

Integrated Organ-System Course 4: Gastrointestinal, Endocrine, and Reproductive (GER)

Course Content:

The GI-Endocrine-Reproduction course will provide an integrated approach to the gastrointestinal, endocrine, and reproductive systems. Students will acquire a broad understanding of the normal structure and function of each system. A comprehensive overview of anatomy, embryology, pathophysiology, epidemiology, biostatistics, diagnostic tests, and therapeutic principles related to disorders of these systems will be covered.

Course Objectives:

- Describe the essential features of the gastrointestinal, endocrine, and reproductive systems, their normal structure and function, and the epidemiology, clinical features, pathogenesis, pathophysiology, and laboratory findings associated with gastrointestinal, endocrine, and reproductive diseases, including disorders of pregnancy.
- Identify appropriate therapeutic options for selected diseases of the gastrointestinal, endocrine, and reproductive systems.
- Describe how epidemiologic, socioeconomic, behavioral, sociocultural, and community factors may impact the care of patients with diseases of the gastrointestinal, endocrine, and reproductive systems.
- Describe how wellness, nutrition, hospitality principles, pain management, and integrative medicine may contribute to the care of patients with diseases of the gastrointestinal, endocrine, and reproductive systems.
- Recognize bioethical issues germane to the medical care of patients with diseases of the gastrointestinal, endocrine, and reproductive systems.
- Recognize end-of-life issues germane to patients with gastrointestinal, endocrine, and reproductive diseases.
- Construct a differential diagnosis based on the clinical presentation of a patient with a gastrointestinal, endocrine, and/or reproductive disease and apply diagnostic reasoning to narrow the differential.
- Develop pertinent clinical questions related to the diagnosis and/or treatment of gastrointestinal, endocrine, and reproductive diseases, and utilize appropriate resources to answer those questions in a self-directed fashion.

Content Distribution:

Week 1: Oral cavity, salivary gland, and upper luminal GI tract

Week 2: Lower luminal GI tract and exocrine pancreas

Week 3: Liver and hepatobiliary tract

Week 4: Biochemistry

Week 5: Endocrine pancreas and nutrition

Week 6: Endocrine and male reproductive system

Week 7: Female reproductive system

Week 8: Pregnancy

PBL Objectives:

- Demonstrate self-directed learning through the assessment of personal educational needs, the appropriate selection and use of learning resources, the acquisition, integration, and application of knowledge, and the assessment of educational progress.

- Demonstrate the interaction skills and discussion skills used in learning, educating, research, patient care, and advocacy.
- Demonstrate clinical reasoning to develop and refine differential diagnoses.
- Identify and use data and resources to formulate diagnostic assessments and treatment plans.
- Identify and use data and resources to formulate an integrated medical knowledge base.
- Demonstrate the integration of individual and social health processes that contribute to the complete picture of wellness and illness in patients.
- Analyze, interpret, and apply new data and knowledge relevant to clinical problems.

Weekly Objectives:

Week 1 – Oral cavity, salivary gland, and upper luminal GI tract

- Describe the normal embryology and anatomy of the oral cavity, salivary glands, and upper luminal GI tract
- Recognize the salient histologic features of the oral cavity, salivary glands, and upper luminal GI tract.
- Describe the motility of the upper GI tract, including vomiting.
- Illustrate the neural and hormonal mechanisms involved in the consumption and digestion of food.
- Describe the clinical features, pathogenesis, and diagnostic findings associated with selected disorders of the esophagus, including achalasia, certain types of esophagitis (e.g. reflux, eosinophilic), Barrett esophagus, and esophageal varices.
- Describe the clinical features, pathogenesis, and diagnostic findings, as well as potential complications, associated with acute and chronic forms of gastritis.
- Describe the clinical features, pathogenesis, and diagnostic findings associated with selected tumors of the oral cavity, salivary gland, esophagus, and stomach.
- Describe the clinical features, pathogenesis, and diagnostic findings associated with the hypertrophic gastropathies.
- Describe the epidemiology of selected diseases of the upper gastrointestinal tract.
- Recognize the major therapeutic modalities for treating disorders of the upper gastrointestinal system, including the uses, contraindications, side effects, and major drug-drug interactions associated with various pharmacologic interventions.

Week 2 – Lower luminal GI tract and exocrine pancreas

- Describe the normal embryology and anatomy of the small intestine, pancreas, large intestine, and anus.
- Recognize the salient histologic features of the small intestine, pancreas, large intestine, and anus.
- Illustrate the neural and hormonal mechanisms involved in the transit and absorption of digested materials through the intestines.
- Describe the clinical features, pathogenesis, and diagnostic findings associated with major infectious diseases of the intestines.
- Describe the clinical features, pathogenesis, and diagnostic findings associated with major inflammatory and immunologic diseases of the lower gastrointestinal tract, including celiac disease, inflammatory bowel disease (IBD), and pancreatitis.

