  |
| **LO 9** | Be able to reflect the knowledge and skills gained in the program in practice of animal production. |  |  |  |

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| **Prepared by :** | Dr. Öğr. Üyesi Zekeriya Kıyma | **Date:** | 13-11-2018 |

**Signature**:

**T.R.**

**ESKISEHIR OSMANGAZI UNIVERSITY**

**GRADUATE SCHOOL OF NATURAL AND APPLIED SCIENCES**

**COURSE INFORMATION FORM**

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| **DEPARTMENT** | **ANIMAL SCIENCE (MSc)** | **SEMESTER** |  |

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| **COURSE** | | | |
| **CODE** |  | **TITLE** | Amin Aacids in Animal Nutrition |

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| **LEVEL** | **HOUR/WEEK** | | | | | | **Credit** | **ECTS** | **TYPE** | | | **LANGUAGE** |
| **Theory** | | **Practice** | **Laboratory** | | |
| **MSc** | 3 | |  |  | | | 3 | 7.5 | COMPULSORY  (   ) | | ELECTIVE  ( x ) | Turkish |
| **CREDIT DISTRIBUTION** | | | | | | | | | | | | |
| **Basic Science** | | **Basic Engineering** | | | | **Knowledge in the discipline**  **[if it contains considerable design content, mark with (√)]** | | | | | | |
| x | |  | | | |  | | | | | | |
| **ASSESSMENT CRITERIA** | | | | | | | | | | | | |
| **SEMESTER ACTIVITIES** | | | | | **Evaluation Type** | | | | | **Number** | | **Contribution**  **( % )** |
| Midterm | | | | | 2 | | 40 |
| Quiz | | | | |  | |  |
| Homework | | | | |  | |  |
| Project | | | | |  | |  |
| Report | | | | |  | |  |
| Seminar | | | | |  | |  |
| Other (     ) | | | | |  | |  |
| **Final Examination** | | | | | | | 60 |
| **PREREQUISITE(S)** | | | | |  | | | | | | | |
| **SHORT COURSE CONTENT** | | | | | Chemical Nature of the Amino Acids and CORN law, Classification of Amino Acids, (R-Groups- Hydrophobic and hydrophilic; Synthesis- Essential and nonessential, Metabolic function- Glycogenic and ketogenic and Characteristics of side chain- Aliphatic, aromatic, acidic, basic amino acids, and amino acid containing hydroxyl, sulphur and amid), Properties of the Amino Acids (Acid-base properties, Polar or apolar properties, Optical Properties and branched chain properties), Biosynthesis and catabolism of Amino Acids and Analysis of the Peptides and Amino Acids | | | | | | | |
| **COURSE OBJECTIVES** | | | | | This course is to acquaint the graduated students with the chemistry of amino acids and the importance of amino acids in the nutrition of animals | | | | | | | |
| **COURSE CONTRIBUTION TO THE PROFESSIONAL EDUCATION** | | | | | Authorization on the use of amino acids in animal nutrition. | | | | | | | |
| **LEARNING OUTCOMES OF THE COURSE** | | | | | Understands the concept of amino acid and its importance in animal nutrition.  Learn the chemical structure of amino acids.  Understands the role of each amino acid in animal feeding.  Understands the mechanisms of absorption of amino acids and their evaluation in the body.  Learns amino acid needs of different animal species. | | | | | | | |
| **TEXTBOOK** | | | | | F D’Mello J. P. F., 2003. Amino Acids in Animal Nutrition, 2nd Ed., CAB Int., Oxon, UK. | | | | | | | |
| **OTHER REFERENCES** | | | | | Scientific articles | | | | | | | |

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| **COURSE SCHEDULE (Weekly)** | |
| **WEEK** | **TOPICS** |
| 1 | General information on proteins |
| 2 | Classification and functions of amino acids |
| 3 | General information on amino acid analysis of feeds |
| 4 | Absorptions mechanisms of amino acids and peptides |
| 5 | Absorptions mechanisms of amino acids and peptides |
| 6 | Midterm Examination 1 |
| 7 | Amino acid metabolism in animals |
| 8 | Amino acid metabolism in animals |
| 9 | Ratios of essential and nonessential amino acids |
| 10 | Ratios of essential and nonessential amino acids |
| 11 | Midterm Examination 2 |
| 12 | Antagonistic and synergistic relationships between amino acids |
| 13 | Roles of amino acids in ruminant nutrition |
| 14 | Roles of amino acids in poultry nutrition. |
| 15,16 | Final Examination |

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| **CONTRIBUTION OF THE COURSE LEARNING OUTCOMES TO THE ANIMAL SCIENCE MSc PROGRAM LEARNING OUTCOMES** | | **CONTRIBUTION LEVEL** | | |
| **NO** | **LEARNING OUTCOMES (MSc)** | **3**  High | **2**  Mid | **1**  Low |
| **LO 1** | Graduate student should specialize in one of animal nutrition, animal breeding or biometry and genetics disciplines in addition to bachelor's degree qualifications. |  |  |  |
| **LO 2** | Be able to identify problems in the area of expertise, do research, analyze and interpret the results, develop solutions, entrepreneurs and becomes the router in this area. |  |  |  |
| **LO 3** | Be able to generate new knowledge in the field of scientific expertise by using scientific methods, use and transfer this information to stakeholders through social and ethical responsibility. |  |  |  |
| **LO 4** | Be able to develop strategic approaches to the field of expertise and produce regional, national or international solutions by taking responsibility. |  |  |  |
| **LO 5** | To gain the ability of effective communication orally and in writing, to be conscious in the continuity of learning and self-renewal, to monitor the developments in science and technology. |  |  |  |
| **LO 6** | To gain skills for self-study for disciplinary and interdisciplinary teamwork. |  |  |  |
| **LO 7** | Be able to use the acquired knowledge and skills in interdisciplinary studies. |  |  |  |
| **LO 8** | To be able to use computer and information technology effectively in the field of expertise. |  |  |  |
| **LO 9** | Be able to reflect the knowledge and skills gained in the program in practice of animal production. |  |  |  |

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| **Prepared by :** | Dr. Öğr. Üy. Canan KOP BOZBAY | **Date:** |  |

**Signature**:

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**ESKISEHIR OSMANGAZI UNIVERSITY**

**GRADUATE SCHOOL OF NATURAL AND APPLIED SCIENCES**

**COURSE INFORMATION FORM**

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| **DEPARTMENT** | **ANIMAL SCIENCE (MSc)** | **SEMESTER** |  |

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| **COURSE** | | | |
| **CODE** |  | **TITLE** | Biosecurity in animal breeding |

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| **LEVEL** | **HOUR/WEEK** | | | | | | **Credit** | **ECTS** | **TYPE** | | | **LANGUAGE** |
| **Theory** | | **Practice** | **Laboratory** | | |
| **MSc** | 3 | | 0 | 0 | | | 3 | 7.5 | COMPULSORY  ( x ) | | ELECTIVE  (   ) | Turkish |
| **CREDIT DISTRIBUTION** | | | | | | | | | | | | |
| **Basic Science** | | **Basic Engineering** | | | | **Knowledge in the discipline**  **[if it contains considerable design content, mark with (√)]** | | | | | | |
|  | | X | | | |  | | | | | | |
| **ASSESSMENT CRITERIA** | | | | | | | | | | | | |
| **SEMESTER ACTIVITIES** | | | | | **Evaluation Type** | | | | | **Number** | | **Contribution**  **( % )** |
| Midterm | | | | | 2 | | 50 |
| Quiz | | | | |  | |  |
| Homework | | | | |  | |  |
| Project | | | | |  | |  |
| Report | | | | |  | |  |
| Seminar | | | | |  | |  |
| Other (     ) | | | | |  | |  |
| **Final Examination** | | | | | | | 50 |
| **PREREQUISITE(S)** | | | | | Not required | | | | | | | |
| **SHORT COURSE CONTENT** | | | | | Overview of Biosecurity, Principles of Biosecurity, Developing a Biosecurity Program, Handling Disease Outbreaks, Levels of Biosecurity, Biosecurity in Dairy and Beef Herds, Principles and Practices of Biosecurity in the Commercial Poultry Industry | | | | | | | |
| **COURSE OBJECTIVES** | | | | | The aims of the course are to teach what does biosecurity mean, principles of biosecurity, developing a biosecurity program, handling disease outbreaks, levels of biosecurity, dairy and beef herd biosecurity, principles and practices of biosecurity in the commercial poultry industry. | | | | | | | |
| **COURSE CONTRIBUTION TO THE PROFESSIONAL EDUCATION** | | | | | It will be important level. | | | | | | | |
| **LEARNING OUTCOMES OF THE COURSE** | | | | | Learning what does biosecurity mean and analize biosecurity risks, knowing biosecurity topics, appling biosecurity measures in farms. | | | | | | | |
| **TEXTBOOK** | | | | | Merck Veterinary Manual | | | | | | | |
| **OTHER REFERENCES** | | | | | A lot of sources can be reached when they are searched via the key word. | | | | | | | |

