

# **MEDT 479 - Clinical Immunohematology Practicum**

## **COURSE SYLLABUS**

### **INTRODUCTION**

The clinical practicum is the culmination of several years of study. It is an exciting time for students, and offers unique experiences in the clinical laboratory setting. Students will achieve from this experience benefits comparable to the effort they put forth.

### **STUDENT LEARNING GOALS**

Student learning goals for the clinical immunohematology practicum focus on active participation in daily laboratory operations and personal performance as a laboratory professional. Thus, the learning goal for the technical portion of the clinical immunohematology practicum is to facilitate and enhance the student's application of clinical immunohematology theory, laboratory experience, and test data interpretation learned in campus courses to an active clinical laboratory setting. To accomplish this goal, students will apply principles of pre-analytical, analytical, and post-analytical components of laboratory practice in clinical immunohematology to the performance of laboratory operations in a contemporary clinical setting. The learning goal for the professional component is for students to attain high level interpersonal performance so as to interact professionally with fellow staff and all consumers of laboratory testing. The ultimate outcome of a successfully completed practicum experience is the ability to perform testing of the highest quality to support the laboratory's role in quality patient care and safety. Student achievement during this practicum course will lay the foundation for success as an entry-level medical laboratory scientist.

### **GENERAL COURSE OBJECTIVES**

Upon the completion of this course, based upon the objectives detailed in this document, the student must achieve a final minimum average of 70% on the assessment tools utilized in this course.

Upon successful completion of the clinical practicum, studying assigned materials, and reviewing materials associated with the course objectives from MEDT 360, 409/419, and 420/421, the student will:

1. Demonstrate correctly proper procedures for the collection, safe handling, and analysis of biological specimens.
2. Utilize correctly scientific principles, principles of methods for quantifying, clinical correlations, and clinical decision making for analyses of interest in clinical immunohematology.
3. Perform correctly laboratory testing according to established laboratory protocol.
4. Apply correctly appropriate problem solving steps for determining instrument/methodology problems, utilizing instrument manuals, laboratory procedure manuals, and information contained in package inserts.

5. Operate equipment properly, troubleshoot, and perform preventive and corrective maintenance according to the manufacturer's directions and to the satisfaction of the instructor.
6. Utilize proper techniques in the performance of all laboratory testing to the satisfaction of the instructor.
7. Evaluate correctly laboratory test results to determine disease diagnosis.
8. Evaluate correctly acceptability of quality control and test result data.
9. Discuss the impact and apply principles of total quality management on laboratory operations, including relevance to the pre-analytical, analytical, and post-analytical stages of the testing process.
10. Comply with established safety regulations and regulations governing regulatory compliance related to laboratory practice to the satisfaction of the instructor.
11. Assess correctly critical pathways to facilitate diagnosis and to determine additional testing as warranted.
12. Communicate effectively and professionally as a member of the healthcare team to enable consultative and educational interactions with other healthcare personnel, the public, and patients to the satisfaction of the instructor.
13. Demonstrate ethical behavior and professionalism, including maintaining the confidentiality of patient information to the satisfaction of the instructor.
14. Participate in continuing education as opportunities arise for one's own professional career development to the satisfaction of the instructor.

## **OUTCOME EXPECTATION FOR STUDENTS BASED ON UNIVERSITY, PROGRAM, AND COURSE STUDENT LEARNING GOALS AND OBJECTIVES**

The student learning goals and objectives, as stated for MEDT 479 Clinical Immunohematology Practicum, provide the foundation for student achievement of the Medical Laboratory Science Program's student learning goals and objectives. Achievement of the Program's combined goals and objectives is necessary for students to gain the knowledge needed to be successful entry-level medical laboratory scientists, as well as successful on passing the Board of Certification national examination. Additionally, the Medical Laboratory Science Program's student learning goals and objectives support student accomplishment of the University's general education goals for undergraduate students. The University's general education goals support a comprehensive understanding of the liberal arts and sciences, fostering student development for success in an increasingly challenging global society. The synergy for this collaborative educational effort is expressed in the table entitled "University and MLS Program Educational Goals and Objectives".

**UNIVERSITY AND MLS PROGRAM EDUCATIONAL GOALS AND OBJECTIVE**

<b>UNIVERSITY GENERAL EDUCATION GOALS</b>	<b>MLS PROGRAM OBJECTIVES, SUPPORTING GEN ED GOAL(S) GED ED #:</b>	<b>MEDICAL LABORATORY SCIENCE PROGRAM EDUCATION OBJECTIVES</b>	<b>MEDT479 COURSE OBJECTIVE(S) SUPPORTING MLS ED OBJECTIVES COURSE OBJ #</b>
<b>1</b> -Read critically, analyze arguments & information, & engage in constructive ideation.	<b>5</b>	<b>1</b> -Demonstrate proper procedures for the collection of safe handling & analysis of biological specimens.	<b>1</b>
<b>2</b> -Communicate effectively in writing, orally, & through creative expression.	<b>5</b>	<b>2</b> -Utilize scientific principles (e.g. physiology, immunology, biochemistry, molecular biology, genetics, microbiology, etc.), laboratory principles and methodologies for the clinical setting.	<b>2</b>
<b>3</b> -Work collaboratively & independently within & across a variety of cultural contexts and a spectrum of differences.	<b>5</b>	<b>3</b> -Perform laboratory testing with accuracy.	<b>3</b>
<b>4</b> -Critically evaluate the ethical implications of what they say and do.	<b>1,3</b>	<b>4</b> -Evaluate problems that impact on laboratory services and take corrective action.	<b>4</b>
<b>5</b> -Reason quantitatively, computationally, and scientifically.	<b>1,5</b>	<b>5</b> -Operate equipment properly, troubleshoot, and perform preventive and corrective maintenance.	<b>5</b>
	<b>5</b>	<b>6</b> -Utilize proper technique in the performance of all laboratory testing.	<b>6</b>
	<b>1,5</b>	<b>7</b> -Interpret clinical significance, clinical procedures, & laboratory test data accurately.	<b>2, 7, 11</b>
	<b>5</b>	<b>8</b> -Evaluate laboratory data using statistical analysis.	<b>8</b>
	<b>1,5</b>	<b>9</b> -Apply principles of continuous assessment to all laboratory services.	<b>9</b>
	<b>1,2,5</b>	<b>10</b> -Utilize principles of quality assurance and quality improvement for all phase of laboratory services (i.e. pre-analytical, analytical, & post-analytical).	<b>9</b>
	<b>2,4</b>	<b>11</b> -Comply with established laboratory safety regulations & regulations governing regulatory compliance related to laboratory practice.	<b>10</b>
	<b>2,3</b>	<b>12</b> -Communicate through oral and written skills effectively & professionally to enable consultative & educational interactions with healthcare personnel, the public, & patients in order to function successfully as a member of the healthcare team.	<b>12</b>
	<b>4</b>	<b>13</b> -Demonstrate ethical behavior & professionalism, maintain confidentiality of patient information, & participate in continuing education for one's own professional career development.	<b>13, 14</b>
	<b>2,3</b>	<b>14</b> -Apply principles of educational methodology to educate providers & users of laboratory services.	<b>N/A</b>
	<b>1,5</b>	<b>15</b> -Evaluate published scientific studies utilizing knowledge of research design.	<b>N/A</b>
	<b>1,2,3,5</b>	<b>16</b> -Apply principles & concepts of laboratory operations to critical pathways and clinical decision making, performance improvement dynamics of healthcare delivery systems in relationship to laboratory services, human resource management & financial management.	<b>11</b>
	<b>1,3</b>	<b>17</b> -Demonstrate a commitment to the future of medical laboratory profession through involvement in a national professional society.	<b>N/A</b>
	<b>1,2,3</b>	<b>18</b> -Demonstrate an understanding of human creativity & of various types of aesthetic & intellectual expression through study of the liberal arts.	<b>N/A</b>
	<b>1,3</b>	<b>19</b> - Demonstrate an understanding of the significance of cultural diversity as exhibited within the United States through study of the liberal arts including completion of a multicultural course.	<b>N/A</b>
	<b>1,3</b>	<b>20</b> -Demonstrate an understanding of the impact of globalization on society through study of the liberal arts.	<b>N/A</b>

