Old Dominion University
Medical Technology/Medical Laboratory Science Program

Mission Statement

The mission of the Medical Technology/Medical Laboratory Science Program is to provide an excellent educational program embodying a curriculum that prepares students to become competent professionals who are committed to providing quality patient care, serving the community, and advancing the body of knowledge in clinical laboratory science.
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Old Dominion University
Medical Technology/Medical Laboratory Science Program

Program Goals

• To provide students with a model educational system based upon scientific and technological excellence.
• To provide a high quality academic program and clinical learning experiences that espouses commitment to quality patient care and concern for the dignity and rights of all patients.
• To provide opportunities for faculty and the professional community to work with students to further the body of knowledge in the profession through research and scholarship.
• To provide qualified and competent practitioners and future leaders, within the educational framework, in order to ensure the integrity of the profession, promote service to the community, and respond to health care issues and needs.

Graduate Competencies

• Develops and performs specimen collection, processing, and evaluation, adapting systems when corrective actions are indicated.
• Performs analytical tests on body fluids, cells, and other substances.
• Correlates laboratory data, recognizes problems, and selects appropriate corrective actions.
• Utilizes quality control and quality assurance measures to evaluate the validity and reliability of laboratory test results and services provided.
• Evaluates new techniques, instruments, and methodologies.
• Applies knowledge of applicable regulations that govern laboratory operations so that compliance is maintained.
• Demonstrates professional conduct and interpersonal skills with patients, laboratory personnel, and other health care professionals.
• Exercises principles of financial, operations, information, and human resource management.
• Applies principles of educational methodology in the development and delivery of instructional materials to students, health care professionals, and patients.
• Recognizes the importance of continuing education for growth and the maintenance of professional competence.
• Applies knowledge of research design in evaluating published studies.
INTRODUCTION TO CLINICAL PRACTICUM COURSES
Purpose:

The Clinical Practicum component of the Medical Technology/Medical Laboratory Science curriculum allows the student to gain valuable practical experience in a clinical laboratory setting. Students are expected to be able to build on the foundation of knowledge, skills and values acquired from the university classroom and laboratory courses as they master challenges provided in clinical practice. The practice experiences will allow the student the opportunity to display professional characteristics, gain confidence, and develop proficiency in both: technical and theoretical laboratory practice skills.

According to the Standards for Accredited Programs for Medical Laboratory Scientist established by the National Accrediting Agency for Clinical Laboratory Science (NAACLS, 2016)*, a Medical Laboratory Scientist/Medical Technologist Program at the baccalaureate level should prepare students who are able to demonstrate entry-level competencies as described below:

At entry level, the medical laboratory scientist will possess the entry level competencies necessary to perform the full range of clinical laboratory tests in areas such as Clinical Chemistry, Hematology/Hemostasis, Immunology, Immunohematology/Transfusion medicine, Microbiology, Urine and Body Fluid Analysis and Laboratory Operations, and other emerging diagnostics, and will play a role in the development and evaluation of test systems and interpretive algorithms.

The medical laboratory scientist will have diverse responsibilities in areas of analysis and clinical decision-making, regulatory compliance with applicable regulations, education, and quality assurance/performance improvement wherever laboratory testing is researched, developed or performed.

At entry level, the medical laboratory scientist will have the following basic knowledge and skills in:

A. Application of safety and governmental regulations and standards as applied to clinical laboratory science;

B. Principles and practices of professional conduct and the significance of continuing professional development;

C. Communications sufficient to serve the needs of patients, the public and members of the health care team;

D. Principles and practices of administration and supervision as applied to clinical laboratory science;

E. Educational methodologies and terminology sufficient to train/educate users and providers of laboratory services;

F. Principles and practices of clinical study design, implementation and dissemination of results.

Student Expectations:

The practical experiences that students gain while in clinical practicum courses should prepare students to work in a clinical laboratory setting as entry-level Medical Technologist/Medical Laboratory Scientist in areas of Clinical Chemistry, Hematology, Blood Bank, Microbiology, Serology/Immunology, Urinalysis, and Phlebotomy. The experiences are expected to lead to standard entry-level competence.

Once entry-level competence is demonstrated, work in the various clinical disciplines may be performed under the instructor's supervision. Student learning experiences however, are not substituted for the work of the staff. Service work performed by students outside of academic hours is not required or permitted to fulfill practicum requirements.

Clinical Instructors:

The clinical instructors at the clinical affiliate sites are experienced Medical Technologists/Medical Laboratory Scientists who have a special dedication to the profession and to students in particular.

The next pages provide contact information for clinical instructors at sites affiliated with ODU Medical Technology/Medical Laboratory Science Program at the time this handbook is updated. Note that not all affiliated sites accept students every year and that changes in instructor responsibilities may be expected. ODU MT Program Education Coordinator provides students with proper contact information prior the practicum.
### Old Dominion University

