

rev 10/10

CHATTANOOGA STATE COMMUNITY COLLEGE
CHATTANOOGA, TENNESSEE
NURSING/ALLIED HEALTH DIVISION

RADIATION THERAPY TECHNOLOGY PROGRAM

COURSE SYLLABUS

HS 223 RADIATION ONCOLOGY I

INSTRUCTORS: Lisa Legg	Cheryl Turner
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SEMESTER: spring **CREDIT HOURS:** 3 **CLASS HOURS:** 3 **LAB HOURS:** 0
DATES: EVERY OTHER THURSDAY AND FRIDAY **TIME:** TBA **LOCATION:** OMNI 175

COURSE DESCRIPTION: This course presents the concept of neoplastic disease, types of growth, causative factors, and biological behavior. The student is presented with an introduction to specific malignant disease entities by site of occurrence and how they are staged. Disease processes and the treatment planning philosophy for each are discussed as well as the inter-relating of treatment planning with clinical radiation therapy.

PREREQUISITE: HS 123, HS 172, HS 214, HS 220

COREQUISITES: HS 224, HS 230

REQUIRED (R) TEXTBOOK(S) AND SUGGESTED (S) REFERENCE MATERIAL BASIC TO COURSE:

1. Principles and Practice of Radiation Therapy. Washington & Leaver, 2004. (R)
2. American Cancer Society Textbook of Clinical Oncology. Murphy, Lawrence, Lenhard 1995. (S)
3. Radiation Therapy Planning. Gunilla C, Bentel, 1996. (R)
4. Taber's Cyclopedic Medical Dictionary. Thomas, 1989. (optional) (S)

CLASS SCHEDULE: See 'Program Schedule' for specific class dates.

PROGRAM STUDENT LEARNING OUTCOMES (PSLOs): This program and its curricula are designed to prepare the graduates to attain and master the knowledge, skills, and affect needed to enter the field of radiation therapy. The following goals:

PSLO1: Prepare graduates to possess the knowledge, skill, and affect to meet the demands of an entry-level position in radiation therapy technology by ensuring that graduates:

- (a) demonstrate clinical competence appropriate for an entry-level radiation therapist;
- (b) demonstrate satisfactory oral and written communication skills;
- (c) demonstrate satisfactory critical thinking/problem solving skills; and
- (d) demonstrate an understanding of the importance of professional development and lifelong learning.

PSLO2: Provide the regional medical community with qualified individuals who can function as competent entry-level radiation therapists by ensuring that graduates:

- (a) complete the program in a timely manner;
- (b) pass the American Registry of Radiologic Technologists certification examination;
- (c) receive jobs upon graduation;
- (d) are satisfied with the education they received from the program; and
- (e) meet the expectations of employers.

COURSE STUDENT LEARNING OUTCOMES: The student will demonstrate the required level of performance relative to the following areas:

- CSLO-A: Describe the relationship of viruses to the formation of malignant disease. (PSLO1a, PSLO1b, PSLO1c, PSLO1d, PSLO2b)
- CSLO -B: Describe the importance of the paraneoplastic syndromes associated with malignant disease. (PSLO1a, PSLO1b, PSLO1c, PSLO1d, PSLO2b)
- CSLO -C: Given a particular body system, demonstrate knowledge of the anatomy of the area. (PSLO1a, PSLO1b, PSLO1c, PSLO1d, PSLO2b)
- CSLO -D: Given a particular malignant disease process, recall its associated epidemiology and etiology factors. (PSLO1a, PSLO1b, PSLO1c, PSLO1d, PSLO2b)
- CSLO -E: Given a particular malignant disease process, discuss the associated clinical detection (symptoms), diagnosis, and staging. (PSLO1a, PSLO1b, PSLO1c, PSLO1d, PSLO2b)
- CSLO -F: Describe the classification and staging of malignant disease. (PSLO1a, PSLO1b, PSLO1c, PSLO1d, PSLO2b)
- CSLO -G: Describe the natural growth and spread of malignant disease. (PSLO1a, PSLO1b, PSLO1c, PSLO1d, PSLO2b)
- CSLO -H: Given a particular malignant disease, describe the possible treatment options and the associated treatment planning procedure. (PSLO1a, PSLO1b, PSLO1c, PSLO1d, PSLO2b)
- CSLO -I: Given a particular malignant disease, state its prognosis. (PSLO1a, PSLO1b, PSLO1c, PSLO1d, PSLO2b)

TOPIC SCHEDULE / COURSE CONTENT / INSTRUCTIONAL COMPETENCIES:

Meeting / Unit / Topic

2 / 1 / Viruses and Paraneoplastic Syndromes (CSLO-A, CSLO-B)

Reading Assignment: Lenhard: Chapter 31

additional reading as assigned by instructor

- I. Carcinogenesis
 - A. Oncogenes
 - B. Carcinogens
 1. Definition
 2. Examples
 - C. Viruses
 1. Definition
 2. Examples
- II. Cancer Risk
 - A. Genetics
 - B. Exposure to Carcinogens
 - C. Lifestyle
- III. Paraneoplastic Syndromes
 - A. Definition
 - B. Importance
 - C. Disorder Examples
 1. Skin
 2. Hematologic
 3. Gastrointestinal Tract
 4. Urinary Tract
 - D. General Disorders
 1. Fever
 2. Tumor Markers/Antigens

Instructional Indicators: Viruses and Paraneoplastic Syndromes (CSLO -A, CSLO -B)

The student will:

1. Define the following:
 - a. oncogene
 - b. carcinogen
 - c. virus
 - d. tumor marker
 - e. antigen
2. Explain how oncogenes cause cancer.
3. Discuss ways in which personal lifestyle increases ones risk of developing cancer.
4. Relate the importance of paraneoplastic syndromes.
5. List five examples of a paraneoplastic syndrome.
6. Describe how viruses are thought to cause cancer.
7. State two human herpes viruses that are suspected cancer agents.
8. Explain the importance of the concept of “early detection” in the diagnosis of cancer.
9. Discuss how “where you live” can be a risk factor in cancer development.
10. Compare cancers associated with tobacco to cancers associated with diet.

