***Course name:*** Biotechniques in animal reproduction

**BIOTECHNIQUES IN ANIMAL REPRODUCTION**

| | |
|---|---|
| ECTS | **4** |
| Course status | **obligatory** |
| Course final assessement/evaluation of outcomes | **exam** |
| Prerequisites | **Prerequisites knowledge and skills in biology of animal reproduction** |

**Main field of study: Animal Science**

**field of study name ANIMAL SCIENCE**

| | |
|---|---|
| Profile of study | **academic** |
| The code of studies (education level) | **master** |
| Semester of studies | **winter** |
| Language of instruction | **English** |

**Course offered by:**

| | |
|---|---|
| Name of faculty offering the course | **Faculty of Animal Science** |
| Name of department offering the course | **Department of Aminal Reproduction, Anathomy and Genomics** |
| Course coordinator | **dr inż. Joanna Kochan** |

**Learning outcomes of the course:**

| Symbol of outcome | Description of learning outcome | Reference to | |
|---|---|---|---|
| | | main field of study outcomes | discipline# |
| **KNOWLEDGE – student knows and/or understands:** | | | |
| BIOT_W01 | methods of genetic engineering and molecular diagnostics and methods of their application in animal breeding; the basic concepts of conservation of genetic | ZOO1_W03 | RZ |
| BIOT_W02 | in a deep degree knowledge about bioengineering of animals and the impact of xenobiotics and environmental factors on animal reproduction and development; the | ZOO1_W04 | RZ |
| | | | |
| | | | |
| **SKILLS – student is able to:** | | | |
| BIOT_U01 | apply methods of breeding biotechnology, use molecular genetics techniques to perform research tasks, and apply genetic engineering | ZOO1_U02 | RZ |
| | | | |
| | | | |
| | | | |
| **SOCIAL COMPETENCE- student is ready to:** | | | |
| BIOT_K01 | solve complex decision problems related to the use of animals and is aware of the need to make a critical evaluation of the results of the use of various methods and | ZOO1_K05 | RZ |
| BIOT_K02 | think and act in an entrepreneurial manner on issues that aim to apply animal science knowledge in his professional work. | ZOO1_K07 | RZ |

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|---|---|---|---|
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**Teaching contents:**

| **Lectures** | | **15** | **hours** |
|---|---|---|---|
| Topics of the lectures | Development of biotechnology methods of reproduction- perspectives and limitations<br>Methods of collection and in vitro maturation of oocytes<br>In vitro fertilization<br>Embryo transfer<br>Cloning of mammals<br>Chimeras and hybrids<br>Cryopreservation of oocytes and embryos | | |
| Accomplished learning outcomes | *BIOT_W01-W02; BIOT U01, BIOT_K01 – K03* | | |
| Verification methods, rules and criteria of outcome assessment | *together with participation in the final asessement (in %)* | | |

| **Classes** | | **30** | **hours** |
|---|---|---|---|
| Topics of the classes | Embryo transfer techniques 2h<br>In vitro embryo culture 2h<br>Methods of embryos evaluation 2h<br>Cryopreservation of oocytes and embryos 2h<br>Micromanipulation of gametes and embryos 2h<br>Assisted reproduction techniques in programs of animal conservation 2h<br>Mono- and diparental embryos 2h<br>Using of animal models in embryology 2h<br>Stem cells in animal reproduction 2h<br>Ethical aspects in embryology 2h | | |
| Accomplished learning outcomes | *BIOT_W01-W02; BIOT U01, BIOT_K01 – K03* | | |
| Verification methods, rules and criteria of outcome assessment | *Exam in the form of written test. A positive grade should be correctly answered. 60%. t (final asessement 60%)* | | |

| **Seminars** | | **…** | **hours** |
|---|---|---|---|
| Topics of the seminars | | | |
| Accomplished learning outcomes | *symbol of learning outcomesof the seminars* | | |
| Verification methods, rules and criteria of outcome assessment | *together with participation in the final asessement (in %)* | | |

**References:**

| | |
|---|---|
| Basic | *Biotechnology in animal reproduction. Senecia et al. 2012* |
| Supplementary | *Supplementary 1. Biotechnology in equine reproduction: Prospects and limitations Kochan J., Nowak A, et al; Med Wet.2016, 226-230* |

**Structure of learning outcomes:**

| | | |
|---|---|---|
| Discipline: RZ | *4* | ECTS** |
| Discipline: # (*provide appripriate symbol - if the course relates to more than one academic discipline*) | … | ECTS** |

| **Structure of student activities:** | | | | | |
|---|---|---|---|---|---|
| Contact hours | | 45 | hours | 0,47 | ECTS** |
| including: | lectures | 15 | hours | | |
| | classes and seminars | 30 | hours | | |
| | consultations | … | hours | | |
| | participation in research | … | hours | | |
| | mandatory trainerships | … | hours | | |
| | participation in examinations | 2 | hours | | |
| e-learning | | … | hours | … | ECTS** |
| student own work | | 53 | hours | 0,53 | ECTS** |

Syllabus valid from the academic year 2021/2022

*** where 10 hours of classes = 1 ECTC (in case of 15 h → 2 ECTS)**

** stated with an accuracy to 0.1 ECTS, where 1 ECTS = 25 - 30 hours of classes

# academic discipline code: RZ - animal science and fishery, PB - biological sciences, etc.