**Medical Technology/Medical Laboratory Science Program**

**Clinical Liaisons and Instructors**

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<td>(manager)</td>
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<tr>
<td>Kelly Slaughter</td>
<td>Molecular Diagnostics</td>
<td><a href="mailto:KASLAUG1@sentara.com">KASLAUG1@sentara.com</a> 757-388-5910</td>
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</tr>
<tr>
<td>Carol Dewey</td>
<td>Phlebotomy</td>
<td><a href="mailto:clsaunde@sentara.com">clsaunde@sentara.com</a> 757-388-0099 pgr 757-475-2149</td>
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<tr>
<td>Ethel Austria</td>
<td>Urinalysis</td>
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<tr>
<td>Charlie Banks</td>
<td>Laboratory Manager/Site Coordinator</td>
<td><a href="mailto:crbanks@sentara.com">crbanks@sentara.com</a> 757-934-4731</td>
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<tr>
<td>Wayne Johnson</td>
<td>Hematology/Coag/Urines</td>
<td><a href="mailto:twjohnso@sentara.com">twjohnso@sentara.com</a> 757-934-4398-W. Johnson; 757-934-4731/C. Banks</td>
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<tr>
<td>Greg Berry</td>
<td>Chemistry</td>
<td>757-934-4595</td>
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<tr>
<td>Casey Rhodes</td>
<td>Microbiology/Immunology</td>
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<tr>
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<tr>
<td>Priscilla Darville</td>
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<td>757-507-1645</td>
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<tr>
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<tr>
<td>Beatriz De Venuto</td>
<td>Hematology/Coagulation</td>
<td><a href="mailto:BXRODRIG@sentara.com">BXRODRIG@sentara.com</a></td>
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<tr>
<td>Pegah Stanley</td>
<td>Chemistry</td>
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<tr>
<td>Pam Simmons-McDonald</td>
<td>Phlebotomy</td>
<td><a href="mailto:Psmcdona@sentara.com">Psmcdona@sentara.com</a></td>
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<td></td>
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<td>757-363-6883 – BS; 757-475-9033 - P</td>
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<tr>
<td>Aleyamma Alexander</td>
<td>Microbiology/Urinalysis</td>
<td>757-507-1620</td>
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<tr>
<td><strong>Sentara Virginia Beach Hospital/Sentara Independence</strong></td>
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<tr>
<td>Brenda Boston</td>
<td>Laboratory Manager</td>
<td><a href="mailto:bcboston@sentara.com">bcboston@sentara.com</a></td>
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<td>757-395-8696; 757-475-2574 - P</td>
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<tr>
<td>Robert Murray</td>
<td>Chemistry</td>
<td><a href="mailto:rpmurray@sentara.com">rpmurray@sentara.com</a></td>
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<tr>
<td>Jenny Carter</td>
<td>Hematology/Coag</td>
<td><a href="mailto:jrcarte1@sentara.com">jrcarte1@sentara.com</a></td>
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<tr>
<td>Pam Simmons-McDonald</td>
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<td><a href="mailto:Psmcdona@sentara.com">Psmcdona@sentara.com</a></td>
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<tr>
<td>Deborah Hibberd</td>
<td>Blood Bank</td>
<td><a href="mailto:dkhibber@sentara.com">dkhibber@sentara.com</a></td>
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<tr>
<td>Tercassa Emerson</td>
<td>Laboratory Manager/Site</td>
<td><a href="mailto:TJMAJETT@sentara.com">TJMAJETT@sentara.com</a></td>
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<tr>
<td></td>
<td>Coordinator</td>
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<tr>
<td>Hannah Thomason</td>
<td>Blood Bank</td>
<td>757-984-7982</td>
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<tr>
<td>Nancy Jones</td>
<td>Hematology/Coag/Micro</td>
<td><a href="mailto:NSJONES@sentara.com">NSJONES@sentara.com</a></td>
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<tr>
<td>Pete Moore</td>
<td>Chemistry/Transfusion</td>
<td>757-984-7990</td>
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<tr>
<td>Michele Spencer</td>
<td>Phlebotomy</td>
<td>757-736-0115</td>
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<tr>
<td><strong>Southampton Memorial Hospital (Franklin)</strong></td>
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<tr>
<td>Linda Pittman</td>
<td>ODU Liaison/Education</td>
<td><a href="mailto:Linda_Pittman@chs.net">Linda_Pittman@chs.net</a></td>
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<tr>
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<tr>
<td>Ioleen Beecham</td>
<td>Hematology</td>
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<td>Samuel Byrd</td>
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<td>Rebecca Stokes</td>
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<tr>
<td>Mary Petty</td>
<td>ODU Liaison/Education Coordinator Laboratory Manager</td>
<td><a href="mailto:mary.petty@va.gov">mary.petty@va.gov</a></td>
<td>757-722-9961 x3632</td>
</tr>
<tr>
<td>Deitra Phillips</td>
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<td>757-722-9961 x2870</td>
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<tr>
<td>Niurca Rossy</td>
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<td><a href="mailto:niurca.rossy@va.gov">niurca.rossy@va.gov</a></td>
<td>757-722-9961 x2881</td>
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<tr>
<td>Mary Hasan</td>
<td>Blood Bank</td>
<td><a href="mailto:mary.hasan@va.gov">mary.hasan@va.gov</a></td>
<td>757-722-9961 x3559</td>
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<tr>
<td>Steve Kelley</td>
<td>Chemistry</td>
<td><a href="mailto:Stephen.kelley2@va.gov">Stephen.kelley2@va.gov</a></td>
<td>757.722.9961 x2877</td>
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**Veterans Administration Medical Center Richmond**

