CURRICULUM FOR 1 YEAR CERTIFICATE COURSE IN REPRODUCTIVE MEDICINE

INTRODUCTION

Special Requirements For Training Centres in Reproductive Medicine

To be eligible for subspecialty training in reproductive medicine a centre must:-

i) Provide a service for the referral and transfer of patients with endocrine and infertility problems requiring special diagnostic and therapeutic facilities and expertise

ii) Have an adequate clinical workload with a full range of gynaecological endocrine, fertility and infertility (female and male) problems

iii) Have appropriate clinical facilities for investigating the relevant endocrine and infertility disorders

iv) Have access to appropriate endocrine and ultrasound investigations for monitoring women having ovulation inductions

v) Have an established assisted conception program, including assisted fertilisation with appropriate clinical and laboratory facilities

vi) Provide training in laparoscopic and hysteroscopic surgery for investigation and treatment including ovarian biopsy and cystectomy, oophorectomy, treatment of ectopic pregnancy, adhesiolysis, salpingolysis, treatment of endometriosis, endometrial biopsy, removal of endometrial polyps, endometrial resection/ablation, hysteroscopic resection of fibroids

vii) Participate actively in the investigation of male infertility and collaborate closely with consultant urologists/andrologists and their staff with commitments to the investigation and management of male infertility

viii) Have an established donor insemination program

ix) Collaborate with consultant physicians/endocrinologists and their supporting staff having definite commitments to the care of endocrine disorders in women during the reproductive years of life

x) Have an adequate gynecological pathology service;

xi) Have a research program in the subspecialty field with access for the trainee to support his or her own training program.

I. **DURATION OF COURSE:** ONE YEAR

II. **ELIGIBILITY CRITERIA FOR ADMISSION**:POST M.S (OBST&GYN) / D.N.B(OBGYN). / D.G.O. (OBST&GYN)

III. **INTAKE CAPACITY:**

IV. NAME, DESIGNATION & INSTITUTION FOR 1 YEAR CERTIFICATE COURSE

EXPECTED LEARNING OUTCOMES

1. Candidates should be able to interview, take history, examine and arrive at a diagnosis when an infertile couple comes to them
2. Perform appropriate Investigations and depending on the diagnosis manage the patient independently.
3. Candidate must be able to perform endoscopic surgery related to infertility management
4. Should be able to perform ART procedures independently

ASSESSMENT

The assessment test at the end of course.
Practical Assessment as per speciality

Course / module	**Theory (MCQs)**	**Practical**
Name of Module Reproductive Medicine Total Marks Theory + Practical's + Log Book - 400	State Type and Marks Total Paper I +II = 200 marks	Clinical case / Procedure / Diagnostic Reporting, drugs, equipment's spotters etc. - 150 marks Log Book - 50 marks
Paper 1	**Basic Science** 1. Embryology 2. Andrology 3. Anatomy and Physiology 4. Basic Endocrinology 5. Causes of male and female fertility 6. Associated pathologies with infertility 7. Investigations of male and female partner 8. Implantation 9. Counselling 10. Obesity 11. Endocrinology 12.Psychosomatic Aspects	**Total Marks 100**
Paper II	**Applied and Clinical Sciences** 1. Infertility Management	**Total Marks 100**

	2. Polycystic ovarian Syndrome (PCOS) 3. Intrauterine insemination 4. Assisted reproductive technology – All aspects 5. Quality Assurance in ART 6. Genetics and epigenetics 7. Advances in ART 8. RIF 9. Early Pregnancy after infertility treatment 10. RPL 11. Immunology in Infertility 12. Uterine receptivity 13. Microbiota and infertility 14. Fertility Preservation in oncological and non-oncological cases 15. Third party Reproduction 16. ART and Surrogacy Law 17. Ethical and Medicolegal aspects	
Practical Exams	Long Case Short Case Drugs Embryology Consumables Endoscopy Instruments Spotters	**Total Marks 150** 50 20 20 20 20 20
Log Book	Completion as per Format	50

