## VETERINARY GYNAECOLOGY & OBSTETRICS

### Course Structure

<table>
<thead>
<tr>
<th>COURSE NO.</th>
<th>COURSE TITLE</th>
<th>CREDITS</th>
<th>SEM</th>
</tr>
</thead>
<tbody>
<tr>
<td>VOG 601</td>
<td>GENERAL GYNAECOLOGY</td>
<td>3+1</td>
<td>I</td>
</tr>
<tr>
<td>VOG 602</td>
<td>FEMALE INFERTILITY</td>
<td>3+1</td>
<td>II</td>
</tr>
<tr>
<td>VOG 603</td>
<td>VETERINARY OBSTETRICS</td>
<td>2+2</td>
<td>I</td>
</tr>
<tr>
<td>VOG 604</td>
<td>ANDROLOGY &amp; MALE INFERTILITY</td>
<td>3+1</td>
<td>II</td>
</tr>
<tr>
<td>VOG 605</td>
<td>SEMEN PRESERVATION AND ARTIFICIAL INSEMINATION</td>
<td>2+1</td>
<td>I</td>
</tr>
<tr>
<td>VOG 606</td>
<td>REPRODUCTIVE BIOTECHNOLOGY</td>
<td>2+1</td>
<td>II</td>
</tr>
<tr>
<td>VOG 607</td>
<td>CLINICAL PRACTICE I</td>
<td>0+3</td>
<td>I</td>
</tr>
<tr>
<td>VOG 608</td>
<td>CLINICAL PRACTICE II</td>
<td>0+3</td>
<td>II</td>
</tr>
<tr>
<td>VOG 691</td>
<td>MASTER’S SEMINAR</td>
<td>I</td>
<td>I, II</td>
</tr>
<tr>
<td>VOG 699</td>
<td>MASTER’S RESEARCH</td>
<td>20</td>
<td>I, II</td>
</tr>
<tr>
<td>VOG 701</td>
<td>ADVANCES IN GYNAECOLOGY</td>
<td>2+1</td>
<td>I</td>
</tr>
<tr>
<td>VOG 702</td>
<td>ADVANCES IN OBSTETRICS</td>
<td>2+1</td>
<td>II</td>
</tr>
<tr>
<td>VOG 703</td>
<td>ADVANCES IN ANDROLOGY</td>
<td>2+1</td>
<td>I</td>
</tr>
<tr>
<td>VOG 704</td>
<td>ADVANCES IN REPRODUCTIVE BIOTECHNOLOGY</td>
<td>1+1</td>
<td>II</td>
</tr>
<tr>
<td>VOG 705</td>
<td>ADVANCES IN SEMEN PRESERVATION</td>
<td>1+1</td>
<td>I</td>
</tr>
<tr>
<td>VOG 706</td>
<td>CLINICAL PRACTICE I</td>
<td>0+3</td>
<td>I</td>
</tr>
<tr>
<td>VOG 707</td>
<td>CLINICAL PRACTICE II</td>
<td>0+3</td>
<td>II</td>
</tr>
<tr>
<td>VOG 790</td>
<td>SPECIAL PROBLEM</td>
<td>0+2</td>
<td>I, II</td>
</tr>
<tr>
<td>VOG 791</td>
<td>DOCTORAL SEMINAR I</td>
<td>1</td>
<td>I, II</td>
</tr>
<tr>
<td>VOG 792</td>
<td>DOCTORAL SEMINAR II</td>
<td>1</td>
<td>I, II</td>
</tr>
<tr>
<td>VOG 799</td>
<td>DOCTORAL RESEARCH</td>
<td>45</td>
<td>I, II</td>
</tr>
</tbody>
</table>
## Course Contents

### VOG 601  GENERAL GYNAECOLOGY  3+1  SEM - I

**Objective**
To understand hormonal regulation of female reproduction and therapeutic management of infertility.

**Theory**
- **UNIT-I:** Puberty and sexual maturity, role of hypothalamic-pituitary-gonadal axis in attainment of puberty and sexual maturity, onset of postpartum ovarian activity, Endocrine regulation of estrous cycle.
- **UNIT-II:** Folliculogenesis, oogenesis and ovulation and associated endocrine pattern, manipulation of follicular waves, synchronization of estrus and ovulation and induction of ovarian activity.
- **UNIT-III:** Gamete transport, fertilization, implantation and maternal recognition of pregnancy.
- **UNIT-IV:** Embryonic and fetal development, placentation, fetal circulation and gestation, position of fetus in the uterus, age characteristics of fetus.
- **UNIT-VI:** Factors affecting reproduction – seasonality, nutrition, stress, environment, management, suckling and diseases.
- **UNIT-VII:** Lactation and artificial induction of lactation.

