

REPRODUCTIVE BIOTECHNOLOGY

1	Course Title:	REPRODUCTIVE BIOTECHNOLOGY
2	Course Code:	VET4507
3	Type of Course:	Optional
4	Level of Course:	First Cycle
5	Year of Study:	4
6	Semester:	7
7	ECTS Credits Allocated:	3.00
8	Theoretical (hour/week):	1.00
9	Practice (hour/week):	2.00
10	Laboratory (hour/week):	0
11	Prerequisites:	None
12	Language:	Turkish
13	Mode of Delivery:	Face to face
14	Course Coordinator:	Doç. Dr. BURCU ÜSTÜNER
15	Course Lecturers:	Prof.Dr.İbrahim DOĞAN Doç.Dr.Selim ALÇAY
16	Contact information of the Course Coordinator:	e-posta: bbaspinar@uludag.edu.tr Telefon: 0224-2941245 Adres: Bursa Uludağ Üniversitesi Veteriner Fakültesi Dölerme ve Suni Tohumlama Anabilim Dalı
17	Website:	
18	Objective of the Course:	Giving basic information about reproductive biotechnology and showing the possibilities of using reproductive biotechnology in Veterinary Medicine; determining the some practical application fields for improving animal husbandry in the country; providing enough knowledge and practice to the students in this field to apply some reproductive biotechnology techniques
19	Contribution of the Course to Professional Development:	The student transfer the knowledge gained in course to the field in professional practices and to support animal breeding methods with biotechnological applications.
20	Learning Outcomes:	
	1	Basic knowledge in the field of reproductive biotechnology
	2	In vitro embryo production, cryopreservation of oocytes and embryos, embryo sexing
	3	Intracytoplasmic sperm injection and chimeric animal production
	4	Transgenic farm animal production and cloning
	5	Determining the importance of some practical application fields for improving animal husbandry in the country
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21	Course Content:	
	Course Content:	
Week	Theoretical	Practice

1	Description of in vitro embryo production (IVP), advantages of IVP, factors affecting the success of IVP.	Presentation of IVF laboratory.		
2	Methods used for oocyte collection from slaughterhouse material: aspiration, slicing, follicle dissection, media used for oocyte wash.	Presentation of chemical agents and medium preparation.		
3	Oocyte and embryo collection from living animals: oocyte and embryo collection by surgical method, oocyte collection using ultrasound guided transvaginal oocyte aspiration method (ovum pick-up, OPU).	Oocyte collection.		
4	Maturation of immature oocyte in laboratory conditions (in vitro maturation, IVM).	IVM protocol.		
5	Fertilization of in vitro matured oocytes in the laboratory (in vitro fertilization, IVF), most used methods for the preparation of sperm used for IVF: swim-up and percoll gradient system.	IVM protocol.		
6	Intracytoplasmic sperm injection (ICSI).	IVF protocol.		
7	Classifications of embryos according to the developmental stages: zygote, 2-cell, 4-cell, 8-cell, 16-cell, morula and blastocyst, morphological evaluation in embryos: excellent, fair, medium, poor.	IVF protocol.		
8	Culture environments for embryo survival after IVF: in vivo and in vitro cultures, media used for in vitro culture (IVC), co-culture.	In vitro culture of embryos.		
Activites		Number	Duration (hour)	Total Work Load (hour)
Theoretical	of cryopreservation and methods used for cryopreservation: slow freezing, fast freezing	14	1.00	14.00
Practicals/Labs		14	2.00	28.00
10	Self study and preparation of oocytes, embryos and ovarian tissue	Conventional freezing procedure.		15.00
Homeworks		0	0.00	0.00
11	Embryo sexing before embryo transfer, methods and advantages of embryo sexing.	0	0.00	0.00
Field Studies		0	0.00	0.00
12	Methods of transgenic animal production.	1	15.00	15.00
13	Description of embryonic stem cells, their function and drug production.	0	0.00	0.00
Others		0	0.00	0.00
Final Exams	them in veterinary and medical fields.	1	18.00	18.00
Total Work Load				90.00
Total workload/ 30 hr				3.00
ECTS Credit of the Course				3.00

22	Textbooks, References and/or Other Materials:	1. Scientific farm animal production : an introduction to animal science / Robert E. Taylor, Thomas G. Field. – 8th ed. – Upper Saddle River, NJ : Pearson Prentice Hall, 2004. 2. Reproductive technologies in farm animals / Ian Gordon. – Wallingford, Oxon: CABI Publishing, 2004. 3. Basic biotechnology / edited by Colin Ratledge and Bjørn Kristiansen. – 2nd ed. – Cambridge, UK : Cambridge University Press, 2004. 4. Bearden, Henry Joe, 1926-. Applied animal reproduction / H.Joe Bearden, John W. Fuquay, Scott T. Willard. – 6th ed. – Upper Saddle River, New Jersey : Pearson / Prentice Hall, 2004. 5. Textbook of assisted reproductive techniques: laboratory and clinical perspectives / edited by David K. Gardner...et al.. – 2nd ed. – London : Taylor & Francis, 2004. 6. Gordon, Ian R. Reproductive technologies in farm animals / Ian Gordon. – Wallingford, Oxon : CABI Publishing, 2004.
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23	Assesment
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TERM LEARNING ACTIVITIES	NUMBER	WEIGHT
Midterm Exam	1	40.00
Quiz	0	0.00
Home work-project	0	0.00
Final Exam	1	60.00
Total	2	100.00
Contribution of Term (Year) Learning Activities to Success Grade		40.00
Contribution of Final Exam to Success Grade		60.00
Total		100.00
Measurement and Evaluation Techniques Used in the Course		Exams that including test and classical questions

24	ECTS / WORK LOAD TABLE
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25	CONTRIBUTION OF LEARNING OUTCOMES TO PROGRAMME QUALIFICATIONS															
	PQ1	PQ2	PQ3	PQ4	PQ5	PQ6	PQ7	PQ8	PQ9	PQ10	PQ11	PQ12	PQ13	PQ14	PQ15	PQ16
ÖK1	5	3	2	3	1	1	2	1	2	2	3	2	0	0	0	0
ÖK2	3	2	2	3	1	1	1	1	2	3	3	2	0	0	0	0
ÖK3	3	2	2	3	1	1	1	1	2	3	3	2	0	0	0	0
ÖK4	3	2	2	3	1	1	1	1	2	3	3	2	0	0	0	0
ÖK5	3	2	2	3	1	1	1	1	2	3	3	5	0	0	0	0
LO: Learning Objectives PQ: Program Qualifications																
Contribution Level:	1 very low		2 low		3 Medium		4 High		5 Very High							