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| **COURSE SCHEDULE (Weekly)** | |
| **WEEK** | **TOPICS** |
| 1 | Biosecurity and Why it is Important to the Dairy-Meat Industry |
| 2 | Laying the Foundation of Biosecurity Plan |
| 3 | Laying the Foundation of Biosecurity Plan. Continued. |
| 4 | Building Biosecurity Plan. 1: Animal health management |
| 5 | Building Biosecurity Plan. 1: Animal health management. Continued. |
| 6 | Midterm Examination 1 |
| 7 | Building Biosecurity Plan. 2: Animal additions and movement |
| 8 | Building Biosecurity Plan. 2: Animal additions and movement. Continued. |
| 9 | Building Biosecurity Plan. 3: Premises’ management and sanitation |
| 10 | Building Biosecurity Plan. 4: Personnel, visitors, vehicles and equipment |
| 11 | Midterm Examination 2 |
| 12 | Biosecurity Guide for Commercial Poultry Production: Importance of biosecurity, Definition and basic principles of biosecurity, Portals of entry of disease agents; Location, house design and construction materials for bio secured poultry farms;Movement control of vehicles, people and pests to prevent disease transmission among farms. |
| 13 | Biosecurity Guide for Commercial Poultry Production (Continued). Importance of chick quality, Importance of feed and water quality, Decontamination: cleaning, disinfection, down time and monitoring; Egg management: collection, disinfection and storage. |
| 14 | Biosecurity Guide for Commercial Poultry Production: Management of poultry mortality, Disease prevention and monitoring during production cycle, Commitment to biosecurity efforts, Biosecurity and continuing education, Examples of poor biosecurity |
| 15,16 | Final Examination |

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| **CONTRIBUTION OF THE COURSE LEARNING OUTCOMES TO THE ANIMAL SCIENCE MSc PROGRAM LEARNING OUTCOMES** | | **CONTRIBUTION LEVEL** | | |
| **NO** | **LEARNING OUTCOMES (MSc)** | **3**  High | **2**  Mid | **1**  Low |
| **LO 1** | Graduate student should specialize in one of animal nutrition, animal breeding or biometry and genetics disciplines in addition to bachelor's degree qualifications. |  |  |  |
| **LO 2** | Be able to identify problems in the area of expertise, do research, analyze and interpret the results, develop solutions, entrepreneurs and becomes the router in this area. |  |  |  |
| **LO 3** | Be able to generate new knowledge in the field of scientific expertise by using scientific methods, use and transfer this information to stakeholders through social and ethical responsibility. |  |  |  |
| **LO 4** | Be able to develop strategic approaches to the field of expertise and produce regional, national or international solutions by taking responsibility. |  |  |  |
| **LO 5** | To gain the ability of effective communication orally and in writing, to be conscious in the continuity of learning and self-renewal, to monitor the developments in science and technology. |  |  |  |
| **LO 6** | To gain skills for self-study for disciplinary and interdisciplinary teamwork. |  |  |  |
| **LO 7** | Be able to use the acquired knowledge and skills in interdisciplinary studies. |  |  |  |
| **LO 8** | To be able to use computer and information technology effectively in the field of expertise. |  |  |  |
| **LO 9** | Be able to reflect the knowledge and skills gained in the program in practice of animal production. |  |  |  |

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| **Prepared by :** | Prof. Dr. Muhammet Alan | **Date:** |  |

**Signature**:

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**ESKISEHIR OSMANGAZI UNIVERSITY**

**GRADUATE SCHOOL OF NATURAL AND APPLIED SCIENCES**

**COURSE INFORMATION FORM**

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| **DEPARTMENT** | **ANIMAL SCIENCE (MSc)** | **SEMESTER** |  |

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| **COURSE** | | | |
| **CODE** |  | **TITLE** | Cattle Behavior and Welfare |

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| **LEVEL** | **HOUR/WEEK** | | | | | | **Credit** | **ECTS** | **TYPE** | | | **LANGUAGE** |
| **Theory** | | **Practice** | **Laboratory** | | |
| **MSc** | 3 | | 0 | 0 | | | 3 | 7.5 | COMPULSORY  (   ) | | ELECTIVE  ( x ) | Turkish |
| **CREDIT DISTRIBUTION** | | | | | | | | | | | | |
| **Basic Science** | | **Basic Engineering** | | | | **Knowledge in the discipline**  **[if it contains considerable design content, mark with (√)]** | | | | | | |
|  | | x | | | |  | | | | | | |
| **ASSESSMENT CRITERIA** | | | | | | | | | | | | |
| **SEMESTER ACTIVITIES** | | | | | **Evaluation Type** | | | | | **Number** | | **Contribution**  **( % )** |
| Midterm | | | | | 1 | | 20 |
| Quiz | | | | |  | |  |
| Homework | | | | | 1 | | 20 |
| Project | | | | |  | |  |
| Report | | | | |  | |  |
| Seminar | | | | |  | |  |
| Other (Scientific paper discussion) | | | | | 1 | | 20 |
| **Final Examination** | | | | | | | 40 |
| **PREREQUISITE(S)** | | | | | None | | | | | | | |
| **SHORT COURSE CONTENT** | | | | | Physiological, genetic and environmental principles of behavior in cattle, the five senses in cattle, daily behaviors in cattle, breeding, nutrition, maternity, play, aggression, herd and social behaviors, abnormal behaviors, behavior-disease relationship, use of cattle behavior and animal comminication in herd management, recent research results in the field of cattle behavior and welfare. | | | | | | | |
| **COURSE OBJECTIVES** | | | | | To know about the physiological and psychological status of the animal by learning about the behavior of cattle and improve animal welfare and animal production by providing suitable environments for animals. | | | | | | | |
| **COURSE CONTRIBUTION TO THE PROFESSIONAL EDUCATION** | | | | | To identify appropriate or unsuitable animal behaviors and to achieve economic and healthy animal production. | | | | | | | |
| **LEARNING OUTCOMES OF THE COURSE** | | | | | -To have general information about the behavior of cattle and to apply the theoretical knowledge,  -To observe and analyze the apropriate and unfavaroble cattle behaviors,  - To evaluate the external appearance and behavior of cattle,  -To plan herd management according to animal behavior,  -To communicate by knowing the ways of communication with cattle. | | | | | | | |
| **TEXTBOOK** | | | | | Cattle Behavior and Herd Management (Prof Dr. Serap Göncü; Akademisyen Bookstore) | | | | | | | |
| **OTHER REFERENCES** | | | | | Domestic and international scientific articles on cattle behavior. | | | | | | | |

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| **COURSE SCHEDULE (Weekly)** | |
| **WEEK** | **TOPICS** |
| 1 | Physiological, genetic and environmental principles of behavior in cattle |
| 2 | Senses in cattle |
| 3 | Daily cattle behaviors |
| 4 | Reproductive behaviors in cattle |
| 5 | Nutritional behaviors in cattle |
| 6 | Midterm Examination 1 |
| 7 | Maternity and play behaviors in cattle |
| 8 | Agression behaviors in cattle |
| 9 | In-herd and social behaviors in cattle |
| 10 | Behavioral disorders in cattle |
| 11 | Midterm Examination 2 |
| 12 | relationship between behavior and disease in cattle |
| 13 | Use of cattle behavior and cattle comminication in herd management |
| 14 | Results of recent research in the field of cattle behavior and welfare |
| 15,16 | Final Examination |