XI. Summative Report to be submitted as Eligibility for University Exam (Format will be Provided)

XII. University Exam – External Practical as per existing format.

SYLLABUS

Paper I

1. Menstrual & ovarian cycles
    - Regulation of menstrual cycle
    - Follicle growth in humans
    - Autocrine & paracrine factors regulating follicle growth
    - Physiology & biochemistry of follicular rupture
    - Function of follicle after ovulation _ Corpus luteum
    - Structure & function of fallopian tubes
    - Uterus – structure, anomalies, physiology, endometrial structure, importance of dating endometrium
    - Cervix & cervical canal & its function

2. Spermatogenesis, ejaculation & spermatozoa
    - Sexual differentiation
    - Structure & Physiology of testis & seminiferous tubules
    - Mode of steroid hormone action
    - Spermatogenesis & spermiogenesis
    - Collecting ducts & Epididymis
    - Vas deferens
    - Male accessory gland & ejaculation
    - Normal semen profile
    - Changes in sperm for & at fertilisation
    - Sperm-oocyte interaction

3. Embryology
    - Oocyte Quality and grading
    - Analysis of fertilization
    - Embryo development & assessment
    - Embryo culture systems
    - Preimplantation genetic diagnosis
    - Selection of sperms
    - Cryopreservation of gametes and embryos
    - Quality control in the Lab
    - Embryo Glue
    - Witnessing in ART
    - AI in ART

4. Aetiology of female infertility
    - Ovulatory dysfunction
    - Cervical factor
    - Uterine facor
    - Tubal factor
    - Tuboperitoneal factor – Endometriosis, infection, adhesions
    - Immunological factor

- Ovarian mass
- Infertility of unknown aetiology

5. Evaluation of female factor
    - Importance of detailed history & physical examination
    - Disorders of menstrual cycle & ovulation
    - Other endocrine disorders affecting menstrual cycle & ovulation
    - Polycystic ovarian syndrome
    - POI
    - Primary & secondary amenorrhea
    - Evaluation of ovarian reserve – Endocrine, ultrasound and dynamic
    - Luteal disorders
    - Ovarian dysfunction
    - Tubal & peritoneal factors
    - Uterus & endometrium
    - Cervical factor
    - Immunity to spermatozoa
    - Infection of the genital tract
    - Subtle factors in idiopathic infertility
    - Genetic evaluation

6. Investigations in the female
    - Hormone assays in early follicular phase
    - Assesment of ovulation by BBT, USG & urinary LH
    - Postcoital test
    - Progesterone in mid or late luteal phase
    - Endometrial biopsy & hysteroscopy for evaluation of endometrium
    - HSG, Hysreosonosalpingography
    - Laparoscopy
    - PAP smear with cervical &/or vafinal swab culture
    - Sperm antibody test
    - Need of routine blood profile
    - ACL, ANA, ssDNA, LA, APTT, PTT, PT
    - Chronic endometritis

7. Etiology of male factor
    - Genetic factor
    - Germinal epithelial abnormality
    - Sertolicell dysfunction
    - Tubal dysfunction
    - Endocrine abnormalities
    - Infection
    - Inflammation
    - Immunologic factors
    - Varicocele

8. Evaluation of male factor
    - History & physical examination
    - Detailed semen analysis
    - Tests for sperm function & integrity
    - Testicular Biopsy
    - Vasography
    - Sperm antigens & antibodies
    - Endocrine evaluation
    - Ultrasound evaluation
    - Evaluation for retrograde ejaculation
    - Karyotyping
    - Declining sperm count. – global concern

9. Implantation

10. Obesity and its effects on Fertility

11. Endocrine physiology, pharmacology of substances that regulate the reproductive systems and the relevant aspects of the thyroid and adrenal systems

