

## **MED 803: Hematology and Oncology (HONC)**

*Autumn 2017*

Mondays, Tuesdays, Thursdays & Fridays  
8:00 a.m. to 12:00 p.m. & 1:00 to 5:00 p.m.  
1001 Shadow Lane

Course Chair:  
Paul Michael, MD  
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### **Course Description and Learning Objectives:**

This course takes an integrated approach to hematology and neoplasia to provide a broad understanding of the normal structure and function of blood, and the lymphoreticular system. A comprehensive overview of pathophysiology, epidemiology, biostatistics, diagnostic tests, and therapeutic principles related to disorders of the hematologic system are covered along with foundational concepts of cancer biology, epidemiology, and anti-neoplastic therapies.

- Describe the essential features of the hematologic system, its normal structure and function, and the epidemiology, clinical features, pathogenesis, pathophysiology, and laboratory findings associated with benign and malignant hematologic diseases.
- Describe the essential features of cancer, including its molecular basis, classification, staging, and the basic types of anti-neoplastic therapies.
- Identify appropriate therapeutic options for selected hematologic diseases.
- Determine how epidemiologic, socioeconomic, behavioral, sociocultural, and community factors may impact the care of patients with hematologic diseases.
- Describe how wellness, nutrition, hospitality principles, pain management, and integrative medicine may contribute to the care of patients with hematologic diseases.
- Recognize bioethical issues germane to the medical care of patients with hematologic diseases.
- Recognize end-of-life issues germane to patients with cancer and non-malignant hematologic diseases.
- Construct a differential diagnosis based on the clinical presentation of a patient with a hematologic disease and apply diagnostic reasoning to narrow the differential.
- Develop pertinent clinical questions related to the diagnosis and/or treatment of hematologic diseases, and utilize appropriate resources to answer those questions in a self-directed fashion.
- 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.

### **Required and Recommended Textbooks:**

#### Required

- Drake, R. L., Vogl, W. A., & Mitchell, A. W. (2015). *Gray's Anatomy for Students*. 3<sup>rd</sup> ed. Elsevier Saunders.
- Fletcher, R., & Fletcher, S. (2013). *Clinical Epidemiology: The Essentials*. 5<sup>th</sup> ed. Wolters Kluwer.
- Kumar, V., Abbas, A., & Aster, J. (2014). *Robbins and Cotran Pathologic Basis of Disease*. 9<sup>th</sup> ed. Elsevier Saunders.

#### Recommended

*To be determined at the onset & throughout the course's duration to facilitate learning objectives.*

**Course Schedule & Weekly Objectives:**

Week 1 – October 16-20, 2017 – Erythrocytes

*Topics include:*

- Normal anatomy and embryology of the hematopoietic and lymphoid tissues
- Salient histologic features of blood, *e.g.* cellular and acellular components
- Key features of normal hematopoiesis (including essential regulatory mechanisms)
- Major structural and biochemical features of red cells
- Formation of normal hemoglobin at varying points in the life cycle (including iron metabolism and heme synthesis)
- Role of hemoglobin in transporting oxygen and carbon dioxide (including factors that modify this transport)
- Clinical features, pathogenesis, and diagnostic findings associated with selected types of congenital anemia (including sickle cell disease, thalassemia, and hereditary spherocytosis)
- Clinical presentation, pathogenesis, and laboratory findings associated with selected types of acquired anemia (including immune-mediated hemolysis and anemia of chronic disease)
- Epidemiology of selected red cell disorders.
- Major therapeutic modalities for treating disorders of the red cell (including the uses, contraindications, side effects, and major drug-drug interactions associated with various pharmacologic interventions)

*Assigned Readings & Review Materials:*

Week 2 – October 23-26, 2017 – Transfusion and Hemostasis

*Topics include:*

- Major blood group antigens and their significance in assessing compatibility for blood transfusion
- Major indications and significant potential complications associated with blood transfusion
- Normal steps in thrombopoiesis and its regulation
- Major features of the coagulation system, including the synthesis, localization, and actions of each component
- Process of clot formation and dissolution (including the roles of clotting factors, platelets, and the fibrinolytic proteins)
- Clinical features, pathogenesis, and diagnostic findings associated with selected bleeding disorders (including coagulopathies, von Willebrand disease (vWD), thrombotic thrombocytopenic purpura (TTP), and immune thrombocytopenic purpura, ITP)
- Epidemiology of selected disorders of hemostasis.
- Major therapeutic modalities for treating disorders of hemostasis (including the uses, contraindications, side effects, and major drug-drug interactions associated with various pharmacologic interventions)

*Assigned Readings & Review Materials:*

**EXAM 1: October 30, 2017**

Week 3 – October 30 - November 3, 2017 – Neoplasia

*Topics include:*

- Basic classification of and terminology associated with benign and malignant neoplasms
- Salient histologic features that characterize benign and malignant neoplasms.
- Define and contrast grade and stage of neoplasms