- Describe the clinical features, pathogenesis, and diagnostic findings associated with major traumatic and mechanical disorders of the lower gastrointestinal tract, including various types of intestinal obstruction and perforation.
- Describe the clinical features, pathogenesis, and diagnostic findings associated with major neoplastic and pre-neoplastic lesions of the lower gastrointestinal tract, including adenocarcinoma and various types of colonic polyps.
- Illustrate the salient mechanisms involved in various types of familial colon cancer syndromes.
- Describe the clinical features, pathogenesis, and diagnostic findings associated with major neoplastic and pre-neoplastic lesions of the lower gastrointestinal tract, including adenocarcinoma and various types of colonic polyps.
- Describe the clinical features, pathogenesis, and diagnostic findings associated with major vascular lesions of the lower gastrointestinal tract, including ischemia, angiodysplasia, and hemorrhoids.
- Describe the epidemiology of selected diseases of the lower gastrointestinal tract.
- Recognize the major therapeutic modalities for treating disorders of the lower gastrointestinal tract, including the uses, contraindications, side effects, and major drug-drug interactions associated with various pharmacologic interventions.

Week 3 – Liver and hepatobiliary tract

- Describe the normal embryology and anatomy of the liver, gallbladder, and biliary tract.
- Recognize the salient histologic features of the hepatobiliary system.
- Illustrate the major synthetic and metabolic functions of hepatocytes and hepatic endothelial cells, including cholesterol, bile salts, and selected drugs.
- Describe the clinical features, pathogenesis, and diagnostic findings associated with major infectious diseases affecting the liver, including viral hepatitis.
- Describe the clinical features, pathogenesis, and diagnostic findings associated with major inflammatory and autoimmune diseases affecting the hepatobiliary system, including cholecystitis, primary biliary cirrhosis (PBC), and primary sclerosing cholangitis (PSC).
- Describe the clinical features, pathogenesis, and diagnostic findings associated with major drug/toxin-induced liver diseases, including alcoholic liver disease.
- Describe the clinical features, pathogenesis, and diagnostic findings associated with major metabolic diseases affecting the hepatobiliary system, nonalcoholic fatty liver disease (NAFLD), hemochromatosis, Wilson disease, alpha-1-antitrypsin deficiency.
- Describe the clinical features, pathogenesis, and diagnostic findings associated with major circulatory disorders of the hepatobiliary system.
- Describe the clinical features, pathogenesis, and diagnostic findings associated with major tumors of the hepatobiliary system, including hepatocellular carcinoma, cholangiocarcinoma, and nodular hyperplasia.
- Describe the epidemiology of selected diseases of the liver and hepatobiliary tract.
- Recognize the major therapeutic modalities for treating disorders of the hepatobiliary system, including the uses, contraindications, side effects, and major drug-drug interactions associated with various pharmacologic interventions.

Week 4 – Biochemistry

- Illustrate the major biochemical sequences involved in energy metabolism

- Describe the key biochemical pathways that extract energy from carbohydrates, fatty acids, and amino acids
- Describe the key biochemical pathways that store energy in the body, primarily those involved glycogen and triglyceride synthesis
- Recognize key features of the biochemical pathways responsible for amino acid synthesis and degradation, and describe the clinical and laboratory findings associated with inherited defects in these pathways (e.g. homocystinuria, maple syrup urine disease)
- Illustrate the key biochemical pathways involved in nucleotide synthesis and degradation
- Recognize key features of the biochemical pathways responsible for lipid synthesis and degradation, and describe the clinical and laboratory findings associated with inherited defects in these pathways (e.g. dyslipidemia, carnitine deficiency)
- Recognize key features of the biochemical pathways responsible for porphyrin synthesis and degradation, and describe the clinical and laboratory findings associated with inherited defects in these pathways (i.e. the porphyrias)
- Recognize the key features of the biochemical pathways responsible for the metabolism of galactose, and describe the clinical and laboratory findings associated with galactosemia
- Recognize key features of the biochemical pathways responsible for alcohol synthesis and degradation
- Recognize key features of the biochemical pathways responsible for the synthesis, storage, and degradation and degradation of selected macromolecules (e.g. complex carbohydrates, glycoproteins, and proteoglycans), and describe the clinical and laboratory findings associated with inherited defects in these pathways (e.g. lysosomal and glycogen storage diseases)