## COURSE DETAILS

This is a clinical practicum course, and it will meet at a clinical affiliate to be determined by the University instructor. Students will be notified of this location prior to the commencement of the clinical practicum. **Attendance at all clinical practicums is MANDATORY, and missed time must be rescheduled with the date/time at the discretion of the clinical instructor and the University instructor.** See <http://sites.udel.edu/mls/clinical-practicum-schedule/> for further details about attendance expectations.

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## MODES OF INSTRUCTION

Clinical faculty will utilize various methods of instruction, including but not limited to a combination of:

- Clinical specimens
- Quality control materials
- Immunohematology automated analyzers
- Assay of CAP survey samples previously analyzed and stock samples
- Case studies

Students will receive instruction about proper operation of equipment, specimen processing, quality control, use of the LIS, and result interpretation and reporting mechanisms specific to the clinical facility where they are assigned.

## METHODS OF ASSESSMENT

Upon the completion of this course, based upon affective, cognitive and psychomotor objectives, the student must achieve a final minimum average of 70% (C-) on the assessment tools utilized in this course.

The clinical instructor will administer written quizzes. In addition, the clinical instructor will assign papers or projects that are relevant to the practicum. This component of the Evaluation comprises 40% of the practicum grade.

A practical examination is another means of assessment employed by the clinical instructor. The instructions and rubric for the practical examination will be provided to the student prior to commencing the practical examination. The clinical instructor will complete the practical grading rubric and will return it to the University instructor. This component of the Evaluation comprises 40% of the practicum grade.

Affective assessment is incorporated into the mid- and final-evaluation process. A mid-evaluation will be completed by the clinical instructor and will be discussed with the student. If there are any issues to be addressed, this will also be shared with the University instructor. The final MEDT 479 Clinical Immunohematology Practicum Evaluation will be completed by the clinical instructor and discussed with/reviewed by the student. The affective component on the final Evaluation comprises 20% of the practicum grade.

A written final examination will be administered by the University instructor at the conclusion of the practicum. The University-administered written final examination component of the Evaluation does not affect the practicum grade, but is included on the form.

A sample MEDT 479 Clinical Immunohematology Practicum Evaluation can be found at the end of this syllabus.

### Additional Requirements

Journals are one of the most frequently prescribed methods of reflecting on lifetime experiences. Each student is required to maintain a journal for each clinical practicum period. The student may record the sequence of daily events, as well as unusual or memorable situations or events that transpired and how he/she reacted to them. Think about what happened. How would you react the next time you encounter a similar situation? Or perhaps provide a commentary about a particular laboratory employee or environment that you encounter. Think about how your day impacted you professionally. Write regularly and record the date of each entry. Adhere to HIPAA and confidentiality guidelines; do not disclose any identifying facts or information. For more information and guidelines for the journal, see: <http://sites.udel.edu/mls/clinical-practicum-evaluation/>.

Paperwork documenting attendance and orientation to the affiliate institution must be submitted to the University instructor at the conclusion of the practicum. Note that the attendance sheet must be signed by the Clinical instructor prior to completion of the practicum.

Site evaluations are a tool used by the Clinical and University instructors to assess the achievement of the clinical practicum experience and the academic preparation for it. Students are required to submit a completed Site Evaluation for each clinical practicum to the University instructor. These will be collated by affiliate institution and discipline, and will be provided in an anonymous format to the Clinical instructors during the summer following completion of the clinical practicums. Comments regarding academic preparation will be shared and discussed with the University instructors, and used to enhance the curriculum as indicated.

## COURSE PREREQUISITES

MEDT 420/421

RESTRICTIONS:

Open to medical laboratory science majors only.

## TEXTBOOKS AND OTHER RESOURCES

**One of the following review books is required** for all clinical practicums senior year and should be taken daily to your clinical practicum sites for review during slower periods:

Ciulla AP, Lehman DL. *Success! In Clinical Laboratory Sciences*. 4<sup>th</sup> ed. Upper Saddle River, NJ: Pearson Education, Inc.; 2010. ISBN: 978-0-13-512648-6

Tanabe PA., Holladay EB, eds. *BOC Study Guide: Clinical Laboratory Certification Examinations*. 5<sup>th</sup> ed. Chicago, IL: American Society For Clinical Pathology, 2014. ISBN: 978-089189-5879

Students should refer to the textbook and lecture and laboratory course materials from MEDT 360, MEDT 409/419, and MEDT 420/421. Students are expected to review these materials in preparation for this clinical practicum experience. In addition, students are expected to use these materials as resources during this practicum, as well as in preparation for the written final examination.

Students also have access to the reference library at the affiliate institution. This library provides students access to journals and medical-related books.

Through the University of Delaware, students have online access to DELCAT – UD's library online catalog <https://library.udel.edu/>.

## DRESS CODE

All University of Delaware Medical Laboratory Science majors assume responsibility for their own attire while in the clinical setting. Each site has established guidelines for employee/students. In addition to abiding by the guidelines of the site at which the rotation occurs, each student must adhere to the following minimum guidelines of the University of Delaware Medical Laboratory Science Program described below.

