1. Course offered :: UG, PG , PhD - Semester / Year wise

- List of UG Courses (B.V.Sc & AH) As per latest MSVE Guidelines) , B.Tech. (D.T.) and B.F.Sc as per ICAR – V Deans Committee – 2016.

Sr No	Course No.	Title	Credit	Course offered in the Year
1	VOG	Veterinary Gynaecology & Obstetrics	2+1=3	4th year BVSc&AH

- List of PG Courses (MVSc) and M.Tech. (Dairy Technology)

Sr. No.	Course No	Title	Credit	Semester
1.	VOG 501	General Gynaecology	2+1	Sem I
2.	VOG 502	Female Infertility in Farm Animals	2+1	Sem I
3.	VOG 507	Clinical Practice-I	0+3	Sem I
4.	VOG 503	Veterinary Obstetrics	2+1	Sem II
5.	VOG 504	Andrology and Male Infertility	2+1	Sem II
6.	VOG 508	Clinical Practice-II	0+3	Sem II
7.	VOG 505	Semen Preservation and Artificial Insemination	2+1	Sem III
8.	VOG 506	Basics of Reproductive Biotechnology	2+1	Sem III
9.	VOG 591	Master's Seminar	1+0	Sem III
10.	VOG 599	Master's Research	30	Sem IV

Ph.D. in Animal Reproduction Gynaecology and Obstetrics
Course Title with Credit Load

Course Code	**Course Title**	**Credit Hours**
VGO 601	Advances in Gynaecology and Infertility Management*	2+1
VGO 602	Advances in Veterinary Obstetrics	1+1
VGO 603	Advances in Andrology and Male Infertility*	2+1
VGO 604	Reproductive Biotechnology	1+1
VGO 605	Semenology	1+1
VGO 606	Clinical Practice-I*	0+3
VGO 607	Clinical Practice-II*	0+3
VGO 690	Special Problem	0+2
VGO 691	Doctoral Seminar-I	1+0
VGO 692	Doctoral Seminar-II	1+0
VGO 699	Doctoral Research	75

Regular Ph.D.

Sr. No.	Course No	Title	Credit	Sr. No.
11.	VOG 601	Advances in Gynaecology	2+1	Sem I
12.	VOG 606	Clinical Practices I	0+3	Sem I
13.	VOG 602	Advances in Obstetrics	2+1	Sem II
14.	VOG 607	Clinical Practices II	0+3	Sem II
15.	VOG 603	Advances in Andrology	2+1	Sem III
16.	VOG 604	Advances in Reproductive Biotechnology	1+1	Sem III
17.	VOG 605	Advances in Semen Preservation	1+1	Sem III
18.	VOG 690	Special Problem	0+2	Sem III
19.	VOG 691	Doctorial Seminar I	1+0	Sem III
20.	VOG 692	Doctorial Seminar II	1+0	Sem III
21.	VOG 699	Doctorial Research	0+45	Sem IV
22.	VOG 699	Doctorial Research	0+45	Sem V
23.	VOG 699	Doctorial Research	0+45	Sem VI
24.	-	-	-	Sem VII
25.	-	-	-	SemVIII

Inservice Ph.D.

Sr. No.	Course No	Title	Credit	Sem
1.	VOG 601	Advances in Gynaecology	2+1	Sem I
2.	VOG 606	Clinical Practices I	0+3	Sem I
3.	VOG 602	Advances in Obstetrics	2+1	Sem II
4.	VOG 607	Clinical Practices II	0+3	Sem II
5.	VOG 603	Advances in Andrology	2+1	Sem III
6.	VOG 604	Advances in Reproductive Biotechnology	1+1	Sem III
7.	VOG 605	Advances in Semen Preservation	1+1	Sem III
8.	VOG 690	Special Problem	0+2	Sem IV
9.	VOG 691	Doctorial Seminar I	1+0	
10.	VOG 692	Doctorial Seminar II	1+0	
11.	VOG 699	Doctorial Research	0+12	Sem V
12.	VOG 699	Doctorial Research	0+12	Sem VI
13.	VOG 699	Doctorial Research	0+12	Sem VII
14.	VOG 699	Doctorial Research	0+09	SemVIII
	-	-	-	-

2. Lecture Schedule – UG, PG , PhD - Theory / Practical Schedule – Approved by BoS – Subject wise

Course title: General Gynaecology
Course Code: VGO 501 Credit hours: 2 + 1

Sr. No.	Lecture No./ Practical No.	Topic
Theory		
1	1	Functional anatomy in small animals
2	2	Functional anatomy in large animals
3	3	Puberty and Sexual maturity in small animals
4	4	Puberty and Sexual maturity in large animals
5	5	Role of hypothalamic-pituitary gonadal axis in attainment of puberty and sexual maturity in different animals
6	6	Endocrine regulation of estrous cycle in small animals
7	7	Endocrine regulation of estrous cycle in large animals
8	8	Role of pineal gland, endogenous opioids and neuropeptides inreproduction
9	9	Folliculogenesis, Oogenesis and ovulation and associated endocrine pattern
10	10	Manipulation of follicular waves
11	11	Synchronization of estrus and ovulation in small animals
12	12	Synchronization of estrus and ovulation in large animals
13	13	Induction of ovarian activity in small animals
14	14	Induction of ovarian activity in large animals
15	15	Gamete transport in female reproductive system
16	16	Fertilization
17	17	Implantation and maternal recognition of Pregnancy in small animals
18	18	Implantation and maternal recognition of Pregnancy in large animals
19	19	Embryonic and fetal development
20	20	Placentation in small animals
21	21	Placentation in large animals
22	22	Fetal circulation and gestation
23	23	Position of fetus in the uterus
24	24	Age characteristics of fetus
25	25	Pregnancy diagnosis in small animals - Clinical methods
26	26	Pregnancy diagnosis in small animals - Clinical methods
27	27	Pregnancy diagnosis in small animals -Ultrasonography
28	28	Pregnancy diagnosis in small animals -Ultrasonography
29	29	Pregnancy diagnosis in small animals - Endocrinological and other diagnostic tests
30	30	Pregnancy diagnosis in small animals - Endocrinological and other diagnostic tests
31	31	Pregnancy diagnosis in large animals - Clinical methods
32	32	Pregnancy diagnosis in large animals -Ultrasonography
33	33	Pregnancy diagnosis in large animals -Ultrasonography

34	34	Pregnancy diagnosis in large animals - Endocrinological and other diagnostic tests
35	35	Lactation in small animals
36	36	Lactation in large animals
Practicals		
1	1	Clinical examination of female genitalia-small animals

2	2	Clinical examination of female genitalia-large animals
3	3	Biometry of female genital organs.
4	4	Rectal and vaginal examination to diagnose cyclic phases of estrous cycle.
5	5	Fern pattern of cervical mucus
6	6	Exfoliated vaginal cytology.
7	7	Pregnancy diagnosis in small animals - Clinical methods
8	8	Pregnancy diagnosis in small animals -Ultrasonography
9	9	Pregnancy diagnosis in small animals -Ultrasonography
10	10	Pregnancy diagnosis in small animals - Endocrinological and other diagnostic tests
11	11	Pregnancy diagnosis in large animals - Clinical methods
12	12	Pregnancy diagnosis in large animals -Ultrasonography
13	13	Pregnancy diagnosis in large animals -Ultrasonography
14	14	Pregnancy diagnosis in large animals - Endocrinological and other diagnostic tests
15	15	Estimation of age of the fetus
16	16	Use of RIA/ ELISA in Gynaecology
17	17	Synchronization of estrus and ovulation in small animals
18	18	Synchronization of estrus and ovulation in large animals

