IM 653
Hematology-Oncology Clerkship

Selective/Elective Clerkship Rotation Syllabus

Osteopathic Medical Specialties
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Chairperson, Instructor of Record

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Course Director

Last updated: 1-1-2015

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MSUCOM constantly strives to improve and advance its curriculum through innovation while assuring compliance with current AOA accreditation standards. While major changes are generally instituted at the beginning of each academic year, minor changes may be implemented semester to semester.

Please be mindful of the need to read your syllabi before beginning your rotations.
**General Description**

This course is designed to provide the student with an opportunity to actively engage in patient-based, learning experiences under the guidance of a faculty member (preceptor) in collaboration, as appropriate, with residents and/or fellows.

Rotations are typically two week, 3 credit hour, or four week, 6 credit hours in duration. Timeframes for each rotation are decided at least 30 days prior to the beginning of the rotation.

The overall performance of course participants will be evaluated through customary assessment instruments normally employed by the department for core rotations, at the discretion of the instructor of record.

**Educational / Instructional Goals & Objectives**

Course participants will:

A. Develop an appreciation of the practice of Hematology/Oncology as related to the specialty of the preceptor.

B. Assimilate what they learn and demonstrate their understanding of patient-care through ongoing interaction and dialogue with, as well as formative feedback from, the preceptor.

C. Demonstrate an understanding of the (seven) osteopathic core competencies (as applicable).

1. Educational Goals: The cardiology rotation is intended to provide the student with experience in the evaluation and treatment of a range of hematology/oncology clinical problems. The clinical experience is intended to emphasize the diagnosis and management of acute and chronic hematologic/oncologic diseases and the management of risk factors associated with the disease. Learning objectives focus on the complete and accurate patient history and physical examination, indications for appropriate diagnostic studies, and the understanding of first line therapy for common hematologic diseases.

2. Competencies/Objectives

I: Medical Knowledge: The student is expected to be able to describe the clinical presentation, pathophysiology and management of the following hematologic/oncologic issues:

**HEMATOLOGY/ONCOLOGY**

**EDUCATIONAL GOALS**

The hematology/oncology rotation is intended to provide the student with hands on experience in the evaluation and treatment of various hematological and oncological conditions

The clinical experience will emphasize the diagnosis and management of acute and chronic hematology/oncology diseases and the management of the risk factors associated with each disease

Learning objectives highlight the complete and accurate patient history and physical exam, indications for appropriate diagnostic studies and the understanding of first line therapy for common hematological/oncological conditions
HEMATOLOGY COMPETENCIES/OBJECTIVES

**A. LAB EVALUATION**

1. Describe the role of the peripheral smear in the diagnosis of various diseases

2. Identify and list the significance of the various red blood cell abnormalities including microcytosis, macrocytosis, schistocytes, target cells, Howell-Jolly bodies etc.

3. Identify and list the significance of the various white blood cell abnormalities including hypersegmented neutrophils, blast cells, auer rods, hairy cells, etc.

4. Be familiar with the significance and indications of a bone marrow biopsy

**B. WHITE BLOOD CELL DISORDERS**

1. Define and identify causes of the following white blood cell disorders:
   a. Leukopenia
   b. Neutropenia
   c. Lymphopenia
   d. Leukocytosis

**C. RED BLOOD CELL DISORDERS**

1. Understand the definition of anemia for both men and women

2. Be familiar with the clinical symptoms and signs of anemia

3. Discuss the diagnostic approach to anemia with regard to the complete blood count, MCV, RDW, reticulocyte count, and peripheral smear findings

4. Understand the approach, pathophysiology, and diagnosis of anemia's associated with decreased production
   a. Microcytic anemia
      i. Iron deficiency anemia
      ii. Sideroblastic anemia
      iii. Anemia of chronic disease
      iv. Thalassemias
      v. Lead poisoning
   
   b. Normocytic anemia's
      i. Anemia of chronic disease
      ii. Anemia of chronic renal failure
      iii. Endocrine disorders

   c. Macrocytic anemia
      i. Vitamin B12 deficiency
      ii. Folate deficiency
      iii. Drug induced disorders