- Oncogene, tumor suppressor, and basic molecular mechanisms that culminate in neoplastic transformation
- Basic mechanisms by which increased susceptibility to certain cancers may be inherited
- Salient molecular and pathologic features of tumor invasion and metastasis
- Significant paraneoplastic manifestations of cancer
- Major features of selected antineoplastic agents, organized by their respective mechanisms
- Epidemiology of cancer globally and in the United States
- Major therapeutic modalities for treating cancer (including the uses, contraindications, side effects, and major drug-drug interactions associated with various pharmacologic interventions)

*Assigned Readings & Review Materials:*

Week 4 –November 6-10, 2017 – Malignant Hematology

*Topics include:*

- Basic classification of hematologic neoplasms by cell of origin
- Contrast acute versus chronic hematologic neoplasms
- Clinical features, pathogenesis, and diagnostic findings associated with selected neoplasms of lymphoid origin
- Clinical features, pathogenesis, and diagnostic findings associated with selected neoplasms and preneoplastic lesions of myeloid origin (including myeloid leukemia, myelodysplastic syndrome (MDS), and myeloproliferative neoplasms, MPNs)
- Clinical features, pathogenesis, and diagnostic findings associated with plasma cell disorders (including myeloma, monoclonal gammopathy of undetermined significance (MGUS), and plasma cell-derived amyloidosis)
- Epidemiology of selected hematologic malignancies.
- Major therapeutic modalities for treating cancer (including the uses, contraindications, side effects, and major drug-drug interactions associated with various pharmacologic interventions)

**FINAL EXAM: November 13, 2017**

**Course Requirements & Evaluation:**

Two (2) summative National Board of Medical Examiners (NBME) exams will be administered throughout the duration of the course, utilizing U.S. Medical Licensing Examination (USMLE)-type questions. Formative and summative assessments for small group activities, *e.g.* active engagement in problem-based learning sessions, in addition to preparation quizzes and written assignments will be administered throughout the course's duration. It is imperative that students engage in individual, small group, and class discussions to effectively contribute to active learning activities as well as offer and receive constructive feedback and assessment.

Students are expected to arrive on time to all course sessions and prepared to participate actively and engage in all learning and small group activities. Additionally, students are expected to be respectful, take responsibility and accountability for their own choices, actions, and/or decision. This includes the demonstration of personal and professional integrity.

**Grading:**

A pass/fail (P/F) grade is based upon satisfactory participation in small group activities, the timely

completion of written assignments and exercises, and successful passage on the summative NBME exams.

**Dress Code:**

Students represent not only themselves, but also the medical profession to those with whom they have contact. Appropriate and professional attire should be worn, especially when students are in patient care settings or when contact with patients is anticipated. Students should be aware that personal appearance may serve to inspire or hinder the establishment of the trust and confidence that are essential in the doctor-patient relationship. Jeans, sandals, and shorts (and other casual attire) are not considered professional dress. Scrubs are worn in the operating room, in the anatomy lab or in other clinical circumstances to protect the operator's clothing from soilage. Scrubs, in general, should not be worn outside of the lab or hospital, and scrubs worn in the operating room should not be worn outside of the operating room. *(Please refer to Section 6: Professionalism in the UNLV SOM Student Handbook for guidelines pertaining specifically to dress and deportment.)*

**University Expectations and Resources:**

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 UNLV SOM's Senior Associate Dean for Student Affairs, as well as a Disabilities Specialist at the DRC to discuss appropriate options.

If you are registered with the UNLV Disability Resource Center, please submit your Academic Accommodation Plan from the DRC to UNLV SOM's Office of Student Affairs to develop strategies for implementing an accommodations plan that meets both your needs and UNLV SOM requirements. Any information provided is private and confidential. To maintain confidentiality, please do not approach course chairs or instructors before or after class to discuss 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 Senior Associate Dean for Student Affairs and the course chair or faculty preceptor 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 – Course or clerkship/elective faculty share responsibility with individual students to monitor their performance in the curriculum. The Student Progress Committee (SPC) follows student performance throughout the curriculum, and is responsible for approving all remediation plans once students have been assigned an insufficient grade, such as an ‘Incomplete’ or ‘Fail.’

Remediation plans are developed by individual course directors, based upon individual student’s identified academic and professional deficits, and tailored by both the course director and the SPC. The SPC determines deadlines for the adequate remediation of the course and provides final approval of the remediation plan. Students have the option, upon request, to appear before the SPC when plans for remediation are being considered.

*Please note:* In Phase 3 of the curriculum, any remediation of elective or advanced clerkship deficits must be completed prior to April 1 to meet the School of Medicine’s graduation requirements. Students are not permitted to remediate more than two (2) course grades of ‘Incomplete’ during a single academic year. Students who receive more than two incomplete grades must be reviewed by the SPC. *(Please refer to Section 7: Academic Policies in the UNLVSOM Student Handbook for guidelines pertaining specifically to academic progress and actions.)*

Tutoring & Academic Resources – The Academic Skills Team (AST) provides academic assistance for all UNLVSOM students taking UNLVSOM courses. Students are encouraged to stop by the AST to utilize a variety of academic services, including test-tasking skills and strategies, coping with test anxiety, and improving self-study skills in preparation for USMLE and board exams. The AST is located at: 2040 West Charleston Boulevard, 89102.

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