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| **CONTRIBUTION OF THE COURSE LEARNING OUTCOMES TO THE ANIMAL SCIENCE MSc PROGRAM LEARNING OUTCOMES** | | **CONTRIBUTION LEVEL** | | |
| **NO** | **LEARNING OUTCOMES (MSc)** | **3**  High | **2**  Mid | **1**  Low |
| **LO 1** | Graduate student should specialize in one of animal nutrition, animal breeding or biometry and genetics disciplines in addition to bachelor's degree qualifications. |  |  |  |
| **LO 2** | Be able to identify problems in the area of expertise, do research, analyze and interpret the results, develop solutions, entrepreneurs and becomes the router in this area. |  |  |  |
| **LO 3** | Be able to generate new knowledge in the field of scientific expertise by using scientific methods, use and transfer this information to stakeholders through social and ethical responsibility. |  |  |  |
| **LO 4** | Be able to develop strategic approaches to the field of expertise and produce regional, national or international solutions by taking responsibility. |  |  |  |
| **LO 5** | To gain the ability of effective communication orally and in writing, to be conscious in the continuity of learning and self-renewal, to monitor the developments in science and technology. |  |  |  |
| **LO 6** | To gain skills for self-study for disciplinary and interdisciplinary teamwork. |  |  |  |
| **LO 7** | Be able to use the acquired knowledge and skills in interdisciplinary studies. |  |  |  |
| **LO 8** | To be able to use computer and information technology effectively in the field of expertise. |  |  |  |
| **LO 9** | Be able to reflect the knowledge and skills gained in the program in practice of animal production. |  |  |  |

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| **Prepared by :** | Dr. Öğr. Üyesi Zekeriya Kıyma | **Date:** | 13-11-2018 |

**Signature**:

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**ESKISEHIR OSMANGAZI UNIVERSITY**

**GRADUATE SCHOOL OF NATURAL AND APPLIED SCIENCES**

**COURSE INFORMATION FORM**

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| **DEPARTMENT** | **ANIMAL SCIENCE (MSc)** | **SEMESTER** |  |

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| **COURSE** | | | |
| **CODE** |  | **TITLE** | Animal Behaviour |

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| **LEVEL** | **HOUR/WEEK** | | | | | | **Credit** | **ECTS** | **TYPE** | | | **LANGUAGE** |
| **Theory** | | **Practice** | **Laboratory** | | |
| **MSc** | 3 | |  |  | | | 3 | 7.5 | COMPULSORY  (   ) | | ELECTIVE  ( x ) | Turkish |
| **CREDIT DISTRIBUTION** | | | | | | | | | | | | |
| **Basic Science** | | **Basic Engineering** | | | | **Knowledge in the discipline**  **[if it contains considerable design content, mark with (√)]** | | | | | | |
| 2 | |  | | | | x | | | | | | |
| **ASSESSMENT CRITERIA** | | | | | | | | | | | | |
| **SEMESTER ACTIVITIES** | | | | | **Evaluation Type** | | | | | **Number** | | **Contribution**  **( % )** |
| Midterm | | | | | 1 | | 40 |
| Quiz | | | | |  | |  |
| Homework | | | | |  | |  |
| Project | | | | |  | |  |
| Report | | | | |  | |  |
| Seminar | | | | |  | |  |
| Other (     ) | | | | |  | |  |
| **Final Examination** | | | | | | | 60 |
| **PREREQUISITE(S)** | | | | | None | | | | | | | |
| **SHORT COURSE CONTENT** | | | | | Description of Ethology and principles, physiology of behavior, components of behavior, methods for observation and analyses of behavior, feeding behavior, behavior and housing environment, reproduction behavior and it’s importance for the production, defecation (eliminative) behavior, expolatory behavior, social behavior and it’s importance for the management of farm animals. | | | | | | | |
| **COURSE OBJECTIVES** | | | | | To give students a better knowledge on behavioral characteristics of farm animals, species spesific reproduction and feeding behaviors; and using the knowledge of behavioral traits in production scheduling, implementing animal wellfare and provide more efficient production in animal farms | | | | | | | |
| **COURSE CONTRIBUTION TO THE PROFESSIONAL EDUCATION** | | | | | The knowledege of physiological behaviors, will ensure the correct planning of shelter, feeding and other elements in farm animal production | | | | | | | |
| **LEARNING OUTCOMES OF THE COURSE** | | | | | 1- Able to know the components of behavior such as feeding, shelter seeking, eliminative behavior, stocking, social behavior and learning in farm animals.  2-To have knowledge on the basis of behavioral physiology in farm animals  3-To have knowledge on the methods of behavioral observations for experimantal purposes  4- To understand the factors affecting the behavior  5- Able to determine the differences and similarities in the behavioral components in farm animals  6- Having skills for production scheduling, management of reproduction and feeding of animals in the farms by using the animal behavior | | | | | | | |
| **TEXTBOOK** | | | | | Seyidoğlu N., Aydın C., Köşeli E., Cengiz F. Hayvan Davranışları, dora yayınevi, ISBN:9786052473313.Öber, A. Hayvan Davranışları, “Temel Ögeler” Nobel Yayın No: 1197 Fen Bilimleri : 58, ISBN: 978-605-395-004-2 (2007) | | | | | | | |
| **OTHER REFERENCES** | | | | | GOODENOUGH, J.; B. MCGUIRE, R. WALLACE, 1993: Perspectives on Animal Behaviour. ISBN: 0-471-53623-7, John Wiley Sons. Inc. USA. | | | | | | | |

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| **COURSE SCHEDULE (Weekly)** | |
| **WEEK** | **TOPICS** |
| 1 | Description and principles of behavior |
| 2 | Physiology of behavior, sensation and sense organs |
| 3 | Balance organs, receptors |
| 4 | Methods for experimental analyses of behavior |
| 5 | Components of behavior |
| 6 | Nutritional behavior and feeding |
| 7 | Reproduction behavior and it’s importance for production efficiency. |
| 8 | Arasınav |
| 9 | Housing and behavior |
| 10 | Eliminative behavior |
| 11 | Allelomimetic behavior |
| 12 | Exploratory behavio |
| 13 | Social behavior |
| 14 | Learning and implementation of learning in animal science |
| 15,16 | Final Examination |

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| **CONTRIBUTION OF THE COURSE LEARNING OUTCOMES TO THE ANIMAL SCIENCE MSc PROGRAM LEARNING OUTCOMES** | | **CONTRIBUTION LEVEL** | | |
| **NO** | **LEARNING OUTCOMES (MSc)** | **3**  High | **2**  Mid | **1**  Low |
| **LO 1** | Graduate student should specialize in one of animal nutrition, animal breeding or biometry and genetics disciplines in addition to bachelor's degree qualifications. |  |  |  |
| **LO 2** | Be able to identify problems in the area of expertise, do research, analyze and interpret the results, develop solutions, entrepreneurs and becomes the router in this area. |  |  |  |
| **LO 3** | Be able to generate new knowledge in the field of scientific expertise by using scientific methods, use and transfer this information to stakeholders through social and ethical responsibility. |  |  |  |
| **LO 4** | Be able to develop strategic approaches to the field of expertise and produce regional, national or international solutions by taking responsibility. |  |  |  |
| **LO 5** | To gain the ability of effective communication orally and in writing, to be conscious in the continuity of learning and self-renewal, to monitor the developments in science and technology. |  |  |  |
| **LO 6** | To gain skills for self-study for disciplinary and interdisciplinary teamwork. |  |  |  |
| **LO 7** | Be able to use the acquired knowledge and skills in interdisciplinary studies. |  |  |  |
| **LO 8** | To be able to use computer and information technology effectively in the field of expertise. |  |  |  |
| **LO 9** | Be able to reflect the knowledge and skills gained in the program in practice of animal production. |  |  |  |

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| **Prepared by :** | Assist.Prof.Dr. Oya ERALP İNAN | **Date:** | 28.04.2022 |