5. Understand the approach, pathophysiology and diagnosis of anemia's associated with increased destruction
   a. Hemolytic anemia's
      i. Sickle Cell anemia

ii. Glucose-6-Phosphate Dehydrogenase deficiency  
iii. Hereditary spherocytosis  
iv. Acquired immune hemolytic anemia  
    1. Warm antibody  
    2. Cold antibody  
v. Acquired nonimmune hemolytic anemia  
    1. Microangiopathic hemolytic anemia  
        i. Thrombotic thrombocytopenic purpura (TTP)  
        ii. Disseminated intravascular coagulation (DIC)  
        iii. Hemolytic-uremic syndrome  
        iv. Eclampsia  
        v. Malignant hypertension  
    2. Macroangiopathic hemolytic anemia  
        vi. Prosthetic valves  
        vii. Severe aortic stenosis  
  3. Physical and chemical trauma  
  4. Infection  
  5. Hypersplenism  
  6. Paroxysmal nocturnal hemoglobinuria  
  6. Understand the approach, pathophysiology and diagnosis of anemia's associated with decreased production of red blood cells  
    a. Malignancies and other marrow infiltrative diseases  
        i. Leukemia and lymphoma  
        ii. Plasma cell disorders  
    b. Stem cell disorders  
        iii. Myelofibrosis  
        iv. Aplastic anemia  
        v. Pure red cell aplasia  
        vi. Myelodyplasia  
  D. PLATELET DISORDERS  
  1. Thrombocytopenia  
      a. Understand the definition of thrombocytopenia  
      b. Discuss the differential diagnosis of thrombocytopenia with regard to decreased production and increased destruction  
      c. Review TTP and HUS  
      d. Review DIC  
      e. Discuss the etiologies and pathophysiological mechanism of Heparin induced thrombocytopenia (HIT)  
          i. Distinguish between HIT I and HIT II  
          ii. Discuss treatment goals of HIT  
      f. Discuss the pathophysiology, presentation and management of idiopathic thrombocytopenic purpura  
  2. Thrombocytosis  
      a. Understand the etiology, diagnostic criteria and treatment of Essential Thrombocytosis  
      b. Understand causes of reactive thrombocytosis
E. DEEP VEIN THROMBOSIS AND PULMONARY EMBOLISM

1. Be familiar with the risk factors associated with DVT and PE
2. Understand the etiology of DVT and PE
3. Review the clinical symptoms and signs of DVT/PE
4. Understand the diagnostic approach to DVT/PE
5. Be familiar with the management of DVT/PE
6. Review the importance of prevention of DVT/PE

F. THROMBOPHILIA

1. Understand the clinical and laboratory manifestations of the various causes of thrombophilia
   a. Activated Protein C Resistance /Factor V Leiden
   b. Prothrombin G20210A
   c. Antithrombin deficiency
   d. Protein C and S deficiency
2. Be familiar with the work up of the hypercoagulable state
3. Discuss the clinical and laboratory features of Antiphospholipid syndrome

G. COAGULOPATHY

1. Discuss the presentation, diagnosis and treatment of Hemophilia A
2. Discuss the presentation, diagnosis and treatment of Hemophilia B
3. Discuss the presentation, diagnosis and treatment of Von Willebrand Disease

H. PANCYTOPENIA

1. Understand the etiology and classification of pancytopenia
2. Review the various causes of pancytopenia
3. Be familiar with the proper workup for pancytopenia

I. BONE MARROW FAILURE

1. Define Myelodysplasia
2. Review the epidemiology and pathogenesis of myelodysplasia
3. Briefly discuss the classifications of myelodysplasia

J. APLASTIC ANEMIA

1. Define aplastic anemia
2. Review the causes of aplastic anemia
3. Understand the pathogenesis of acquired aplastic anemia
4. Discuss the diagnosis and treatment of aplastic anemia

K. PAROSYSMAL NOCTURNAL HEMOGLOBINURIA (PNH)

1. Explain the pathogenesis and presentation of PNH
2. Discuss the diagnosis and treatment of PNH
L. MYELOPROLIFERATIVE DISORDERS

1. Be familiar with the background, epidemiology, and clinical presentation of Polycythemia Vera (PV)
2. Discuss the diagnostic criteria for PV
3. Review the treatment options for PV
4. Define and review the epidemiology of Essential Thrombocytosis (ET)
5. Discuss the diagnostic criteria of ET
6. Discuss the treatment options of ET