- Navy medical scrub uniforms are required. Clothing must be neatly pressed and colors must match. Hose or socks are required when wearing pants. Female students must wear neutral or white stockings/panty hose when wearing a skirt. White shoes are recommended; flat shoes are required. Cloth or open-toed shoes, jeans, and sweat shirts are not acceptable.
- A clean, white labcoat is required unless otherwise specified by the clinical site.
- Safety glasses must be worn while in the clinical laboratory as per University of Delaware requirements.
- Hair styles which extend below the shoulder must be tied back.

- For safety reasons, most jewelry is limited. Small post earrings that do not extend below the ears are acceptable, long necklaces or dangling bracelets are not. Facial, ear cartilage and tongue piercings must be removed while at the affiliate institution. Tattoos that are visible must be covered.
- The various clinical sites may have additional dress code requirements. The student must adhere to any additional requirements at that site.
- Each student is expected to present a professional appearance and attitude at all times. NO EXCEPTIONS!!

## ACADEMIC HONESTY

Honesty is essential in the profession of Medical Laboratory Science. You are encouraged to become familiar with the UD Student Guide to University Policies <<http://www.udel.edu/stuguide/current>>. The content of the handbook applies to this course. If you have any questions about this policy, please consult with the instructor.

## ACADEMIC SERVICES

The University of Delaware offers a variety of academic services for students. These services include coordinating tutoring sessions, providing academic skills workshops, and providing assistance for students with ADHD and learning disabilities. Students are encouraged to contact the Academic Enrichment Center at 831-2805 or <<http://www.aec.udel.edu>> to take advantage of these services.

## FOR MORE INFORMATION

If a student has any questions, he/she should contact the University instructor prior to commencement of the clinical practicum.

## AFFECTIVE OBJECTIVES

The following objectives have been listed as general affective objectives, since they apply to the overall performance and participation by the student during clinical rotations at the affiliate institutions. Among other qualities, the student is expected to demonstrate dependability, organizational skills, time efficiency and the ability to work with others in accordance with a professional program of study. As a member of the healthcare team, it is expected that the student will maintain an appropriate professional demeanor at all times.

During the clinical rotations and upon completion of the program of study in Medical Laboratory Science, the student will:

1. Comply with the established dress code policy as outlined in the clinical practicum manual.
2. Report to the laboratory at the scheduled time.
3. Notify the Clinical Coordinator and the University Education Coordinator when unable to report to the clinical practicum.
4. Comply with the attendance policy as outlined in the clinical practicum manual.
5. Comply with instructions given either orally or written.
6. Demonstrate the ability to ask pertinent questions or for assistance if needed.
7. Demonstrate the ability to work independently within student guidelines.
8. Communicate courteously, effectively and professionally with instructors, laboratory staff, other health care personnel, patients and visitors.
9. Demonstrate interest and enthusiasm for the clinical laboratory science profession.
10. Accept evaluation of performance as constructive when offered by instructors and other laboratory personnel, and follow through with suggestions made.
11. Adhere to laboratory safety regulations in each clinical area.
12. Maintain a clean, organized work area.
13. Utilize reagents and supplies judiciously.
14. Replenish supplies required in the laboratory work area.
15. Demonstrate self-confidence in the operation of equipment and in the performance of laboratory procedures.
16. Report patient laboratory results only to authorized personnel.
17. Maintain the confidentiality of all privileged information.
18. Cooperate with other laboratory personnel to create a pleasant and efficient work environment.

19. Demonstrate the ability to concentrate on the laboratory test procedure being performed and the need to avoid distractions.
20. Demonstrate organizational skills through ability to coordinate the quantity of work needed to be done with the time available for its completion.
21. Practice acceptable quality assurance as established for each clinical area.
22. Defend the policy of running quality control samples according to laboratory protocol.
23. Coordinate theory with laboratory analysis to appropriately judge patient data.
24. Offer assistance to other laboratory personnel when scheduled assignment is complete.
25. Recognize technical problems and plan possible corrective action.
26. Maintain composure and work quality under stressful conditions.
27. Demonstrate concern for professional self-image and that of the medical laboratory science profession by practicing ethical behavior, participating in professional activities and attending professional seminars to maintain knowledge base.

## **COURSE OBJECTIVES RELATED TO SPECIFIC CONTENT AREAS**

Upon the completion of this course, based upon the objectives detailed in this document, the student must achieve a final minimum average of 70% on the assessment tools utilized in this course.

- I. **Professionalism**
- II. **Specimen Management/Safety**
- III. **Quality Control / Quality Assessment / Total Quality Management**
- IV. **Inventory and Processing**
- V. **Issuing and Proper Usage of Blood and Components**
- VI. **Storage and Transportation of Blood/Components**
- VII. **Specimen Acceptability/Pretransfusion Testing**
- VIII. **Automated Immunohematology Instrumentation**
- IX. **Obstetrical Considerations**
- X. **Neonatal Transfusion Practices**
- XI. **Transfusion Complications**
- XII. **Molecular Diagnostic and Immunologic Assays**

### **I. PROFESSIONALISM**

#### **Introduction**

The student is expected to conduct himself/herself in a professional manner at all times. The ability to communicate in a respectful manner under all circumstances is an expectation of a professional. The student must remember that all patient information is privileged and as such strict confidentiality must be maintained. The student should realize that in some ways his/her education is just beginning, and to remain current during the work years ahead, it is important to participate in continuing education activities on a routine basis. If continuing education activities are available at the affiliate institution during the practicum, it is expected that the student will avail himself/herself of the opportunity. Professional performance is guided by the affective objectives previously listed, and professional behavior is evaluated using the form located at the end of this syllabus.

#### **Objectives**

Upon successful completion of the clinical practicum, studying assigned materials, and reviewing materials associated with the course objectives from MEDT 360, 409/419, 420/421, and 461/471, the student will:

1. Communicate effectively and professionally as a member of the healthcare team to enable consultative and educational interactions with other healthcare personnel, the public, and patients to the satisfaction of the instructor.
2. Demonstrate ethical behavior and professionalism to the satisfaction of the instructor.
3. Maintain confidentiality of patient information to the satisfaction of the instructor.
4. Participate in continuing education as opportunities arise for one's own professional career development to the satisfaction of the instructor.

Note: Review affective objectives and affective evaluation form.