<table>
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<tr>
<th>Name</th>
<th>Position</th>
<th>Email</th>
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</tr>
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<tbody>
<tr>
<td>Neil Gamayon</td>
<td>ODU Clinical Liaison</td>
<td><a href="mailto:Neil.Gamayon@va.gov">Neil.Gamayon@va.gov</a></td>
<td>804-675-5812</td>
</tr>
<tr>
<td>Shakita Kearney</td>
<td>Hematology</td>
<td></td>
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<tr>
<td>Jocelyn Budda</td>
<td>Microbiology</td>
<td><a href="mailto:Jocelyn.Budda@va.gov">Jocelyn.Budda@va.gov</a></td>
<td>(804)675-5524</td>
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<tr>
<td>Amanda Rosser</td>
<td>Chemistry</td>
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<tr>
<td>Jaime Almond</td>
<td>Blood Bank</td>
<td><a href="mailto:Jaime.Almond@va.gov">Jaime.Almond@va.gov</a></td>
<td>(804) 675-5000; ext. 4584</td>
</tr>
</tbody>
</table>

Shaded Areas - Inactive
Note on Medical Technology/Medical Laboratory Science Program Policies:

All ODU Medical Technology/ Medical Laboratory Science (MT/MLS) Program Policies and Practices are determined and enforced by the Program Director in conjunction with the School of Medical Diagnostic and Translational Sciences and the MT/ MLS Advisory Committee (**See Appendix A for Program Policies).  

**Advisory Committee:** The MT/ MLS Advisory Committee consists of: Education Coordinators from affiliate sites, ODU faculty, and selected members of the professional community. The committee meets in the fall of each academic year for a general meeting and in the spring for a meeting and student admissions interviews and decisions. All policies and practices of the ODU MT/ MLS Program are determined by the committee in accordance with the ODU College of Health Sciences.  

**Curriculum Committees:** Each of the disciplines in the MT/ MLS Clinical Rotation Program has a curriculum committee. The committees are composed of an ODU faculty member and clinical instructors for each discipline from each affiliate site. The curriculum committees are responsible for reviewing and revising university and clinical course objectives.  

**Clinical Course Policies:** All clinical course policies established by the MT/ MLS Advisory Committee are expected to be followed. (**See Appendix A for Clinical Course Policies).  

**Clinical Course Objectives:** Clinical course objectives are formulated, reviewed, and revised by the Curriculum Committees. The student should use the objectives to review and prepare for the rotation courses. Clinical instructors should use the objectives to determine that all pertinent information has been covered in the rotation. (**See Appendix B for Clinical Course Syllabi and Objectives Policies).  

**Clinical Course Competencies:** Each clinical course is designed to culminate in the attainment of specified competencies. Competency checklists for each clinical course must be completed for each student by clinical instructors. These checklists must be returned to the Program Director at the completion of each course (**See Appendix B for competency checklists).
PREPARING FOR CLINICAL ROTATIONS
Criminal Background Check

All students must obtain a criminal background check prior to entering clinical rotations. Castlebranch.com has been chosen by Old Dominion University as the approved source for background checks. The myCB Profile also includes a platform for immunization records. The instructions for requesting the services are on the next page. The total cost is $55.00. The results of the background check will either be presented in a sealed envelope to the appropriate facility representative on the first day of each clinical facility assignment or communicated directly to the facility representative. If a facility requires the results, have a copy made and keep the original for subsequent rotations. Students deemed unacceptable by a facility due to results from a criminal background check forfeit that assignment and will not be allowed to complete the program of study.

The next pages contain instructions provided for the students by CastleBranch. Please, note that instructions may be subject to change. A phone number is provided at the end so that students may request assistance.

In addition to background check, some clinical sites have also started to require a drug screen. The students assigned to these sites will be notified how to proceed. CastleBranch accounts for ODU MT/MLS students have not been set up for drug screen documentation for summer 2017.
STUDENT INSTRUCTIONS FOR OLD DOMINION UNIVERSITY

MEDICAL TECHNOLOGY

About Your Profile

MyCB is a secure platform that allows you to order your background check and medical document manager online. Once you have placed your order, you may use your login to access additional features of My CB, including document storage, portfolio builders and reference tools. MyCB also allows you to upload any additional documents required by your school.

Order summary

- Required Personal Information
  - In addition to entering your full name and date of birth, you will be asked for your Social Security Number, current address, phone number and e-mail address.

- Immunizations
  - Document trackers provide secure online storage for all of your important documents. At the end of the online order process you will be prompted to upload specific documents required by your school for immunization, medical or certification records.

- Payment Information
  - At the end of the online order process, you will be prompted to enter your Visa or Mastercard information. Money orders are also accepted but will result in a $10 fee and an additional turn-around-time.

Place Your Order

Go to: castlebranch.com and enter package code: OD03

You will then be directed to set up your MyCB account.

View Your Results

Your results will be posted directly to your MyCB account. You will be notified if there is any missing information needed in order to process your order. Although 95% of background check results are completed within 3-5 business days, some results may take longer. Your order will show as "In Process" until it has been completed in its entirety. Your school's administrator can also securely view your results online with their unique username and password.
Measles, Mumps & Rubella (MMR)
- There must be documentation of one of the following:
  - 2 vaccinations
  - Positive antibody titer for all 3 components (lab report required)

Varicella (Chicken Pox)
- Submit a positive antibody titer (lab report required).

Hepatitis B
- There must be documentation of one of the following:
  - 3 vaccinations
  - Positive antibody titer (lab report required)
  - Declination waiver

TB Skin Test
- There must be documentation of one of the following:
  - 2 step TB Skin test ≥2 weeks apart
  - If positive results, provide a clear Chest X-Ray (lab report OR physician verification of results required)

Tetanus
- Please submit documentation of the completed primary DPT series (at least 4 vaccines) AND a Td booster within the past 10 years.

Polio
- Please submit documentation of the completed primary polio series. There must be record of at least 3 vaccinations.