3-4 / 2 / Head and Neck (CSLO-C, CSLO-D, CSLO-E, CSLO-F, CSLO-G, CSLO-H, CSLO-I)

Reading Assignment: Washington: Chapter 33

Lenhard: Chapter 12

Bentel: Chapter 9

- I. Anatomical Review
 - A. Diagram
 - B. Nasal Cavity
 - 1. Location of included structures
 - 2. Borders
 - C. Nasopharynx
 - 1. Location
 - 2. Borders
 - D. Oral Cavity
 - 1. Location of included structures
 - 2. Borders
 - E. Oropharynx
 - 1. Location of included structures
 - 2. Borders
 - F. Hypopharynx (pyriform sinus)
 - 1. Location
 - 2. Borders
 - G. Larynx
 - 1. Skeletal portions
 - 2. Anatomical portions
- II. Epidemiology
- III. Etiology
- IV. Clinical Detection (symptoms)
 - A. Mouth/Oral Cavity
 - B. Oropharynx
 - C. Nasopharynx
 - D. Nasal Cavity/Paranasal Sinuses
 - E. Hypopharynx
 - F. Larynx
- V. Diagnosis
 - A. Physical Examination
 - B. Laboratory Exams
 - C. Imaging Techniques
 - D. Endoscopy/Biopsy
- VI. Classification
 - A. Squamous Cell Carcinoma
 - B. Others
 - C. Hidden Primary
- VII. Staging (Larynx)
- VIII. Spread
- IX. Treatment
 - A. Goals
 - B. Considerations
 - C. Options
 - D. Radiation Therapy Techniques

1. Nasal Cavity/Paranasal Sinuses
 2. Nasopharynx
 3. Oral Cavity
 4. Oropharynx
 5. Hypopharynx
 6. Larynx
- X. Prognosis

Instructional Indicators: Head and Neck (CSLO-C, CSLO-D, CSLO-E, CSLO-F, CSLO-G, CSLO-H, CSLO-I)

The student will:

1. Given a diagram of the head and neck, label each part correctly.
2. State the anatomical borders for the following:
 - a. nasal cavity
 - b. nasopharynx
 - c. oral cavity
 - d. oropharynx
 - e. hypopharynx
3. Contrast the skeletal portions of the larynx to the anatomical portions of the larynx.
4. Discuss the importance of adequate cosmesis in the treatment of head and neck cancer.
5. Define Waldeyer's ring.
6. List etiologic factors relative to head and neck cancer.
7. Describe symptoms related to the following anatomy:
 - a. Mouth/Oral Cavity
 - b. Oropharynx
 - c. Nasopharynx
 - d. Nasal Cavity / Paranasal Sinuses
 - e. Hypopharynx
 - f. Larynx
8. State various methods used to diagnose head and neck cancer.
9. Classify pathologies relative to head and neck cancer.
10. Given a larynx staging chart, fill in each black correctly.
11. Discuss treatment goals relative to head and neck cancer.
12. Contrast surgery, chemotherapy and radiation therapy treatments for head and neck cancer.
13. List complications of radiation therapy treatment to the head and neck area.
14. Define osteoradionecrosis.
15. List and describe the divisions of the larynx.
16. State lymphatic pathways for the following cancer sites:
 - a. oral cavity
 - b. oropharynx
 - c. nasopharynx
 - d. hypopharynx
 - e. larynx
17. Contrast the following options relative to laryngeal surgery:
 - a. esophageal voice
 - b. electronic larynx
 - c. tracheoesophageal puncture
18. Name the two external landmarks often palpated to locate the larynx in a clinical set up.
19. Locate the anatomical site in the head and neck where the "classic smoker's cancer" occurs.
20. State the most common histopathology of head and neck cancers.

5 / - / Exam #1: Head and Neck

5-6 / 3 / Central Nervous System and Eye (CSLO-C, CSLO-D, CSLO-E, CSLO-F, CSLO-G, CSLO-H, CSLO-I)

*Reading Assignment: Washington: Chapter 34
Lenhard: Chapter 28, 29
Bentel: Chapter 10*

- I. Anatomical Review
 - A. Diagram
 - B. Brain
 - 1. Division
 - 2. Functions
 - C. Spinal Cord
 - 1. Length
 - 2. Location
 - 3. Function
 - 4. Meninges
 - 5. Cerebrospinal Fluid
 - 6. Blood Brain Barrier
 - D. Cranial Nerves
- II. Epidemiology
- III. Etiology
- IV. Clinical Detection (symptoms)
 - A. Pressure related
 - B. Location related
- V. Diagnosis
 - A. Physical Examination
 - B. CSF
 - C. Imaging Techniques
 - D. Biopsy
- VI. Classification
 - A. Glioma
 - 1. Glioblastoma multiforme
 - 2. Astrocytoma
 - 3. Ependymoma
 - 4. Oligodendroglioma
 - 5. Medulloblastoma
 - B. Brain Stem Glioma
 - C. Meningioma
 - C. Pituitary Adenoma
 - D. Craniopharyngioma
 - E. Others
 - F. Metastatic Disease
 - G. Spinal Cord Tumors
- VII. Staging
- VIII. Spread
- IX. Treatment
 - A. Surgery

- B. Radiation
- C. Investigational treatment
- D. Chemotherapy
- E. Supportive therapy
- X. Prognosis
- XI. Eye
 - A. Anatomy
 - B. Tumors
 - 1. Metastatic lesions
 - a. Primary lesions
 - 2. Eyelid lesions
 - a. Pathology
 - b. Location
 - 3. Intraocular lesions
 - a. Pathology
 - b. Occurrence
 - c. Symptoms
 - d. Diagnosis
 - e. Treatment
 - 1. Surgery
 - 2. Cryotherapy
 - 3. Radiation
 - 4. Radioactive plaque
 - 5. Chemotherapy
 - 4. Orbital tumors
 - a. Pathology
 - b. Occurrence
 - c. Treatment

Learning Indicators: Central Nervous System and Eye (CSLO-C, CSLO-D, CSLO-E, CSLO-F, CSLO-G, CSLO-H, CSLO-I)

The student will:

1. Given a diagram of the brain, label each part correctly.
2. Compare functions of the following brain divisions:
 - a. brain stem
 - b. diencephalon
 - c. cerebrum
 - d. cerebellum
3. Describe the brain stem.
4. Describe the diencephalon.
5. State the anatomical borders of the spinal cord.
6. Discuss brain and spinal cord meninges.
7. Explain the origin and function of cerebral spinal fluid.
8. List the name and function(s) of the following cranial nerves:
 - a. I (one)
 - b. II (two)
 - c. VII (seven)
 - d. VIII (eight)
 - e. X (ten)
9. List etiologic factors relative to CNS cancer.