Course Title: Female Infertility in Farm Animals
Course Code: VGO 502 Credit Hours: 2+1

Sr. No.	**Lecture No./ Practical No.**	**Topic**
Theory		
1	1	Introduction to infertility and classification
2	2	Economic impact of infertility
3	3	Anatomical and congenital causes of infertility
4	4	Hereditary causes of infertility and acquired defects
5	5	Nutritional causes of infertility.
6	6	Importance of body condition score
7	7	Negative energy balance, its prevention and amelioration
8	8	Negative energy balance, its prevention and amelioration
9	9	Managemental causes of infertility.
10	10	Environmental causes of infertility.
11	11	Reproduction during non breeding season in seasonal breeders
12	12	Infectious causes of female infertility,
13	13	Specific and non-specific infections; It's diagnosis, treatment, prevention and control
14	14	Specific and non-specific infections; It's diagnosis, treatment, prevention and control
15	15	Specific and non-specific infections; It's diagnosis, treatment, prevention and control

16	16	Specific and non-specific infections; It's diagnosis, treatment, prevention and control
17	17	Ovarian dysfunction; Anoestrus, causes, diagnosis and treatment.
18	18	Ovarian dysfunction; Anoestrus, causes, diagnosis and treatment.
19	19	Cystic ovarian degeneration, causes, diagnosis and treatment.
20	20	Cystic ovarian degeneration, causes, diagnosis and treatment.
21	21	Anovulation and delayed ovulation causes, diagnosis and treatment.
22	22	Anovulation and delayed ovulation causes, diagnosis and treatment.
23	23	Luteal insufficiency; causes, diagnosis and treatment.
24	24	Repeat breeding; its causes, diagnosis and treatment.
25	25	Repeat breeding; its causes, diagnosis and treatment.
26	26	Repeat breeding; its causes, diagnosis and treatment.
27	27	Early embryonic death (EED); it's causes
28	28	Early embryonic death (EED); it's causes
29	29	Abortion; causes, diagnosis and prevention of abortion
30	30	Abortion; causes, diagnosis and prevention of abortion
31	31	Abortion; causes, diagnosis and prevention of abortion
32	32	Abortion; causes, diagnosis and prevention of abortion
33	33	Abortion; causes, diagnosis and prevention of abortion
34	34	Interactions in immunological mechanisms and infertility.
35	35	Immuno- diagnostic techniques.
36	36	Immuno- diagnostic techniques.
Practical		
1	1	Record keeping
2	2	Record keeping
3	3	Herd fertility assessment and management, diagnosis and treatment of infertility in female animals
4	4	Herd fertility assessment and management, diagnosis and treatment of infertility in female animals
5	5	Herd fertility assessment and management, diagnosis and treatment of infertility in female animals
6	6	Herd fertility assessment and management, diagnosis and treatment of infertility in female animals
7	7	Use of uterine swabs for bacterial culture
8	8	Use of uterine swabs for fungal culture
9	9	White side test
10	10	Endometrial cytology
11	11	Endometrial cytology
12	12	Hormone assay
13	13	Hormone assay
14	14	Use of ultrasonography in diagnosis of infertility.
15	15	Use of ultrasonography in diagnosis of infertility.
16	16	Use of ultrasonography in diagnosis of infertility.
17	17	Use of ultrasonography in diagnosis of infertility.
18	18	Immuno- diagnostic techniques

Course Title: Veterinary Obstetrics

Course No VGO-503 Credit 2+1 =03

Sr. No.	Lecture No./ Practical No.	Topic
1	1	Parturition and stages of parturition
2	2	Stages of Parturition
3	3	Mechanism of initiation of parturition
4	4	Mechanism of initiation of parturition
5	5	Hormonal profiles associated with parturition
6	6	Transition cow
7	7	Transition cow
8	8	Onset of postpartum ovarian activity.
9	9	Principles of handling dystocia
10	10	Obstetrical procedures: Mutations
11	11	Fetotomy
12	12	Fetotomy
13	13	Obstetrical procedures
14	14	Obstetrical anaesthesia and analgesia
15	15	Epidural anaesthesia
16	16	Maternal dystocia its causes, diagnosis and management
17	17	Maternal dystocia its causes, diagnosis and management
18	18	Foetal dystocia its causes, diagnosis and management (Anterior presentation)
19	19	Foetal dystocia its causes, diagnosis and management (Posterior Presentation)
20	20	Uterine torsion- causes, diagnosis and its corrections
21	21	Anaesthesia for caesarean section
22	22	Caesarean section in large animals
23	23	Caesarean section in small animals
24	24	Caesarean section in canines and felines
25	25	Ovariohysterectomy
26	26	Ovariohysterectomy
27	27	Diseases and accidents during gestation.
28	28	Diseases and accidents around parturition
29	29	Etiology, diagnosis and treatment of ante-partum uterine and vaginal prolapse.
30	30	Etiology, diagnosis and treatment of post-partum uterine and vaginal prolapse.
31	31	Induction of parturition
32	32	Elective termination of pregnancy.
33	33	Involution of uterus following normalparturition.
34	34	Involution of uterus following abnormal parturition.
35	35	Reproductive care of post partum dam
36	36	Care of Neonates
Practical		
1	1	Pelvimetry of different species of farm animals.
2	2	Pelvimetry of different species of farm animals.
3	3	Diagnosis and correction of abnormal fetal presentation, position and posture in phantom box (Anterior Presentation)
4	4	Diagnosis and correction of abnormal

		fetal presentation, position and posture in phantom box (Posterior Presentation)
5	5	Epidural anaesthesia
6	6	Episiotomy
7	7	Ovario-hysterectomy
8	8	Caesarean operation in large animals
9	9	Caesarean operation in small animals
10	10	Caesarean operation in canines and felines animals
11	11	Management of incomplete cervical dilation.
12	12	Fetotomy operations.
13	13	Different instruments for Fetotomy operations
14	14	Detorsion of uterus.
15	15	Detorsion of uterus.
16	16	Management of cervico-vaginal and uterine prolapse.
17	17	Handling of clinical cases of dystocia in large animals
18	18	Handling of clinical cases of dystocia in small animals

Course Title : Andrology and Male Infertility
Course Code : VGO 504 Credit Hours : 2+1

Sr. No.	Lecture No./ Practical No.	Topic
1	1	Structure and function of reproductive tract of male.
2	2	Structure and function of reproductive tract of male.
3	3	Structure and function of reproductive tract of male.
4	4	Sexual behavior
5	5	Examination of bulls for breeding soundness
6	6	Examination of bulls for breeding soundness
7	7	Spermatogenesis,
8	8	Seminiferous epithelial cycle
9	9	Seminiferous epithelial cycle
10	10	Spermatogonial wave
11	11	Structure of spermatozoa
12	12	Semen and its composition
13	13	Mechanism of sperm motility.
14	14	Mechanism of sperm motility.
15	15	Diseases transmitted through semen
16	16	Factors affecting semen quality
17	17	Semen culture
18	18	Tests for assessment of sperm motility
19	19	Sperm survival
20	20	Fertilizing capacity of spermatozoa.
21	21	Causes of infertility - Hereditary,
22	22	Causes of infertility - Congenital,
23	23	Causes of infertility - Infectious
24	24	Causes of infertility - Infectious
25	25	Causes of infertility - Nutritional

