NEOPLASIA I, II, III

Reading Assignment: Robbins Basic Pathology (Kumar, Abbas, Aster) 10th Edition, Chapter 6 pp. 189-242

*Correlate with lecture notes and readings from Molecular Cell Biology & Genetics Course:
DNA Replication. Introduction to Mitosis
DNA Repair & Recombination. Introduction to Meiosis
Cancer Molecular Genetics 1&2

KEY CONCEPTS AND LEARNING OBJECTIVES:

- Define the following terms: hyperplasia, metaplasia, dysplasia, tumor, neoplasm, cancer

- Cite the two basic tissue components of a neoplasm. Name the component which is largely responsible for the biologic behavior of the neoplasm.

- Describe dysplasia and explain its natural history. Use the respiratory tract and the female genital tract as clinical examples.

- List the major characteristics which are used to differentiate between benign and malignant neoplasms. Describe each characteristic and briefly explain how each is used to differentiate a benign from a malignant neoplasm. Define and characterize anaplasia.

- Define metastasis. List three pathways by which neoplasms metastasize.

- List the major steps which are involved in the process of tumor invasion.

- Define proto-oncogene and tumor suppressor genes. Discuss what is meant by the statement; "The molecular basis of carcinogenesis is a multi-step process"

- Summarize the mechanisms by which mutated RAS, Rb and p53 genes contribute to carcinogenesis.

- Summarize the key principles of the internal and external pathways of apoptosis,

- Describe the process (mechanism of action) of chemical carcinogenesis. Define the following terms: direct-acting carcinogenic agents, indirect-acting carcinogenic agents, promotors

- Describe the concept of “immune surveillance” of cancer.
• List four sources of radiation that are carcinogenic. Cite two examples of therapeutic irradiation that can lead to cancer.

• Cite the two categories of oncogenic viruses. List the human neoplasms that are strongly linked with causative oncogenic viruses.

• Define “tumor associated marker”

• Define, as well as compare and contrast, the concepts of grading a cancer and staging a cancer. Describe the TNM system of staging.

• Define “paraneoplastic syndrome”

• Define “cancer cachexia”