## II. SPECIMEN MANAGEMENT/SAFETY

### Introduction

Thorough knowledge of safety procedures is essential before performing any duties in the clinical laboratory which might be hazardous to personnel. The immunohematology department is responsible for monitoring departmental criteria for specimen acceptance, processing of various testing, evaluating and reporting laboratory results. These pre-analytical, analytical, and post-analytical factors are essential for quality assessment in the laboratory. In the immunohematology department, a considerable amount of effort is placed on specimen handling and collection, since the final results for any analysis and potential transfusion of the patient are dependent on these two factors. The following precautions or conditions are essential for quality specimens:

- correct identification of patient
- correct labeling of specimen
- correct specimen type – anticoagulants, preservatives
- correct special handling – 37°C, etc.
- correct storage conditions

### Prerequisite

The student will familiarize herself/himself with the overall management of the Immunohematology Department.

### Objectives

Upon successful completion of the clinical practicum, studying assigned materials, and reviewing materials associated with the course objectives from MEDT 360, 409/419, and 420/421, the student will:

1. Discuss the specimen management system used by the immunohematology laboratory.
2. Distribute specimens to workstations appropriately to the satisfaction of the instructor.
3. State the tests performed at each station or instrument in the immunohematology laboratory (e.g., Type and Screen, Antibody Identification, Type Rechecks, etc.).
4. Evaluate correctly specimens for acceptance or rejection using laboratory guidelines.
5. Document correctly specimen rejection according to laboratory guidelines.
6. Report and/or call test results according to laboratory protocol to the satisfaction of the instructor.
7. Maintain correctly patient records according to laboratory protocol.
8. File correctly patient records according to laboratory protocol.
9. Utilize correctly safe techniques in handling and disposal of infectious materials according to laboratory protocol.
10. Comply with established safety regulations and regulations governing regulatory compliance related to laboratory practice to the satisfaction of the instructor.

## III. QUALITY CONTROL / QUALITY ASSESSMENT / TOTAL QUALITY MANAGEMENT

### Introduction

Quality is of utmost importance in every laboratory. Today's laboratories have a variety of programs in place to control, assess, and improve their quality.

### Prerequisite

The student should read the department's quality control (QC), quality assessment (QA), total quality management (TQM) and/or continuous quality improvement (CQI) policies.

### Objectives

Upon successful completion of the clinical practicum, studying assigned materials, and reviewing materials associated with the course objectives from MEDT 360, 409/419, and 420/421, the student will:

1. Compare and contrast quality control, quality assessment, and total quality management.
2. Evaluate correctly laboratory QC data according to laboratory protocol.
3. Demonstrate the ability to identify appropriate corrective action when data falls out of control range to the satisfaction of the instructor.
4. Explain how quality is verified and documented for critical equipment used in the blood bank laboratory.
5. Discuss how QC is monitored and recorded for each procedure in the immunohematology laboratory.
6. Perform correctly daily reagent Quality Control.
7. Record correctly QC data according to departmental guidelines.
8. Discuss the need for departmental quality assessment and/or total quality management programs.
9. Identify the key components of the Blood Bank's Quality Plan.



10. Explain the purpose of proficiency testing.
11. Discuss the impact of total quality management on laboratory operations, including relevance to the pre-analytical, analytical, and post-analytical stages of the testing process.
12. Apply correctly principles of total quality management to laboratory operations, including relevance to the pre-analytical, analytical, and post-analytical stages of the testing process.
13. Discuss the role of the medical laboratory scientist in maintaining laboratory quality.
14. State the AABB standards for the appropriate time interval related to maintaining the following records:
  - a. Patient blood types
  - b. Compatibility test record
  - c. Units dispositions
  - d. Patient antibody identifications
15. List factors that can minimize human errors and assure Personnel Quality Control.
16. Differentiate between the terms "Preventative Action" and "Corrective Action" as they relate to error management.

## IV. INVENTORY AND PROCESSING

### Introduction

For an immunohematology laboratory to function efficiently, it is important to maintain an appropriate inventory of blood and components. The student will gain experience in serologic testing, record keeping and component storage.

### Prerequisite

The student should read the department's Standard Operating Procedures relating to product inventory and processing.

### Objectives

Upon successful completion of the clinical practicum, studying assigned materials, and reviewing materials associated with the course objectives from MEDT 360, 409/419, and 420/421, the student will:

1. Document correctly inventory levels according to laboratory protocol.
2. Report correctly inventory levels to the blood supplier.
3. Place orders for and/or coordinate return of products based on established target inventory levels, anticipated usage, product availability, and product expirations to the satisfaction of the instructor.
4. Inspect correctly donor units as received into inventory and prior to issue according to defined criteria.
5. Initiate correctly quarantine and appropriate documentation for any nonconforming product.
6. Perform correctly unit log-in/accessioning of donor units according to laboratory protocol.
7. Perform correctly confirmatory ABO and Rh typing, as appropriate.
8. Perform correctly the labeling of donor units according to laboratory protocol.

## V. ISSUING AND PROPER USAGE OF BLOOD AND COMPONENTS

### Introduction

Providing blood components efficiently to the appropriate patient is the major objective of immunohematology laboratories. Ensuring safe inspection of the blood products and accurate labeling/dispensing of the blood products is essential for the safety of the intended recipient. The student will learn and assist in the proper issuance of blood and components. She/he will learn to evaluate proper blood utilization based on criteria established by the clinical facility.

### Prerequisite

The student should read the department's Standard Operating Procedures relating to issuing and proper usage of blood and components.

### Objectives

Upon successful completion of the clinical practicum, studying assigned materials, and reviewing materials associated with the course objectives from MEDT 360, 409/419, and 420/421, the student will:

1. Perform correctly all record keeping procedures related to the issuance of blood and components for patient transfusion.
2. Review correctly all patient and donor unit identification names and numbers:
  - o Visual inspection of units
  - o Documentation of unit disposition

3. Discuss the return of products following dispense with regard to acceptance criteria for reissue.
4. State the procedures for the emergency release of uncrossmatched blood and massive transfusion protocols.
5. Select correctly platelets for transfusion according to laboratory protocol.
6. Pool correctly platelets for transfusion according to laboratory protocol.
7. Compare and contrast the storage conditions and expiration time of the products prior to and after preparation for transfusion.
8. Select correctly fresh frozen plasma for transfusion according to laboratory protocol.
9. Prepare correctly fresh frozen plasma for transfusion according to laboratory protocol.
10. Compare and contrast the storage conditions and expiration time of the products prior to and after preparation for transfusion.
11. Select correctly cryoprecipitate for transfusion according to laboratory protocol.
12. Prepare correctly cryoprecipitate for transfusion according to laboratory protocol.
13. Compare and contrast the storage conditions and expiration time of the products prior to and after preparation for transfusion.
14. Select correctly appropriate red blood cell products (RBC) for transfusion according to laboratory protocol.
15. Discuss how special requirements listed below impact RBC product selection:
  - o Leukoreduced
  - o Irradiated
  - o CMV Negative
  - o Hgb S Negative
  - o Antigen Negative
16. Explain why blood is irradiated for selected patients.
17. Identify which patient groups should receive CMV Negative products.
18. Recognize ISBT compliant labels for modified blood components when required.
19. Prepare correctly ISBT compliant labels for modified blood components when required.
20. Describe the circumstances and policies associated when compatible products cannot be obtained for a patient.