M. TRANSFUSIONS

1. Discuss the indications, risks and benefits of the following transfusions
   a. Red cell transfusions
   b. Platelet transfusions
   c. Plasma products

N. SICKLE CELL DISEASE (SCD)

1. Review the pathophysiology of SCD
2. Discuss the clinical symptoms and signs of SCD
3. Discuss the treatment options of SCD
4. Review the important acute complications of SCD

O. PLASMA CELL DISORDERS

1. Discuss the pathophysiology and clinical presentation of Multiple Myeloma (MM)
2. Review the diagnosis and proper work up of MM
3. Briefly review the treatment options of MM
4. Define Monoclonal Gammopathy of undetermined Significance (MGUS)
5. Discuss the natural history, clinical presentation and management of MGUS
6. Be familiar with the diagnosis, presentation and treatment of Waldenstrom Macroglobulinemia
7. Discuss the causes, presentation and treatment of amyloidosis

P. BREAST CANCER

1. Review the risk factors associated with breast cancer
2. Discuss the recommended screening modalities for the early detection of breast cancer
3. Explain the various pathologic subtypes of breast cancer
   a. Types of Adenocarcinoma
   b. Ductal carcinoma in situ (DCIS)
   c. Lobular carcinoma in situ (LCIS)
   d. Paget disease of the nipple
4. Review the diagnosis and work up of a breast mass
5. Discuss the prognosis of breast cancer with regard to estrogen, progesterone receptors and Her-2 overexpression
6. Briefly review treatment options for the various forms of breast cancer

Q. LUNG CANCER

1. Discuss the risk factors associated with lung cancer
2. Review the epidemiology of lung cancer
3. Discuss the various classifications, presentation and management of **Non-Small-Cell Lung Cancer**
4. Review the presentation, associated syndromes and management of **Small-Cell Lung Cancer**

**R. COLORECTAL CANCER**

1. Discuss the epidemiology and pathophysiology of colorectal cancer
2. List the risk factors associated with colorectal cancer
3. Review the recommendations regarding screening for colorectal cancer
4. Briefly discuss the work-up, diagnosis and treatment of colorectal cancer

**S. GASTROINTESTINAL CANCERS**

1. Discuss the presentation, risk factors, diagnosis and treatment of the following GI malignancies:
   a. Esophageal cancer
   b. Gastric cancer
   c. Pancreatic cancer
   d. Hepatocellular cancer
   e. Gall bladder cancer
   f. Cholangiocarcinoma

**T. MALIGNANT MELANOMA**

1. Review the incidence, epidemiology and risk factors associated with melanoma
2. Discuss the clinical presentation, diagnosis and treatment options for melanoma

**U. PROSTATE CANCER**

1. Review the epidemiology and risk factors associated with prostate cancer
2. Discuss the current recommendations regarding screening for prostate cancer
3. Explain the presentation, diagnosis, prognosis and treatment options of prostate cancer

**V. LEUKEMIA**

1. Differentiate the various leukemia’s with regard to presentation, cytogenetics, diagnostic workup, treatment options and prognosis
   a. Acute Myelogenous Leukemia
   b. Chronic Myelogenous Leukemia
   c. Chronic Lymphocytic Leukemia
   d. Acute Lymphocytic Leukemia
   e. Hairy Cell Leukemia

**W. LYMPHOMA**

1. Differentiate **Hodgkin lymphoma** and **Non Hodgkin lymphoma** with regard to epidemiology, pathophysiology, presentation, diagnosis, staging, and treatment

**X. ADDITIONAL MALIGANCIES**

Discuss the epidemiology, pathophysiology, risk factors, screening, diagnosis, treatment and prognosis for the following cancers
1. Head and Neck Cancers
2. Sarcomas
3. Endocrine malignancies
4. Renal Cell Cancer
5. Bladder Cancer
6. Testicular Cancer
7. Gynecological Cancers
8. Intracranial Cancers

Y. ONCOLOGICAL EMERGENCIES

Discuss the definition, pathophysiology, presentation, diagnosis and treatment of the following emergencies

1. Malignant pericardial effusion and tamponade
2. Superior Vena Cava Syndrome
3. Acute Tumor Lysis Syndrome
4. Hypercalcemia of Malignancy
5. Syndrome of Inappropriate Antidiuresis and Hyponatremia
6. Neutropenic Fever
7. Epidural Spinal Cord Compression
8. Pathologic Fractures

II: Clinical Skills

A. The student should complete a thorough medical history including details of current symptoms, previous hematologic issues and management efforts, and risk factors that could impact on the diagnosis or management of their current problem.

