Academic:

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

List of UG Courses (B.V.Sc& AH) As per latest MSVE Guidelines-2016

Sr No	Course No.	Title	Credit	Course offered in the Year
1	VGO	Veterinary Gynaecology & Obstetrics	2+1=3	Fouth

List of PG Courses M.V.Sc. – Animal Reproduction, Gynaecology and Obstetrics

Sr No	Course No .	Title	Credit	Core / Optional	Semester
1	VGO 501	General Gynaecology	2+1	Core	I
2	VGO 502	Female Infertility in Farm Animals	2+1	Core	I
3	VGO 503	Veterinary Obstetrics	2+1	Core	II
4	VGO 504	Andrology and Male Infertility	2+1	Core	II
5	VGO 505	Semen Preservation and Artificial Insemination	2+1	Optional	II
6	VGO 506	Basics of Reproductive Biotechnology	2+1	Core	III
7	VGO 507	Clinical Practice-I	0+3	Core	I
8	VGO 508	Clinical Practice-II	0+3	Core	II
9	VGO 590	Special Problem	0+1	Optional	II
10	VGO 591	Master's Seminar	1+0	Core	III
11	VGO 599	Master's Research	0+10=10	Core	III
12	VGO 599	Master's Research	0+20=20	Core	IV

List of PG Courses Ph.D. (Regular) – Animal Reproduction, Gynaecology and Obstetrics

Sr No	Course No .	Title	Credit	Semester
1	VGO 601	Advances in Gynaecology and Infertility Management	2+1	I
2	VGO 602	Advances in Veterinary Obstetrics	1+1	I
3	VGO 603	Advances in Andrology and Male Infertility	2+1	II
4	VGO 604	Reproductive Biotechnology	1+1	III
5	VGO 605	Semenology	1+1	III
6	VGO 606	Clinical Practice-I	0+3	I
7	VGO 607	Clinical Practice-II	0+3	II

8	VGO 690	Special Problem	0+2	III
9	VGO 691	Doctoral Seminar-I	1+0	III
10	VGO 692	Doctoral Seminar-II	1+0	III
11	VGO 699	Doctoral Research	75	IV-VI

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

LECTURE SCHEDULE UG (MSVE-2016)

Degree: B.V.Sc. & A.H. **Subject :** Veterinary Gynaecology & Obstetrics
Credit Hours : 2 + 1 =3 **Year:** IV

THEORY SCHEDULE

Sr. No	Unit No.	Lecture No.	Topic to be covered
1	**Unit-I Gyanecology**	1	Bovine: Applied clinical anatomy and embryology of female reproductive tract
2		2	Applied clinical anatomy and embryology of female reproductive tract
3		3	Clinical evaluation and abnormalities of ovary, salpinx
4		4	Clinical evaluation and abnormalities of uterus
5		5	Clinical evaluation and abnormalities of cervix, vagina and vulva
6		6	Puberty and sexual maturity and their endocrine control Puberty and maturity, factors affecting the same
7		7	Endocrine control of puberty and sexual maturity
8		8	Delayed puberty- Its causes
9		9	Delayed puberty-clinical approach, treatment and prevention of delayed puberty
10		10	Applied reproductive physiology and endocrinology of oestrous cycle
11		11	Oestrous cycle
12		12	Factors affecting the length of the oestrous cycle-
13		13	Aberrations of oestrus and oestrus cycle
14		14	Clinical management of aberrations of oestrus and oestrus cycle
15		15	Problems in oestrus detection and oestrus detection aids
16		16	Transportation and survivability of gametes in female reproductive tract
17		17	Follicular Dynamics
18		18	Clinical impact of Follicular Dynamics on fertility improvement
19		19	Ovulation
20		20	Aberrations of ovulation
21		21	Incidence causes, diagnosis treatment and prevention of ovulatory failures
22		22	Fertilization
23		23	Aberrations of fertilization-
24		24	Fertilization failures
25		25	Pathological affections of ovary, uterine tubes, uterus, cervix , vagina and external genitalia and prevention
26		26	Embryonic mortality incidence, causes, diagnosis, treatment and prevention
27		27	Clinical management of specific forms of infectious infertility- bacterial