## VI. STORAGE AND TRANSPORTATION OF BLOOD/COMPONENTS

### Introduction

It is important to remember that for the blood and/or components to provide maximum benefit to the recipient, the products must be maintained at the required temperature on the shelf or during transport.

### Prerequisite

The student should read the department's Standard Operating Procedures relating to storage and transportation of blood/components.

### Objectives

Upon successful completion of the clinical practicum, studying assigned materials, and reviewing materials associated with the course objectives from MEDT 360, 409/419, and 420/421, the student will:

1. Identify the different components that can be prepared from a single whole blood donation.
2. State the purpose and advantages of collecting and transfusing platelets prepared from an apheresis instrument.
3. List the storage/transport conditions required for each component following manufacturing.
4. Identify the various packing materials designed to maintain appropriate temperature during transportation of each product type.
5. Explain how transportation temperatures are periodically quality controlled.
6. Discuss how continuous monitoring of blood storage devices is conducted and documented.
7. State the acceptable storage temperature ranges for the following storage devices:
  - o Red cell refrigerators
  - o Plasma/Cryo freezers
  - o Platelet incubators
  - o Reagent refrigerators
8. Discuss how required periodic preventative maintenance is performed on each type of blood storage device.

## VII. SPECIMEN ACCEPTABILITY/PRETRANSFUSION TESTING

### Introduction

Pretransfusion testing lays the groundwork for a successful transfusion. Specimens must be evaluated carefully for acceptability prior to commencing pretransfusion testing. The student will learn and perform the various tests involved in compatibility testing. He/she will also learn the follow-up procedures used when blood is incompatible.

## Prerequisite

The student should read the department's Standard Operating Procedures relating to specimen acceptability and pretransfusion testing.

## Objectives

Upon successful completion of the clinical practicum, studying assigned materials, and reviewing materials associated with the course objectives from MEDT 360, 409/419, and 420/421, the student will:

1. Examine specimens submitted for pretransfusion testing with respect to defined labeling criteria, age of specimen, and appearance of specimen to the satisfaction of the instructor.
2. Perform correctly all serologic testing procedures required to provide compatible blood for transfusion, including:
  - o ABO and Rh typing of patient
  - o Antibody screening
  - o Antibody identification
  - o Selection of appropriate donor units for compatibility testing
  - o Crossmatch testing
3. Interpret correctly all serologic testing procedures required to provide compatible blood for transfusion listed in objective #2.
4. Recognize test reactions characteristic of the following situations:
  - o ABO cell-serum grouping discrepancies
  - o Rouleaux
  - o Cold reactive auto and/or alloantibodies
  - o Single/multiple blood group alloantibodies
  - o Warm autoantibodies
5. Suggest or perform correctly follow-up procedures and appropriate crossmatch methods for the situations listed in objective #4.
6. Identify when weak D testing must be performed as part of Rh typing (i.e., donor units, postpartum patients, neonates).
7. Given a patient sample with one or more clinically significant antibody(ies),
  - o Accurately identify antibody specificity(ies) with statistical confidence.
  - o Confirm correctly identification by antigen typing patient red cells.
  - o Determine correctly the number of units to select for antigen screening.
  - o Perform correctly antigen typing of selected donor units using appropriate controls.
  - o Document correctly antigen typing of selected donor units and appropriate controls.
  - o Accurately label donor units as antigen negative following laboratory protocol.
8. Given a specimen with a positive DAT:
  - o Perform correctly Direct Antiglobulin Test using appropriate polyspecific and monospecific reagents.
  - o Evaluate correctly DAT results relative to patient diagnosis, medication, transfusion history.
  - o Perform correctly an RBC elution when indicated.
  - o Identify correctly antibody(ies) contained in an eluate.
9. Discuss results of special procedures for antibody testing/identification and resolution of incompatibility, such as:
  - o R.E.S.t.<sup>®</sup> absorption technique
  - o Enzyme treatment of RBCs
  - o W.A.R.M.<sup>™</sup> autoabsorption
  - o Homologous adsorption
  - o Neutralization techniques for Lewis, Sd<sup>a</sup>, Chido, Rogers antibodies
  - o Antibody titration procedures
10. Interpret results of special procedures listed in objective #9 for antibody testing/identification and resolution of incompatibility.

## VIII. AUTOMATED IMMUNOHEMATOLOGY INSTRUMENTATION

### Introduction

Automated immunohematology analyzers may be the workhorse of the immunohematology laboratory. While instruments vary by manufacturer and type, the following basic objectives remain the same for each analyzer.

## Prerequisites

The student should review the automated immunohematology analyzer operator manuals for those instruments that will be employed during the practicum period.

## Objectives

Upon successful completion of the clinical practicum, studying assigned materials, and reviewing the automated immunohematology analyzer operator manuals, the student will:

1. Operate correctly the automated immunohematology instrument(s) according to the manufacturer's directions, producing accurate quality control and patient results.
2. Evaluate correctly quality control data according to laboratory protocol.
3. Record correctly quality control data according to laboratory protocol.
4. Identify inaccurate/indeterminate instrument results.
5. Troubleshoot inaccurate/indeterminate instrument results according to laboratory protocol to the satisfaction of the instructor.
6. Correlate correctly patient results with clinical significance (e.g., impact on ability to safely transfuse the patient) and clinical decision making.
7. Assess critical pathways to facilitate diagnosis and to determine additional testing as warranted to the satisfaction of the instructor.
8. Identify the basic operating components of the analyzer(s).
9. Locate the basic operating components of the analyzer(s) to the satisfaction of the instructor.
10. Explain the function of each component of the analyzer(s).
11. Perform routine daily maintenance on the analyzer(s) according to the manufacturer's directions to the satisfaction of the instructor.
12. Identify periodic (weekly, monthly, etc.) maintenance requirements according to the manufacturer's directions.
13. Explain the function of each reagent used on the automated instrument(s).
14. Prepare correctly reagents for use on the analyzer(s) according to the manufacturer's directions.
15. State how reagents are stored when not in use on the analyzer.
16. Explain where to find basic troubleshooting information about the analyzer.
17. Participate in troubleshooting the analyzer(s) as appropriate to the satisfaction of the instructor.
18. Apply correctly appropriate problem solving steps for determining instrument/methodology problems, utilizing instrument manuals, laboratory procedure manuals, and information contained in package inserts.
19. Justify the importance of documenting maintenance, quality control, and troubleshooting.