Influenza
- Vaccination documentation for the current season (August-May)

**If you need assistance please contact CastleBranch at 888.850.4314**
Health Records

Junior Students: HBV vaccination is strongly recommended for all students enrolled in both pre-clinical and clinical courses. All program and non-program students in pre-clinical courses must provide documentation of completion or initiation of HBV vaccination series by the end of the first week of the semester that classes begin. Students who choose not to be vaccinated or who have initiated the vaccine must sign a declination form indicating receipt of information regarding the protection conferred by the vaccine.

Senior Students: MT Program students are also required to provide proof of a negative 2 step PPD tuberculin skin test within one calendar year of the time they begin clinical rotations or a negative chest x-ray if there is a history of a positive PPD.

Additional records of immunizations required for clinical rotations are listed below. Please provide appropriate documentation to the CastleBranch Corporation @CastleBranch.com no later than May 1 of your junior year. Failure to do so will prevent rotation attendance and may result in forfeiture of assignments.

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<thead>
<tr>
<th>DISEASE</th>
<th>DOCUMENTATION</th>
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<td>Tetanus/ Diphtheria</td>
<td>Completed primary series; TD booster required every 10 yrs.</td>
</tr>
<tr>
<td>Tuberculosis</td>
<td>2-step TST (PPD): two tests placed and read at least 2 weeks apart within the last year; a TST placed and read within the past 12 mos. may be used as the 1st step; negative chest X-ray within last year if history of positive TST</td>
</tr>
<tr>
<td>Polio</td>
<td>Completed primary series</td>
</tr>
<tr>
<td>MMR (Measles [Rubeola], Mumps, Rubella)</td>
<td>Doses 1 &amp; 2 @ 12 mos or later and after May, 1971. If no record of previous vaccination - titers are required</td>
</tr>
<tr>
<td>Varicella</td>
<td>Varicella titer - vaccine if susceptible</td>
</tr>
<tr>
<td>Hepatitis B</td>
<td>Vaccination series or signed declination form</td>
</tr>
<tr>
<td>Influenza</td>
<td>Vaccination documentation for the current season (August – May)</td>
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</table>

**Note:** A transcript of your Diphtheria/Tetanus, MMR, and Hepatitis B vaccination immunization records exists at ODU Student Health Center. Additional required immunization documentation should be added to your existing transcript so that a single document may be uploaded to CastlBranch.

The TST (PPD), Varicella titer, Mumps, Rubeola & Rubella titers (if required), and the Hepatitis B vaccine are available either at the Student Health Center for a fee or through your personal health care provider. If obtained from your PCP, the results should be added to your Student Health Center transcript.
I understand that during my University laboratory courses and clinical practica, I will be exposed to blood or other potentially infectious materials and I may be at risk of acquiring Hepatitis B Virus (HBV) infection. I have been encouraged by program faculty to be vaccinated with the HBV vaccine to eliminate or reduce the risk of acquiring the HBV. However, I decline the hepatitis B vaccination at this time. I understand that by declining this vaccine, I continue to be at risk of acquiring HBV infection, a serious disease. In addition, I understand that as a student, I am responsible for all arrangements and fees involved in receiving the HBV vaccine.

I, _____________________________________ have not been immunized against the HBV and choose not to have the vaccine at this time.

I, _____________________________________ have started the HBV vaccination series and I will complete it.

I understand that I continue to be at risk of acquiring HBV infection, a serious disease.

<table>
<thead>
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<th>Student Signature</th>
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<th>Program Faculty</th>
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Old Dominion University
College of Health Sciences
School of Medical Diagnostic & Translational Sciences
Medical Technology/Medical Laboratory Science Program

**Emergency Health Care Services Responsibility**

This is to acknowledge that the undersigned student is aware that any emergency health care services needed during clinical rotations will be his/her responsibility.

__________________________
UIN

Student Name

__________________________
Date

Student Signature

__________________________
Date

Faculty Signature
Review of Didactic Course Materials
Students are expected to review didactic course materials before entering clinical rotations. Lecture notes, textbooks, lab materials and clinical course objectives should also be used in preparation for clinical sites. The ASCP BOC Review and other review materials are excellent resources for students to use in preparation for the second phase of the program.

Clinical instructors assume that the students entering rotations are well versed in the theory of their particular discipline. Clinical rotations are a time for learning advanced technical skills and gaining practical experience with clinical equipment and overall laboratory operations.

Pre-tests are administered prior to each practicum. Students may be required to make up deficiencies in a discipline before entering a clinical rotation if an acceptable grade is not achieved on the pre-test.

Professionalism
Students are reminded that once they enter a clinical site, they will be treated as professional Medical Technologists/Medical Laboratory Scientists. Students will be graded on professionalism through the Professional Characteristics component of the grading policy. Please review these characteristics and be prepared to exceed the standards. A display of strong ethics during the clinical rotation is expected.

Dress Code and Grooming
Dress codes are site specific. Scrubs and lab coats over street clothes are examples of allowed attire. If the site that you are attending does not have a specific dress code, please be reminded that blue jeans, sweat pants, shorts and short skirts are not appropriate. Shoes should be clean, leather, closed toe and heel, and functional. Grooming policies vary but are consistent with regard to hair, nails and jewelry. Providers who have direct patient care are NOT to wear artificial fingernails or extenders. Natural fingernails should be ≤1/4 inch long. Nails may be painted with pink shade/clear fingernail polish. Long hair should be pulled back and tied. Avoid large, bold jewelry, i.e. earrings, rings and necklaces.