**Signature**:

**T.R.**

**ESKISEHIR OSMANGAZI UNIVERSITY**

**GRADUATE SCHOOL OF NATURAL AND APPLIED SCIENCES**

**COURSE INFORMATION FORM**

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| **DEPARTMENT** | **ANIMAL SCIENCE (MSc)** | **SEMESTER** |  |

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| **COURSE** | | | |
| **CODE** |  | **TITLE** | Animal Welfare |

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| **LEVEL** | **HOUR/WEEK** | | | | | | **Credit** | **ECTS** | **TYPE** | | | **LANGUAGE** |
| **Theory** | | **Practice** | **Laboratory** | | |
| **MSc** | 3 | |  |  | | | 3 | 7.5 | COMPULSORY  (   ) | | ELECTIVE  ( x ) | Turkish |
| **CREDIT DISTRIBUTION** | | | | | | | | | | | | |
| **Basic Science** | | **Basic Engineering** | | | | **Knowledge in the discipline**  **[if it contains considerable design content, mark with (√)]** | | | | | | |
|  | |  | | | | x | | | | | | |
| **ASSESSMENT CRITERIA** | | | | | | | | | | | | |
| **SEMESTER ACTIVITIES** | | | | | **Evaluation Type** | | | | | **Number** | | **Contribution**  **( % )** |
| Midterm | | | | | 1 | | 40 |
| Quiz | | | | |  | |  |
| Homework | | | | |  | |  |
| Project | | | | |  | |  |
| Report | | | | |  | |  |
| Seminar | | | | |  | |  |
| Other (     ) | | | | |  | |  |
| **Final Examination** | | | | | | | 60 |
| **PREREQUISITE(S)** | | | | | None | | | | | | | |
| **SHORT COURSE CONTENT** | | | | | Importance of animal welfare on animal health management and sustainability, relationships between welfare and health, welfare parameters, practices and legal regulations in Europe countries and Turkey, relationships between welfare and stress. | | | | | | | |
| **COURSE OBJECTIVES** | | | | | To know or ability for animal welfare and its importance, historical period of animal welfare in Europe Union and Turkey, animal welfare standards, animal welfare practice in some Europe Union countries, Relationship between animal welfare and yield, animal welfare and transporting, animal welfare in organic animal production, animal welfare and product quality for point of view from consumer. | | | | | | | |
| **COURSE CONTRIBUTION TO THE PROFESSIONAL EDUCATION** | | | | | Applying international animal farming standards considering animal welfare. | | | | | | | |
| **LEARNING OUTCOMES OF THE COURSE** | | | | | 1-Analyzing possible raising, feeding and managing problems due to welfare criteria  2-Evaluating and managing the welfare and health-protection practices in animal production facilities  3- Know how to apply animal welfare concepts, standards and legislations  4- Determining effects of animal welfare on yield in farms | | | | | | | |
| **TEXTBOOK** | | | | | Rollin, B.E. 1995. Farm Animal Welfare, Iowa State University Pres. USA. | | | | | | | |
| **OTHER REFERENCES** | | | | | Grandin, T. 2005. Livestock Handling and Transport 3rd Edition, USA. Broom D. (1998). – Psychological indicators of stress and welfare. In Ethics, welfare, law and market forces: the veterinary interface (A.R. Michell & R. Ewbank, eds). Universities Federation for Animal Welfare, Wheathampstead, 167-175. Grant D.I. (1998). – Perceived and actual welfare issues: companion animals. In Ethics, law and market forces: the veterinary interface (A.R. Michell & R. Ewbank, eds). Universities Federation for Animal Welfare, Wheathampstead, 107-111. International Companion Animal Conference (2004). –Where the international companion animal welfare conference came from. www.icawc.org/history.html (accessed on 4 August 2005). Moberg, G.P. and Mench, J.A., 2000. The Biology of Animal Stress, Basic Principles and İmplication for Animal Welfare, CAB Publishing, ISBN 085199359-1. Anon, 2000. The Welfare of Chickens Kept for Meat Production (Broiler). Özcan, T., 2010. | | | | | | | |

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| **COURSE SCHEDULE (Weekly)** | |
| **WEEK** | **TOPICS** |
| 1 | Animal Welfare: Definition, importance, national and international applications. |
| 2 | Code of Ethics in Animal and Animal Rights. |
| 3 | Animal Welfare in Broiler Production. |
| 4 | Animal Welfare in Egg Production |
| 5 | Welfare Criteria and Welfare Evaluation in Poultry Production |
| 6 | Poultry Welfare Applications in The European Union and Turkey. |
| 7 | Welfare and Health Protection in Small Ruminants. |
| 8 | The Relationships between Housing, Transports, Slaughter and Welfare in Small Ruminants. |
| 9 | Midterm Exam |
| 10 | Small Ruminant Welfare Applications in The European Union and Turkey. |
| 11 | Welfare and Health Protection in Large Ruminants Production |
| 12 | The Relationships between Housing, Transports, Slaughter and Welfare in Large Ruminants |
| 13 | Large Ruminants Welfare Applications in The European Union and Turkey. |
| 14 | Pig Production in The European Union and Welfare. |
| 15,16 | Final Examination |

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| **CONTRIBUTION OF THE COURSE LEARNING OUTCOMES TO THE ANIMAL SCIENCE MSc PROGRAM LEARNING OUTCOMES** | | **CONTRIBUTION LEVEL** | | |
| **NO** | **LEARNING OUTCOMES (MSc)** | **3**  High | **2**  Mid | **1**  Low |
| **LO 1** | Graduate student should specialize in one of animal nutrition, animal breeding or biometry and genetics disciplines in addition to bachelor's degree qualifications. |  |  |  |
| **LO 2** | Be able to identify problems in the area of expertise, do research, analyze and interpret the results, develop solutions, entrepreneurs and becomes the router in this area. |  |  |  |
| **LO 3** | Be able to generate new knowledge in the field of scientific expertise by using scientific methods, use and transfer this information to stakeholders through social and ethical responsibility. |  |  |  |
| **LO 4** | Be able to develop strategic approaches to the field of expertise and produce regional, national or international solutions by taking responsibility. |  |  |  |
| **LO 5** | To gain the ability of effective communication orally and in writing, to be conscious in the continuity of learning and self-renewal, to monitor the developments in science and technology. |  |  |  |
| **LO 6** | To gain skills for self-study for disciplinary and interdisciplinary teamwork. |  |  |  |
| **LO 7** | Be able to use the acquired knowledge and skills in interdisciplinary studies. |  |  |  |
| **LO 8** | To be able to use computer and information technology effectively in the field of expertise. |  |  |  |
| **LO 9** | Be able to reflect the knowledge and skills gained in the program in practice of animal production. |  |  |  |

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| **Prepared by :** | Assist. Prof.Dr.Oya ERALP İNAN | **Date:** | 28.04.2022 |

**Signature**:

**T.R.**

**ESKISEHIR OSMANGAZI UNIVERSITY**

**GRADUATE SCHOOL OF NATURAL AND APPLIED SCIENCES**

**COURSE INFORMATION FORM**

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| **DEPARTMENT** | **ANIMAL SCIENCE (MSc)** | **SEMESTER** |  |

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| **COURSE** | | | |
| **CODE** |  | **TITLE** | Alternative Feed Sources in Animal Nutrition |