10. Contrast clinical symptoms relative to pressure caused by a brain tumor.
11. Discuss epidemiology relative to CNS cancer.
12. State various methods used to diagnose CNS cancer.
13. Explain why brain tumors are so fatal.
14. Contrast surgery, chemotherapy and radiation therapy treatments for CNS cancer.
15. Compare prescribed doses for primary brain disease and metastatic brain disease.
16. Explain a radiation therapy treatment for whole brain irradiation.
17. State the most common corticosteroids used for brain edema.
18. Describe the most malignant glioma.
19. Discuss the most common brain primary.
20. Compare and contrast the following CNS tumors:
 - a. Ependymoma
 - b. Oligodendroglioma
 - c. Medulloblastoma
 - d. Brain Stem Glioma
 - e. Meningioma
21. Discuss the danger of brain stem glioma biopsies.
22. Contrast the following pituitary adenomas:
 - a. chromophobe
 - b. eosinophilic
 - c. basophilic
23. List various cancers which metastasize to the brain.
24. Explain the importance of the following prognostic factors relative to brain tumors:
 - a. age
 - b. Karnofsky
 - c. tumor size
 - d. tumor grade
25. Describe spinal cord tumor symptoms.
26. Given a diagram of the eye, label each part correctly.
27. State the main goal in treating eye tumors.
28. List several cancers that metastasize to the eye.
29. Name the most common type of benign eyelid lesion.
30. Identify the most frequent malignant eyelid lesion and its most common site of occurrence.
31. State the most common childhood intraocular tumor.
32. Compare leukokoria and strabismus.
33. Discuss various methods used to diagnose and/or detect retinoblastoma.
34. Define enucleation.
35. Describe treatment methods for retinoblastoma.
36. State the most common childhood primary orbital tumor.
37. Explain why a rhabdomyosarcoma is of menenchynal origin.

7 / - / Exam #2: Central Nervous System and Eye

7-8 / 4 / Respiratory System (CSLO-C, CSLO-D, CSLO-E, CSLO-F, CSLO-G, CSLO-H, CSLO-I)

Reading Assignment: Washington: Chapter 32

Lenhard: Chapter 11

Bentel: Chapter 11

- I. Anatomical Review
 - A. Diagram
 - B. Function
 - C. Lobes
 - 1. Divisions
 - 2. Location
 - D. Mediastinum
 - 1. Location
 - 2. Contents
 - E. Hilus
 - F. Pleura
 - 1. Parietal
 - 2. Visceral
 - 3. Pleural space
 - G. Anatomical landmarks
- II. Epidemiology
- III. Etiology
- IV. Clinical Detection
 - A. Symptoms
 - B. Local Complications
 - 1. Superior Vena Cava
 - 2. Pancoast's Tumor
 - 3. Horner's Syndrome
 - 4. Extra-pulmonary Manifestations
 - a. Metabolic
 - b. Dermatologic
 - c. Skeletal
 - d. Vascular
 - 5. Pleural effusions and Pneumonia
- V. Diagnosis
 - A. History and Physical Examination
 - B. Imaging Techniques
 - 1. Radiography
 - 2. CT
 - 3. MRI
 - 4. Nuclear Medicine
 - C. Bronchoscopy
 - D. Cytology
 - E. Bone Marrow Evaluation
 - F. Transthoracic Needle Aspiration
 - G. Specific Node Evaluation
 - H. Mediastinoscopy
 - I. Thorocentesis
- VI. Classification
 - A. Squamous Cell Carcinoma
 - B. Adenocarcinoma
 - C. Large Cell
 - D. Small Cell (Oat Cell Carcinoma)
 - E. Other
 - 1. Mesothelioma

2. Sarcoma
 3. Metastatic
 4. Hodgkin's Disease and Lymphomas
- VII. Staging
- VIII. Spread
- IX. Treatment
- A. Non-Small Cell Carcinomas
 1. Surgery
 2. Radiation Therapy
 3. Chemotherapy
 - B. Small Cell Carcinomas
 1. Surgery
 2. Chemotherapy
 3. Radiation Therapy
 - C. Standards of Radiation Therapy
 1. Curative
 2. Palliative
 3. Simulation
 - D. Complications of Radiation Therapy
- X. Prognosis

Instructional Indicators: Respiratory System (CSLO-C, CSLO-D, CSLO-E, CSLO-F, CSLO-G, CSLO-H, CSLO-I)

The student will:

1. Given a diagram of the lung, label parts correctly.
2. Describe the mediastinum relative to location and contents.
3. Compare lung pleura to the pleural space of the lung.
4. Discuss lung epidemiology.
5. Explain why smoking is hazardous to one's health.
6. Contrast the following etiologic factors relative to lung cancer:
 - a. asbestos
 - b. occupation
 - c. pollution
 - d. age
 - e. scarring
 - f. host susceptibility
 - g. smoking
7. State the most common diagnostic test for lung cancer.
8. Discuss clinical symptoms related to lung cancer.
9. Compare the complications of superior vena cava syndrome and Pancoast's tumor.
10. Describe Paraneoplastic Syndromes associated with lung cancer.
11. State various methods used to diagnose lung cancer.
12. Explain the difference between staging and grading.
13. Discuss the value of thoracentesis in the evaluation of pleural effusion.
14. Compare squamous cell carcinoma of the lung to adenocarcinoma of the lung.
15. Contrast large cell and small cell carcinomas.
16. State the most common histopathology of lung cancer.
17. Describe treatment methods for lung cancer.
18. Discuss lung simulation.
19. List complications of radiation therapy relative to lung cancer.