26	26	Causes of infertility - Hormonal
27	27	Impotentiacoeundi
28	28	impotentiagenerandi
29	29	impotentiagenerandi
30	30	Testicular hypoplasia-causes and affect on semen and fertility
31	31	Testicular degeneration-causes and affect on semen and fertility.
32	32	Coital injuries and
33	33	Vices of male animals.
34	34	Influence of seminal plasma proteins in modulating fertility
35	35	Heat stress and it's effect on sperm production.
36	36	Screening of the breeding bulls to be selected for semen collection
Practical		
1	1	General and rectal examination for biometrics of male genitalia and accessory sex glands.
2	2	General and rectal examination for biometrics of male genitalia and accessory sex glands.
3	3	General and rectal examination for biometrics of male genitalia and accessory

		sex glands.
4	4	General and rectal examination for biometrics of male genitalia and accessory sex glands.
5	5	General and rectal examination for biometrics of male genitalia and accessory sex glands.
6	6	Breeding soundness evaluation of male animals.
7	7	Breeding soundness evaluation of male animals.
8	8	Breeding soundness evaluation of male animals.
9	9	Semen evaluation for sperm abnormalities,
10	10	Semen evaluation for sperm abnormalities,
11	11	Semen evaluation for sperm abnormalities,
12	12	Fertility and determination of other biochemical constituents of seminal plasma,
13	13	Fertility and determination of other biochemical constituents of seminal plasma,
14	14	Microbiological load of semen.
15	15	Microbiological load of semen.
16	16	Examination, diagnosis and treatment of infertile male animals
17	17	Examination, diagnosis and treatment of infertile male animals
18	18	Examination, diagnosis and treatment of infertile male animals

Course Title : Semen Preservation and Artificial Insemination Course Code : VGO 505
Credit Hours : 2+1

Sr. No.	Lecture No./ Practical No.	Topic
Theory		
1	1	History of artificial insemination
2	2	Methods of semen collection
3	3	Methods of semen collection
4	4	Semen evaluation- macroscopic tests
5	5	Semen evaluation- microscopic tests including Computer assisted semen analysis (CASA)
6	6	Semen evaluation- microscopic tests including Computer assisted semen analysis (CASA)
7	7	Semen evaluation- microscopic tests including Computer assisted semen analysis (CASA)
8	8	Semen evaluation- biochemical tests
9	9	Semen evaluation- microbiological tests
10	10	Semen preservation. Extenders for preservation of semen at different temperatures.
11	11	Semen preservation. Extenders for preservation of semen at different temperatures.
12	12	Semen additives for enhancement of motility and fertilizing capacity of spermatozoa
13	13	Dilution of semen.
14	14	Cryopreservation of semen.
15	15	Cryopreservation of semen.
16	16	Cryopreservation of semen.
17	17	Effect of cryopreservation on spermatozoa, semen quality and fertility.
18	18	Effect of cryopreservation on spermatozoa, semen quality and fertility.
19	19	Effect of cryopreservation on spermatozoa, semen quality and fertility.
20	20	Liquid Nitrogen (LN2) cylinders; it's handling, care and maintenance.
21	21	Thawing protocols of frozen semen.
22	22	Factors affecting post-thaw semen quality.
23	23	Factors affecting post-thaw semen quality.
24	24	Ideal protocol for AI in different species of animals.
25	25	Ideal protocol for AI in different species of animals.
26	26	Factors affecting success of AI.
27	27	Biosecurity and biosafety guidelines for frozen semen stations, semen processing laboratories and quarantine stations.
28	28	Biosecurity and biosafety guidelines for frozen semen stations, semen processing laboratories and quarantine stations.
29	29	Biosecurity and biosafety guidelines for frozen semen stations, semen processing laboratories and quarantine stations.

30	30	Biosecurity and biosafety guidelines for frozen semen stations, semen processing laboratories and quarantine stations.
31	31	Minimum standards and standard operating procedures for artificial insemination,
32	32	Minimum standards and standard operating procedures for artificial insemination,
33	33	Minimum standards and standard operating procedures for artificial insemination,
34	34	Minimum standards and standard operating procedures for artificial insemination,
35	35	Quality testing of straws and sheath for use in artificial insemination.
36	36	Quality testing of straws and sheath for use in artificial insemination.
Practicals		
1	1	Instrumentation in semen laboratory
2	2	Minimum standards of protocols and Standard operating procedures for semen production
3	3	Minimum standards of protocols and Standard operating procedures for semen production
4	4	Minimum standards of protocols and Standard operating procedures for semen production
5	5	Minimum standards of protocols and Standard operating procedures for semen production
6	6	Minimum standards of protocols and Standard operating procedures for semen production
7	7	Minimum standards of protocols and Standard operating procedures for semen production
8	8	Computer assisted semen analysis (CASA)
9	9	Collection and evaluation of semen.
10	10	Preparation of extenders
11	11	Preparation of extenders
12	12	Preparation of extenders
13	13	Preparation of extenders
14	14	Preservation of semen; room temperature, refrigeration and cryopreservation.
15	15	Preservation of semen; room temperature, refrigeration and cryopreservation.
16	16	Handling and evaluation of processed semen.
17	17	Handling and evaluation of processed semen.
18	18	Practice of AI techniques

Course Title : Basics of Reproductive Biotechnology
Course Code : VGO 506 credit Hours : 2+1

Sr. No.	Lecture No./ Practical No.	Topic
Theory		
1	1	Embryo transfer technology: General Information, it's importance and History
2	2	Embryo transfer technology: General Information, it's importance and History
3	3	Selection of donors
4	4	Selection of recipient
5	5	Synchronization of estrus in donors and recipients
6	6	Synchronization of estrus in donors and recipients
7	7	Super-ovulation: General Information, it's importance
8	8	Super-ovulation: Hormonal Protocols
9	9	Non-surgical method of embryoscollection.
10	10	Surgical method of embryoscollection.
11	11	Evaluation of embryos.
12	12	Cryopreservation of embryos.
13	13	Cryopreservation of embryos.
14	14	Transfer of embryos in recipient (Surgical method)
15	15	Transfer of embryos in recipient (Non surgical method)
16	16	Sexed semen production.
17	17	Sexed semen production.
18	18	Sexing of embryos.
19	19	Sexing of embryos.
20	20	Guidelines for export and import of bovine germplasm.
21	21	Guidelines and standards regarding embryo production.
22	22	Guidelines and standards regarding embryo production.
23	23	*In-vitro* fertilization: Introduction & history
24	24	Recovery of bovine oocytes; from abattoir ovaries and live animals.
25	25	*In-vitro* maturation oocytes
26	26	*In-vitro* maturation oocytes
27	27	*in-vitro* fertilization of oocytes
28	28	*in-vitro* fertilization of oocytes
29	29	*In-vitro* culture of oviductal cells for embryo production.
30	30	*In vitro* culture and embryo production
31	31	*In vitro* culture and embryo production
32	32	Micromanipulation of embryos.
33	33	Immuno-neutralization of fertility
34	34	Immuno-neutralization of fertility
35	35	Immunomodulation of fertility.
36	36	Immunomodulation of fertility.
Practical		
1	1	Synchronization of estrus in donors and recipients.
2	2	Synchronization of estrus in donors and recipients.
3	3	Superovulation protocol with different hormone treatment
4	4	Surgical embryocollectionprocedure

5	5	Non surgicalembryo collection procedure
6	6	Surgical and Non surgicalembryotransfer procedure
7	7	IVF: Introduction to laboratory hygiene, instrumentation and handling, sterilization procedure, storage of chemicals, biologicals and biosafety
8	8	In vitro maturation, fertilization and embryo development media preparation and sterilization
9	9	Collection of oocytes from slaughter house genitalia.
10	10	Transvaginal oocyte retrieval (TVOR) by ultrasonography
11	11	Transvaginal oocyte retrieval (TVOR) by ultrasonography
12	12	*In-vitro* maturation of oocytes
13	13	*In-vitro* fertilization of oocytes
14	14	*in-vitro* embryo development culture.
15	15	Media preparation, oviductal cells isolation and culture
16	16	Media preparation, oviductal cells isolation and culture
17	17	Sexing of embryos.
18	18	Sexing of embryos, visit to laboratory having PCR machine

Course Title : Clinical Practice-I

Course Code : VGO 507 Credit Hours : 0+3

Sr. No.	Lecture No./ Practical No.	Topic
1	1	Clinical examination of female genitalia
2	2	Clinical examination of female genitalia
3	3	Clinical examination of female genitalia
4	4	Clinical examination of female genitalia
5	5	Clinical examination of female genitalia during the various stages of estrous cycle.
6	6	Clinical examination of animals affected with reproductive tract abnormalities
7	7	Clinical examination of female for affections of ovary
8	8	Clinical examination of female for affections of oviduct
9	9	Clinical examination of female for affections of uterus
10	10	Clinical examination of female for pyometra
11	11	Clinical examination of female for affections of cervix
12	12	Clinical examination of female for affections of cervix
13	13	Clinical examination of female: Anoestrum
14	14	Clinical examination of female: Anoestrum
15	15	Clinical examination of female: Silent Estrus
16	16	Clinical examination of female: Anovulation
17	17	Clinical examination of female: Delayed Ovulation
18	18	Clinical examination of female: Cystic ovary
19	19	Clinical examination of female: Cystic ovary

20	20	Clinical examination of female: Abortion
21	21	Clinical examination of female: Fertilization Failure
22	22	Clinical examination of female: Early embryonic mortality
23	23	Diagnosis and treatment of affections of ovary
24	24	Diagnosis and treatment of affections of oviduct
25	25	Diagnosis and treatment of affections of uterus
26	26	Diagnosis and treatment of affections of Cervix
27	27	Diagnosis and treatment of Anoestrum & silent estrus
28	28	Diagnosis and treatment of Anovulation & delayed ovulation
29	29	Diagnosis and treatment of cystic ovary
30	30	Diagnosis and treatment of fertilization failure
31	31	Diagnosis and treatment of early embryonic mortality in bovine
32	32	Hormone assay in ruminant
33	33	Hormone assay in non-ruminant
34	34	Use of ultrasonography in diagnosis of infertility in ruminant
35	35	Use of ultrasonography in diagnosis of infertility in non-ruminant
36	36	Immuno diagnostic techniques
37-50	37-50	Attending the clinical cases with reproductive disorders
51-54	51-54	Maintenance of case record and case presentation

Course Title : Clinical Practice-II

Course Code : VGO 508 Credit Hours : 0+3

Sr. No.	**Lecture No./ Practical No.**	**Topic**
Practical		
1	1	Attending Normal parturition in large ruminant
2	2	Attending Normal parturition in large ruminant
3	3	Attending Normal parturition in large ruminant
4	4	Attending Normal parturition in small ruminant
5	5	Attending Normal parturition in small ruminant
6	6	Attending Normal parturition in canines & felines
7	7	Attending Normal parturition in canines & felines
8	8	Attending Normal parturition in canines & felines
9	9	Attending Normal parturition in equines
10	10	Attending Normal parturition in porcine
11	11	Attending Normal cases of parturition in camels
12	12	Attending Normal cases of parturition in elephants
13	13	Principles of handling case of dystokia in bovine
14	14	Attending Dystokia cases large ruminant

15	15	Attending Dystokia cases small ruminant
16	16	Attending Dystokia cases canines & felines
17	17	Attending Dystokia cases porcines
18	18	Attending Dystokia cases equines
19	19	Attending Dystokia cases camels
20	20	Attending Dystokia cases elephants
21	21	Obstetrical Anaeshesia
22	22	Clinical examination of male genitalia
23	23	Clinical examination of male genitalia
24	24	Clinical examination of male for affections of accessory sex glands
25	25	Diagnosis and treatment of affections of male reproductive system of bovine
26	26	Diagnosis and treatment of affections of male reproductive system of caprine & ovine
27	27	Diagnosis and treatment of affections of male reproductive system of equines
28	28	Diagnosis and treatment of affections of male reproductive system of porcine
29	29	Diagnosis and treatment of affections of male reproductive system of canine & feline
30	30	Diagnosis and treatment of affections of male reproductive system of camel
31	31	Diagnosis and treatment of affections of male reproductive system of elephant
32	32	Surgical procedure in reproductive disorders of male
33	33	Attending Normal parturition in wild & zoo animals
34	34	Principles of handling case of dystokia in wild & zoo animals
35	35	Management of dystokia inwild & zoo animals
36	36	Surgical procedure in reproductive disorders of wild & zoo animals
37-50	37-50	Attending the clinical cases with reproductive disorders
51-54	51-54	Maintenance of case record and case presentation

Course Title : Canine and Feline Reproduction Course

Code : VGO 509 Credit Hours : 2+1

Sr. No.	Lecture No./ Practical No.	Topic
Theory		
1	1	Development of reproductive system
2	2	Anatomy of male and female reproductive system
3	3	Anatomy of male and female reproductive system

4	4	Canine and feline estrous cycle
5	5	Endocrinology of estrous cycle
6	6	Endocrinology of estrous cycle
7	7	Endocrinology of estrous cycle
8	8	Breeding management, pregnancy
9	9	Breeding management, pregnancy
10	10	Contraception
11	11	Pregnancy diagnosis; clinical, ultrasonographic, endocrinological and other diagnostic laboratory tests
12	12	Pregnancy diagnosis; clinical, ultrasonographic, endocrinological and other diagnostic laboratory tests
13	13	Parturition
14	14	Parturition
15	15	Fetal dystocia: causes, diagnosis and management
16	16	Maternal dystocia: causes, diagnosis and management
17	17	Induction of parturition
18	18	Caesarean section
19	19	Periparturient disorders
20	20	Medical termination of pregnancy in dogs
21	21	Medical termination of pregnancy in cats
22	22	Management of psudopregnancy and it's management
23	23	Management of pyometra and it's management
24	24	Infertility and it's management in dogs
25	25	Infertility and it's management in cats
26	26	Postpartum care of dam and lactation
27	27	Neonatal care
28	28	Population control in dogs; surgical and non surgical methods
29	29	Population control in dogs; surgical and non surgical methods
30	30	Reproductive physiology of male dogs
31	31	Semen collection techniques, semen evaluation, freezing of semen
32	32	Semen collection techniques, semen evaluation, freezing of semen
33	33	Semen collection techniques, semen evaluation, freezing of semen
34	34	Artificial insemination techniques
35	35	Male reproductive disorders and it's management
36	36	Male reproductive disorders and it's management
Practical		
1	1	Exfoliative vaginal cytology
2	2	Exfoliative vaginal cytology
3	3	Determinationof ovulation time
4	4	Determinationof ovulation time
5	5	Demonstrationof semen collection
6	6	Demonstrationof artificial insemination
7	7	Predictingtime of parturition using hormonal assay
8	8	Managementof dystocia using clinical cases
9	9	Castration in dogs
10	10	Castration in cats
11	11	Ovariohystrectomy in female dogs
12	12	Ovariohystrectomy in female cats

13	13	Caesarean section in dogs
14	14	Caesarean section in cats
15	15	Surgical procedure related to reproductive disorders in male dogs
16	16	Surgical procedure related to reproductive disorders in female dogs
17	17	Surgical procedure related to reproductive disorders in male cats
18	18	Surgical procedure related to reproductive disorders in female cats

Course Title : Caprine and Ovine Reproduction

Course Code : VGO 510 Credit Hours : 2+1

Sr. No.	**Lecture No./ Practical No.**	**Topic**
Theory		
1	1	Reproductive anatomy and physiology of doe
2	2	Reproductive anatomy and physiology of ewe
3	3	Caprine estrous cycle
4	4	Ovine estrous cycle
5	5	Endocrinology of estrous cycle in goat and sheep
6	6	Endocrinology of estrous cycle in goat and sheep
7	7	Seasonal breeding and fertility management in goat
8	8	Seasonal breeding and fertility management in sheep
9	9	Artificial control of estrus in goat
10	10	Artificial control of estrus in sheep
11	11	Breeding management, methods for advancing sheep breeding season
12	12	Induction ofmultiple births in sheep
13	13	Artificial insemination in goat and sheep
14	14	Methods of pregnancy diagnosis in goat and sheep(clinical)
15	15	Methods of pregnancy diagnosis in goat and sheep (immunologic)
16	16	Placentation in goat and sheep
17	17	Care and management during pregnancy in goat and sheep
18	18	Initiation of parturition process in goat and sheep
19	19	Stages of parturition in goat and sheep
20	20	Dystocia and its classification
21	21	Dystocia and its management in goat
22	22	Dystocia and its management in sheep
23	23	Noninfectious type of infertility in goat and sheep
24	24	Infectious type of infertility in goat
25	25	Infectious type of infertility in goat
26	26	Infectious type of infertility in sheep
27	27	Post partum reproductive disorders and its management in goat and sheep
28	28	Post partum reproductive disorders and its management in goat and sheep

29	29	Reproductive anatomy and physiology of buck
30	30	Reproductive anatomy and physiology of ram
31	31	Semen collection techniques in buck and ram
32	32	Semen evaluation in buck
33	33	Semen evaluation in ram
34	34	Freezing of semen in buck and ram
35	35	Reproductive disorders and its management in buck
36	36	Reproductive disorders and its management in ram
Practical		
1	1	Study of genitalia of doe
2	2	Study of genitalia of ewe
3	3	Different protocols for induction and synchronization of estrus in doe

4	4	Different protocols for induction and synchronization of estrus in doe
5	5	Different protocols for induction and synchronization of estrus in ewe
6	6	Different protocols for induction and synchronization of estrus in ewe
7	7	Demonstration of different reproductive hormonal preparations and their uses
8	8	Demonstration of ultrasonographic imaging of reproductive organs of doe and ewe
9	9	Pregnancy diagnosis and differential diagnosis
10	10	Demonstration on semen collection in buck and ram
11	11	Artificial insemination technique in goat and sheep
12	12	Demonstration of reproductive pathological conditions in male and female goat and sheep using museum specimens
13	13	Management of dystocia using clinical cases in does
14	14	Management of dystocia using clinical cases in ewes
15	15	Castration in bucks and rams (non surgical& surgical)
16	16	Ovario-hystrectomy in does and ewes
17	17	Caesarean section in does and ewes
18	18	Surgical procedure related to reproductive disorders male and female goat and sheep

Course Title : Equine Reproduction
Course Code : VGO 511 Credit Hours : 2+1

Sr. No.	Lecture No./ Practical No.	Topic
Theory		
1	1	Reproductive anatomy of Mare
2	2	Reproductive anatomy of Mare
3	3	Reproductive physiology of Mare
4	4	Reproductive physiology of Mare
5	5	Reproductive anatomy of Stallion
6	6	Reproductive anatomy of Stallion
7	7	Reproductive physiology of Stallion
8	8	Reproductive physiology of Stallion
9	9	Estrous cycle in Mare
10	10	Manipulation of estrus cycle in Mare
11	11	Manipulation of estrus cycle in Mare
12	12	Broodmare management
13	13	Use of ultrasound in breeding management
14	14	Use of ultrasound in breeding management
15	15	Use of ultrasound in breeding management
16	16	Infertility in Mare and it's management
17	17	Infertility in Mare and it's management
18	18	Infertility in Mare and it's management
19	19	Pregnancy diagnosis
20	20	Pregnancy diagnosis
21	21	Management of the pregnant mare
22	22	Management of the pregnant mare
23	23	Fetal development
24	24	Fetal development
25	25	Abortion in mare
26	26	Abortion in mare
27	27	Parturition and induced parturition
28	28	Management of dystocia in mare
29	29	Neonatal management
30	30	Common neonatal diseases,orphan foal management
31	31	Foal management during the first six months
32	32	Semen collection in stallion
33	33	Semen preservation
34	34	Artificial insemination in mare
35	35	Embryo transfer in mare
36	36	Embryo transfer in mare
Practical		
1	1	Visit of equine/ stud farm
2	2	Visit of equine/ stud farm
3	3	Overall management of an equine breeding program

4	4	Overall management of an equine breeding program
5	5	Overall management of an equine breeding program
6	6	Handling the cases of reproductive disorders
7	7	Handling the cases of reproductive disorders
8	8	Handling the cases of reproductive disorders
9	9	Handling the cases of reproductive disorders
10	10	Artificial insemination in mare
11	11	Artificial insemination in mare
12	12	Artificial insemination in mare
13	13	Semen collection in stallion
14	14	Semen collection in stallion
15	15	Semen collection in stallion
16	16	Semen preservation
17	17	Breeding record keeping and analysis
18	18	Breeding record keeping and analysis

Course Title : Camel Reproduction
Course Code : VGO 512 Credit Hours : 2+1

Sr. No.	Lecture No./ Practical No.	Topic
Theory		
1	1	Male reproductive organs in Camel
2	2	Male reproductive organs in Camel
3	3	Male reproductive physiology in Camel
4	4	Male reproductive physiology
5	5	Female reproductive organs in Camel
6	6	Female reproductive organs in Camel
7	7	Female reproductive physiology in Camel
8	8	Female reproductive physiology
9	9	Sexual behavior in Camel
10	10	Sexual behavior in Camel
11	11	Oestrous cycle and signs of oestrus in Camel
12	12	Oestrous cycle and signs of oestrus in Camel
13	13	Puberty and sexual maturity in Camel
14	14	Seasonal changes and copulation in Camel
15	15	Seasonal changes and copulation in Camel
16	16	Semen collection and it's characteristics in Camel
17	17	Semen collection and it's characteristics in Camel
18	18	Semen collection and it's characteristics in Camel
19	19	Sexual behavior in Camel
20	20	Pregnancy and foetal development in Camel
21	21	Pregnancy and foetal development in Camel
22	22	Pregnancy diagnosis in Camel
23	23	Pregnancy diagnosis in Camel
24	24	Parturition in Camel

25	25	Parturition in Camel
26	26	Breeding season in Camel
27	27	Conception rate, calving interval, reproductive longevity in Camel
28	28	Conception rate, calving interval, reproductive longevity in Camel
29	29	Early embryonic mortality, reproductive problems in the female
30	30	Early embryonic mortality, reproductive problems in the female
31	31	Reproductive problems in the male
32	32	Reproductive problems in the male
33	33	Artificial insemination in Camel
34	34	Nutrition and reproduction in Camel
35	35	Nutrition and reproduction in Camel
36	36	Embryo transfer in camel
Practical		
1	1-6	Management of dystocia in clinical cases
2	7-12	Castration and ovariohystrectomy
3	13-16	Caesarean section
4	17-18	Surgical procedure related to reproductive disorders in both male and females

Course Title : Elephant Reproduction
Course Code : VGO 513 Credit Hours : 2+1

Sr. No.	Lecture No./ Practical No.	Topic
Theory		
1	1	General introduction, Elephas maximus, domestic and wild elephants
2	2	General introduction, Elephas maximus, domestic and wild elephants
3	3	General introduction, Elephas maximus, domestic and wild elephants
4	4	Male genital system of elephant
5	5	Accessory sex glands of elephant
6	6	Accessory sex glands of elephant
7	7	Hormonal control of reproduction in elephant
8	8	Hormonal control of reproduction in elephant
9	9	Spermatogenesis in elephant
10	10	Spermatogenesis in elephant
11	11	Spermatogenesis in elephant
12	12	Semen characteristics in elephant
13	13	Semen characteristics in elephant
14	14	Female reproductive system - ovaries, fallopian tubes, uterus, vagina and external genitalia
15	15	Female reproductive system - ovaries, fallopian tubes, uterus, vagina and external genitalia
16	16	Oestrous cycle in elephant
17	17	Hormonal regulation of estrous cycle in elephant
18	18	Hormonal regulation of estrous cycle in elephant
19	19	Mating behaviour and act of copulation in elephant

20	20	Mating behaviour and act of copulation in elephant
21	21	Pregnancy and gestation length in elephant
22	22	Parturition in elephant
23	23	Parturition in elephant
24	24	Neonatal care of elephant calves
25	25	Neonatal care of elephant calves
26	26	Musth in elephants, bahavioural patterns, pre-musth, violent- musth and post-musth phases
27	27	Musth in elephants, bahavioural patterns, pre-musth, violent- musth and post-musth phases
28	28	Musth in elephants, bahavioural patterns, pre-musth, violent- musth and post-musth phases
29	29	Controlling elephants in musth using drugs/ hormones, anti androgens
30	30	Controlling elephants in musth using drugs/ hormones, anti androgens
31	31	Controlling elephants in musth using drugs/ hormones, anti androgens
32	32	Cryopreservation of gametes in elephant
33	33	Cryopreservation of gametes in elephant
34	34	Cryopreservation of gametes in elephant
35	35	Artificial insemination in elephant
36	36	Artificial insemination in elephant

Practical		
1	1-6	Management of dystocia in clinical cases
2	7-12	Management of dystocia in clinical cases
3	13-16	Surgical procedure related to reproductive disorders in both male and females
4	17-18	Surgical procedure related to reproductive disorders in both male and females

Course Title : Wild and Zoo Animal Reproduction Course Code : VGO 514

Credit Hours : 2+1

Sr. No.	Lecture No./ Practical No.	Topic
Theory		
1	1	Introduction to reproduction in wild animals
2	2	Introduction to reproduction in wild animals
3	3	Introduction to reproduction in wild animals
4	4	Introduction to reproduction in wild animals
5	5	Pattern of estrous cycle in tiger
6	6	Pattern of estrous cycle in tiger
7	7	Pattern of estrous cycle in deer
8	8	Pattern of estrous cycle in deer
9	9	Pattern of estrous cycle in monkey
10	10	Pattern of estrous cycle in monkey
11	11	Pattern of estrous cycle in crocodile
12	12	Pattern of estrous cycle in crocodile
13	13	Pattern of estrous cycle in crocodile
14	14	Hormonal control of estrus cycle in tiger, deer, monkey and crocodile
15	15	Hormonal control of estrus cycle in tiger, deer, monkey and crocodile
16	16	Hormonal control of estrus cycle in tiger, deer, monkey and crocodile
17	17	Optimal breeding time with emphasis on tiger
18	18	Optimal breeding time with emphasis on tiger
19	19	Optimal breeding time with emphasis on deer
20	20	Optimal breeding time with emphasis on deer
21	21	Optimal breeding time with emphasis on monkey
22	22	Optimal breeding time with emphasis on monkey
23	23	Optimal breeding time with emphasis on crocodile
24	24	Optimal breeding time with emphasis on crocodile
25	25	Gestational length in wild and zoo animals
26	26	Gestational length in wild and zoo animals
27	27	Pregnancy diagnosis in wild and zoo animals
28	28	Pregnancy diagnosis in wild and zoo animals
29	29	Pregnancy diagnosis in wild and zoo animals
30	30	Parturition in wild and zoo animals
31	31	Parturition in wild and zoo animals
32	32	Sexual behavior in wild and zoo animals
33	33	Sexual behavior in wild and zoo animals
34	34	Major reproductive disorders in wild and zoo animals
35	35	Contraception techniques for deer
36	36	Contraception techniques for deer
Practical		
1	1-4	Management of dystocia in clinical cases
2	5-10	Castration in wild and zoo animals
3	11-14	Observation of estrus behavior
4	15-16	Pregnancy diagnosis

5	17-18	Surgical procedure related to reproductive disorders in both male and females

Course Title : Porcine Reproduction Course

Code : VGO 515 Credit Hours : 2+1

Sr. No.	Lecture No./ Practical No.	Topic
Theory		
1	1	Reproductive anatomy and physiology of Boar
2	2	Reproductive anatomy and physiology of Boar
3	3	Reproductive anatomy and physiology of Boar
4	4	Reproductive anatomy and physiology of Sow
5	5	Reproductive anatomy and physiology of Sow
6	6	Reproductive anatomy and physiology of Sow
7	7	Oestrus cycle in sow
8	8	Oestrus cycle in sow
9	9	Neuro-endocrine control of estrus cycle in sow
10	10	Neuro-endocrine control of estrus cycle in sow
11	11	Manipulation of oestrus cycle in sow
12	12	Manipulation of oestrus cycle in sow
13	13	Methods for detection of oestrus
14	14	Methods for detection of oestrus
15	15	Endocrinology of pregnancy in sow
16	16	Endocrinology of pregnancy in sow
17	17	Endocrinology of parturition in sow
18	18	Endocrinology of parturition in sow
19	19	Infertility in sow and its management
20	20	Infertility in sow and its management
21	21	Infertility in sow and its management
22	22	Pregnancy diagnosis in sow
23	23	Pregnancy diagnosis in sow
24	24	Management of pregnant sow
25	25	Fetal development in sow
26	26	Abortion and induced parturition in sow
27	27	Abortion and induced parturition in sow
28	28	Parturition and its stages in sow
29	29	Parturition and its stages in sow
30	30	Dystocia in Sow
31	31	Mastitis-metritis complex in sow
32	32	Neonatal management and common neonatal diseases, care of piglets
33	33	Breeding boar selection and management
34	34	Semen collection and preservation
35	35	Natural service and artificial insemination
36	36	Embryo transfer and IVF
Practical		
1	1-2	Visit and record keeping of swine farm
2	3-5	Breeding management in sows
3	6-8	Handling the cases of reproductive disorders
4	9-11	Caesarean section and castration

5	12-13	Sexual behaviour and vaginal cytology
6	14-15	Pregnancy diagnosis in Sow
7	16-17	Semen collection, semen preservation and artificial insemination
8	18	Embryo transfer in Sow

Course Title : Ultrasonography in Animal Reproduction
Course Code : VGO 516 Credit Hours : 1+2

Sr. No.	Lecture No./ Practical No.	Topic
Theory		
1	1	Basic principle of ultrasonography, physics of ultrasonography, A-mode, B-mode andM-mode Ultrasonography.
2	2	Artifacts and principle of Doppler ultrasonography
3	3	Trans-abdominal ultrasonography.
4	4	Trans-abdominal ultrasonography.
5	5	Transrectal ultrasonography.
6	6	Follicular dynamics and luteal characteristics in large ruminants, lutealblood flow studies.
7	7	Follicular dynamics and luteal characteristics in small ruminants, lutealblood flow studies.
8	8	Use of ultrasonography in pregnancy diagnosis
9	9	Use of ultrasonography in infertility management.
10	10	Studies on uterine involution
11	11	Studies on luteal cyst and follicular cyst
12	12	Blood flow studies in uterine and foetal arteries using ultrasonography
13	13	Blood flow studies in uterine and foetal arteries using ultrasonography
14	14	Determination of gestational age in small animals by measuring gestational sac diameter, crown rump length and body diameter.
15	15	Detection of foetal resorption and mummification
16	16	Prediction of parturition time, fetal viability by detecting fetal heart rate
17	17	Foetal number and sex determination
18	18	Testicular and male accessory sex gland ultrasonography
Practical		
1	01-04	Practicing trans-abdominal and trans-rectal ultrasonography
2	05-10	Use of ultrasonography in follicular dynamics study.
3	10-14	Use of ultrasonography in luteal characteristics study.
4	15-20	Use of ultrasonography in pregnancy diagnosis.
5	21-26	Prediction of parturition time using ultrasonography.
6	27-32	Use of ultrasonography in diagnosis of clinical cases associated with reproductive disorders in females.
7	33-34	Testicular studies using ultrasonography.
8	35-36	Male accessory sex gland studies using ultrasonography

VGO 590	Special Problem	0+1

VGO 591	Masters Seminar	1+0

VGO 599	Masters Research	30

Ph.D. in Animal Reproduction Gynaecology and Obstetrics
Course Title with Credit Load

Course Title : Advances in Gynaecology and Infertility Management
Course Code : VGO 601 Credit Hours : 2+1

Sr. No.	Lecture No.	Topic
Theory		
1	1	Neuro-endocrine control of reproduction
2	2	Neuro-endocrine control of reproduction
3	3	Follicular development
4	4	Follicular development
5	5	Ovulation
6	6	Fertilization
7	7	Implantation
8	8	Embryonic
9	9	Fetal development
10	10	Maternal recognition of pregnancy
11	11	Maternal recognition of pregnancy
12	12	Advances in early diagnosis of pregnancy
13	13	Advances in early diagnosis of pregnancy
14	14	Embryonic losses
15	15	Abortion Prevention
16	16	Prevention of abortion
17	17	Seasonal breeders, synchronization and induction of estrus and ovulation in seasonal breeders.
18	18	Seasonal breeders, synchronization and induction of estrus and ovulation in seasonal breeders.
19	19	Seasonal breeders, synchronization and induction of estrus and ovulation in seasonal breeders.
20	20	Assisted reproductive technology (ART) to increase reproductive efficiency in farmanimals.
21	21	Assisted reproductive technology (ART) to increase reproductive efficiency in farmanimals.
22	22	Assisted reproductive technology (ART) to increase reproductive efficiency in farmanimals.
23	23	Effect of stress on fertility.
24	24	Effect of nutritional factors on fertility
25	25	Effect of immunological factors on fertility
26	26	Effect of immunological factors on fertility
27	27	Onset of postpartum ovarian activity and factors affecting it
28	28	Onset of postpartum ovarian activity and factors affecting it
29	29	Diagnostic and therapeutic approaches in infertility
30	30	Diagnostic and therapeutic approaches in infertility
31	31	Principles of hormone therapy in reproductive disorders
32	32	Principles of hormone therapy in reproductive disorders
33	33	Principles of hormone therapy in reproductive disorders
34	34	Laproscopy.

35	35	Ultrasonographic diagnosis of ovarian/ uterine dysfunction
36	36	Vaginal and uterine cytology

Practical		
1	1	Clinical examination of female animals for reproductive soundness
2	2	Clinical examination of female animals for reproductive soundness
3	3	Clinical examination of female animals for reproductive soundness
4	4	Use of ultrasonography in ovarian function (follicular image pattern, follicular dynamics).
5	5	Use of ultrasonography in ovarian function (follicular image pattern, follicular dynamics).
6	6	Use of ultrasonography in ovarian function (follicular image pattern, follicular dynamics).
7	7	Use of ultrasonography in early pregnancy diagnosis.
8	8	Use of ultrasonography in early pregnancy diagnosis.
9	9	Use of ultrasonography in infertility management
10	10	Use of ultrasonography in infertility management
11	11	Use of ultrasonography in infertility management
12	12	Uterine culture, uterine cytology and uterine biopsy (histopathological examination) in infertility investigation.
13	13	Uterine culture, uterine cytology and uterine biopsy (histopathological examination) in infertility investigation.
14	14	Uterine culture, uterine cytology and uterine biopsy (histopathological examination) in infertility investigation.
15	15	Laparoscopy in diagnosis of ovarian and uterine dysfunction.
16	16	Laparoscopy in diagnosis of ovarian and uterine dysfunction.
17	17	Use of ELISA/ RIA in reproductive parameters study and interpretation of results.
18	18	Use of Assisted reproductive technology (ART) to enhance reproductive efficiency in farm animals.

Course Title : Advances in Veterinary Obstetrics
Course Code : VGO 602 Credit Hours : 1+1

Sr. No.	**Lecture No.**	**Topic**
Theory		
1	1	Conceptus and its development
2	2	Conceptus and its development
3	3	Factors influencing gestation period and birth weight
4	4	Anomalies of conceptus, teratogens and effect of stress on conceptus development
5	5	Anomalies of conceptus, teratogens and effect of stress on conceptus development
6	6	Mechanism of initiation of parturition. Use of tocolytic drugs.
7	7	Mechanism of initiation of parturition. Use of tocolytic drugs.
8	8	Induction of parturition and termination of abnormal pregnancies
9	9	Pre-treatment evaluation of the dam suffering from dystocia.

10	10	Obstetrical analgesia and anesthesia.
11	11	Management of maternal and fetal dystocia
12	12	Hydrallantois, hydramnion, fetal mummification, fetal maceration,
13	13	Uterine inertia and uterine torsion
14	14	Fetotomy, caesarean section
15	15	Ovaro-hysterectomy
16	16	Retention of fetal membranes and management
17	17	Neo-natal physiology and post-natal adaptations. Assessment of neonatal viability, care of the newborn.
18	18	Involution of uterus, post-partum ovarian dysfunction and their manipulation. Care of the postpartum dam.
Practical		
1	1	Performing obstetrical operations
2	2	Performing obstetrical operations
3	3	Performing obstetrical operations
4	4	Performing obstetrical mutations
5	5	Performing obstetrical mutations
6	6	Performing obstetrical mutations
7	7	Fetotomy
8	8	Fetotomy
9	9	Cesarean section
10	10	Cesarean section
11	11	Cesarean section
12	12	Ovario-hysterectomy
13	13	Ovario-hysterectomy
14	14	Ovario-hysterectomy
15	15	Induction of parturition
16	16	Induction of parturition
17	17	Obstetrical analgesia and anaesthesia
18	18	Obstetrical analgesia and anaesthesia

Course Title : Advances in Andrology and Male Infertility
Course Code : VGO 603 Credit Hours : 2+1