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| **LEVEL** | **HOUR/WEEK** | | | | | | **Credit** | **ECTS** | **TYPE** | | | **LANGUAGE** |
| **Theory** | | **Practice** | **Laboratory** | | |
| **MSc** | 3 | | 0 | 0 | | | 3 | 7.5 | COMPULSORY  (   ) | | ELECTIVE  ( x ) | Turkish |
| **CREDIT DISTRIBUTION** | | | | | | | | | | | | |
| **Basic Science** | | **Basic Engineering** | | | | **Knowledge in the discipline**  **[if it contains considerable design content, mark with (√)]** | | | | | | |
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| **ASSESSMENT CRITERIA** | | | | | | | | | | | | |
| **SEMESTER ACTIVITIES** | | | | | **Evaluation Type** | | | | | **Number** | | **Contribution**  **( % )** |
| Midterm | | | | | 2 | | 40 |
| Quiz | | | | |  | |  |
| Homework | | | | | 4 | | 20 |
| Project | | | | |  | |  |
| Report | | | | |  | |  |
| Seminar | | | | |  | |  |
| Other (     ) | | | | |  | |  |
| **Final Examination** | | | | | | | 40 |
| **PREREQUISITE(S)** | | | | |  | | | | | | | |
| **SHORT COURSE CONTENT** | | | | | Alternative energy and protein feed sources, alternative forages and feed additives. | | | | | | | |
| **COURSE OBJECTIVES** | | | | | Especially in this lesson focused on the alternative feedstuffs in animal | | | | | | | |
| **COURSE CONTRIBUTION TO THE PROFESSIONAL EDUCATION** | | | | | To authorize on economic animal feeding. | | | | | | | |
| **LEARNING OUTCOMES OF THE COURSE** | | | | | 1.To make students aware of alternative feed sources for ruminants.  2.To learn about feed values of different alternative feeds and factors affecting their consumption in ruminants.  3.To obtain animal products using alternative feeds. Thus, to provide economic benefits.  4.To make students aware of to be able to present alternative feeds to the consumption of animals by using different processing methods (scalding, silo etc.). | | | | | | | |
| **TEXTBOOK** | | | | | Kutlu, H.R., Özen, N., 2009. Hayvan Beslemede Son Gelişmeler. Hayvan Besleme Bilim Derneği YayınıKutlu, H.R., Çelik, L., 2014. Yemler Bilgisi ve Yem Teknolojisi. Çukurova Üniv. Ziraat Fak. Genel Yayın No: A-86 Adana. | | | | | | | |
| **OTHER REFERENCES** | | | | | Academic articles | | | | | | | |

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| **COURSE SCHEDULE (Weekly)** | |
| **WEEK** | **TOPICS** |
| 1 | Definition of alternative feedstuffs |
| 2 | The using of alternative feedstuffs as forages in animal nutrition |
| 3 | The using of alternative feedstuffs as energy and protein supplement in ruminant nutrition. |
| 4 | Alternative feedstuffs as mineral and vitamin source |
| 5 | The using of alternative feedstuffs as feed additives in animal nutrition |
| 6 | Midterm Examination 1 |
| 7 | The using of plant extracts and essential oils in animal nutrition |
| 8 | The process of some antinutritional feedstuffs in animal nutrition. (boiled, boiling application) |
| 9 | The using of twig and foliage of tree in animal nutrition |
| 10 | Possibilities of using alternative feed sources in mixed feeds |
| 11 | Midterm Examination 2 |
| 12 | The effects of using of alternative feedstuffs on animal products. |
| 13 | Innovations about the using of alternative feedstuffs in animal nutrition |
| 14 | Evaluation is economically for alternative feed sources |
| 15,16 | Final Examination |

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| **CONTRIBUTION OF THE COURSE LEARNING OUTCOMES TO THE ANIMAL SCIENCE MSc PROGRAM LEARNING OUTCOMES** | | **CONTRIBUTION LEVEL** | | |
| **NO** | **LEARNING OUTCOMES (MSc)** | **3**  High | **2**  Mid | **1**  Low |
| **LO 1** | Graduate student should specialize in one of animal nutrition, animal breeding or biometry and genetics disciplines in addition to bachelor's degree qualifications. |  |  |  |
| **LO 2** | Be able to identify problems in the area of expertise, do research, analyze and interpret the results, develop solutions, entrepreneurs and becomes the router in this area. |  |  |  |
| **LO 3** | Be able to generate new knowledge in the field of scientific expertise by using scientific methods, use and transfer this information to stakeholders through social and ethical responsibility. |  |  |  |
| **LO 4** | Be able to develop strategic approaches to the field of expertise and produce regional, national or international solutions by taking responsibility. |  |  |  |
| **LO 5** | To gain the ability of effective communication orally and in writing, to be conscious in the continuity of learning and self-renewal, to monitor the developments in science and technology. |  |  |  |
| **LO 6** | To gain skills for self-study for disciplinary and interdisciplinary teamwork. |  |  |  |
| **LO 7** | Be able to use the acquired knowledge and skills in interdisciplinary studies. |  |  |  |
| **LO 8** | To be able to use computer and information technology effectively in the field of expertise. |  |  |  |
| **LO 9** | Be able to reflect the knowledge and skills gained in the program in practice of animal production. |  |  |  |

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| **Prepared by :** | Canan KOP BOZBAY | **Date:** | 29.03.2019 |

**Signature**:

**T.R.**

**ESKISEHIR OSMANGAZI UNIVERSITY**

**GRADUATE SCHOOL OF NATURAL AND APPLIED SCIENCES**

**COURSE INFORMATION FORM**

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| **DEPARTMENT** | **ANIMAL SCIENCE (MSc)** | **SEMESTER** |  |

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| **COURSE** | | | |
| **CODE** |  | **TITLE** | Molecular Genetics Applications in Livestock |

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| **LEVEL** | **HOUR/WEEK** | | | | | | **Credit** | **ECTS** | **TYPE** | | | **LANGUAGE** |
| **Theory** | | **Practice** | **Laboratory** | | |
| **MSc** | 2 | |  | 2 | | | 3 | 7.5 | COMPULSORY  (   ) | | ELECTIVE  ( X ) | Turkish |
| **CREDIT DISTRIBUTION** | | | | | | | | | | | | |
| **Basic Science** | | **Basic Engineering** | | | | **Knowledge in the discipline**  **[if it contains considerable design content, mark with (√)]** | | | | | | |
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| **ASSESSMENT CRITERIA** | | | | | | | | | | | | |
| **SEMESTER ACTIVITIES** | | | | | **Evaluation Type** | | | | | **Number** | | **Contribution**  **( % )** |
| Midterm | | | | |  | | 30 |
| Quiz | | | | |  | |  |
| Homework | | | | |  | | 10 |
| Project | | | | |  | |  |
| Report | | | | |  | |  |
| Seminar | | | | |  | |  |
| Other (     ) | | | | |  | |  |
| **Final Examination** | | | | | | | 60 |
| **PREREQUISITE(S)** | | | | |  | | | | | | | |
| **SHORT COURSE CONTENT** | | | | | DNA technologies are used intensively in livestock production as in many fields. Today, PCR (Polymerase Chaın Reaction), RT-PCR (Real Time PCR), AS-PCR (Allele Specific), RFLP (Restricted Fragment Length Polymorphism), microsatellite DNA analysis and whole genome analyses by SNP arrays and Next Generation Sequencing (NGS). These and similar technologies are used in the conservation programs, phylogenetic analysis, improving of the quality and quantity of economically important traits (reproduction, meat, milk yields etc.) together with gene mapping studies in animal genetic resources. In this regard, information about the molecular methods mentioned above and application fields used in animal production will be given within the context of proposed lecture. | | | | | | | |
| **COURSE OBJECTIVES** | | | | | It is aimed to introduce commonly used molecular markers and to demonstrate practically in laboratory environment. Additionally, detailed information about the usage of molecular methods in animal production will be given. | | | | | | | |
| **COURSE CONTRIBUTION TO THE PROFESSIONAL EDUCATION** | | | | | Students having this lecture during MsC will be of knowledge about fundamental molecular genetic practises and approaches together with their application infarm animals. Thanks to this knowledge, they will be able to use molecular methods to eliminate genetic defects in the field and to improve economically important traits. Additionally, studenst considering academic carrier could learn fundamental methods an use them for their planned projects in the future. | | | | | | | |
| **LEARNING OUTCOMES OF THE COURSE** | | | | | At the end of this course, studens;  1- will have knowledge about the molecular marker methods,  2- may apply as independently PCR and some PCR- based methods in laboratory  3- will have knowledge about animal breeding, conservation and detection of genetic-based diseases by using molecular methods.  4- will have the ability to carry out independent studies by using molecular methods in livestock.  5- will be able to make comments and suggestions about solution of any genetic-based problem on molecular level.  6- will be able to use these information in animal breeding by learning of actual information related with molecular genetic, | | | | | | | |
| **TEXTBOOK** | | | | | 1- Klug, W.S., Cummings, M.R., Spencer, C.A. 2011. Genetik Kavramlar2- Turner, P.C., McLennan, Bates, A.D., White, M.R.H. 2002. Molecular Biology3- Avise, J.C. 2004. Molecular Markers, Natural History, and Evolution. | | | | | | | |
| **OTHER REFERENCES** | | | | | 1- Golstein , D.B., Schlötterer, C. 1999. Microsatellites Evolution and Aplications.2- Liu Z. 2007. Aquaculture Genome Tecnologies | | | | | | | |

