

Benha University  
Faculty of Veterinary Medicine  
Department of Theriogenology



Faculty of Veterinary Medicine-Benha University  
Department of Theriogenology

**Course Specification for PhD Degree  
(2010- 2011)**

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**Course Title: Reproductive  
Biotechnology in Ruminants**

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قسم التوليد والتناسل والتلقيح الاصطناعي  
كلية الطب البيطري-جامعة بنها

Benha University  
Faculty of Veterinary Medicine  
Department of Theriogenology

## Course Specification for PhD Degree (2010- 2011)

### Course specifications

<b>Awarding Body:</b>	Benha University
<b>Teaching Body:</b>	Faculty of Veterinary Medicine
<b>Department responsible:</b>	Theriogenology
<b>Program on which the course is given:</b>	PhD degree
<b>Academic year / Level :</b>	Post-graduate
<b>Date of specification approval:</b>	Ministerial Decree No 921, on 15/9/1987
<b>Date of reviewing by department council:</b>	28 /11 / 2010

#### A- Basic Information

<b>Title</b>	Reproductive biotechnology in ruminants		<b>Code:</b>	PVD6
<b>Lecture:</b>	2 hours	<b>Practice:</b>	2 hours	<b>Total:</b> 4 hours

#### B- Professional information:

##### 1- Overall aims of course:

The overall aims of this course are preparation of the graduate to:

- Understand the importance of the advanced reproductive biotechnology in improving cow-buffalo reproduction and genetic character.
- Design and conduct research to improve the efficacy of advanced reproductive techniques.
- Recognize the most recent techniques and diagnostic tools in the field of reproductive biotechnology, embryo transfer, cloning ...etc.
- To achieve capability in modern laboratory technology to develop practical research project.
- To have the ability of data statistical analysis, results interpretation and dissertation preparation.

## 2- Intended Learning Outcomes of Course (ILOs)

### a- Knowledge and understanding:

By the end of this course the graduates should be able to:

- a.1. Describe the most recent research techniques and methods used in the field of reproductive biotechnology especially semen processing, IVF and embryo transfer.
- a.2. Be aware of the recent concepts of semen preservation, cryopreservation of oocyte and animal preparation for ET.
- a.3. Understand the bases of oocyte and/or embryo collection and evaluation.
- a.4. Recognize advanced concepts about different advanced reproductive techniques.
- a.5. Demonstrate the advanced concepts about the importance of advanced reproductive techniques in improving the animal genetic character and productivity.
- a.6. Apply their knowledge and understanding of reproductive efficiency to the critical analysis and discussion of the scientific literature.
- a.7. To recognize the different procedures and disciplines those improve the fertility status of the herd.

### b- Intellectual Skills:

By the end of this course the graduates should be able to:

- b.1. Identify, conceptualize and define problems related to the use of advanced reproductive biotechnology.
- b.2. Choose the best advanced reproductive technique that can overcome any form of infertility in superior genetic animal or to improve the genetic character and/or productivity of the animals.
- b.3. Evaluate the possible consequences that may be gained by application of different advanced reproductive biotechniques against the cost and/or negative consequences.

- b.4. Evaluate their own research data and develop new approach to solve their research related to semen or oocyte manipulation.
- b.5. Design a plan to widely spread the application of advanced reproductive techniques.
- b.6. Identify, summarize and evaluate previous researches adopted in the field of advanced reproductive techniques.
- b.7. Understand areas where further researches necessary and be aware of any which would be beyond current ethical codes.

### **c- Professional and Practical Skills:**

By the end of this master course the graduate should be able to:

- c.1. Handle those recent techniques and tools adopted for super-ovulation and oocyte/embryo recovery in farm animals.
- c.2. Apply the principles of efficient in vitro handling of semen, oocyte, and embryo.
- c.3. Select and perform successful oocyte and/or embryo collection.
- c.4. Plan and execute a research project in the field of in-vitro maturation, fertilization and culture of embryo with a consideration to the technical, ethical and safety issues and associated costs.
- c.5. Perform essential laboratory skills that underpin techniques associated cryopreservation of the embryo and gametes.
- c.6. Recognize recent techniques and tools adopted for embryo transfer.