## IX. OBSTETRICAL CONSIDERATIONS

### Introduction

Hemolytic Disease of the Newborn can have critical implications for the baby. The student will perform and interpret tests on maternal blood samples as related to the issue of RhIG products and recognition of potential HDN.

### Prerequisite

The student should read the department's Standard Operating Procedures relating to prenatal, postpartum, and newborn testing.

### Objectives

Upon successful completion of the clinical practicum, studying assigned materials, and reviewing materials associated with the course objectives from MEDT 360, 409/419, and 420/421, the student will:

1. Determine correctly the ABO blood group and Rh type of maternal blood samples.
2. Interpret the results of ABO blood group and Rh type testing of maternal blood samples.
3. Identify correctly a mixed field weak D test due to a feto-maternal hemorrhage.
4. Examine correctly patient history and test results to determine the need for:
  - o antepartum RhIG
  - o postpartum RhIG
5. State the dose of RhIG in available RhIG products.
6. Perform correctly a screening test for a feto-maternal hemorrhage.
7. Evaluate results of a screening test for a feto-maternal hemorrhage.
8. Explain the principle of a quantitative test for feto-maternal hemorrhage.
9. Perform correctly a quantitative test for feto-maternal hemorrhage.
10. From case histories, determine correctly the volume of the fetal bleed.
11. From case histories, calculate correctly the required dose of RhIG.

12. Evaluate the antibody screen and antibody identification as to possible cause of Hemolytic Disease of the Fetus and Newborn (HDFN).
13. Demonstrate correctly proper technique in performing an antibody titration:
  - o Interpret result as to titer and score
  - o Recognize a significant change in titer given a series of results on the same patient
14. Explain the transfusion requirements for Rh negative females.

## **X. NEONATAL TRANSFUSION PRACTICES**

### **Introduction**

Transfusion therapy for neonates is uniquely different from adult transfusion therapy. The student will receive blood samples from neonates and perform tests as requested. He/she will evaluate results and perform additional tests as indicated or directed by physician or instructor. The student will assist in the selection and preparation of blood and components requested for transfusion therapy of neonates.

### **Prerequisite**

The student should read the department's Standard Operating Procedures relating to neonatal pretransfusion testing and selection and manipulation of blood and components for neonates.

### **Objectives**

Upon successful completion of the clinical practicum, studying assigned materials, and reviewing materials associated with the course objectives from MEDT 360, 409/419, and 420/421, the student will:

1. Define the neonatal period.
2. Demonstrate proper technique when determining the ABO Blood Group, the Rh type, the Direct Antiglobulin Test (DAT) on either cord blood, venous and/or capillary samples to the satisfaction of the instructor.
3. Distinguish ABO Hemolytic Disease of the Fetus and Newborn (HDFN) from HDFN caused by maternal alloantibody(ies).
  - o Evaluation to be based on actual serologic findings or known case histories.
4. Select correctly the most appropriate elution technique when evaluating a positive direct antiglobulin test.
5. Demonstrate correctly the elution of an antibody (if applicable) using either the Lui-Freeze/Thaw or Acid Elution technique.
6. Discuss policies related to blood selection and compatibility testing requirements for neonates in need of:
  - o Routine transfusion
  - o Exchange transfusion
7. Describe the preparation of blood products for aliquot or exchange transfusion including:
  - o Packed red blood cells
  - o Modified whole blood
  - o Platelets
  - o Fresh frozen plasma
  - o Cryoprecipitate
8. If possible at the clinical affiliate, prepare correctly blood products for aliquot transfusion for neonates including the products listed in objective #7.

## **XI. TRANSFUSION COMPLICATIONS**

### **Introduction**

Transfusion complications create the potential for injury or death. The suspected transfusion reaction work-up must be completed in a timely fashion with accuracy and care. The student will perform all necessary tests and clerical work necessary to work up a transfusion reaction.

### **Prerequisite**

The student should read the department's Standard Operating Procedures relating to suspected transfusion reactions, including but not limited to stat, delayed hemolytic, TRALI, TACO, NAIT, and bacterial transfusion reactions.

### **Objectives**

Upon successful completion of the clinical practicum, studying assigned materials, and reviewing materials associated with the course objectives from MEDT 360, 409/419, and 420/421, the student will:

1. Define the term "transfusion reaction".
2. Identify correctly the signs and symptoms that may accompany hemolytic transfusion reactions.

3. Describe the protocol for the investigation of a transfusion reaction including initial and extended testing according to AABB Standards.
4. Arrange the steps in a post-transfusion work-up in the appropriate sequence.
5. State the most frequent cause of an acute hemolytic transfusion reaction.
6. List the characteristics of a delayed hemolytic transfusion reaction, including the etiology and the usual clinical consequences of such a reaction.
7. Name the most frequent cause of febrile transfusion reactions.
8. Name other types of immunologic transfusion reactions (not including acute hemolytic and febrile non-hemolytic).
9. Name the nonimmunologic cause or causes of immediate and delayed transfusion reactions.
10. Describe the signs and symptoms of a urticarial reaction.
11. Differentiate the testing required among the various types of suspected transfusion reactions.
12. Describe the signs, symptoms and causes of anaphylactic transfusion reactions.
13. Discuss the treatment options for the various types of transfusion reactions.
14. Given a pretransfusion specimen and post transfusion specimen, perform correctly serologic techniques required in a suspected transfusion workup.
15. Interpret the test results of a suspected transfusion workup in an acceptable amount of time to assist the physician to initiate appropriate therapy.
16. Discuss the features of graft-versus-host disease including etiology and prevention.
17. Name the diseases that can be transmitted through blood or blood components.
18. List the screening tests currently performed on donor blood to detect and prevent transfusion transmitted diseases.
19. Identify the limitations of infectious disease testing in relation to the "window period" of infection.
20. Explain how new technologies are impacting the "window period" of particular infectious diseases.
21. Explain the fundamental differences between infectious disease screening tests and confirmatory tests.
22. Define the current risk of disease transmission for HBV, HCV and HIV through blood transfusion.
23. Define the term "Look-back."

## **XII. MOLECULAR DIAGNOSTIC and IMMUNOLOGIC ASSAYS**

### **Introduction**

Molecular diagnostic techniques are being integrated in all aspects of laboratory testing. Some affiliate institutions are utilizing molecular techniques in pretransfusion testing, antigen typing, etc. Many transfusion service laboratories also perform immunologic assays. Students will be given the opportunity to observe and possibly perform these assays as available.