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| **COURSE SCHEDULE (Weekly)** | |
| **WEEK** | **TOPICS** |
| 1 | Basic Concepts in Molecular Genetics |
| 2 | DNA Extraction Methods |
| 3 | DNA Extraction (laboratory application) |
| 4 | Nucleic Acids (DNA and RNA) and Replication of DNA,  PCR (Polymerase Chain Reaction) |
| 5 | PCR technique (laboratory application) |
| 6 | RT-PCR (Real Time PCR),  AS-PCR (Allele Specific PCR), |
| 7 | Midterm exam,  AS-PCR (laboratory application) |
| 8 | RFLP (Restriction Fragment Length Polymorphism),  Microsatellite DNA Analysis |
| 9 | RFLP (laboratory application) |
| 10 | SNP's and their importance in livestock,  Next Generation Sequence Analysis, SNP chips |
| 11 | Next Generation Sequence Analysis, SNP chips |
| 12 | Use of molecular marker methods in the conservation of the genetic resources |
| 13 | Use of molecular marker methods in animal breeding |
| 14 | Use of molecular marker methods in the detection of genetic diseases |
| 15,16 | Final Examination |

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| **CONTRIBUTION OF THE COURSE LEARNING OUTCOMES TO THE ANIMAL SCIENCE MSc PROGRAM LEARNING OUTCOMES** | | **CONTRIBUTION LEVEL** | | |
| **NO** | **LEARNING OUTCOMES (MSc)** | **3**  High | **2**  Mid | **1**  Low |
| **LO 1** | Graduate student should specialize in one of animal nutrition, animal breeding or biometry and genetics disciplines in addition to bachelor's degree qualifications. |  |  |  |
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| **LO 9** | Be able to reflect the knowledge and skills gained in the program in practice of animal production. |  |  |  |

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| **Prepared by :** | Assoc. Prof. Dr. Taki KARSLI | **Date:** | 29.04.2022 |

**Signature**:

**T.R.**

**ESKISEHIR OSMANGAZI UNIVERSITY**

**GRADUATE SCHOOL OF NATURAL AND APPLIED SCIENCES**

**COURSE INFORMATION FORM**

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| **DEPARTMENT** | **ANIMAL SCIENCE (MSc)** | **SEMESTER** |  |

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| **COURSE** | | | |
| **CODE** |  | **TITLE** | Molecular Markers and their use in animal husbandry |

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| **LEVEL** | **HOUR/WEEK** | | | | | | **Credit** | **ECTS** | **TYPE** | | | **LANGUAGE** |
| **Theory** | | **Practice** | **Laboratory** | | |
| **MSc** | 3 | | 0 | 0 | | | 3 | 7.5 | COMPULSORY  (   ) | | ELECTIVE  ( X ) | Turkish |
| **CREDIT DISTRIBUTION** | | | | | | | | | | | | |
| **Basic Science** | | **Basic Engineering** | | | | **Knowledge in the discipline**  **[if it contains considerable design content, mark with (√)]** | | | | | | |
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| **ASSESSMENT CRITERIA** | | | | | | | | | | | | |
| **SEMESTER ACTIVITIES** | | | | | **Evaluation Type** | | | | | **Number** | | **Contribution**  **( % )** |
| Midterm | | | | | 1 | | 40 |
| Quiz | | | | |  | |  |
| Homework | | | | |  | |  |
| Project | | | | |  | |  |
| Report | | | | |  | |  |
| Seminar | | | | |  | |  |
| Other (     ) | | | | |  | |  |
| **Final Examination** | | | | | | | 60 |
| **PREREQUISITE(S)** | | | | |  | | | | | | | |
| **SHORT COURSE CONTENT** | | | | | Definition of molecular genetic concepts, extra chromosomal inheritance, DNA technology and its use in animal husbandry, DNA amplification, DNA sequencing, molecular marker techniques, marker assisted selection (MAS) | | | | | | | |
| **COURSE OBJECTIVES** | | | | | To inform students about the basics of DNA technology, molecular marker methods and comparison of these methods and their usage in animal husbandry | | | | | | | |
| **COURSE CONTRIBUTION TO THE PROFESSIONAL EDUCATION** | | | | | To learn definition and types of molecular markers, the types of molecular markers, the use of molecular markers and understand the importance of molecular markers in breeding studies. | | | | | | | |
| **LEARNING OUTCOMES OF THE COURSE** | | | | | Molecular markers used in the field of animal husbandry and their application areas will have the necessary information. | | | | | | | |
| **TEXTBOOK** | | | | | Griffiths, A.J.F., S.R. Wessler, R. C. Lewontin, S.B. Carroll, 2008. Introduction to Genetics Analysis 9Ed. W.H. Freeman. New York | | | | | | | |
| **OTHER REFERENCES** | | | | | Klug W.S. and M.R.Cummings, 2003. Concept of Genetics 6Ed. Prentice Hall. New Jersey. lecture presentations | | | | | | | |

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| **COURSE SCHEDULE (Weekly)** | |
| **WEEK** | **TOPICS** |
| 1 | Structure, function and organization of DNA molecule, |
| 2 | Enzymes of nucleic acid metabolism (Polymerases, DNA ligases, Nucleases etc.) |
| 3 | Extra chromosomal inheritance (cytoplasmic inheritance) |
| 4 | DNA and RNA isolation from different materials (blood, milk, tissue, etc.) |
| 5 | DNA replication |
| 6 | DNA sequencing techniques |
| 7 | Commonly used molecular markers; RFLP (Restriction Fragment Lenght Polymorphism), SSCP (Single Chain Conformational Polymorphism) |
| 8 | Midterm examination |
| 9 | RAPD (Randomly Amplified Polymorphic DNA) method, AFLP (Amplified Fragment Length Polymorphism) |
| 10 | Commonly used molecular markers; Microsatellites and SNP (Single Nucleotide Polymorphism) |
| 11 | Comparison of commonly used molecular markers |
| 12 | Use of molecular markers in animal husbandry |
| 13 | Marker assisted selection (MAS) |
| 14 | Discussion of current articles |
| 15,16 | Final Examination |

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| **CONTRIBUTION OF THE COURSE LEARNING OUTCOMES TO THE ANIMAL SCIENCE MSc PROGRAM LEARNING OUTCOMES** | | **CONTRIBUTION LEVEL** | | |
| **NO** | **LEARNING OUTCOMES (MSc)** | **3**  High | **2**  Mid | **1**  Low |
| **LO 1** | Graduate student should specialize in one of animal nutrition, animal breeding or biometry and genetics disciplines in addition to bachelor's degree qualifications. |  |  |  |
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| **LO 4** | Be able to develop strategic approaches to the field of expertise and produce regional, national or international solutions by taking responsibility. |  |  |  |
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| **LO 7** | Be able to use the acquired knowledge and skills in interdisciplinary studies. |  |  |  |
| **LO 8** | To be able to use computer and information technology effectively in the field of expertise. |  |  |  |
| **LO 9** | Be able to reflect the knowledge and skills gained in the program in practice of animal production. |  |  |  |

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| **Prepared by :** | Asst. Prof. Yasemin GEDİK | **Date:** | 12/11/2019 |

**Signature**:

**T.R.**

**ESKISEHIR OSMANGAZI UNIVERSITY**

**GRADUATE SCHOOL OF NATURAL AND APPLIED SCIENCES**

**COURSE INFORMATION FORM**

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| **DEPARTMENT** | **ANIMAL SCIENCE (MSc)** | **SEMESTER** |  |

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| **COURSE** | | | |
| **CODE** |  | **TITLE** | Population Genetics in Animal Breeding |