B. Perform a complete physical exam with appropriate emphasis on the hematopoietic system exam.

C. Interpret common diagnostic tests utilized in the evaluation of the patient with a hematologic or oncologic disorder.

D. Interpret laboratory test with emphasis on the CBC, iron studies, Vitamin B12 and Folate disorders

III: Socioeconomic: the student will:

A. Appreciate the psychosocial issues that potentially impact the patient’s hematologic problems (professionalism and sensitivity to disability issues).

Assessment of Clinical Competencies:

1. Patient Care: The student will be able to complete an accurate history and physical exam and accurately document the findings, write daily notes to accurately and concisely project the status of the patient’s condition, and recognize unstable patients in need of urgent evaluation and management.

2. Medical Knowledge: The student can demonstrate knowledge of the criteria for diagnosis of common clinical problems, know the first line therapies for common clinical problems, and demonstrate a knowledge of the interpretation of diagnostic tests.
3. **Communication Skills:** The student can effectively present the clinical evaluation of a new patient and/or the clinical progress of a continuing patient, and communicate effectively with patients, clinical support staff, and supervising residents and attending physicians.

4. **Professionalism:** The student will demonstrate respect for patients, families, co-workers, and work effectively with nurse coordinators, social services, and ancillary staff.

5. **Practice Based Learning:** The student will be able to identify and discuss appropriate, evidence based approaches to assist in the diagnosis and management of clinical problems encountered in their patients.

6. **Systems Based Practice:** The student will be able to incorporate a team approach in the management of complicated patients.

7. **Osteopathic Principles and Practices:** The student should be able to integrate osteopathic principles and treatments in the management of the hematologic patient.

**Teaching Methods:**

The student is expected to function as a viable member of the supervising physician health care team. Assigned student responsibilities can include:

- supervised first patient contact in the office or clinic,
- the completion of admission history and physicals,
- the completion of pre-rounding progress notes on assigned patients,
- participation in conducting and the interpretation of diagnostic testing and clinical management.

Participation in Clinical Conferences and/or Structured Educational Programs: The student is expected to participate in clinical conferences and educational programs appropriate for the clerkship course including those generally associated with residency educational programs.

Evaluation: The student is encouraged to solicit feedback related to his/her clinical performance on a daily basis. The student should receive formative performance evaluations at the mid-point and end of the rotation that outlines faculty perceived strengths and weaknesses related to the student’s performance that includes recommendations for strengthening his/her performance as warranted.

**Reference Materials**

Review of the Hematology Modules from the Heme course OST 578 coursepack will be of value to the student. There is no assigned textbook. Reading assignments are under the purview of the preceptor.

**Student Responsibilities**

Course participants will meet the preceptor on the first day of the rotation at a predetermined location to be oriented to rotation hours, location(s), and expected duties and responsibilities while on-service.
### Rotation Clinical Requirements

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<tr>
<th>Requirements</th>
<th>Submission Method</th>
<th>Due Date</th>
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<tbody>
<tr>
<td>Attending Evaluation of Rotation</td>
<td>To be appropriately submitted per the instructions at the end of each evaluation form</td>
<td>Final Day of Rotation</td>
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<tr>
<td><em>the determination of a satisfactory attending evaluation is governed by the University’s Policy for Retention, Promotion, and Graduation</em></td>
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<tr>
<td>Student Evaluation of Rotation</td>
<td>“Evaluate” Link in Kobiljak Schedule</td>
<td>11pm Last Sunday of Rotation</td>
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<td><em>(this link will activate on the final Monday of the rotation)</em></td>
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<tr>
<td>Patient Types and Procedure Log</td>
<td>See page 14 at end of syllabus and upload into D2L dropbox for the course</td>
<td>11pm Last Sunday of Rotation</td>
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<tr>
<td>Clinical Shift Schedule</td>
<td>Online D2L Drop Box if you have access to a scanner</td>
<td>11pm Last Sunday of Rotation</td>
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<td>Mail to: MSUCOM, Dept. of OMS</td>
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<td>ATTN: Steve Stone</td>
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### IM 653 Hematology-Oncology Corrective Action Policy

There is no Corrective Action Policy or Plan as there are no graded components to the IM 653 rotation. All items with the exception of the attending evaluation are under the direct control of the student and there is no reason that they cannot be completed in a timely fashion. If the student has an extension in the rotation due to some verifiable reason, then they will receive this same extension for submitting the required end of rotation paperwork.