### **Prerequisite**

The student should read the department's Standard Operating Procedures relating to molecular diagnostic and immunologic assays.

### **Objectives**

Upon successful completion of the clinical practicum, studying assigned materials, and reviewing materials associated with the course objectives from MEDT 360, 409/419, and 420/421, the student will:

1. Identify each molecular diagnostic assay utilized in the affiliate immunohematology laboratory.
  - a. Explain the principle of each molecular based assay, discussing its clinical significance.
  - b. Perform correctly molecular diagnostic assays offered by the affiliate laboratory according to laboratory protocol.
2. Identify each immunologic assay utilized in the affiliate immunohematology laboratory.
  - a. Explain the principle of each immunologic assay, discussing its clinical significance.
  - b. Perform correctly immunologic assays offered by the affiliate laboratory according to laboratory protocol.

## **ASSESSMENT TOOLS**

See below for:

Clinical Practicum Student Affective Evaluation Grading Scale  
 Clinical Practicum Practical Evaluation Instructions  
 Clinical Practicum Practical Evaluation Grading Rubric  
 Clinical Practicum Student Evaluation

### Clinical Practicum Student Affective Evaluation Grading Scale:

**Instructions:** For items #1 through #15: Rate on 1 - 5 point scale below. Record rating in the column provided.

Space is provided with each evaluation item for narrative appraisal. Any unsatisfactory evaluation **must** be documented. Please indicate strong points exhibited. **The completed evaluation form must be discussed with the student at mid-point and end of the clinical practicum.**

Performance Level	Rating Value	Performance Indicators
Outstanding	5	Contribution <b>far exceeds</b> what is normally expected of a student. Personal commitment to a high level of performance and professionalism is clear.
Exceeds Expectations	4	Seizes initiative in development and implementation of challenging projects. Accomplishments <b>exceed</b> requirements. Requires minimal direction
<b>Fully Satisfactory</b>	<b>3</b>	<b>Performance is what is expected in senior clinical practicum. Does not require significant improvement. Errors are minimal and seldom repeated. Requires only normal supervision and follow-up.</b>
Less Than Satisfactory	2	Performance generally does not meet minimum requirements for senior clinical practicum. Errors are significant and frequently repeated. Requires close surveillance and guidance.
Unacceptable Performance	1	Has had sufficient exposure to have shown better performance. Does not grasp basic concepts no matter how many times they have been explained. Does not demonstrate commitment to this aspect of professional development.

**Practical Evaluation Instructions**

**Student:** \_\_\_\_\_

**Eval by:** \_\_\_\_\_

**Date:** \_\_\_\_\_

## **Clinical Immunohematology Practical**

As detailed in the practical evaluation rubric, perform the following functions:

1. Perform daily maintenance and quality assurance procedures assigned according to protocol.
2. Perform weekly maintenance and quality assurance procedures assigned according to protocol.
3. Process appropriate controls and patient samples.
4. Evaluate acceptability of controls.
5. Interpret patient results.
6. Perform appropriate follow-up testing as indicated.

7. Conditions - The following conditions apply to this practical (all that are marked with a v):

\_\_\_\_ Time limit = \_\_\_\_\_

\_\_\_\_ Use of Instrument Operating Manuals is permitted

\_\_\_\_ Use of course manuals is permitted

\_\_\_\_ Other: Please describe \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_



UNIVERSITY OF DELAWARE/CHRISTIANA CARE HEALTH SERVICES MEDICAL LABORATORY SCIENCE PROGRAM  
 MEDT 479 IMMUNOHEMATOLOGY  
 PRACTICAL EXAM GRADING SCHEME

Student \_\_\_\_\_ Grade \_\_\_\_\_

T.S.L. \_\_\_\_\_ Pre-Natal-Neonatal \_\_\_\_\_ Instructor \_\_\_\_\_

The instructor will design a practical exam suitable to the laboratory service. She/he will assign a point value based on the grading scheme presented below.

The student must obtain a passing grade of 70 unless otherwise noted by the instructor.

GRADING SCHEME

ITEM	VALUE	SAMPLE		SAMPLE		SAMPLE		SAMPLE		SAMPLE	
		Total Possible	Total Earned	Total Poss.	Total Earned	Total Poss.	Total Earned	Total Poss.	Total Earned	Total Poss.	Total Earned
ABO	Anti-A;B	2									
	Cell A;B	2									
	Interp	5									
Rh	Anti-D	2									
	D Ct.	1									
	Interp	5									
Serum Tests	ABSC	10									
	Interp	20									
	Panel	30									
	Interp	50									
Donor	Comp Test (pr unit)	5									
	Comp Test (pr unit)	5									
	Comp Test (pr unit)	5									
	Comp Test (pr unit)	5									
Misc	Titer	10									
	Titer Interp	20									
	Prewarm - ABSC	10									
	Panel	20									
	Fetal Screen Technique	10									
DAT	Interp	15									
	P.S.	10									
	IgG	10									
	C3bC3d	3									
Antigen Typing	Patient	3									
	Units	10									
Daily Temperatures	10										
Daily Reagent QC	10										
Product Selection AG Frequency	10										

Calculation of grade:  $\frac{\text{Student numerical score}}{\text{Exam numerical score}} = \text{exam grade}$

Page Score \_\_\_\_\_ = \_\_\_\_\_

Overall Score \_\_\_\_\_ = \_\_\_\_\_

**UNIVERSITY OF DELAWARE**  
**DEPARTMENT OF MEDICAL LABORATORY SCIENCES**  
**MEDT479 CLINICAL LABORATORY PRACTICUM - STUDENT EVALUATION**

Student's Name: \_\_\_\_\_

Affiliate Site: \_\_\_\_\_

Discipline: **IMMUNOHEMATOLOGY**

Signature of Evaluator(s): \_\_\_\_\_

Date of Mid Evaluation: \_\_\_\_\_  
 (due at the end of the first two weeks of the clinical practicum period)

Date of Final Evaluation: \_\_\_\_\_  
 (due at the completion of the clinical practicum period, please mail completed evaluation to UD coordinator)

**Affective Evaluation**

- 5 = Outstanding *Far exceeds expectations*      2 = Below expectations *No self-motivation*  
 4 = Exceeds expectations *Seizes initiative*      1 = Unacceptable performance *No commitment*  
**3 = Fully satisfactory Meets expectations**      Please circle score below and add comments for all scores below/above "3":

**1. Dress Code:** (Obj. #1) Complies with the established dress code policy as outlined in the clinical practicum guidelines; gives evidence of good grooming.