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| **LEVEL** | **HOUR/WEEK** | | | | | | **Credit** | **ECTS** | **TYPE** | | | **LANGUAGE** |
| **Theory** | | **Practice** | **Laboratory** | | |
| **MSc** | 3 | |  |  | | | 3 | 7.5 | COMPULSORY  (   ) | | ELECTIVE  ( X ) | Turkish |
| **CREDIT DISTRIBUTION** | | | | | | | | | | | | |
| **Basic Science** | | **Basic Engineering** | | | | **Knowledge in the discipline**  **[if it contains considerable design content, mark with (√)]** | | | | | | |
|  | |  | | | | x | | | | | | |
| **ASSESSMENT CRITERIA** | | | | | | | | | | | | |
| **SEMESTER ACTIVITIES** | | | | | **Evaluation Type** | | | | | **Number** | | **Contribution**  **( % )** |
| Midterm | | | | |  | | 40 |
| Quiz | | | | |  | |  |
| Homework | | | | |  | |  |
| Project | | | | |  | |  |
| Report | | | | |  | |  |
| Seminar | | | | |  | |  |
| Other (     ) | | | | |  | |  |
| **Final Examination** | | | | | | | 60 |
| **PREREQUISITE(S)** | | | | |  | | | | | | | |
| **SHORT COURSE CONTENT** | | | | | Within the context of this lecture, up-to-date information on;  1- Genetic variation and its importance,  2- Molecular methods used to reveal genetic variation,  3- Hardy-Weinberg equilibrium and the factors affecting Hardy-Weinberg equilibrium,  4- Wahlund effect, genetic drift, founder effect, population bottleneck,  5- Basic parameters of genetic diversity and population  6- Conservation studies in livestock populations will be given. | | | | | | | |
| **COURSE OBJECTIVES** | | | | | The aim of this lecture is to give information about population genetics to MsC students from department of animal science. Within the context of this lecture, the studens are expected to supply with basic knowledge on genetic balance, factors affecting thise balance and population structure in livestock populations. | | | | | | | |
| **COURSE CONTRIBUTION TO THE PROFESSIONAL EDUCATION** | | | | | Studens having this lecture will be able to calculate some parameters such as genetic diversity, genetic differentiation, inbreeding level. They can use obtained results for breeding practises and sustainable use populations. | | | | | | | |
| **LEARNING OUTCOMES OF THE COURSE** | | | | | Thanks to this lecture, students will be of knowled on;  1- Reasons for genetic diversity in population genetic basis,  2- Factors affecting genetic diversity within populations and inbreeding among populations,  3- Hardy-Weinberg equilibrium and factors affecting this equilibrium  4- Usage of molecular data in conservation studies in livestock populations. | | | | | | | |
| **TEXTBOOK** | | | | | 1- Hartl, D.L., Clark, A.G. 2007. Principle of Population Genetics2- Klug, W.S., Cummings, M.R., Spencer, C.A. (Çeviri Öner C.) 2011. Genetik Kavramlar3- Turner, P.C., McLennan, Bates, A.D., White, M.R.H. 2002. Molecular Biology | | | | | | | |
| **OTHER REFERENCES** | | | | | 1- Freeman S., Herron JC., (Çeviri Çıplak B., Başıbüyük H.H., Karaytuğ S., Gündüz İ.) 1999. Evrimsel Analiz | | | | | | | |

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| **COURSE SCHEDULE (Weekly)** | |
| **WEEK** | **TOPICS** |
| 1 | Basic Concepts of Population Genetics |
| 2 | Gene-genotype frequencies - Chi-square test |
| 3 | Hardy-Weinberg equilibrium |
| 4 | Effect of selection on Hardy-Weinberg equilibrium |
| 5 | Effect of mutation on Hardy-Weinberg equilibrium |
| 6 | Effect of migration on Hardy-Weinberg equilibrium |
| 7 | Midterm Exam |
| 8 | Wahlund, founder, bottlenecks effects and genetic drift |
| 9 | Inbreeding coefficient (FİS) and Wright’s F-statistics (FIT, FIS and FST), Analysis of Molecular Variance (AMOVA), Genetic differentiation |
| 10 | Conservation genetics (effective population size, inbreeding coefficient, heterozygosity values, conservation priorities in subpopulations) |
| 11 | Conservation genetics (effective population size, inbreeding coefficient, heterozygosity values, conservation priorities in subpopulations) |
| 12 | Genetic distance and genetic differentiation between populations based on phylogenetic relationships |
| 13 | Genetic distance and genetic differentiation between populations based on phylogenetic relationships |
| 14 | General evaluation/repetition |
| 15,16 | Final Examination |

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| **CONTRIBUTION OF THE COURSE LEARNING OUTCOMES TO THE ANIMAL SCIENCE MSc PROGRAM LEARNING OUTCOMES** | | **CONTRIBUTION LEVEL** | | |
| **NO** | **LEARNING OUTCOMES (MSc)** | **3**  High | **2**  Mid | **1**  Low |
| **LO 1** | Graduate student should specialize in one of animal nutrition, animal breeding or biometry and genetics disciplines in addition to bachelor's degree qualifications. |  |  |  |
| **LO 2** | Be able to identify problems in the area of expertise, do research, analyze and interpret the results, develop solutions, entrepreneurs and becomes the router in this area. |  |  |  |
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| **LO 4** | Be able to develop strategic approaches to the field of expertise and produce regional, national or international solutions by taking responsibility. |  |  |  |
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| **LO 9** | Be able to reflect the knowledge and skills gained in the program in practice of animal production. |  |  |  |

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| **Prepared by :** | Assoc. Prof. Dr. Taki KARSLI | **Date:** | 29.04.2022 |

**Signature**:



**T.R.**

**ESKISEHIR OSMANGAZI UNIVERSITY**

**GRADUATE SCHOOL OF NATURAL AND APPLIED SCIENCES**

**COURSE INFORMATION FORM**



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| **DEPARTMENT** | **ANIMAL SCIENCE (MSc)** | **SEMESTER** |  |

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| **COURSE** | | | |
| **CODE** |  | **TITLE** | Basic Genetics |

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| **LEVEL** | **HOUR/WEEK** | | | | | | **Credit** | **ECTS** | **TYPE** | | | **LANGUAGE** |
| **Theory** | | **Practice** | **Laboratory** | | |
| **MSc** | 3 | | 0 | 0 | | | 3 | 7.5 | COMPULSORY  (   ) | | ELECTIVE  ( X ) | Turkish |
| **CREDIT DISTRIBUTION** | | | | | | | | | | | | |
| **Basic Science** | | **Basic Engineering** | | | | **Knowledge in the discipline**  **[if it contains considerable design content, mark with (√)]** | | | | | | |
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| **ASSESSMENT CRITERIA** | | | | | | | | | | | | |
| **SEMESTER ACTIVITIES** | | | | | **Evaluation Type** | | | | | **Number** | | **Contribution**  **( % )** |
| Midterm | | | | | 1 | | 40 |
| Quiz | | | | |  | |  |
| Homework | | | | |  | |  |
| Project | | | | |  | |  |
| Report | | | | |  | |  |
| Seminar | | | | |  | |  |
| Other (     ) | | | | |  | |  |
| **Final Examination** | | | | | | | 60 |
| **PREREQUISITE(S)** | | | | |  | | | | | | | |
| **SHORT COURSE CONTENT** | | | | | Definition of the concepts of genetics, The historical development of genetics, Introduction of Mendelian Genetics Mendelian Genetics Concepts of Non-Mendelian Inheritance, Gene interactions Discovery, Definition of the genetic material, Mutations and Polymorphism | | | | | | | |
| **COURSE OBJECTIVES** | | | | | Provide information about basic genetic concepts and history of genetics | | | | | | | |
| **COURSE CONTRIBUTION TO THE PROFESSIONAL EDUCATION** | | | | | Establish the conceptual basis of genetics | | | | | | | |
| **LEARNING OUTCOMES OF THE COURSE** | | | | | The student will understand the basis and mechanistic of heredity | | | | | | | |
| **TEXTBOOK** | | | | | Klug W.S. and M.R.Cummings, 2003. Concept of Genetics 6Ed. Prentice Hall. New Jersey. | | | | | | | |
| **OTHER REFERENCES** | | | | | Düzgüneş, O. ve H.R. Ekingen, 1983. Genetik. A.Ü. Basımevi. Ankara. Griffiths, A.J.F., S.R. Wessler, R. C. Lewontin, S.B. Carroll, 2008. Introduction to Genetics Analysis 9Ed. W.H. Freeman. New York. | | | | | | | |