### **d- General and Transferable Skills:**

By the end of this course the graduates should be able to

- d.1. To have the ability to learn independently in preparation for career of lifelong learning.
- d.2. To have information retrieval and library skills.
- d.3. To have interpersonal skills and team working ability by successful completion of collaborative learn assignment and the honors researches project.

d.4. To present research finding in oral and written from using arrange of appropriate soft ware( e.g., power point, word, excel and database)

No.	Topic	Lect./h	Pract./h	Total/h
1	Processing of the frozen semen	2	2	4
2	Embryo & oocyte collection methods	2	2	4
3	IV oocyte maturation & fertilization	2	2	4
4	Cryopreservation of fertilized ovum	2	2	4
5	Donor & recipient preparation for ET	2	2	4
6	Surgical & non-surgical techniques of ET	2	2	4
	Total	12	12	24

## Teaching and Learning

### 4- Teaching Methods

#### 4.1. Lectures

The department council assigns one of the teaching staff to teach a special chapter in the course syllabus. The entire student will attend one class 3h/week. The teacher will use all the available teaching tools including data show and overhead projectors. The lectures usually take the form of open discussion

#### 4.2. Discussion sessions

The student will be responsible for making a presentation about and discuss one subject (usually related to his thesis subject) in front of all department members

#### 4.3. Information collection

The supervisors will make assignment for their student to collect data and make a complete review about one subject (usually related to his thesis subject).

#### 4.4. Practical training / laboratory

The students will take the practical course 4hours/week under supervision of one of the department member 2 assistants. During the lab the student will do all practical syllabus by them self.

#### 4.5. Research assignment field

The student will be responsible for searching for the most recent research pint and designs a plan for his research work.

#### 4.6. Visits.

The student will chair in some visits to the surrounding villages and /or farms

#### 4.7. Case studies.

The student will chair in diagnosis and handling cases came to the faculty educational hospital.

### 5- Student assessment methods

- Practical exam to assess professional and practical skills.
- Oral exam to assess knowledge and information and intellectual skills.
- Written exam to assess knowledge, information and intellectual skills.
- Assignments to assess management of clinical cases.

### 6- Student assessment grade:

Method	Weighting		Evidence
	Mark	%	
Written Examination	50	50	Marked and signed written paper
Oral Examination	20	20	Signed list of oral exam marks
Practical Examination	20	20	Marked and signed practical exam sheet
Seminar	10	10	??????
Total	<b>100</b>	<b>100</b>	

## 7- List of references

### a- Course Notes

- A concise guide of theriogenology.

### b- Essential Text Books:

- Animal breeding and infertility, Michael Meredith, 1995.
- Cattle embryo transfer procedure, John Curtis, 1991.
- Clinical obstetrics and gynecology, Lind Heimer, Davidson, 1994.
- Congenital malformations in lab and farm animals, Kalman, 1989.
- Ultrasonography in obstetrics and gynecology, Peter, Callen, 3rd Ed., 1994.

### c- Recommended Reference Books:

- Fertility and infertility in veterinary practices, Laing, et al., 4th Ed., 1988.
- Physiology of reproduction and A.I. in cattle, Salisbury, et al., 1985.
- Reproduction in farm animals, Hafez, 7th Ed., 2000
- Veterinary Reproduction and obstetrics, Arthur, et al., 6th Ed., 1989.
- Current therapy in theriogenology, Morrow, 1980

### d- Periodicals

- J. Animal reproduction & Fertility
- J. Fertility & Sterility
- Theriogenology.
- Benha veterinary medical journal.
- Veterinary record
- Journal dairy science
- Journal animal science

### e- Web sites

- google.Com
- arabvet.com
- esarf.tripod.com/index.html.

**f- Facilities required for teaching and learning:**

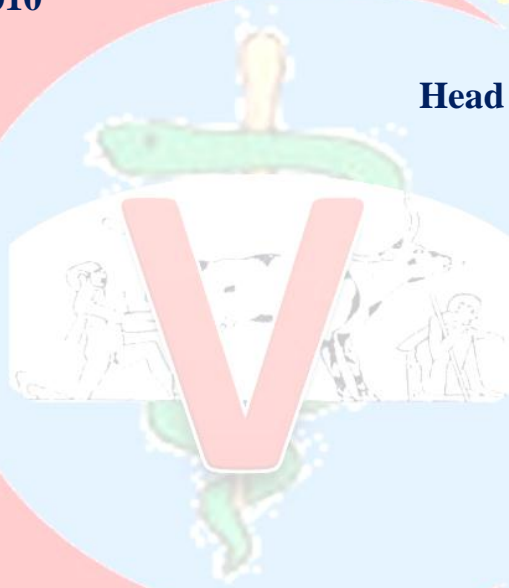
- 1- Video Films.
- 2- Data-show.
- 3- Farm animals for clinical application
- 4- Network for technology transfer.
- 5- Overhead projector.
- 6- Laboratory kits for reproductive biotechnology.
- 7- Computer.
- 8- Field visits.

**Date of production and revision: 28/ 11 / 2010**

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**Course Co-coordinator:**

**Head of Department**



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