Sr. No.	Lecture No.	Topic
Theory		
1	1	Spermatogenesis
2	2	Spermatogenesis
3	3	Spermatogenic waves
4	4	Sperm passage in male genitalia
5	5	Biochemical milieu of male genitalia
6	6	Biochemical milieu of male genitalia
7	7	Correlation between motility and fertilizing capacity of spermatozoa
8	8	Correlation between motility and fertilizing capacity of spermatozoa
9	9	Correlation between motility and fertilizing capacity of spermatozoa
10	10	Seminiferous eipithelial cycle
11	11	Seminiferous eipithelial cycle
12	12	Theory of sperm motility and ultrastructure of sperm
13	13	Theory of sperm motility and ultrastructure of sperm
14	14	Sperm passage in female reproductive tract
15	15	Sperm passage in female reproductive tract
16	16	Capacitation and acrosome reaction
17	17	Capacitation and acrosome reaction
18	18	Separation of motile and immotile spermatozoa
19	19	Sperm plasma membrane and its permeability and binding properties
20	20	Sperm plasma membrane and its permeability and binding properties
21	21	Sperm plasma membrane and its permeability and binding properties
22	22	Acrosome and lysosomal enzymes, sperm nucleus and nuclear proteins
23	23	Acrosome and lysosomal enzymes, sperm nucleus and nuclear proteins
24	24	Mitochondria and their role in sperm metabolism
25	25	Flagellum and the mechanochemical basis of motility and cyclic nucleotides
26	26	Flagellum and the mechanochemical basis of motility and cyclic nucleotides
27	27	Flagellum and the mechanochemical basis of motility and cyclic nucleotides
28	28	Flagellum and the mechanochemical basis of motility and cyclic nucleotides
29	29	Biochemistry of seminal plasma and accessory sex gland secretions
30	30	Biochemistry of seminal plasma and accessory sex gland secretions
31	31	Biochemistry of seminal plasma and accessory sex gland secretions
32	32	Electrolytes, proteins, enzymes and amino acids in seminal plasma. Fructose and other sugars, lipids, cholesterol, steroid hormones and prostaglandins in seminal plasma
33	33	Fructolysis index. Aerobic and anaerobic metabolism of spermatozoa
34	34	Markers of fertility in males; Sperm chromatin structure assay
35	35	Anti-sperm antibodies
36	36	Karyotyping to identify sperm defect and DNA mapping for parentage
Practical		
1	1	Breeding soundness evaluation of bulls
2	2	Breeding soundness evaluation of bulls
3	3	Breeding soundness evaluation of bulls

4	4	Breeding soundness evaluation of bulls
5	5	Biochemical tests of semen for evaluation of fertility
6	6	Biochemical tests of semen for evaluation of fertility
7	7	Semen culture for diagnosis of venereal diseases
8	8	Diagnosis and treatment of genital pathological condition
9	9	Diagnosis and treatment of genital pathological condition
10	10	Studies on sperm motility using Computer assisted semen analysis (CASA)
11	11	Studies on sperm motility using Computer assisted semen analysis (CASA)
12	12	Cervical mucus penetration test, sperm capacitation test and hypo-osmotic swelling test.
13	13	Cervical mucus penetration test, sperm capacitation test and hypo-osmotic swelling test.
14	14	Cervical mucus penetration test, sperm capacitation test and hypo-osmotic swelling test.
15	15	Zona free hamster egg penetration test
16	16	Anti-sperm antibody assay
17	17	Anti-sperm antibody assay
18	18	Collection of preputial washings and semen for bacterial load and venereal pathogens

Course Title : Reproductive Biotechnology Course Code : VGO 604 Credit Hours : 1+1

Sr. No.	Lecture No.	Topic
Theory		
1	1	Micromanipulation and Intracytoplasmic sperm injection (ICSI)
2	2	Micromanipulation and Intracytoplasmic sperm injection (ICSI)
3	3	Micromanipulation and Intracytoplasmic sperm injection (ICSI)
4	4	Sexing of embryos
5	5	Sexing of embryos
6	6	Sexing of embryos
7	7	Stem cell biotechnology
8	8	Stem cell biotechnology
9	9	Stem cell biotechnology
10	10	Semen sorting for production of sexed semen
11	11	Cloning and biopharming
12	12	Cloning and biopharming
13	13	Cloning and biopharming
14	14	Cloning and biopharming
15	15	Transgenic animals and chimeras
16	16	Gene expression in oocyte and embryo, identification of cellular organelles of Gamete
17	17	Gene expression in oocyte and embryo, identification of cellular organelles of Gamete
18	18	Principle and application of PCR technique in animal reproduction
Practical		

1	1	Micromanipulation of embryos
2	2	Micromanipulation of embryos
3	3	Micromanipulation of embryos
4	4	Micromanipulation of embryos
5	5	Micromanipulation of embryos
6	6	Sexing of embryos
7	7	Sexing of embryos
8	8	Sexing of embryos
9	9	Sexing of embryos
10	10	Sexing of embryos
11	11	Sexing of embryos
12	12	Stem cell production
13	13	Stem cell production
14	14	Stem cell production
15	15	Stem cell production
16	16	Stem cell production
17	17	Stem cell production
18	18	Stem cell production

Course Title : Semenology
Course Code : VGO 605 Credit Hours : 1+1

Sr. No.	Lecture No.	Topic
Theory		
1	1	Contribution of gonads and accessory sex glands to semen ejaculate.
2	2	Factors affecting semen production.
3	3	Factors affecting semen production.
4	4	Morphology of sperm and their defects.
5	5	Biochemical composition of semen.
6	6	Metabolism of sperm. Role of seminal plasma proteins.
7	7	Species variation in seminal characteristics.
8	8	Species variation in seminal characteristics.
9	9	Factors affecting motility and fertilizing capacity of spermatozoa.
10	10	Commercial extenders used for bovine semen.
11	11	Use of semen additives and activators. Sperm cryodamage.
12	12	Microbial contamination of semen and measures for its prevention.
13	13	Transmission of venereal diseases through semen and their prevention.
14	14	Thawing protocols for frozen semen. Post-thaw evaluation of motility and fertilizing capacity of spermatozoa.
15	15	Quality control and quality assurance of semen.
16	16	Antisperm antibodies assay.
17	17	Flow cytometric assessment of sperm quality.
18	18	Sperm vitrification, freeze drying of sperm and sperm encapsulation. Criteria for gradation of semen stations.
Practical		
1	1	Semen evaluation for its quality.

2	2	Semen evaluation for its quality.
3	3	Semen evaluation for its quality.
4	4	Estimation of bacterial load in semen.
5	5	Estimation of bacterial load in semen.
6	6	Estimation of bacterial load in semen.
7	7	Estimation of enzymes in the semen.
8	8	Estimation of enzymes in the semen.
9	9	Estimation of enzymes in the semen.
10	10	*In-vitro* tests for sperm function i.e. BCMPT, HOST, et**c.**
11	11	*In-vitro* tests for sperm function i.e. BCMPT, HOST, et**c.**
12	12	*In-vitro* tests for sperm function i.e. BCMPT, HOST, et**c.**
13	13	Tests to assess acrosomal integrity, mitochondrial activity and DNA damage
14	14	Tests to assess acrosomal integrity, mitochondrial activity and DNA damage
15	15	Tests to assess binding assays.
16	16	Fluorescent probe based assessment of sperm quality.
17	17	Comet assay, Sperm chromatin structure assay, TUNEL assay.
18	18	Comet assay, Sperm chromatin structure assay, TUNEL assay.

VGO 606	Clinical Practice-I*	0+3

VGO 607	Clinical Practice-II*	0+3

VGO 690	Special Problem	0+2

VGO 691	Doctoral Seminar-I	1+0

VGO 692	Doctoral Seminar-II	1+0

VGO 699	Doctoral Research	75