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| **COURSE SCHEDULE (Weekly)** | |
| **WEEK** | **TOPICS** |
| 1 | Definition of the concepts of genetics, |
| 2 | Historical development of genetic |
| 3 | Concepts and definition of genetics, |
| 4 | Introduction of Mendelian Genetics |
| 5 | The Laws of Mendel |
| 6 | Concepts of Non-Mendelian Inheritance |
| 7 | Gene interactions |
| 8 | Midterm examination |
| 9 | Discovery and definition of the genetic material |
| 10 | DNA as the Hereditary Material and Its Structure |
| 11 | DNA Replication |
| 12 | Transcription |
| 13 | Translation |
| 14 | Mutations and Polymorpsim |
| 15,16 | Final Examination |

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| **CONTRIBUTION OF THE COURSE LEARNING OUTCOMES TO THE ANIMAL SCIENCE MSc PROGRAM LEARNING OUTCOMES** | | **CONTRIBUTION LEVEL** | | |
| **NO** | **LEARNING OUTCOMES (MSc)** | **3**  High | **2**  Mid | **1**  Low |
| **LO 1** | Graduate student should specialize in one of animal nutrition, animal breeding or biometry and genetics disciplines in addition to bachelor's degree qualifications. |  |  |  |
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| **LO 9** | Be able to reflect the knowledge and skills gained in the program in practice of animal production. |  |  |  |

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| **Prepared by :** | Asst. Prof. Yasemin GEDİK | **Date:** | 12/11/2019 |

**Signature**:



**T.R.**

**ESKISEHIR OSMANGAZI UNIVERSITY**

**GRADUATE SCHOOL OF NATURAL AND APPLIED SCIENCES**

**COURSE INFORMATION FORM**



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| **DEPARTMENT** | **ANIMAL SCIENCE (MSc)** | **SEMESTER** |  |

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| **COURSE** | | | |
| **CODE** | 505102515 | **TITLE** | Genetic Diversity Analysis with Molecular Marker Data |

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| **LEVEL** | **HOUR/WEEK** | | | | | | **Credit** | **ECTS** | **TYPE** | | | **LANGUAGE** |
| **Theory** | | **Practice** | **Laboratory** | | |
| **MSc** | 3 | | 0 | 0 | | | 3 | 7,5 | COMPULSORY  (   ) | | ELECTIVE  ( X ) | Turkish |
| **CREDIT DISTRIBUTION** | | | | | | | | | | | | |
| **Basic Science** | | **Basic Engineering** | | | | **Knowledge in the discipline**  **[if it contains considerable design content, mark with (√)]** | | | | | | |
| X | |  | | | |  | | | | | | |
| **ASSESSMENT CRITERIA** | | | | | | | | | | | | |
| **SEMESTER ACTIVITIES** | | | | | **Evaluation Type** | | | | | **Number** | | **Contribution**  **( % )** |
| Midterm | | | | | 1 | | 30 |
| Quiz | | | | |  | |  |
| Homework | | | | | 1 | | 10 |
| Project | | | | |  | |  |
| Report | | | | |  | |  |
| Seminar | | | | |  | |  |
| Other (     ) | | | | |  | |  |
| **Final Examination** | | | | | | | 60 |
| **PREREQUISITE(S)** | | | | |  | | | | | | | |
| **SHORT COURSE CONTENT** | | | | | In this course context;  1- The importance of genetic variation for Animal Science department,  2- The causes of genetic variation,  3- Basic parameters used to measurement the genetic diversity ( Allele frequencies, Allele Range, Mean Allele Number, Effective Allele Number, Observed Heterozygosity, Expected Heterozygosity, Polimorphism Information Content, Number of Private Alleles)  4- İnbreeding coefficient (FİS) and Wright’s F-statistics (FIT, FIS and FST)  5- Analysis of Molecular Variance (AMOVA)  6- Genetic differentiation, Genetic distance, Phylogenetic tree, Factorial Correspondence Analysis (FCA), Structure Analysis  7- Deviations from Hardy-Weinberg Equilibrium  8- Intensive used methods to show genetic variation in animal breeding  9- Arrangement of data obtained from molecular markers  10- Some statistical package programs used in determining genetic diversity,  about current information will be given. | | | | | | | |
| **COURSE OBJECTIVES** | | | | | The aim of this course to give information about the importance of genetic variation in animal production, the causes of genetic variation, determination of the basic parameters used to identify the genetic diversity with molecular data. In addition, determining relationships between populations by using molecular data will be discussed. In this context, information about current statistical package programs used to determination of genetic variations in population and genetic relationship between populations will be given. | | | | | | | |
| **COURSE CONTRIBUTION TO THE PROFESSIONAL EDUCATION** | | | | | Studens having this lecture will be able to calculate some parameters such as genetic diversity, genetic differentiation, inbreeding level in populations. They can use obtained results for breeding practises and sustainable use populations. | | | | | | | |
| **LEARNING OUTCOMES OF THE COURSE** | | | | | At the end of this course, studens;  1- understand the importance of genetic diversity in the basics of population genetics,  2- can analyze genetic diversity from molecular marker data,  3- will have knowledge about the parameters used the define genetic variations and can comment about populations from these parameters,  4- can edit the data obtained using molecular markers for various analysis,  5- will have knowledge about current statistical package programs used to calculate genetic diversity  6- can comment future of populations, by learning to history of populations and current situation from results of genetic diversity and phlogeny studies. | | | | | | | |
| **TEXTBOOK** | | | | | 1- Hartl, D.L., Clark, A.G. 2007. Principle of Population Genetics2- Golstein , D.B., Schlötterer, C. 1999. Microsatellites Evolution and Aplications.3- Wang, J.T.L., Zaki, M.J., Toivonen, H.T.T., Shasha, D. 2005. Data Mining in Bioinformatics. | | | | | | | |
| **OTHER REFERENCES** | | | | | 1- Yeh, F.C. 1999. POPGENE User Guide (https://www.ualberta.ca/~fyeh/popgene.pdf)2- Liu, J. 2003. PowerMarker V3.0 Manual http://statgen.ncsu.edu/powermarker/downloads/Manual.pdf3- Excoffier, L. 2015. ARLEQUIN VER 3.5.2 User Manual. http://cmpg.unibe.ch/software/arlequin35/man/Arlequin35.pdf4- Pritchard, J.K., Wen, X., Falush D. 2010. Documentation for structure software: Version 2.3. http://pritchardlab.stanford.edu/structure\_software/release\_versions/v2.3.4/structure\_doc.pdf.5- Belkhir K., Borsa P., Chikhi L., Raufaste N. & Bonhomme F. 1996-2004 GENETIX 4.05, logiciel sous Windows TM pour la génétique des populations. Laboratoire Génome, Populations, Interactions, CNRS UMR 5000, Université de Montpellier II, Montpellier (France). Genetix Version 4.05. http://kimura.univ-montp2.fr/genetix/ | | | | | | | |

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| **COURSE SCHEDULE (Weekly)** | |
| **WEEK** | **TOPICS** |
| 1 | Importance of genetic diversity |
| 2 | Reasons of genetic diversity in populations |
| 3 | Molecular marker techniques (PCR, RCR-RFLP, SSR, AFLP) used extensively in the determination of genetic diversity |
| 4 |  |
| 5 | Basic parameters used in the measurement of genetic diversity |
| 6 | Basic parameters used in the measurement of genetic diversity |
| 7 | Phylogenetic analyzes used to determine the relationship between populations |
| 8 | CONVERT and POPGENE software |
| 9 | POWERMARKER and PGDSpider software |
| 10 | FSTAT and MSTOOL software |
| 11 | ARLEQUIN software |
| 12 | GENETIX software |
| 13 | STRUCTURE software |
| 14 | STRUCTURE software |
| 15,16 | Final Examination |

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| **Prepared by :** | Assoc. Prof. Taki KARSLI | **Date:** | 07.11.2022 |

**Signature**: