

# **Biol 2404 Lecture Outline for Exam V**

## **I. Respiratory System**

### **General**

### **Major Functions of Respiratory System**

### **Anatomy of the Respiratory System**

### **Thoracic Cavity, Serous Tissue & Lungs**

### **Upper vs Lower Respiratory Tract**

### **Principal Organs of Respiratory System**

**Nose**

**Pharynx**

**Larynx**

**Trachea**

**Bronchi**

**Lungs**

**Bronchioles**

**Alveoli**

**Respiratory Physiology**

**Pulmonary Ventilation (External Respiration)**

**Respiratory Volumes**

**Alveolar Gas Exchange**

**Respiratory Membrane**

**Exchange of Gasses across Respiratory Membrane**

**Exchange of Gasses between blood and tissues**

**Transport of Gasses in the Blood**

**Oxygen Transport**

# **Carbon Dioxide Transport**

## **Regulation of Respiration**

### **Respiratory Reflex Centers**

### **Sensory Receptors for Respiration**

## **III. The Digestive System**

### **General Introduction**

### **General Structure of the Digestive System**

## **Alimentary Canal/GI tract**

### **Accessory Organs**

### **Serous Membranes & Mesenteries**

### **Layers of the Alimentary Canal**

## **Organs of the Digestive System**

### **Mouth**

#### **Teeth**

#### **Salivary Glands**

### **Pharynx**

**Esophagus**

**Stomach**

**Small Intestine (Duodenum, Jejunum, Ileum)**

**Large Intestine (Cecum, Colon (Ascending-Transverse-Descending-Sigmoid),  
Rectum)**

**Liver**

**Gall Bladder**

**Pancreas**

**Digestive Physiology**

**Motility**

**Sphincters**

**Physical & Chemical Digestion**

**Mouth**

**Stomach**

**Duodenum**

**Large Intestine**

**Absorption**

**Stomach**

**Small Intestine**

**Large Intestine**

**Functions of Liver**

**Liver Lobules**



## **IV. Nutrition & Metabolism Overview**

### **General Introduction**

### **Essential vs Nonessential Nutrients**

### **Major Organic Molecules**

#### **Carbohydrates**

#### **Lipids**

#### **Proteins**

### **Energy and Metabolism**

## **V. The Urinary (=Excretory) System**

### **General**

### **Metabolic Wastes**

### **Other Excretory Organs**

### **General Functions of Urinary System**

### **Anatomy of the Urinary System**

#### **Kidneys**

#### **Ureters**

**Bladder**

**Urethra**

**Histology of Kidneys**

**Cortex vs Medulla**

**Nephron**

**Urinary Physiology**

## **Function of Nephron**

**Filtration**

**Reabsorption**

**Secretion**

**Urine Analysis**

## **VI. The Reproductive System**

**The Male Reproduction System**

## **External Organs**

**Penis**

**Scrotum**

## **Internal Organs**

**Testes**

**Epididymus**

**Ductus Deferens (=Vas Deferens)**

**Ejaculatory Duct**

**Urethra in Penis**

## **Accessory Glands**

### **Seminal Vesicles**

### **Prostate Gland**

### **Bulbourethral Glands**

## **Physiology of Male Reproductive System**

### **Hormones of the Male Reproductive System**

### **Role of Testosterone**

## **Spermatogenesis**

## **Structure of Sperm**

## **Anatomy of the Female Reproductive System**

### **External Organs**

**Vulva**

**Mammary Glands**

### **Internal Organs**

**Ovaries**

**Uterine Tube (=oviduct, fallopian tube)**

**Uterus**

**Regions of Uterus**

## **Layers of Uterine Wall**

### **Vagina**

## **Physiology of Female Reproductive System**

### **Hormones**

### **Functions of Estrogen & Progesterone**

### **Oogenesis**

### **Development of Follicle Cells**

### **The Ovarian Cycle**

### **The Menstrual Cycle**

### **Cyclic changes in Hormones, egg maturation and uterine development**



## **Mammary Glands**

# **VII. Human Development**

## **Meiosis & Gametogenesis**

## **Fertilization**

## **Stages of Human Development**

### **Duration of Pregnancy**

## **Developmental Landmarks**

### **Preembryonic Stages**

## **Cleavage Divisions**

**Morula**

**Blastocyst**

**Implantation**

**Primitive Streak and Primary Germ Layers**

## **Embryonic Stages**

**Neurula**

**Embryonic Membranes**

**Tailbud Stage**

## **Fetal Stages**

## **Fetal Circulation**