20. Define TDV reactions to radiation therapy.
21. Given a staging chart, fill in each blank completely.

9 / - / Exam #3: Respiratory System

9-10 / 5 / Digestive System, part 1 (CSLO-C, CSLO-D, CSLO-E, CSLO-F, CSLO-G, CSLO-H, CSLO-I)

Reading Assignment: Washington: Chapter 35

Clinical Oncology: Chapters 13, 14, and 16

Bentel: Chapter 12

- I. Esophagus
 - A. Anatomical Review
 1. Diagram
 2. Location
 3. Function
 4. Anatomical Divisions
 - B. Epidemiology
 - C. Etiology
 - D. Clinical Detection (Symptoms)
 1. Presenting symptoms
 2. Symptoms indicating advanced disease
 - E. Diagnosis
 1. Physical Examination
 2. Barium Swallow
 3. CT
 4. MRI
 5. Esophagoscopy
 6. Bronchoscopy
 7. CBC and Blood Chemistries
 8. Biopsy
 9. Nuclear Medicine
 - F. Staging
 - G. Spread
 - H. Classification
 1. Based on location
 2. Based on cell type
 - I. Treatment
 1. Dilatation
 2. Stents
 3. Surgery
 4. Radiation Therapy
 - a. Radiosensitivity
 - b. Margin
 - c. Field Arrangement
 - d. Radiation Doses
 1. Curative
 2. Palliative
 - e. Complications

- 5. Chemotherapy
 - a. Agent used
 - b. Complications
 - 6. Combination Therapy
 - J. Prognosis
- II. Stomach
 - A. Anatomical Review
 - 1. Diagram
 - 2. Location
 - 3. Function
 - 4. Anatomical Divisions
 - B. Epidemiology
 - C. Etiology
 - D. Clinical Detection (Symptoms)
 - E. Diagnosis
 - 1. Physical Examination
 - 2. Upper GI
 - 3. CT/MRI
 - 4. Endoscopy
 - F. Staging
 - G. Spread
 - H. Classification
 - 1. Based on location
 - 2. Based on cell type
 - I. Treatment
 - 1. Surgery
 - 2. Radiation Therapy
 - a. Field Arrangement
 - b. Dose
 - c. Sensitive Organs
 - 3. Chemotherapy
 - J. Prognosis
 - K. Other
 - 1. Lymphoma
 - 2. Sarcoma
- III. Pancreas
 - A. Anatomical Review
 - 1. Diagram
 - 2. Location
 - 3. Function
 - B. Epidemiology
 - C. Etiology
 - D. Clinical Detection (Symptoms)
 - E. Diagnosis
 - 1. CT
 - 2. Ultrasound
 - 3. Endoscopic Retrograde Cholangiopancreatography (ERCP)
 - 4. Laparoscopy
 - 5. MRI
 - 6. CBC

- 7. CEA
 - 8. Upper GI
 - 9. Liver Biopsy
 - F. Staging
 - G. Spread
 - H. Classification
 - 1. Based on location
 - 2. Based on cell type
 - I. Treatment
 - 1. Surgery
 - 2. Chemotherapy
 - 3. Radiation Therapy
 - a. Radiosensitivity
 - b. Tolerance dose
 - c. Sensitive organs
 - d. Field Arrangement
 - e. Radiation dose
 - f. Intraoperative Radiation Therapy
- IV. Extra-hepatic Bile Ducts
- A. Anatomical Review
 - 1. Common Bile Duct
 - 2. Cystic Duct
 - 3. Common Hepatic Duct
 - B. Epidemiology
 - C. Etiology
 - D. Clinical Detection (Symptoms)
 - E. Diagnosis
 - 1. CBC
 - 2. Liver Function Test
 - 3. Ultrasound
 - 4. Percutaneous Transhepatic Cholangiogram (PTC)
 - 5. CT/ MRI
 - 6. Biopsy
 - F. Staging
 - 1. Localized
 - 2. Unresectable
 - G. Spread
 - H. Classification
 - I. Treatment
 - 1. Surgery
 - 2. Chemotherapy
 - 3. Radiation Therapy
 - a. Brachytherapy
 - b. Radiation Dose
 - c. Intra-operative Radiation
 - J. Prognosis
- V. Gallbladder
- A. Anatomical Review
 - 1. Diagram
 - 2. Location

- 3. Function
- B. Epidemiology
- C. Etiology
- D. Clinical Detection (Symptoms)
- E. Diagnosis
 - 1. Ultrasound
 - 2. ERCP
 - 3. Radiographic Films / Contrast Exams
 - 4. PTC
 - 5. CT
 - 6. Biopsy
 - 7. Laparotomy
- F. Staging
- G. Spread
- H. Classification
- I. Treatment
 - 1. Surgery
 - 2. Radiation Therapy
 - 3. Chemotherapy
- J. Prognosis

Instructional Indicators: Digestive System, part 1 (CSLO-C, CSLO-D, CSLO-E, CSLO-F, CSLO-G, CSLO-H, CSLO-I)

The student will:

1. Given digestive system diagrams, label parts correctly.
2. Discuss esophagus anatomy.
3. State factors relative to esophagus epidemiology.
4. List etiologic factors associated with esophagageal cancer.
5. Define Plummer-Vinson syndrome.
6. Compare clinical symptoms relative to esophagus cancer.
7. State various methods used to diagnose esophagus cancer.
8. Given a staging chart for esophagus cancer, fill in each blank correctly.
9. Discuss histopathology relative to the esophagus.
10. Contrast various methods of treatment for cancer of the esophagus.
11. Contrast radiation therapy and chemotherapy complications relative to esophagus cancer.
12. Discuss stomach anatomy.
13. State factors relative to stomach epidemiology.
14. List etiologic factors associated with stomach cancer.
15. Compare clinical symptoms relative to stomach cancer.
16. State methods used in the diagnosis of stomach cancer.
17. Given a stomach cancer staging chart, fill in each blank correctly.
18. Discuss various ways in which stomach cancer may metastasize throughout the body.
19. Compare locations of gastric lesions using percentages and stomach anatomy.
20. Define the following gastric surgical procedures:
 - a. subtotal gastrectomy
 - b. subtotal esophagogastrectomy
 - c. near-total gastrectomy
21. List complications of gastric surgery.
22. Contrast radiation therapy treatment of gastric cancer to the use of chemotherapy.