28		28	Clinical management of specific forms of infectious infertility-viral agents
29		29	Clinical management of specific forms of infectious infertility-parasitic and fungal agents
30		30	Clinical management of non-specific forms of infectious infertility-
31		31	Clinical management of non-specific forms of infectious infertility
After 30% Course Completion- FIRST INTERNAL ASSESSMENT			
32		32	Role of nutrition, infertility, climate and stress on reproductive efficiency-Managemental causes of infertility
33		33	Anoestrus Diagnostic procedures in infertility investigation -Clinical uses of hormones and drugs in the management of infertility
34		34	Anoestrus Diagnostic procedures in infertility investigation -Clinical uses of hormones and drugs in the management of infertility
35		35	Repeat breeding syndrome – Diagnostic procedures in infertility investigation -Clinical uses of hormones and drugs in the management of infertility
36		36	Repeat breeding syndrome – Diagnostic procedures in infertility investigation -Clinical uses of hormones and drugs in the management of infertility
37		37	Surgical procedures for correction of abnormalities of the female reproductive tract
38		38	Herd reproductive health management and fertility parameters in individual animals and in herds
39		39	Synchronization of estrus and ovulation and its principle. methodology and implications
40		40	Multiple ovulation and Embryo transfer technology- In vitro fertilization
41		41	Equines: oestrous cycle- Seasonality- breeding management- Aberrations of oestrous cycle and ovulations- Techniques of Pregnancy diagnosis- Clinical management of specific and non-specific forms of infectious infertility- Diagnostic procedures in infertility investigation
42		42	Ovines and caprines: oestrous cycle- Seasonality- Control of oestrous cycle and infertility
43		43	Swines : oestrous cycle- breeding management- Techniques of Pregnancy diagnosis and infertility
44		44	Canines and Felines : oestrous cycle- breeding management- Phantom pregnancy
45		45	Medical termination of pregnancy – Aberrations of oestrous cycle- Medical and surgical management of affections of ovary, uterine tubes, uterus, cervix, vagina and external genitalia –Methods of Population control by medical and surgical techniques - Comparative reproductive events in camel
46		46	Principle, procedure and application of ultrasonography in farm and pet animal reproduction
47	**UNIT-II Obstetrics**	47	Farm and pet animals - Maternal recognition of pregnancy – Applied endocrinology of pregnancy
48		48	Farm and pet animals– Pregnancy diagnosis-
49		49	Farm and pet animals -Pregnancy diagnosis-
50		50	Duration of pregnancy -Factors affecting gestation length
51		51	Care and management of pregnant animals
52		52	Implantation, Placentation

53		53	Placenta-Classification, functions
54		54	Wandering of ovum- Telegony- Superfetation and Superfecundation
55		55	Clinical management of specific causes of abortion,
56		56	Clinical management of non specific causes of abortion,
57		57	Extra uterine pregnancy, , mummification, maceration, cervicovaginal prolapse, hysterocele
58		58	Dropsy of fetal membranes and fetus,
59		59	Uterine torsion
60		60	Parturition- Signs of approaching parturition - Stages of parturition
61		61	Initiation and induction of parturition
62		62	Lactational disorders - Puerparium and factors affecting puerparium – Postpartum care of the dam and neonate in different species of farm and pet animals
After 60% Course Completion- SECOND INTERNAL ASSESSMENT			
63		63	Dystocia – Classification - Clinical signs and diagnosis - Handling of Fetal dystocia
64		64	Dystocia – Classification - Clinical signs and diagnosis - Handling of maternal dystocia
65		65	Obstetrical interventions - Mutation – Forced extraction – Fetotomy
66		66	Cesarean section in small and large animals – Maternal obstetrical paralysis -
67		67	Retention of fetal membranes,
68		68	Total uterine prolapse
69		69	Common metabolic diseases of puerperal period – Post partum hemorrhage – Sub involution of placental sites - Injuries incidental to parturition
70		70	Post partum uterine infections – Postpartum resumption of ovarian activity.
71	**UNIT-III Andrology and AI**	71	Farm and pet animals - Comparative clinical reproductive Anatomy and endocrinology of the male reproduction
72		72	Farm and pet animals - Comparative clinical reproductive anatomy and endocrinology of the male reproduction
73		73	Common congenital and genetic defects of the male reproductive tract
74		74	Puberty and sexual maturity and factors affecting them
75		75	Sexual behaviour and libido
76		76	Sperm transport, erection and ejaculation
77		77	Coital injuries in male animals
78		78	Vices in male animals
79		79	Semen and ejaculate
80		80	Structure of Spermatozoa
81		81	Semen collection techniques
82		82	Semen collection techniques
After 90% Course Completion-THIRD INTERNAL ASSESSMENT			
83		83	Semen evaluation
84		84	Semen evaluation
85		85	Semen extenders, dilution,
86		86	Semen preservation
87		87	Semen preservation and post thaw evaluation
88		88	Artificial insemination techniques in farm and pet animals
89		89	Forms of male infertility - Impotentia
90		90	Impotentia coeundi
91		91	Impotentia generandi