Week 5 – Endocrine pancreas and nutrition

- Describe how energy is generated, stored, and expended at the whole-body level
- Describe how nutritional status is assessed across the human lifespan
- Recognize the primary functions of selected nutrients, including vitamins, minerals, trans-fatty acids, and cholesterol.
- Recognize the major clinical features associated with deficiencies and/or toxicities of selected vitamins and minerals.
- Describe the diagnosis and treatment of various eating disorders, including anorexia and bulimia, and those associated with obesity.
- Recognize the significance of various alternative diets, food fads, and the use and misuse of certain nutritional supplements.
- Describe the anatomic location and histologic organization of the pancreatic islets
- Illustrate the major endocrine functions of the pancreatic islets in terms of the synthesis, secretion, and actions of pancreatic hormones.
- Describe the pathogenesis of diabetes mellitus types I and II.
- Describe the epidemiology, risk factors, clinical features, and pathophysiology of diabetes mellitus types I and II.
- Describe the classification and clinical manifestations of selected tumors of the pancreatic islets.

- Recognize the major therapeutic modalities for treating diabetes mellitus, including the uses, contraindications, side effects, and major drug-drug interactions associated with various pharmacologic interventions.

Week 6 – Endocrine and male reproductive system

- Describe the normal embryology and anatomy of the pituitary, thyroid, and adrenal glands.
- Recognize the salient histologic features of the pituitary, thyroid, and adrenal glands.
- Illustrate the major endocrine functions of the thyroid and adrenal glands in terms of the synthesis, secretion, and actions of their respective hormones.
- Illustrate the role of the hypothalamus and anterior pituitary in regulating the thyroid and adrenal glands.
- Describe the clinical features, pathogenesis, and diagnostic findings associated with major immunologic and inflammatory disorders of the thyroid gland, including Graves disease and Hashimoto thyroiditis.
- Describe the clinical features, pathogenesis, and diagnostic findings associated with both hyper- and hypo-functioning of the thyroid and adrenal glands.
- Describe the clinical features, pathogenesis, and diagnostic findings associated with selected tumors of the pituitary, thyroid, and adrenal glands.
- Describe the normal embryology and anatomy of the male reproductive system.
- Recognize the salient histologic features of the male reproductive system.
- Describe the clinical and diagnostic findings associated with selected infectious, immunologic, traumatic, neoplastic, and metabolic disorders of the male reproductive system.
- Describe the epidemiology of selected diseases of the endocrine and male reproductive systems.
- Recognize the major therapeutic modalities for treating disorders of the male reproductive tract, including the uses, contraindications, side effects, and major drug-drug interactions associated with various pharmacologic interventions.

Week 7 – Female reproductive system

- Describe the normal embryology and anatomy of the female reproductive system, including the breast.
- Recognize the salient histologic features of the female reproductive system, including the vulva, vagina, cervix, uterus, fallopian tube, ovary, and breast.
- Illustrate the major physiologic mechanisms that regulate female reproductive function
- Describe the major changes associated with the female reproductive system that occur throughout life (e.g. puberty, menopause).
- Describe the clinical features, pathogenesis, and diagnostic findings associated with major infectious and inflammatory diseases that affect the female reproductive system, including sexually transmitted infections (STIs), toxic shock syndrome (TSS), and autoimmune hypogonadism.
- Describe the clinical features, pathogenesis, and diagnostic findings associated with major mechanical disorders of the female reproductive system, including uterine prolapse and cystocele.
- Describe the clinical features, pathogenesis, and diagnostic findings associated with major neoplastic diseases of the female reproductive system, including breast cancer.

- Describe the clinical features, pathogenesis, and diagnostic findings associated with major regulatory disorders affecting the female reproductive system, including anovulation, infertility, polycystic ovary syndrome (PCOS), and endometriosis.
- Describe the epidemiology of selected diseases of the female reproductive system.
- Recognize the major therapeutic modalities for treating disorders of the female reproductive tract, including the uses, contraindications, side effects, and major drug-drug interactions associated with various pharmacologic interventions.

Week 8 – Pregnancy

- Describe the salient features of human intercourse and orgasm.
- Describe major anatomic, histologic, physiologic, biochemical, and clinical features of normal pregnancy, including the placenta, from ovulation and fertilization through labor, delivery, and lactation.
- Describe the clinical features, pathogenesis, and diagnostic findings associated with common and important disorders related to pregnancy, including ectopic pregnancy, third trimester bleeding, eclampsia, and gestational diabetes.
- Describe the clinical features, pathogenesis, and diagnostic findings associated with selected disorders of the puerperium, including postpartum hemorrhage, sepsis, and depression.
- Describe the major features of selected disorders of the fetus, including prematurity, cord compression, and macrosomia.
- Recognize how selected systemic disorders may affect pregnancy, including obesity, cirrhosis, asthma, and renal failure.
- Describe the major features of common fertility treatments.
- Recognize the uses, contraindications, side effects, and major drug-drug interactions of various types of contraception.
- Describe the epidemiology of selected diseases of pregnancy.
- Recognize the major therapeutic modalities for treating disorders of pregnancy, including the uses, contraindications, side effects, and major drug-drug interactions associated with various pharmacologic interventions.