23. State the most frequently used chemotherapy drug for stomach cancer.
24. Given a diagram of the gallbladder and pancreas, label parts correctly.
25. Explain why the pancreas is considered as both an endocrine and exocrine gland.
26. List factors relative to pancreas epidemiology.
27. State etiologic factors relative to pancreatic cancer.
28. Compare clinical symptoms of pancreatic cancer.
29. Explain methods used in the diagnosis of pancreas cancer.
30. Discuss ERCP.
31. Given a staging chart for pancreatic cancer, fill in each blank correctly.
32. List several areas of pancreatic metastases.
33. Discuss the effects of islet cell tumors.
34. Compare cancer of the pancreas head and tail.
35. Explain the Whipple procedure.
36. Describe the anatomy of the extra-hepatic bile ducts.
37. List factors relative to extra-hepatic bile duct epidemiology.
38. State etiologic factors relative to extra-hepatic bile ducts.
39. Compare clinical symptoms of extra-hepatic bile ducts.
40. List methods used to diagnose EHBD cancer.
41. State the most common histopathology of EHBD cancer.
42. Contrast cancer treatments relative to extra-hepatic bile duct cancer.
43. Explain the functions of the gallbladder.
44. State factors relative to gallbladder epidemiology.
45. Define cholelithiasis.
46. List clinical symptoms of gallbladder cancer.
47. Describe various methods used to diagnose GB cancer.
48. List organs associated with GB metastases.
49. Name the most common histopathology of GB cancer.
50. Explain the treatment of choice for gallbladder cancer.

9-10 / 5 / Digestive System, part 2 (CSLO-C, CSLO-D, CSLO-E, CSLO-F, CSLO-G, CSLO-H, CSLO-I)

Reading Assignment: Washington: Chapter 35

Lenhard: Chapters 17 and 15

Bentel: Chapter 12 and 13

- I. Liver
 - A. Anatomical Review
 1. Diagram
 2. Location
 3. Function
 - B. Epidemiology
 - C. Etiology
 - D. Clinical Detection (Symptoms)
 - E. Diagnosis
 1. CBC
 2. Nuclear Medicine
 3. Ultrasound
 4. CT
 5. Biopsy
 6. Arteriography
 - F. Staging

- G. Spread
- H. Classification
- I. Treatment
 - 1. Surgery
 - 2. Cryosurgery
 - 3. Chemotherapy
 - 4. Radiation Therapy
 - a. Tolerance Dose
 - b. Principle Role
- J. Prognosis
- II. Small Intestines
 - A. Anatomical Review
 - 1. Diagram
 - 2. Anatomical Divisions
 - 3. Function
 - B. Epidemiology
 - C. Etiology
 - D. Clinical Detection (Symptoms)
 - E. Diagnosis
 - 1. CBC
 - 2. Upper GI / SBFT
 - 3. CT
 - 4. Enteroclysis
 - 5. Endoscopy / Biopsy
 - F. Staging
 - G. Spread
 - H. Classification
 - I. Treatment
 - 1. Surgery
 - 2. Chemotherapy
 - 3. Radiation Therapy
 - a. Radiosensitivity
 - b. Contraindications
- III. Colo-rectal
 - A. Anatomical Review
 - 1. Diagram
 - 2. Anatomical Divisions
 - B. Epidemiology
 - C. Etiology
 - D. Clinical Detection (Symptoms)
 - E. Diagnosis
 - 1. CBC
 - 2. Ultrasound
 - 3. CT / MRI
 - 4. Barium Enema
 - 5. CEA
 - 6. Radiography
 - 7. Digital Rectal Exam
 - 8. Fecal Occult Blood Test
 - 9. Endoscopy

- 10. Cystoscopy
- F. Staging
- G. Spread
- H. Classification
- I. Treatment
 - 1. Surgery
 - 2. Radiation Therapy
 - a. Pre-operative
 - b. Post-operative
 - c. Field Arrangement
 - d. Radiation Dose
 - 3. Chemotherapy
- J. Prognosis
- IV. Anus
 - A. Anatomical Review
 - B. Epidemiology
 - C. Etiology
 - D. Clinical Detection (Symptoms)
 - E. Diagnosis
 - 1. Digital Examination
 - 2. CBC
 - 3. Fecal Occult Blood Test
 - 4. CT / MRI
 - 5. Biopsy
 - F. Staging
 - G. Spread
 - H. Classification
 - I. Treatment
 - 1. Surgery
 - 2. Radiation Therapy
 - J. Prognosis

Instructional Indicators: Digestive System, part 2: (CSLO-C, CSLO-D, CSLO-E, CSLO-F, CSLO-G, CSLO-H, CSLO-I)

The student will:

1. Describe the anatomy of the liver.
2. List factors relative to liver epidemiology.
3. Explain why primary liver cancer is uncommon in the United States.
4. State etiologic factors relative to liver cancer.
5. Compare clinical symptoms of liver cancer.
6. Describe methods used to diagnose liver cancer.
7. Explain the staging method used to liver cancer.
8. Discuss the most common histopathology of liver cancer.
9. Evaluate surgery as a treatment for liver tumors.
10. Explain the importance of adequate liver function prior to surgery.
11. Compare chemotherapy and radiation therapy as treatments for liver cancer.
12. Given a diagram of the intestines, label parts correctly.
13. Contrast small bowel epidemiology and etiology.
14. List clinical symptoms relative to cancer of the small intestine.
15. State diagnostic methods used to determine small bowel cancer.

16. Discuss the spread of small bowel cancer.
17. Contrast histopathologies relative to small bowel cancer.
18. Compare treatment methods for small bowel tumors.
19. Define the following:
 - a. polyp
 - b. diverticulum
 - c. Crohn's disease
20. Discuss colo-rectal epidemiology.
21. State etiologic factors relative to colon cancer.
22. Contrast clinical symptoms of colon cancer.
23. Explain diagnostic methods used for colon cancer.
24. Discuss the spread of colon cancer.
25. List histopathologies of colon cancer.
26. Compare surgery and radiation therapy as treatments for colorectal cancer.
27. Discuss special considerations when treating colo-rectal lesions.
28. Compare anal cancer epidemiology and etiologic factors.
29. State clinical symptoms of anal cancer.
30. List methods used to diagnose anal cancer.
31. Discuss the spread of anal cancer.
32. Name the most common histopathology of anal cancer.
33. Contrast surgery and radiation therapy as treatments for anal cancer.