Please contact the clinical site approximately one week in advance of your assignment to remind them that you are coming and to obtain information on dress code, parking arrangements and preparation for the rotation.
Clinical rotation schedules are assigned to students on the basis of their predicted date of graduation, i.e., those with a closer graduation date are given preference for available rotation schedules. Clinical rotations are scheduled over the course of two semesters by the Education Coordinator and Program Director. In most situations, second-degree students are scheduled for summer and fall semester rotations, which will allow them to graduate in December. Traditional and transfer students are typically scheduled for rotations in the summer and spring semesters with a May graduation date. Part-time students and those repeating courses will have variable graduation dates and will be scheduled for rotations accordingly.

The affiliate laboratories give the ODU Clinical Education Coordinator a list of the number of students they can take in any given semester, and possible dates and departments for the rotations. Internships/practicums will be assigned as they become available and may be made for evening, night as well as day shifts. Students are expected to be available for all rotations scheduled.

If placements are difficult because of the lack of available slots, there will be a priority list established that will be based on projected date of graduation, progress in preclinical courses, and readiness to graduate (no outstanding GED courses). Assignments will be made on a priority basis, i.e. preference will be given to students who are ready for graduation immediately upon completion of practicum courses. Assignments will be made based on academic performance, centered on cognitive, psychomotor, as well as affective behaviors. Every attempt will be made to place all students and to avoid delaying individual student’s graduation.

Student learning experiences in clinical practicum courses are performed under the supervision of a preceptor. Student learning experiences, however, are not substituted for the work of the staff. Service work performed by students outside of academic hours is not required or permitted to fulfill practicum requirements.

Students will receive a rotation schedule for each semester for which assignments are required. Students will keep this schedule for their records and may use the form to record grades. (See Appendix C for MEDT CLINICAL PRACTICUM ASSIGNMENTS FORM)

If a student fails to appear for a rotation, that student will be dismissed from the program. A student who does not pass an assigned clinical rotation will be placed at the end of the list and must wait for the next available rotation, assuming that there is no other violations of the program’s continuance policy.
Attendance Policies

All students scheduled for clinical rotations are expected to show up on time each day of the rotation. Failure to show up for a rotation or leaving a rotation without properly notifying the Clinical Instructor, Clinical Education Coordinator and Program Director will result in the student’s suspension from the rotation.

Rotation Hours:
The beginning and ending hours for each rotation day are left to the discretion of the Clinical Instructor. Rotations that include maintenance often have variable hours to allow the student to experience all aspects of the daily routine.

Vacations and Holiday Schedule:
While in clinical rotations, students will follow the hospital’s vacation and holiday policy and not the University’s schedule (i.e. students will not necessarily have the week of spring break off).

Attendance Log Sheet:
Students are required to maintain an attendance log sheet while in their clinical rotations. (**See Appendix C for Attendance Log). One log sheet will be kept during all rotations and is the responsibility of the student and not the Clinical Instructors. Students are expected to sign in each day they are in rotation and at the end of each week and have an instructor initial the attendance log. The attendance log will be turned in to the Clinical Education Coordinator before graduation. All students must turn in the completed attendance log before graduation.

Absence or Tardiness:
Clinical Instructors must be properly notified when there is an anticipated or unanticipated absence or tardiness. Instances of absences and /or tardiness greater than 10% of the time during a clinical rotation will result in a “failed to meet” evaluation of Professional Characteristics which translates to a failing grade for the clinical course. Students are strongly encouraged to be on time and have perfect attendance during all clinical rotations. Please remember that clinical instructors are potential employers and references when the job search begins.
Safety

OSHA Standard
Students are reminded that the OSHA Bloodborne Pathogen Standard is to be followed at all times. The standard includes Universal Precautions, personal Protective Equipment, Engineering Controls, and Work Practice Controls. Please review the Medical Diagnostic and Translational Sciences (MDTS) Biosafety Policy Manual for standard guidelines and requirements.

Clinical Site Standard Operating Procedures (SOPs)
Students are required to follow site specific standard operating procedures for safety at all times. Students must review with each Clinical Instructor, site specific safety instructions the first day of each rotation and adhere to these policies throughout the rotation.

Hepatitis B Vaccine
Although students are not required to obtain the HBV vaccination series, it is strongly recommended. Work will be performed on real patient samples and therefore the protection afforded by the HBV vaccine is a wise choice. Post immunization testing is highly recommended. A signed declination form is required if vaccination against the HBV is rejected.

Exposure Incidents
If a student is exposed to blood or other potentially infectious material, the student must follow the exposure protocol outlined below:

Services and treatment needed may be provided by the clinical site, ODU Student Health Center, or the student’s Primary Care Physician (PCP) or a combination of the three.

In the Event of An Exposure Incident (contaminated needlestick, puncture wound from a contaminated, sharp instrument or contamination of any obviously open wound or the mucous membranes by saliva, blood, or a mixture of both saliva and blood):

1. Wounds and skin sites that have been in contact with blood or body fluids should be washed with soap and water; mucous membranes should be flushed with water. Inform the clinic site instructor/supervisor immediately.
2. If post exposure testing service is provided by the site, the student’s blood should be drawn as soon as possible* if testing for HbsAg, Anti-HCV, and Anti-HIV is deemed necessary.
3. If this service is NOT provided at the clinical site, the student should:
   a. Go to ODU Student Health Center where testing may be provided.
   b. If this occurs after normal working hours at the Student Health Center, the on-call licensed care practitioner will be notified and will refer the student for the off-site testing (757-683-4000). (See Appendix C for Student Health/ODU Student Exposure Information). The student through the student’s own insurance or resources must cover needed services and treatment. Post exposure services, including counseling are available through Student Health Center; however, the student is responsible for the cost of all testing.
   c. Go to his/her PCP to obtain the necessary post exposure services and treatment.
4. The person whose blood or body fluid is the source of an occupational exposure should be evaluated for HBV, HCV, and HIV infection as soon as possible* so that appropriate follow-up can be instituted. If the student is seeking post exposure care at the Student Health Center or
from a PCP, the results of the source patient testing should be made available as soon as possible*.