5	4	<u>MID</u> 3	2	1		5	4	<u>FINAL</u> 3	2	1
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Comments: \_\_\_\_\_

**2. Punctuality & Attendance:** (Obj. #2, 3, 4) Arrives in the laboratory with adequate time to start as scheduled. Returns from breaks as scheduled. Complies with attendance policy; notifies appropriate personnel at affiliate and University in a timely fashion.

5	4	<u>MID</u> 3	2	1		5	4	<u>FINAL</u> 3	2	1
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Comments: \_\_\_\_\_

**3. Safety:** (Obj. #11) Adheres to laboratory safety regulations; works in an orderly and safe manner.

5	4	<u>MID</u> 3	2	1		5	4	<u>FINAL</u> 3	2	1
---	---	-----------------	---	---	--	---	---	-------------------	---	---

Comments: \_\_\_\_\_

**4. Attention:** (Obj. #5, 6, 19) Follows both verbal and written instructions. Asks pertinent questions when necessary. Neither distracts others nor allows distractions to affect the completion of assignment.

5	4	<u>MID</u> 3	2	1		5	4	<u>FINAL</u> 3	2	1
---	---	-----------------	---	---	--	---	---	-------------------	---	---

Comments: \_\_\_\_\_

**5. Independence:** (Obj. #7) Demonstrates the ability to work independently within student guidelines. Student draws on previously gained knowledge to solve problems. Student seeks activities to expand knowledge, ability and performance.

5	4	<u>MID</u> 3	2	1		5	4	<u>FINAL</u> 3	2	1
---	---	-----------------	---	---	--	---	---	-------------------	---	---

Comments: \_\_\_\_\_

**6. Interpersonal Skills:** (Obj. #8, 18) Communicates in a professional, tactful manner with instructors, staff, other health care personnel, patients and visitors. Consistently shows common courtesy and contributes toward achieving an environment conducive to work and learning for self and others.

5	4	<u>MID</u> 3	2	1		5	4	<u>FINAL</u> 3	2	1
---	---	-----------------	---	---	--	---	---	-------------------	---	---

Comments: \_\_\_\_\_

7. **Self-Confidence:** (Obj. #15) Demonstrates self confidence in the operation of instrumentation and in the performance of laboratory procedures.

5 4 MID 3 2 1 5 4 FINAL 3 2 1

Comments: \_\_\_\_\_

8. **Organization:** (Obj. #20) Demonstrates organizational skills through ability to coordinate the quantity of work needed to be done with the time available for its completion. Able to perform multiple tasks without jeopardizing accuracy and precision.

5 4 MID 3 2 1 5 4 FINAL 3 2 1

Comments: \_\_\_\_\_

9. **Management & Economy:** (Obj. #12, 13, 14) Conserves reagents and supplies; replenishes supplies required in the laboratory work area.

5 4 MID 3 2 1 5 4 FINAL 3 2 1

Comments: \_\_\_\_\_

10. **Composure:** (Obj. #10, 26) Maintains composure and work quality under stressful conditions and adapts quickly to new situations. Accepts evaluation of performance as constructive and follows through with suggestions made.

5 4 MID 3 2 1 5 4 FINAL 3 2 1

Comments: \_\_\_\_\_

11. **Initiative:** (Obj. #24) Offers assistance to other laboratory personnel when scheduled assignment is complete. Identifies tasks in the lab that need to be done and does them without being asked.

5 4 MID 3 2 1 5 4 FINAL 3 2 1

Comments: \_\_\_\_\_

12. **Enthusiasm:** (Obj. #9) Shows interest and enthusiasm in clinical laboratory work and the medical laboratory science profession.

5 4 MID 3 2 1 5 4 FINAL 3 2 1

Comments: \_\_\_\_\_

13. **Professionalism and Integrity:** (Obj. #16, 17, 27) Accepts accountability for work performed. Readily admits errors, follows procedures as written, and maintains patient confidentiality. Attends continuing education sessions when given the opportunity.

5 4 MID 3 2 1 5 4 FINAL 3 2 1

Comments: \_\_\_\_\_

14. **Decision Making & Problem Solving:** (Obj. #23, 25) Demonstrates the ability to solve problems and seeks corrective action. Coordinates theory with lab analysis as it applies patient data.

5 4 MID 3 2 1 5 4 FINAL 3 2 1

Comments: \_\_\_\_\_

15. **Quality Assurance:** (Obj. #21, 22) Practices acceptable quality assurance as established in specific clinical area. Runs quality control samples according to laboratory protocol. Demonstrates the importance of proper recordkeeping.

5 4 MID 3 2 1 5 4 FINAL 3 2 1

Comments: \_\_\_\_\_

## FINAL CLINICAL PRACTICUM GRADE REPORT

Please provide scores and a description for the written assessments and practical below – the UD Clinical Education Coordinator will calculate the final grade based upon these scores and the affective score. Thank you.

Written Assessment(s) – please include brief description below	QUIZ grades	TEST grades	PROJECT grades
Practical – please include brief description of practical below	Practical    Score achieved _____		

Description of Written Assessment Tools and Practical:

Additional Instructor Comments: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

**Mid Evaluation**

Signature of student \_\_\_\_\_ Date \_\_\_\_\_

**Final Evaluation**

Signature of student \_\_\_\_\_ Date \_\_\_\_\_

Student Comments: \_\_\_\_\_  
 \_\_\_\_\_

**STOP – Grade will be calculated by the UD Education Coordinator. Thank you 😊**

**Student Affective Evaluation 20%**

Average Points:  $\frac{\text{total points}}{15} = \text{_____} = \text{_____}$

Look up grade below: \_\_\_\_\_ X 20% = \_\_\_\_\_

Example:  $52/15 = 3.47 = \text{B-}$  ( $80 \times 20\%$ ) = **16**

Average points = grade:                      Average points = grade:

5.00 – 4.50 = A = 95	2.49 – 2.00 = C- = 70
4.49 – 4.00 = A- = 90	1.99 – 1.50 = D = 65
3.99 – 3.50 = B = 85	1.49 – 1.00 = D- = 60
3.49 – 3.00 = B- = 80	<1.00 = F = 55
3.00 – 2.50 = C = 75	

Written Assessment Ave. Score \_\_\_\_\_ X .40 = \_\_\_\_\_

Practical Score \_\_\_\_\_ X .40 = \_\_\_\_\_

Affective Score \_\_\_\_\_ X .20 = \_\_\_\_\_

Grade for Practicum = \_\_\_\_\_

**PASS or FAIL**

UD end-of-rotation exam grade \_\_\_\_\_