

# CLINICAL EMBRYOLOGY AND REPRODUCTIVE TECHNOLOGY (CERT)

## Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000s to 4000s are upper-level undergraduate courses that can also be taken for graduate credit with permission and additional work assigned
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

### **CERT 3004. Endocrinology for Health Sciences. 3 Credits.**

How hormones influence information flow from cells and tissues, focusing on the reproductive system; classes of hormones, sources and synthesis of hormones, receptors and target tissues, mechanisms of action and regulation, and endocrinology methods. Prerequisites: BISC 1111.

### **CERT 3005. Current Topics in Biomedical Sciences. 3 Credits.**

Enhances critical thinking and communication skills while broadening awareness of novel trends and current findings within the biomedical sciences. Prerequisites: BISC 1111 and 1112 or equivalent; or with the permission of the program director.

### **CERT 4010. Clinical Human Embryology. 3 Credits.**

Physiology of the female reproductive system; gamete biology, fertilization and early embryo development; embryo culture techniques, intracytoplasmic sperm Injection (ICSI), and embryo selection and transfer. Proctor fee. Prerequisites: BISC 1111.

### **CERT 4011. Human Embryology Laboratory. 1 Credit.**

Techniques used in the clinical embryology laboratory, including embryo culture, oocyte retrievals, selection and egg denudation, sperm preparations for in vitro fertilization (IVF), and intracytoplasmic sperm injection (ICSI) procedures. Prerequisites: BISC 1111 and BISC 1112 (or an equivalent general biology I and II course), and CERT 4010, and CERT 4015; or with the approval of the program director. Corequisites: CERT 4010 and CERT 4015 may be taken simultaneously.

### **CERT 4012. Clinical Human Andrology. 3 Credits.**

The physiology of the male reproductive system; sperm anatomy and motility, seminal plasma, and male gamete biology. Proctor fee. Prerequisites: BISC 1111.

### **CERT 4013. Human Andrology Laboratory. 1 Credit.**

Techniques used to analyze semen for assisted reproduction procedure; sperm morphology, motility and vitality, sperm preparation, and chromatin assessment. Prerequisites: BISC 1111 and BISC 1112 (or an equivalent general biology I and II course); and CERT 4012, and CERT 4015; or the approval of the program director. Corequisites: CERT 4012 or 4015 may be taken simultaneously.

### **CERT 4014. Human Reproductive Cryobiology. 3 Credits.**

Theory and methods used to freeze sperm, testicular tissues and embryos for use during in vitro fertilization procedures. Cryo-injuries and vitrification solutions. Proctor fee. Prerequisites: BISC 1111.

### **CERT 4015. Human Cryobiology Laboratory. 1 Credit.**

Freezing techniques for assisted reproductive technologies; sperm and embryo freezing, embryo stage vitrification, blastocyst slow freezing, and testicular sperm freezing. CERT 4014 may be taken as a corequisite. Laboratory fee. Prerequisites: CERT 4014.

### **CERT 4016. Preimplantation Genetic Diagnosis Laboratory. 1 Credit.**

The role of preimplantation genetics procedures for use in reproductive medicine; embryo biopsies at different developmental stages and trophectoderm cell biopsy at the blastocyst stage. MLS 4171 may be taken as a corequisite. Laboratory fee. Prerequisites: MLS 4171.

### **CERT 4017. Clinical Experience in Embryology. 3 Credits.**

Application of embryology techniques in a clinical assisted reproductive technology (ART) laboratory facility. Proctor fee. Prerequisites: MLS 4010 and MLS 4011.

### **CERT 4018. Clinical Experience in Andrology. 3 Credits.**

Application of andrology techniques in a clinical assisted reproductive technology (ART) laboratory facility. Proctor fee. Prerequisites: MLS 4012 and MLS 4013.

### **CERT 4019. Clinical Experience in Cryobiology. 3 Credits.**

Application of cryobiology techniques in a clinical assisted reproductive technology (ART) laboratory facility. Proctor fee. Prerequisites: MLS 4014 and MLS 4015.

### **CERT 4020. Clinical Experience in Preimplantation Genetic Diagnosis. 3 Credits.**

Application of preimplantation genetic diagnosis techniques in a clinical assisted reproductive technology (ART) laboratory facility. Proctor fee. Prerequisites: MLS 4016 and MLS 4171.

### **CERT 4021. Laboratory Techniques in Reproductive Medicine. 3 Credits.**

Basic laboratory skills and techniques specific to assisted reproduction procedures. Prerequisites: CERT 4010, CERT 4012, CERT 4014, and MLS 4151, which can be taken as prerequisites to or concurrent with this course, or waived at the discretion of the program director.