12. Counselling for infertility, RIF and RPL

13. Psychosomatic aspects of reproductive endocrinology

Paper II

14. Treatment of male factors
    - Medical treatment for male factor
    - Surgery for v
    - aricocele
    - Treatment of endocrine deficiencies
    - Treatment of obstruction in epididymis, vas deferens, or ejaculatory duct
    - Congenital absence of seminal vesicles
    - Retrograde ejaculation & failure of emission
    - Deficient or abnormal spermatozoa
    - Infection
    - Autoimmune cause
    - Genetic disorder
    - Use of assisted reproductive techniques – IUI, IVF, ICSI
    - Necessity for PGD

15. Treatment of female factor
    - Ovulation induction – Protocols, monitoring
    - Luteal phase support
    - Ovarian hyperstimulation syndrome – diagnosis & treatment

- Treatment of poor & hyper responders
- Treatment of premature ovarian failure
- Treatment of cervical factor
- Treatment of tubal factor
- Treatment of uterine factor
- Treatment of peritoneal factor
- Treatment of genital infection – Tuberculosis, chlamydia, bacterial, others
- Treatment of chronic endometritis
- Empty follicle syndrome
- Evidence of surgery in infertility
- Evidence for tubal surgery in era of ART

16.Endometriosis – Diagnosis & management

17.Polycystic ovarian disease – Evaluation & management

18.Unexplained Infertility

19.Poor Responders

20.Recurrent implantation failure – Aetiology, Evaluation & management

21.Recurrent pregnancy loss – Aetiology, Evaluation & management

22.Intrauterine Insemination

- Indications
- Ovarian stimulation
- Monitoring
- hCG for ovulation induction
- Timing of IUI
- Sperm preparation techniques
- Procedure of IUI
- Post IUI precautions
- Luteal phase support
- Diagnosis of pregnancy after IUI

23.Assisted Conception

- Types of ART techniques
- Evaluation & preparation of infertile couple for ART
- Testing of ovarian reserve
- Natural cycle & ovulation Induction for ART
- iCOS
- Luteal phase support in ART
- Use of GnRh agonist & Antagonist for ovulation induction
- Use of USG in ART – Monioring, OR, Cyst aspiration, ET
- Oocyte retrieval

- Sperm preparation for IVF & ICSI – Ejacualte, Epididymal aspiration, testicular biopsy/aspiration
- Assisted Fertilization – IVF, ICSI
- Analysis of fertilization
- Embryo development & assessment
- Embryo culture systems – Basic and advanced
- Preimplantation genetic diagnosis
- Assisted Hatching
- Embryo transfer techniques
- Role of stem cells and GCSF for thin endometrium and Asherman's syndrome
- Freeze all verses freeze for all
- Oocyte & embryo cryopreservation
- AI in ART

24. Cryopreservation
    - Methods – Slow freezing verses vitrification
    - Embryo freezing
    - Oocyte freezing
    - Success rate

25. Uterine Receptivity – Normal, abnormal, causes of abnormal uterine receptivity, evaluation and treatment

26. Optimizing ART outcome

27. Advances in ART – COS, investigations, treatment

28. Fertility Preservation in oncology
    - Effect of cancer and its treatment on fertility
    - Testicular and ovarian metastasis in different cancers
    - Fertility preservation in males
    - Fertility Preservation in females
    - Ovulation induction in cancer patients
    - Pregnancy after cancer treatment

29. Fertility Preservation in non-oncological cases
    - Exposure to gonadotoxic agent – Haematological disease and autoimmune disease
    - Surgical menopause
    - Premature ovarian insufficiency
    - Exposure to gonadotoxic agent when HSCT is required
    - Women wishing to postpone motherhood
    - Transgender

30.Microbiota and Infertility

31.Third Party Reproduction

- Oocyte donation
- Sperm Donation
- Embryo donation
- Surrogacy

32.Setting up of an IUI and ART Lab

33.Equipments required for setting an ART Lab

34.Quality Assurance & quality control in ART laboratory

35.Success rate with different treatment modalities for infertility

36.Monitoring & treatment of early pregnancy after ART treatment

37.Complications of ART & its management

38.Genetics in Infertility

39.Epigenetics

40.Immunology in Infertility

41.Ethical aspects of infertility management

42.Religious aspects of infertility

43.Publishing in Infertility