**Practical**

**Suggested Readings**

### VOG 602  FEMALE INFERTILITY  3+1  SEM - II

**Objective**
To impart knowledge and training in diagnosis and treatment of infertility in female domestic animals.

**Theory**
- **UNIT-I:** Introduction to infertility, classification, economic impact. Anatomical causes of infertility, congenital and hereditary causes and acquired defects.
- **UNIT-II:** Nutritional causes of infertility. Importance of body condition score.
- **UNIT-III:** Managemental and environmental causes of infertility. Out of season breeding.
- **UNIT-IV:** Infectious causes of female infertility, specific and non-specific infections.
- **UNIT-V:** Ovarian dysfunction: anoestrus, cystic ovarian degeneration, anovulation, delayed ovulation and luteal insufficiency.
- **UNIT-VI:** Repeat breeding: its causes, diagnosis and treatment.
- **UNIT-VII:** Early embryonic death (EED): causes, diagnosis and therapeutic management.
- **UNIT-VIII:** Abortion: infectious and non-infectious causes, diagnosis and prevention of abortion.
- **UNIT-IX:** Interactions in Immunological mechanisms and infertility.

**Practical**
Record keeping, herd fertility assessment and management, diagnosis and treatment of infertility in female animals, use of uterine swabs for bacterial and fungal culture, histopathological evaluation of uterine biopsy, exfoliated vaginal cytology and hormone assay.
Use of ultrasonography in diagnosis of infertility. Immuno diagnostic techniques.

Suggested Readings


VOG 603 VETERINARY OBSTETRICS 2+2 SEM - I

Objective
To impart knowledge and training on problems of pregnancy and parturition and their management in domestic animals.

Theory

UNIT-II: Principles of handling of dystocia, obstetrical procedures: mutations, fetotomy, caesarean section. Obstetrical anesthesia and analgesia, epidural anesthesia.

UNIT-III: Fetal and maternal dystocia: causes, diagnosis and management.

UNIT-IV: Uterine torsion: causes, diagnosis and its correction.

UNIT-V: Diseases and accidents during gestation and around parturition.

UNIT-VI: Etiology, diagnosis and treatment of ante-partum and post-partum uterine and vaginal prolapse.

UNIT-VII: Induction of parturition and elective termination of pregnancy.

UNIT-VIII: Involution of uterus following normal and abnormal parturition.

UNIT-IX: Care of dam and the newborn.

Practical

Suggested Readings


VOG 604 ANDROLOGY AND MALE INFERTILITY 3+1 SEM - II

Objective
To impart knowledge and training about male reproduction and treatment of male infertility in domestic animals.

Theory
UNIT-I: Structure and function of reproductive tract of male.

UNIT-II: Sexual behavior and examination of bulls for breeding soundness.


UNIT-IV: Diseases transmitted through semen.

UNIT-V: Factors affecting semen quality, semen culture, tests for assessment of sperm motility, sperm survival and fertilizing capacity of spermatozoa.


UNIT-VII: Impotentia cocundi and impotentia generandi. Testicular hypoplasia and degeneration: causes and affect on semen and fertility.

UNIT-VIII: Coital injuries and vices of male animals.

Practical
General and rectal examination for biometrics of male genitalia and accessory sex glands. Breeding soundness evaluation of male animals. Semen evaluation for sperm abnormalities, fertility and determination of other biochemical constituents of seminal plasma. Computer assisted semen analysis (CASA), Microbiological load of semen.
Examination, diagnosis and treatment of infertile male animals.

**Suggested Readings**


**VOG 605**

**SEmen Preservation and Artificial Insemination**

**Objective**

To impart knowledge and training about collection, evaluation and preservation of semen and artificial insemination (AI) in domestic animals.

**Theory**

UNIT-I: History of artificial insemination.
UNIT-II: Methods of semen collection.
UNIT-III: Semen evaluation: macroscopic, microscopic, biochemical and microbiological tests, Computer assisted semen analysis (CASA).
UNIT-IV: Semen preservation. Extenders for preservation of semen at different temperatures. Semen additives for enhancement of motility and fertilizing capacity of spermatozoa.
UNIT-V: Cryopreservation of semen. Effects of cryopreservation on spermatozoa, semen quality and fertility.
UNIT-VII: Ideal protocol for AI in different species of animals. Factors affecting success of AI.