**IMPORTANT NOTE:** Attending Evaluations do not follow the above “Corrective Action” process. Marginal Attending Evaluations will be reviewed on a case-by-case basis by the department, where the Instructor of Record will then determine whether to give the students a Pass or an N grade for the rotation. If the department determines students will be given an N grade in light of the evaluation, they will then proceed to “Remediation Policy” process.
Unsatisfactory Clinical Performance

A student's clinical performance will be assessed through the Attending Evaluation. A satisfactory Attending Evaluation is required for completion of the clinical requirements for the course.

Unsatisfactory Attending Evaluations are governed by the Policy for Retention, Promotion and Graduation. Evaluations with below average scores in two or more categories defined as rankings of Needs Improvement/Unsatisfactory (on a scale of Needs Improvement/Unsatisfactory-Exceptional) or 3 and below (on a numerical scale of 1-7) will be referred to the Department Chairperson/Instructor of Record for review and grade determination.

Any student with two or more marginal evaluations will be referred to the COSE Clerkship Performance Subcommittee for review.

IMPORTANT NOTE: The student will maintain an “Extended” (ET) grade until they have successfully completed all academic and clinical requirements for the course.

“N” Grade and Remediation

http://com.msu.edu/Students/Policies_and_Programs/Remediation_Policy.htm

A student who receives an "N" grade will be required to appear before the Committee on Student Evaluation (COSE) Clerkship Performance Subcommittee for review of the student's overall performance. The Subcommittee may recommend that the student who has received an "N" grade be permitted to remediate the “N” grade (see below) or academically dismissed. If a student is recommended for dismissal, the student will appear before COSE to have their status in MSUCOM determined. COSE will review the student’s academic/clinical performance; determine whether dismissal is appropriate or if the student’s circumstances warrant an opportunity for continuation in the curriculum. The student's eligibility to remediate will be determined following this COSE decision.

Remediation is the method by which course objectives will be met after receiving an "N" grade. Remediation will be offered only after the student’s eligibility for remediation has been determined.

To successfully remediate an “N” grade, a student must demonstrate mastery of the course objectives. To do this the student may be required to retake the course or enroll and participate in a College directed study course demonstrating successful mastery of the course objectives.

Upon remediation of the “N” grade, the original "N" grade remains on the permanent transcript along with the grade, “P” or “N,” for the remediation experience.
MSU College of Osteopathic Medicine Standard Policies

The following are standard MSUCOM policies across all Clerkship rotations.

ATTENDANCE POLICY

Attendance at all scheduled Clerkship activities is mandatory.

If a student is unable to be present for a scheduled clerkship activity because of extenuating circumstances, the student is required to complete a Clerkship Excused Absence Request form. In all cases except for emergencies or sudden illness, requests for scheduled absences are to be submitted at least 30 days prior to the date(s) of absence. Absences are not approved until the form is completed with all required signatures. Once approved, the student is required to notify their preceptor of their absence within 24 hours. Failure to complete this form or obtain required signatures will result in an unexcused absence from the rotation. Unexcused absences are considered unprofessional behavior and could be noted as a mark of unprofessionalism on the student’s performance evaluation, and may lead to failure of the rotation.

An absence request for the first or last day of the rotation will be denied. All absences (excused or unexcused) must be made up as specified on the Excused Absence Form as outlined under the conditions of approval. Makeup experience will be determined by the Director of Medical Education and may include additional clinical day(s) or written assignment(s).

If a student has an emergency or sudden illness they should immediately notify the Director of Medical Education and rotation preceptor. The excused absence request form must be submitted to the Medical Education Office within 24 hours of the original emergency or sudden illness notification.