11 / - / Exam #4: Digestive System

11-12 / 6 / Urinary System (CSLO-C, CSLO-D, CSLO-E, CSLO-F, CSLO-G, CSLO-H, CSLO-I)

Reading Assignment: Washington: Chapter 37

Lenhard: Chapter 18

Bentel: Chapter 13

- I. Kidney
 - A. Anatomical Review
 1. Location
 2. Diagram
 2. Function
 - B. Epidemiology
 - C. Etiology
 - D. Clinical Detection (Symptoms)
 - E. Diagnosis
 1. Clinical Examination
 2. Urinalysis
 3. IVP
 4. Retrograde Pyelogram
 5. Ultrasound
 6. CT / MRI
 7. Arteriogram
 8. Biopsy
 - F. Staging
 - G. Spread

- H. Classification
 - I. Treatment
 - 1. Surgery
 - 2. Chemotherapy
 - 3. Radiation Therapy
 - a. Field Arrangement
 - b. Radiation Dose
 - c. Tolerance Dose
- II. Ureter (Renal Pelvis)
- A. Anatomical Review
 - 1. Location
 - 2. Diagram
 - 2. Function
 - B. Epidemiology
 - C. Etiology
 - D. Clinical Detection (Symptoms)
 - E. Diagnosis
 - 1. Urinalysis
 - 2. IVP
 - 3. Cystoscopy
 - 4. Ultrasound
 - 5. CT
 - F. Staging
 - G. Spread
 - H. Classification
 - I. Treatment
 - 1. Surgery
 - 2. Chemotherapy
 - 3. Radiation Therapy
- III. Bladder
- A. Anatomical Review
 - 1. Location
 - 2. Diagram
 - 2. Function
 - B. Epidemiology
 - C. Etiology
 - D. Clinical Detection (Symptoms)
 - E. Diagnosis
 - 1. CBC
 - 2. Cystoscopy
 - 3. Urinalysis
 - 4. IVP
 - 5. CT / MRI
 - F. Staging
 - G. Spread
 - H. Classification
 - I. Treatment
 - 1. Surgery
 - a. Non-invasive, Low Stage
 - b. Invasive

- 2. Radiation Therapy
 - a. Field Arrangement
 - b. Radiation Dose
 - 1. Pre-operative
 - 2. Post-operative
 - 3. Palliative
 - c. Reactions / Complications
 - d. Brachytherapy
- J. Prognosis

Instructional Indicators: Urinary System (CSLO-C, CSLO-D, CSLO-E, CSLO-F, CSLO-G, CSLO-H, CSLO-I)

The student will:

1. Given a diagram of the urinary system, label parts correctly.
2. Contrast the tolerance doses for both kidneys and for only one kidney.
3. Compare the epidemiology and etiology of kidney cancer.
4. Define von Hippel-Landau Syndrome.
5. State the clinical symptoms of kidney cancer.
6. Explain various methods utilized in the diagnosis of kidney cancer.
7. Given a staging chart for kidney cancer, fill in each blank correctly.
8. Discuss the spread of kidney cancer.
9. Explain surgery as a treatment for kidney cancer.
10. Describe the use of radiation therapy as a treatment for kidney cancer.
11. List epidemiologic factors relative to ureter cancer.
12. Discuss the etiology of ureter cancer relative to renal pelvis seeding.
13. State clinical symptoms of ureter cancer.
14. Discuss the diagnosis of ureter cancer.
15. Compare the treatments for ureter cancer.
16. Contrast the epidemiology and etiology of bladder cancer.
17. List clinical symptoms relative to bladder cancer.
18. Name various methods to diagnose bladder cancer.
19. Given a bladder cancer staging chart, fill in each blank correctly.
20. Discuss the spread of bladder cancer.
21. Explain considerations relative to the treatment modality used for bladder cancer.
22. Evaluate surgical treatments for bladder cancer.
23. Describe radiation therapy as a treatment for bladder cancer.

13 / - / Exam #5: Urinary System

13-14 / 7 / Reproductive System: Female (CSLO-C, CSLO-D, CSLO-E, CSLO-F, CSLO-G, CSLO-H, CSLO-I)

*Reading Assignment: Washington: Chapter 36
 Lenhard: Chapter 19
 Bentel: Chapters 12 and 13*

- I. General Anatomical Review
 - A. Diagram
 - B. Function

- II. Endometrium (Uterus)
 - A. Anatomical Review
 - 1. Location
 - 2. Diagram
 - 2. Function
 - B. Epidemiology
 - C. Etiology
 - D. Clinical Detection (Symptoms)
 - E. Diagnosis
 - 1. Physical Examination
 - 2. Curettage
 - 3. Pap Smear
 - F. Staging
 - G. Spread
 - H. Classification
 - I. Treatment
 - 1. Surgery
 - 2. Radiation Therapy
 - a. Pre-operative
 - b. Post-operative
 - c. Field Arrangement
 - d. Radiation Dose
- III. Vulva
 - A. Anatomical Review
 - 1. Location
 - 2. Diagram
 - 2. Function
 - B. Epidemiology
 - C. Etiology
 - D. Clinical Detection (Symptoms)
 - E. Diagnosis
 - 1. Physical Examination
 - 2. Biopsy
 - F. Staging
 - G. Spread
 - H. Classification
 - I. Treatment
 - 1. Surgery
 - 2. Radiation Therapy
- IV. Ovary
 - A. Anatomical Review
 - 1. Location
 - 2. Diagram
 - 2. Function
 - B. Epidemiology
 - C. Etiology
 - D. Clinical Detection (Symptoms)
 - E. Diagnosis
 - 1. Physical Examination
 - 2. Ca-125