**Practical**


**Suggested Readings**


**VOG 606**

**Reproductive Biotechnology**

**Objective**

To impart knowledge and training on biotechniques in animal reproduction.

**Theory**

UNIT-I: Embryo transfer technology: selection of donors and recipients.
UNIT-II: Synchronization, super-ovulation, surgical and non-surgical collection of embryos and evaluation of embryos.
UNIT-III: Cryopreservation of embryos, transfer of embryos to donors.
UNIT-V: Sexing of sperm and embryos.
UNIT-VI: Transgenic animals. Chimeras.
UNIT-VII: Stem cell biotechnology

**Practical**


**Suggested Readings**

VOG 607  
**CLINICAL PRACTICE – I**  
**Objective**  
Hands-on training on diagnosis and treatment of reproductive disorders in animals in TVCC.  
**Practical**  
Clinical examination of animals affected with reproductive disorders, use of diagnostic techniques for diagnosis and institution of required therapy. Maintenance of case records. Presentation on selected /assigned cases.  
**Suggested Readings**  

VOG 608  
**CLINICAL PRACTICE – II**  
**Objective**  
Hands-on training on diagnosis and treatment of reproductive disorders in animals in TVCC.  
**Practical**  
Clinical examination of animals affected with reproductive disorders, use of diagnostic techniques for diagnosis and institution of required therapy. Maintenance of case records. Presentation on selected /assigned cases.  
**Suggested Readings**  

VOG 701  
**ADVANCES IN GYNAECOLOGY**  
**Objective**  
To learn about advances in endocrine, ovarian and uterine functions and effect of nutrition, season and immunological factors on female fertility.  
**Theory**  
UNIT-I: Neuro-endocrine control of reproduction, follicular development, ovulation fertilization and implantation. Embryonic and fetal development.  
UNIT-II: Maternal recognition of pregnancy, Advances in early diagnosis of pregnancy.  
UNIT-IV: Seasonal breeders, synchronization and induction of estrus and ovulation in seasonal breeders, Assisted reproductive technology (ART) to increase reproductive efficiency in farm animals..  
UNIT-V: Effect of stress, nutrition and immunological factors on fertility.  
UNIT-VI: Onset of postpartum ovarian activity and factors affecting it.  
UNIT-VII: Diagnostic & therapeutic approaches in infertility: Principles of hormone therapy in reproductive disorders, Laparoscopy, ultrasonographic diagnosis of ovarian/uterine dysfunction, RIA/ELISA techniques for hormones assay in reproductive disorders, vaginal and uterine cytology  
**Practical**  
Clinical examination of female animals. Use of ultrasonography in ovarian function (follicular image pattern, follicular dynamics) and in early pregnancy diagnosis and infertility. Utility of uterine culture, uterine cytology and uterine biopsy (histopathological examination) in infertility investigation. Laparoscopy in diagnosis of ovarian and uterine dysfunction. ELISA/RIA of hormones and interpretation of results. Use of Assisted reproductive technology (ART) to enhance reproductive efficiency in farm animals.  
**Suggested Readings**  
Selected articles from journals.  

VOG 702  
**ADVANCES IN OBSTETRICS**  
**Objective**  
To learn current developments in diagnosis and management of dystocia, accidents of gestation and peri-parturient disorders in domestic animals.  
**Theory**  
UNIT-I: Conceptus and its development. Factors influencing gestation period and birth weight.  
UNIT-II: Anomalies of conceptus, teratogens and effect of stress on conceptus development.  
UNIT-III: Mechanism of initiation of parturition. Use of tocolytic drugs in management of...
Selected articles from journals.

VOG 703 ADVANCES IN ANDROLOGY 2+1 SEM - I
Objective
To learn advances in male reproduction and treatment of male infertility in domestic animals
Theory
UNIT-I: Spermatogenesis, spermatogenic waves, sperm passage in male genitalia, biochemical milieu of male genitalia. Correlation between motility and fertilizing capacity of spermatozoa.
UNIT-II: Separation of motile and immotile spermatozoa. Sexing and separation of male and female determining spermatozoa.
UNIT-V: Fructolysis index. Aerobic and anaerobic metabolism of spermatozoa.
UNIT-VI: Biochemical markers of fertility in males, sperm chromatin structure assay, Anti-sperm antibodies.
Practical
Breeding soundness evaluation of bulls, biochemical tests of semen for evaluation of fertility, semen culture for diagnosis of venereal diseases, diagnosis and treatment of genital pathological condition. Computer assisted semen analysis (CASA), Semen evaluation for assessment of fertilizing capacity of spermatozoa: cervical mucus penetration test, sperm capacitation test, hypo osmotic swelling test and zona free hamster egg penetration test. Anti-sperm antibody assay.
Suggested Readings
Selected articles from journals.