Assessment & Grading:

Students will take two summative National Board of Medical Examiners (NBME) exams that use USMLE-style questions. They will also receive formative and summative assessments for small group activities (e.g. PBL), and complete several quizzes and/or written assignments. Students will receive a pass grade based upon satisfactory participation in small group activities, the timely completion of written assignments and exercises, and successful passage on summative NBME exams.

University Expectations:

Academic Misconduct – Academic integrity is a legitimate concern for every member of the campus community; all share in upholding the fundamental values of honesty, trust, respect, fairness, responsibility and professionalism. By choosing to join the UNLV community, students accept the expectations of the Academic Misconduct Policy and are encouraged when faced with choices to always take the ethical path. Students enrolling in UNLV assume the obligation to conduct themselves in a manner compatible with UNLV's function as an educational

institution. An example of academic misconduct is plagiarism. Plagiarism is using the words or ideas of another, from the Internet or any source, without proper citation of the sources. See the Student Academic Misconduct Policy (approved December 9, 2005) located at: <http://studentconduct.unlv.edu/misconduct/policy.html>.

Copyright – The University requires all members of the University Community to familiarize themselves and to follow copyright and fair use requirements. You are individually and solely responsible for violations of copyright and fair use laws. The university will neither protect nor defend you nor assume any responsibility for employee or student violations of fair use laws. Violations of copyright laws could subject you to federal and state civil penalties and criminal liability, as well as disciplinary action under University policies. Additional information can be found at: <http://www.unlv.edu/provost/copyright>.

Disability Resource Center (DRC) – The UNLV Disability Resource Center (SSC-A 143, <http://drc.unlv.edu/>, 702-895-0866) provides resources for students with disabilities. If you feel that you have a disability, please make an appointment with a Disabilities Specialist at the DRC to discuss what options may be available to you.

If you are registered with the UNLV Disability Resource Center, bring your Academic Accommodation Plan from the DRC to me during office hours so that we may work together to develop strategies for implementing the accommodations to meet both your needs and the requirements of the course. Any information you provide is private and will be treated as such. To maintain the confidentiality of your request, please do not approach me before or after class to discuss your accommodation needs.

Religious Holidays Policy – Any student missing class quizzes, examinations, or any other class or lab work because of observance of religious holidays shall be given an opportunity during that semester to make up missed work. The make-up will apply to the religious holiday absence only. It shall be the responsibility of the student to notify the instructor no later than the end of the first two weeks of classes, January 31, of his or her intention to participate in religious holidays which do not fall on state holidays or periods of class recess. This policy shall not apply in the event that administering the test or examination at an alternate time would impose an undue hardship on the instructor or the university that could not have reasonably been avoided. For additional information, please visit: <http://catalog.unlv.edu/content.php?catoid=6&navoid=531>.

Incomplete Grades - The grade of I – Incomplete – can be granted when a student has satisfactorily completed all course work up to the withdrawal date of that semester/session but for reason(s) beyond the student's control, and acceptable to the instructor, cannot complete the last part of the course, and the instructor believes that the student can finish the course without repeating it. A student who receives an I is responsible for making up whatever work was lacking at the end of the semester. If course requirements are not completed within the time indicated, a grade of F will be recorded and the GPA will be adjusted accordingly. Students who are fulfilling an Incomplete do not register for the course but make individual arrangements with the instructor who assigned the I grade.

Tutoring – The Academic Success Center (ASC) provides tutoring and academic assistance for all UNLV students taking UNLV courses. Students are encouraged to stop by the ASC to learn more about subjects offered, tutoring times and other academic resources. The ASC is located across

from the Student Services Complex (SSC). Students may learn more about tutoring services by calling (702) 895-3177 or visiting the tutoring web site at: <http://academicsuccess.unlv.edu/tutoring/>.

UNLV Writing Center – One-on-one or small group assistance with writing is available free of charge to UNLV students at the Writing Center, located in CDC-3-301. Although walk-in consultations are sometimes available, students with appointments will receive priority assistance. Appointments may be made in person or by calling 895-3908. The student's Rebel ID Card, a copy of the assignment (if possible), and two copies of any writing to be reviewed are requested for the consultation. More information can be found at: <http://writingcenter.unlv.edu/>

Rebelmail – By policy, faculty and staff should e-mail students' Rebelmail accounts only. Rebelmail is UNLV's official e-mail system for students. It is one of the primary ways students receive official university communication such as information about deadlines, major campus events, and announcements. All UNLV students receive a Rebelmail account after they have been admitted to the university. Students' e-mail prefixes are listed on class rosters. The suffix is always @unlv.nevada.edu.