- 3. Laparotomy
- 4. Ultrasound
- 5. CT / MRI
- 6. CT / MRI
- 7. Upper and Lower GI
- F. Staging
- G. Spread
- H. Classification
- I. Treatment
 - 1. Combination Therapy
 - 2. Surgery
 - 3. Chemotherapy
 - a. Indications
 - b. Agents Used
 - 4. Radiation Therapy
 - a. Field Arrangement
 - b. Sensitive Organs
 - c. Radiation Dose
- V. Vagina
 - A. Anatomical Review
 - 1. Location
 - 2. Diagram
 - 2. Function
 - B. Epidemiology
 - C. Etiology
 - D. Clinical Detection (Symptoms)
 - E. Diagnosis
 - 1. Physical Examination
 - 2. Biopsy
 - F. Staging
 - G. Spread
 - H. Classification
 - I. Treatment
 - 1. Surgery
 - 2. Radiation Therapy
 - a. Field Arrangement

Instructional Indicators: Female Reproductive System (CSLO-C, CSLO-D, CSLO-E, CSLO-F, CSLO-G, CSLO-H, CSLO-I)

The student will:

1. Given a diagram of the female reproductive system, label parts correctly.
2. List factors relative to cervix epidemiology.
3. State etiologic risk factors relative to cervical cancer.
4. Compare clinical symptoms of cervical cancer.
5. Evaluate classification of the pap smear.
6. Describe methods used to diagnose cervical cancer.
7. Discuss the spread of cervical cancer.
8. Given a cervical cancer staging chart, fill in each blank correctly.
9. Compare various treatments and survival rates relative to cervical cancer.

10. List complications associated with the side effects of radiation therapy for cervical cancer.
11. Explain points A and B relative to tandem and ovoids in brachytherapy treatment of cervical cancer.
12. Contrast factors relative to epidemiology and etiology for uterine cancer.
13. State clinical symptoms of uterine cancer.
14. Name diagnostic methods used in uterine cancer.
15. Discuss the spread of uterine cancer.
16. State the most common histopathology of uterine cancer.
17. Compare surgery and radiation therapy treatments for uterine cancer.
18. List factors relative to vulva epidemiology and etiology.
19. List symptoms of vulva cancer.
20. Discuss the spread of vulva cancer.
21. Explain limitations of radiation therapy to vulva tissues.
22. Contrast ovarian epidemiology and etiology.
23. State ovarian cancer symptoms.
24. Describe diagnostic methods used in ovarian cancer methods.
25. Compare treatment methods for ovarian cancer.
26. State etiologic factors relative to vaginal cancer.
27. Discuss the spread of vaginal cancer.
28. Name the most common histopathology of cancer of the vagina.
29. State the vaginal cancer histopathology linked to DES.
30. List treatment methods for vaginal cancer.

13-14 / 7 / Reproductive System: Male (CSLO-C, CSLO-D, CSLO-E, CSLO-F, CSLO-G, CSLO-H, CSLO-I)

Reading Assignment: Washington: Chapter 37

Lenhard: Chapter 18

Bentel: Chapter 13

- I. General Anatomical Review
 - A. Diagram
 - B. Organs
 - C. Function
- II. Testes
 - B. Epidemiology
 - C. Etiology
 - D. Clinical Detection (Symptoms)
 1. Presenting Symptoms
 2. Advanced Symptoms
 - E. Diagnosis
 1. Clinical Examination
 2. Self Examination
 3. Blood and Tumor Markers
 4. US
 5. Chest X-ray
 6. CT
 7. Lymphangiography
 8. Nuclear Medicine
 9. Biopsy

- F. Staging
 - G. Spread
 - H. Classification
 - 1. Seminomas
 - 2. Non-Seminomas
 - I. Treatment
 - 1. Surgery
 - 2. Radiation Therapy
 - a. Localized Disease vs. Non-seminomas
 - b. Radiosensitivity
 - c. Field Margins
 - d. Radiation Dose
 - e. Complications
 - 3. Chemotherapy
 - a. Seminomas
 - b. Non-Seminomas
 - c. Complications
 - J. Prognosis
- III. Prostate
- A. Anatomical Review
 - 1. Location
 - 2. Diagram
 - 3. Composition
 - 4. Function
 - B. Epidemiology
 - C. Etiology
 - D. Clinical Detection (Symptoms)
 - E. Diagnosis
 - 1. Digital Rectal Examination
 - 2. Trans-rectal Ultrasound
 - 3. Core Needle Biopsy
 - 4. Tumor Marker (PSA)
 - 5. Nuclear Medicine
 - 6. Transurethral Resection of the Prostate (TURP)
 - F. Staging
 - 1. Tumor Staging
 - 2. Tumor Grading
 - G. Spread
 - H. Classification
 - I. Treatment
 - 1. Goal
 - 2. Treatment Determination
 - 3. Surgery
 - 4. Radiation Therapy
 - a. Field Arrangement
 - b. Radiation Dose
 - c. Iodine 124 seeds
 - d. Complications
 - 5. Hormonal Therapy
 - a. Surgical

15 / - / Final Exam: Comprehensive

16 / - / Patient Case Study Presentations

INSTRUCTIONAL ACTIVITIES:

- **Directed Readings/Quiz:** These readings cover paraneoplastic syndromes and oncologic viruses associated with malignancies. Students complete a quiz following the reading. (CSLO-A, CSLO-B)
- **Pre-lecture quizzes:** These quizzes are designed to stimulate learning by testing the student after reading the assigned materials but prior to the lecture presentation. *These quizzes are not graded.* (CSLO-C, CSLO-D, CSLO-E, CSLO-F, CSLO-G, CSLO-H, CSLO-I)
- **Post-lecture quizzes:** These quizzes are designed as critical thinking evaluation tools to test the students after lecture delivery. The quizzes are posted on eLearn the week after the lecture. They are graded and are used in grade calculation for the course. (CSLO-C, CSLO-D, CSLO-E, CSLO-F, CSLO-G, CSLO-H, CSLO-I)
- **Digestive System Presentation:** Students work together in small groups to research an area of the digestive system. They prepare a PowerPoint presentation that must include the following topics: anatomical review, epidemiology, etiology, clinical detection (symptoms), diagnosis, classification/staging/grading, spread, treatment, prognosis, and prevention. Each group prepares a written handout to accompany their presentation. Presentations are made mid-semester. (CSLO-C, CSLO-D, CSLO-E, CSLO-F, CSLO-G, CSLO-H, CC-I)
- **Case Study:** Students select a patient at the beginning of the semester and follow that patient through their entire course of treatment. They complete a packet of patient information data sheets. A research paper is prepared reflecting their patient's histopathology. All information is presented at the end of the semester. An alternative assignment is offered. Students may choose a nonfiction book relating to cancer; books must be pre-approved by the instructor. This book then becomes the focus of their research paper. A 1-2 page executive summary of the book is included with the research paper. All information is presented at the end of the semester. (CSLO-C, CSLO-D, CSLO-E, CSLO-F, CSLO-G, CSLO-H, CSLO-I)
- **Unit/Final Exams:** Each unit will be covered by a corresponding unit exam. The final exam is comprehensive.