STATEMENT OF PROFESSIONALISM

Principles of professionalism are not rules that specify behaviors, but guidelines that provide direction in identifying appropriate conduct. These principles include the safety and welfare of patients, competence in knowledge and skills, responsibility for consequences of actions, professional communication, confidentiality, and lifelong learning for maintenance of professional skills and judgments. Professionalism and professional ethics are terms that signify certain scholastic, interpersonal and behavioral expectations. Among the characteristics included in this context are the knowledge, competence, demeanor, attitude, appearance, mannerisms, integrity and morals displayed by the student to faculty, peers, patients and colleagues in other health care professions. Students are expected to conduct themselves at all times in a professional manner and to exhibit characteristics of a professional student.

STUDENTS RIGHTS AND RESPONSIBILITIES

Each individual student is responsible for their behavior and is expected to maintain standards of academic honesty. Students share the responsibility with faculty for creating an environment that supports academic honesty and principles of professionalism. Proper relationship between faculty and student are fundamental to the college’s function and this should be built on mutual respect and understanding together with shared dedication to the education process. It is a fundamental belief that each student is worthy of trust and that each student has the right to live in an academic environment that is free of injustice caused by dishonesty. While students have an obligation to assist their fellow students in meeting the common goals of their education, students have an equal obligation to maintain the highest standards of personal integrity.
FACULTY RESPONSIBILITIES

It is the responsibility of the college faculty to specify the limits of authorized aid (including but not limited to exams, study aids, internet resources and materials from senior students) in their syllabi, and it is the responsibility of students to honor and adhere to those limits. Course instructors shall inform students at the beginning of the semester of any special criteria of academic honesty pertinent to the class or course.

It is the responsibility of the clinical faculty to provide students with ongoing feedback during rotation upon request. Clinical faculty are generally recommended (though not required) to limit student assigned duty hours from 40 to 60 hours weekly (and not exceeding 60 hours). Both faculty and students are to be treated fairly and professionally in order to maintain a proper working relationship between trainer and trainee.

COURSE GRADES

- **P-Pass** – means that credit is granted and that the student achieved a level of performance judged to be satisfactory according to didactic and clinical performance by the department.
- **N-No Grade** – means that no credit is granted and that the student did not achieve a level of performance judged to be satisfactory according to didactic and clinical performance by the department.
- **ET-Extended Grade** – means that a final grade (“Pass” or “No Grade”) cannot be determined due to one or more missing course requirements. Once all course requirements have been completed, received, and processed, the ET grade will be changed to a final grade. An “ET” will NOT remain on a student’s transcript.

ROTATION EVALUATIONS

**Attending/Faculty/ Resident Evaluation of Student**

Students are responsible for assuring that his/her clinical supervisor receives the appropriate evaluation form. Forms can be accessed via the “Attending Evaluation” link in the student’s Kobiljak online Clerkship schedule.

Students should assertively seek feedback on his/her performance throughout the course of the clinical rotation. Students should also sit down and discuss the formal evaluation with the clinical supervisor.

Students should keep a copy of the evaluation and turn the original in to the “Office of the Registrar” upon their return from the rotation. Any evidence of tampering or modification while in the possession of the student will be considered “unprofessional behavior” resulting in an “N” grade and review by the Committee on Student Evaluation (COSE) and/or the College Hearing Committee.

Grades are held until all rotation requirements, including evaluation forms, are received. Be sure you are using the correct form.

**Student Evaluation of Rotation**

Students will submit their rotation evaluations electronically at the conclusion of every rotation by accessing their online schedule through Kobiljak.

EXPOSURE INCIDENTS PROTOCOL

A form has been developed by the University to report exposure incidents. While on rotations that may occur outside of the base hospital system notify your attending immediately of any exposure and follow the MSU procedure for evaluation and treatment. You can access the form at [www.com.msu.edu/AP/clerkship_program/clerkship_documents/exposure.pdf](http://www.com.msu.edu/AP/clerkship_program/clerkship_documents/exposure.pdf). Please make yourself familiar with the procedure and the form.
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<tr>
<th>Procedure</th>
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<th>Pt. Initials</th>
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<td>Evaluate 2 patients with cancer</td>
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<td>Evaluate 2 patients with anemia</td>
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<td>Interpret 10 CBC</td>
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<td>Participate in five Hematology/Oncology</td>
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<td>consults in the hospital or office.</td>
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