VOG 704 ADVANCES IN REPRODUCTIVE BIOTECHNOLOGY 1+1 SEM - II
Objective
To learn advances in recent developments in biotechnology in reproduction for the production of desired elite animals.
Theory
UNIT-I: Embryo transfer technology and its application in farm animals.
UNIT-II: Selection and management of donor and recipient animals. Superovulation, surgical and non-surgical collection, evaluation of embryos and transfer of embryos.
UNIT-III: In vitro fertilization and maturation of oocytes.
UNIT-IV: Micromanipulation, sexing and cryopreservation of embryos.
UNIT-V: Sexing of sperm and embryos.
UNIT-VI: Transgenic animals. Chimeras.
UNIT-VII: Stem cell biotechnology

Practical

Suggested Readings
Selected articles from journals.

VOG 705 ADVANCES IN SEMEN PRESERVATION 1+1 SEM - I
Objective
To learn advances in processing and cryopreservation of semen and insemination techniques to obtain high fertility.

Theory
UNIT-I: Transmission of venereal diseases through semen and their prevention.
UNIT-II: Factors affecting motility and fertilizing capacity of spermatozoa. Semen collection, extension and cryopreservation of semen, damages to spermatozoa caused by cryopreservation.
UNIT-III: Use of semen additives for promotion of sperm motility and fertilizing capacity.
UNIT-IV: Thawing protocols for frozen semen. Post-thaw evaluation of motility and fertilizing capacity of spermatozoa.

Practical

Suggested Readings
Selected articles from journals.

VOG 706 CLINICAL PRACTICE – I 0+3 SEM - I
Objective
Hands-on training on diagnosis and treatment of reproductive disorders in animals.

Practical
Clinical examination of animals affected with reproductive disorders, use of diagnostic techniques for diagnosis and institution of required therapy, maintenance of case records, presentation on selected/assigned cases.

Suggested Readings
Selected articles from journals.

VOG 707 CLINICAL PRACTICE – II 0+3 SEM - II
Objective
Hands-on training on diagnosis and treatment of reproductive disorders in animals.

Practical
Clinical examination of animals affected with reproductive disorders, use of diagnostic techniques for diagnosis and institution of required therapy.

Suggested Readings
Selected articles from journals.

VOG 790 SPECIAL PROBLEM 0+2 SEM - I, II
Objective
To expose students to research techniques related to sub discipline of the subject and submission of written project with references.

Practical
Student will carry out research on allotted project and submit the project along with research papers for publication in scientific journals.
VETERINARY GYNAECOLOGY & OBSTETRICS

List of Journals

- American Journal of Obstetrics and Gynaecology
- Animal Reproduction
- Animal Reproduction Science
- Animal Science Journal
- Bibliography of Reproduction
- Biology of Reproduction
- Equine practice
- Equine Veterinary Journal
- Fertility and Sterility
- Indian Journal of Animal Reproduction
- Indian Journal of Animal Sciences
- Indian Journal of Experimental Biology
- Indian Veterinary Journal
- Journal of American Veterinary Medical Association
- Journal of Animal Science
- Journal of Dairy Science
- Journal of Endocrinology
- Journal of Reproduction and Development
- Journal of Reproduction and Fertility
- Reproduction in Domestic Animals
- Research in Veterinary Science
- Theriogenology
- Veterinary Record

E-Resources

- www.anirgyep.elsevier.com (Animal Reproduction Science)
- www.blackwellpublishing.com (International Journal of Andrology)
- www.bioreprod.org (Biology of reproduction)
- www.domesticanimalendo.com (Domestic Animal Androcrinology)
- www.reproduction-online.org (Journal of Andrology)
- www.reproduction-online.org (Reproduction)
- www.interscience.wiley.com (Reproduction in domestic animals)
- www.theriojournal.com (Theriogenology)
- www.buffaloresearch.com (Buffalo Journal)
- www.eje-online.org (European journal of Endocrinology)
- www.sciencedirect.com (The Veterinary Journal)
- www.blackwellpublishing.com (Asian journal of Andrology)
- www.editorijar@yahoo.co.in (Indian Journal of Animal Reproduction)

Suggested Broad Topics for Master’s and Doctoral Research

- Anoestrus: Endocrinological investigations
- Reproductive biotechnology
- Investigations into andrological problems
- Management of obstetrical problems