The incident should be reported to the M.T. Program Director and the Student Health Center. The student and supervising instructor should complete the COHS Incident Report Form (See Appendix C). One copy should be kept at the health facility where the accident occurred, one copy should be submitted to the Program Director, and one copy to the Student Health Center. Both should be submitted within 24 hours.

*Student and source person should be evaluated as soon as possible after the exposure incident. Post exposure prophylaxis (PEP), if needed, should ideally be initiated within two hours (See Appendix C for CDC recommended guidelines for PEP).

**Standards for Privacy**

All students are required to become knowledgeable about the Health Insurance Portability and Accountability Act (HIPAA) of 1996 and state laws regarding standards of privacy. The next page contains signature sheet with confidentiality obligations. Sign the form and return to Program Director, Medical Technology/Medical Laboratory Science, Old Dominion University. Keep a copy for your records.
Old Dominion University  
Medical Technology/ Medical Laboratory Science Program  
Standards for Privacy at Affiliated Facilities  

Student’s Name: ___________________________________

Confidentiality Obligations. In the course of your presence at affiliated institutions you may be exposed to incidentally or otherwise federally protected health information (PHI) and other Confidential Information including, but not limited to: all patient information, all information, data, reports, records, summaries, tables and studies, strategic and development plans, financial condition, business plans, co-developer identities, customer lists, employee lists and business manuals, whether written or oral, fixed in hard copy or contained in any computer data base or computer readable form, as well as any information identified as confidential (“Confidential”) of the affiliated institution.

You must abide by the Standards for Privacy of Individually Identifiable Health Information (IIHI) (the “Privacy Regulations”) under the Health Insurance Portability and Accountability Act of 1996 (“HIPAA”) and State Laws including but not limited to the following:

1. You have a responsibility to protect PHI and other Confidential Information and that a breach of confidentiality may make you subject to legal action in forfeiture of the Affiliation Agreement with termination of program participation at the Facility,
2. You cannot use or disclose PHI and other Confidential Information to any third party,
3. You can only access PHI and other Confidential Information for which you have a need to know and then the permitted use is limited to the minimum needed in connection with performance of affiliation duties,
4. You have an obligation to keep PHI and other Confidential Information confidential, including but not limited to:
   a. Permitted conversations concerning Confidential Information must take place such that the information remains confidential.
   b. Confidential Information gained through incidental access is not to be shared with anyone. Incidental access that could be considered a breach of confidentiality MUST be reported to the Facility management.
   c. Unless permitted by the Privacy Officer, no Confidential Information is to be removed from the Facility.
   d. The proper disposal of Confidential Information requires that the information is rendered unrecognizable. Confidential disposal bins are available throughout the Facility for use.
   e. Confidential Information will be de-identified for the purposes of developing oral, written reports required for completion of program/participant requirements.
   f. Copying, transmitting, using or disclosing Confidential Information will not be permitted.

I understand my obligations to maintain and protect the confidentiality of protected health information (PHI).

________________________________________________________  Date: ______________________

Affiliated Participant Signature
INSTRUCTOR EVALUATION OF STUDENT SKILLS
Clinical Practicum Grades

Rotation grades are calculated from three separate components (See Appendix C for Rotation Grade Form).

Written Component: The written component includes all written/online tests, papers and presentations given during the rotation. The university provides three tests, a Pre-test, Exam 1 and Final Exam. The weights are outlined on the grade form. The written/online component counts as 50% of the overall course grade. A student must receive a “C” (76%) or better in order to receive a “C” or better for the rotation grade. Action plans can be used by Education Coordinator and Course Director to remediate cognitive problems.

Oral Presentation: Students are expected to research a subject agreed upon with the clinical instructor and deliver a presentation on a subject to the laboratory staff. Oral Presentation Evaluation Form is provided in Appendix C. The weight of the presentation is outlined on the grade form.

Practical Component: The practical component grade is derived from an average of practical tests. The number and format of tests are outlined on the grade form. The practical component counts as 50% of the overall course grade. A student must receive a “C” (76%) or better in order to receive a “C” or better for the rotation grade.

Professional Characteristics: Students are assigned a pass/fail grade for the professional characteristics component of the rotation course. Students are evaluated as having “exceeded”, “met” or “failed to meet” the following seven characteristics:

- Policy Compliance
- Promptness/Attendance
- Initiative
- Responsibility
- Reliability
- Professional/Workplace Demeanor
- Integrity

(See Appendix C for Professional Characteristics Evaluation Form) A student must “exceed” or “meet” all of the characteristics listed. One or more “failed to meet” assessment will result in a failing grade of the professional characteristics component. A failing grade in professional characteristics will result in a failing grade for the student in that rotation.

Practicum Grading Scale:

A = 93-100%
B = 86-92%
C = 76-85%
D = 65-75%
F = Below 65%
Action Plans

Prescriptive action plans will be employed to facilitate student remediation of performance identified as less than satisfactory in each component. The prescriptive action may extend the time the student spends in a rotation course (See Appendix C for Action Plans).