CSLO/Assessment Alignment: See above for descriptions

CSLO:	CSLO-A	CSLO-B	CSLO-C	CSLO-D
Assessments:	<ul style="list-style-type: none"> Directed readings/quiz 	<ul style="list-style-type: none"> Directed readings/quiz 	<ul style="list-style-type: none"> Pre-lect quiz Post-lect quiz Dig sys pres Unit exams: h/n, cns, resp, dig, urin, repro Final exam 	<ul style="list-style-type: none"> Pre-lect quiz Post-lect quiz Dig sys pres Unit exams: h/n, cns, resp, dig, urin, repro Final exam
CSLO:	CSLO-E	CSLO-F	CSLO-G	CSLO-H
Assessments:	<ul style="list-style-type: none"> Pre-lect quiz Post-lect quiz Dig sys pres Unit exams: h/n, cns, resp, dig, urin, repro Final exam 	<ul style="list-style-type: none"> Pre-lect quiz Post-lect quiz Dig sys pres Unit exams: h/n, cns, resp, dig, urin, repro Final exam 	<ul style="list-style-type: none"> Pre-lect quiz Post-lect quiz Dig sys pres Unit exams: h/n, cns, resp, dig, urin, repro Final exam 	<ul style="list-style-type: none"> Pre-lect quiz Post-lect quiz Dig sys pres Unit exams: h/n, cns, resp, dig, urin, repro Final exam
CSLO:	CSLO-I			
Assessments:	<ul style="list-style-type: none"> Pre-lect quiz Post-lect quiz Dig sys pres Unit exams: h/n, cns, resp, dig, urin, repro Final exam 			

COURSE DELIVERY FORMAT:

This format is the traditional format and may use an online format to provide access to “static” materials which include the syllabus, course material, contact information, and presentations. Faculty must make available when requested a copy of syllabus and any other instructor provided course materials, including their contact information. Faculty may require on-line activities and assignments to include online tests and submission of all written and on-line communications. The extent of on-line activities/assignments may vary by course but will be specified on the syllabus.

TEACHING /LEARNING METHODS:

Lectures / Demonstrations	Reading / Quizzes / Homework Assignments
Clinical Assignments	Online Discussions

EVALUATION GUIDELINES:

Course grade will be derived as follows:

50% Unit examinations	10% Homework/Quizzes
20% Patient Case Study	20% Final Exam

GRADING POLICY:

90 – 100.....A
80 – 89B
70 – 79.....C
60 – 69.....D
59 – belowF

Note: Students must achieve an average of 75% or better to remain in the program.

Late assignments will only receive a maximum of 75% of the grade assigned.

COLLEGE POLICIES:

This class is governed by the policies and procedures stated in the current Chattanooga State Student Handbook. Additional or more specific guidelines may apply.

ADA STATEMENT:

Students who have educational, psychological, and/or physical disabilities may be eligible for accommodations that provide equal access to educational programs and activities at Chattanooga State. These students should notify the instructor immediately, and should contact Disabilities Support Services within the first two weeks of the semester in order to discuss individual needs. The student must provide documentation of the disability so that reasonable accommodations can be requested in a timely manner. All students are expected to fulfill essential course requirements in order to receive a passing grade in a class, with or without reasonable accommodations.

DISRUPTIVE STUDENTS:

The term “classroom disruption” means – student behavior that a reasonable person would view as substantially or repeatedly interfering with the activities of a class. A student who persists in disrupting a class will be directed by the faculty member to leave the classroom for the remainder of the class period. The student will be told the reason(s) for such action and given an opportunity to discuss the matter with the faculty member as soon as practical. The faculty member will promptly consult with the division dean and the college judicial officer. If a disruption is serious, and other reasonable measures have failed, the class may be adjourned, and the campus police summoned. Unauthorized use of any electronic device constitutes a disturbance. Also, if a student is concerned about the conduct of another student, he or she should please see the teacher, department head, or division dean.

AFFIRMATIVE ACTION:

Students who feel that he or she has not received equal access to educational programming should contact the college affirmative action officer.

ACADEMIC INTEGRITY/ACADEMIC HONESTY:

In their academic activities, students are expected to maintain high standards of honesty and integrity. Academic dishonesty is prohibited. Such conduct includes, but is not limited to, an attempt by one or more students to use unauthorized information in the taking of an exam, to submit as one's own work, themes, reports, drawings, laboratory notes, computer programs, or

other products prepared by another person, or to knowingly assist another student in obtaining or using unauthorized materials. Plagiarism, cheating, and other forms of academic dishonesty are prohibited. Students guilty of academic misconduct, either directly or indirectly through participation or assistance, are immediately responsible to the instructor of the class. In addition to other possible disciplinary sanctions, which may be imposed through the regular institutional procedures as a result of academic misconduct, the instructor has the authority to assign an "F" or zero for an activity or to assign an "F" for the course.

EMAIL COMMUNICATION:

Please note all communication with instructors about your course work should be through the eLearn Email system. For assistance on how to use the eLearn Email tool go to this url: http://river.chattanoogastate.edu/orientations/Student_PDFs/eLearn_eMail_aug09.pdf.

For all other communication the official email system used by the college is through Tiger Mail. This is accessible by clicking the blue paw icon from the top right hand side of your Tiger Web home page <https://tigerweb.chattanoogastate.edu/cp/home/displaylogin>.

The instructor reserves the right to modify this syllabus, in writing, anytime during the course of the semester.

Revised 10/10/ldl