92		92	Affections of the scrotum, testis, accessory sex glands, penis and prepuce
93		93	Breeding soundness evaluation
94		94	*In vitro* tests for evaluation of male fertility
95		95	Medical and surgical techniques for population control of the male reproduction
96		96	Surgical procedure on the male reproductive tract in farm and pet animals.
			ANNUAL EXAMINATION

PRACTICAL SCHEDULE

Sr. No	Unit No.	Practical No.	Practical to be covered
1	**UNIT-I Gynaecology**	1	Study of female genital organs using slaughterhouse specimens
2		2	Oestrus detection aids
3		3	Techniques of rectal palpationof female reproductive tract
4		4	Techniques of rectal palpationof female reproductive tract
5		5	Techniques of rectal palpationof female reproductive tract
6		6	Techniques of rectal palpationof female reproductive tract
7		7	Techniques of rectal palpationof female reproductive tract
8		8	Techniques of rectal palpationof female reproductive tract
9		9	Techniques of rectal palpationof female reproductive tract
10		10	Gynaecological equipment and instruments
11		11	Vaginal exfoliative cytology and vaginoscopy
12		12	Ultrasonography of female reproductive tract
13		13	Ultrasonography of female reproductive tract
14		14	Surgical procedures on the vulva, vagina and uterus
15		15	Study of pathological specimens of female genital tract
16		16	Demonstration and practice of ovario-hysterectomy
17		17	Demonstration and practice of panhysterectomy
18		18	Diagnostic procedures in investigation of infertility in female animals
19		19	Diagnostic procedures in investigation of infertility in female animals
20		20	Diagnostic procedures in investigation of infertility in female animals
21		21	Attending gynaecoclinical cases
22		22	Attending gynaecoclinical cases
23		23	Attending gynaecoclinical cases
24		24	Attending gynaecoclinical cases
25		25	Attending gynaecoclinical cases
26	**UNIT-II Obstetrics**	26	Study of pelvis and pelvimetry
27		27	Pregnancy diagnosis
28		28	Pregnancy diagnosis
29		29	Study of foetal membranes of domestic and pet animals –and identification of normal and abnormal foetal membranes
30		30	Approaching signs of parturition- Stages of parturition
31		31	Approach to an obstetrical case
32		32	Obstetrical anaesthesia - obstetrical instrument and equipment
33		33	Manipulation of foetal malpresentation in phantom boxes -
34		34	Maternal causes of dystocia and its management
35		35	Fetotomy in cadavers, Handling of prolapsed of genitalia.

36		36	Demonstration of forceps delivery and Caesarean section in small and large animal clinical cases.
37	**UNIT-III Andrology & A.I.**	37	Study of male genital organs using slaughter house specimens
38		38	Techniques of rectal palpation of the male reproductive tract
39		39	Andrological and AI equipment -Vasectomy and castration. Surgical procedures on penis, prepuce and scrotum
40		40	Planning and organization of AI centre-Preparation of teaser animals -Selection, care, training and maintenance of male animal used for breeding purpose
41		41	Techniques of semen collection
42		42	Semen evaluation techniques
43		43	Semen evaluation techniques
44		44	Sterilization, storage of equipment used for semen collection and Artificial insemination
45		45	Preparation of extenders and extension of semen- Preservation of semen
46		46	Thawing of semen and technique of AI- Handling and maintenance of LN2 containers
47		47	Diagnostic procedures in investigation of infertility in male animals-Breeding soundness evaluation of bulls
48		48	Oestrus synchronization procedures, Multiple Ovulation and Embryo Transfer- *In Vitro* Fertilization
	Annual Practical Examination		

Lecture Schedule- M. V.Sc.
Animal Reproduction, Gynaecology & Obstetrics

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

Sr. No.	Lecture 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

Ph.D Schedule

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

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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, etc.
11	11	*In-vitro* tests for sperm function i.e. BCMPT, HOST, etc.
12	12	*In-vitro* tests for sperm function i.e. BCMPT, HOST, etc.
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.

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