Failure Policy:

If a student fails to obtain a grade of “C” (76%) or better for a clinical course, that course must be repeated if the student is eligible for the repeat. (**See Appendix A for Course Policies) If eligible, the student who fails a rotation course will be placed at the bottom of the list for an available site assignment. This may result in a delay of the student’s scheduled graduation date. No guarantee of a graduation date can be given to a student when a clinical rotation course is not completed successfully.
STUDENT EVALUATION OF CLINICAL INSTRUCTORS & PRACTICUM PROGRAM
Student Evaluation of Clinical Instructors:

All students in clinical rotations will be asked to turn in evaluations of their clinical instructors at the end of the semester. Written evaluations will be kept anonymous. Students are reminded to list positive experiences and give constructive criticism. Feedback from the evaluations will be used by instructors to improve and maintain the quality of their rotation.

Student Evaluation of the Clinical Practicum/Rotation Program:

All students in clinical rotations will be asked to complete an evaluation of their entire Clinical Practicum/Rotation Program. Written evaluations will be kept anonymous. Students are asked to answer questions candidly and to give constructive criticism.

(See Appendix C for Clinical Instructor and Clinical Practicum/Rotation Program Evaluation Forms)
REQUIREMENTS FOR GRADUATION
Degree Checklist:
All students are required to complete a degree checklist that will be kept in student’s file in the MT/MLS department. The checklist should be completed prior to entering clinical courses to ensure that all pre-clinical courses and requirements have been met.

Clinical Course Credit Hours:
Clinical Laboratory Science students are required to complete 19 credit hours of clinical courses. The disciplines and credit hours required are listed below:

<table>
<thead>
<tr>
<th>Discipline</th>
<th>Course</th>
<th>Credit Hours</th>
<th>Weeks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chemistry</td>
<td>MEDT 452</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Microbiology</td>
<td>MEDT 406</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Blood Bank</td>
<td>MEDT 454</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Hematology</td>
<td>MEDT 404</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Phlebotomy</td>
<td>MEDT 458</td>
<td>1</td>
<td>1-2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>19</td>
<td>19-20</td>
</tr>
</tbody>
</table>

Senior Seminar:
In addition to the 19 credit hours of clinical courses, students are required to take the Medical Technology Seminar course (MEDT 457) during their final semester. MEDT 457 is a one credit, P/F, web-based course, designed primarily to prepare students for the Board of Certification (BOC) examination. A pre-test, discipline practice examinations and a final examination are scheduled throughout the semester. Students must adhere to the examination schedule. A grade ≥ 70 must be earned on the final examination and documentation of application to the BOC certification examination must be provided in order for a “P” to be assigned.

Grade Requirements:
Students must obtain a “C” (≥76%) in each clinical course (practicum and written) in order to successfully complete the Medical Technology/ Medical Laboratory Science Program.

Forms and Documents:
The following forms must be submitted to the Program Director prior to graduation:
- Attendance Log
- Evaluation of the Clinical Rotation Program
- Clinical Instructor Evaluation Forms
- Medical Technology/Medical Laboratory Science Alumni Registration Form
- Records Release Authorization Form
- Immunology/Serology and Urinalysis Study Questions and Case Histories (on Bb - MEDT 452)

See Appendix C for the Instructor and Clinical Rotation Program evaluation forms and the Alumni Registration Form.
Appendix A
As a student in the Medical Technology/Medical Laboratory Science (MT/MLS) Program I am aware of the following:

**General Program Course, Attendance, Continuance, and Grade Requirements**

1. Junior year core courses that are over three years old prior to starting a rotation, must be reevaluated by the faculty member at ODU in charge of the specialty, in both theoretical knowledge and technical skills. Reevaluation may result in the requirement to repeat and/or audit out-of-date courses. This applies to both part-time and returning students.

2. Students who take courses out of sequence must demonstrate competence in the out of sequence courses either at the end of the semester preceding or at the beginning of the semester of the out of sequence course. Competence will be assessed by examination. If competence is not demonstrated (grade ≥76), the course or courses must be repeated and/or audited.

3. Continuance in the program is contingent upon my maintaining a GPA of ≥2.0 in all MEDT courses attempted. Failure to maintain this will result in a probationary status for the following semester.

4. Students will be maintained in a probationary status for one semester exclusive of the summer term. Failure to meet the minimum academic standards by the end of the probationary terms will result in dismissal from the program.

5. At no time will students, while on probation, be allowed to enroll in any clinical courses.

6. Students with exceptional backgrounds may challenge lecture courses with permission of the course instructor and MT/MLS Program Director. The granting of a waiver for laboratory courses is dependent on the evaluation of previous training and experience by the course instructor and MT/MLS Program Director.

7. Failure to start the fall semester after admission the previous spring will result in dismissal from the program.

8. Students are expected to abide by the University’s class attendance policy and the attendance policy of each program course.
9. Having to attend work shall never be accepted as an excuse to miss class, or leave a clinical rotation early.

10. Students are responsible to attend all meetings so designated by the MT/MLS Program Director. All senior class meetings are mandatory. Also, students are required to activate and maintain an ODU e-mail account. Students will also be held responsible and accountable for all information and policy changes communicated through e-mail and meetings, even if not present.

11. Students must maintain a minimum grade of “C” in all Medical Technology courses, including management (MEDT 403W) and statistical applications (MEDT 440). Pre-clinical courses with less than a “C” grade must be repeated before entering clinical rotations (see #14 below). Positions in subsequent classes may not be held for students who are out of curriculum sequence if enrollment numbers fill available course capacity.

12. Students who earn a grade of "C -" (C minus) in a pre-clinical course may submit a request for exception (RFE) to this policy (11) to the Program Director no later than 5 working days after the receipt of the course grade. The Medical Technology Continuance Committee*, whose decision will be final, will review all requests for exception. If the exception is granted, the student will be put on probation. Submission of no more than two RFEs for the same pre-clinical MT course or two different pre-clinical MT courses will be allowed. A third C- grade will result in dismissal from the program (see #14 below). Request forms may be obtained from the MT/MLS Program Director.

13. All students must earn a “P” when evaluated for each of the Affective Behaviors/Professional Characteristics in preclinical as well as clinical courses. An action plan will be used to remediate deficiencies. Failure to remediate deficient characteristics as prescribed by the action plan and to “meet” minimum professional standards will result in dismissal from the program.

14. A grade of “D” or less in the same pre-clinical MT course twice or two different pre-clinical MT courses will result in dismissal from the program. Remaining in MT courses after dismissal is not recommended and is strongly discouraged. Permission to continue with selected courses may be granted following counseling by the MT/MLS program director. Consideration for readmission may be made only upon written request to the Admissions Committee at its next scheduled meeting. Decisions will be made on an individual basis, following evaluation of academic performance and professional aptitude. The schedule for repeating students will be required to adhere to an out of sequence curriculum that will be selected to reduce cognitive decay prior to clinical rotations and the BOC examination. This may result in the requirement to repeat and/or audit previously completed courses. Positions in subsequent classes may not be held for students who are out of curriculum sequence if enrollment numbers fill available course capacity.

15. Students who withdraw from any of the junior year courses after acceptance into the program, will forfeit the right to the next scheduled rotations.

16. Students may at any time request an advisor to document in writing, with the use of the counseling record, any statement made as to requirements, courses he or she desires to
challenge or to have substituted. Documentation may also be requested for anything outside of the advising process, including complaints. The counseling record form will become a permanent part of the student’s file.

17. It is the student’s responsibility to frequently check Blackboard and ODU email for announcements pertaining to the program.

* Continuance Committee consists of full time MT/MLS faculty and any instructor involved in the relevant coursework.

Clinical Practicum Courses, Attendance, Continuance, and Grade Requirements

1. Required placement in clinical internships/practica will be dependent upon meeting the specific health and immunization as well as background check requirements of affiliated institutions.

2. Internships/practica will be assigned by the Program Director and Education Coordinator as they become available and may be made for evening, night, as well as day shifts. Student learning experiences in clinical practicum courses are performed under the supervision of a preceptor. Student learning experiences, however, are not substituted for the work of the staff. Service work performed by students outside of academic hours is not required or permitted to fulfill practicum requirements.

3. Internships/practica assignments will be made on a priority basis, i.e., preference will be given to those students who are ready for graduation immediately upon completion of practicum courses. In case of a shortage of clinical sites, assignments will be made based on academic performance, centered on cognitive, psychomotor as well as affective behaviors. Every effort will be made to avoid a delay of scheduled graduation dates.

4. Students may be required to attend several different clinical sites. Transportation is the student’s responsibility. Internships/practica may be local or at distant sites. Newly acquired clinical sites may require relocation for the assignment period.

5. Students may be removed at any time from any rotation or from the program itself for any willful infraction of any university, departmental, program or hospital policy.

6. Students’ performance during clinical rotations will be graded on theory, technical skills, and professional characteristics according to the following percentages and Practicum Grading Scale:

   Written Exams: 50%
   Technical Skills: 50%
   Professional Characteristics: Pass/Fail
   
   A  93-100%
   B  86-92%
   C  76-85%
   D  65-75%
   F  Below 65%

   All clinical competencies must be met. An action plan will be used to remediate deficiencies.
7. Students must attain a passing grade of at least a "C" in the written and practical areas and a “P” on the affective behaviors/professional characteristics area of the clinical courses evaluation in order to successfully complete the courses. An action plan will be used to remediate any deficiencies that occur during the rotation in each area of evaluation. A grade of “D” or below in the written and practical areas will require you to repeat that clinical course at the convenience of our clinical affiliates. There is no guarantee that the rotation can be repeated in the same semester or any other semester if none is available. A grade of “D” or “F” will require you to re-register for the course.

All students must earn a “P” when evaluated for each of the affective behaviors/professional characteristics in clinical courses. Failure to remediate deficient characteristics as prescribed by the action plan will result in dismissal from the program.

8. If you fail a rotation course you will be placed in an inactive status and reassigned that rotation only if one becomes available. Students in good standing will be given priority when assignments are made.

9. If you fail a rotation you will be required to re-register for it and pay full tuition again.

10. A grade below a “D” in the same rotation course twice or two different rotation courses will result in permanent dismissal from the program.

11. Students are expected to attend and complete all assigned clinical rotations. Students will be automatically suspended from the program for failure to appear for a clinical rotation or for withdrawing from a clinical rotation without authorization from the clinical instructor and MT/MLS Program Director. Emergency circumstances will be evaluated by the Program Director.

12. Students desiring to challenge any clinical rotation must declare their intent to do so in writing to the MT/MLS Program Director or Clinical Coordinator within the first week of the semester preceding the start of their clinical rotation, and must abide by the formal challenge policy.

**Graduation Requirements**

1. Students must meet the university’s writing requirement, which is a grade of C (2.0) or better in ENGL 110C, and a C (2.0) or better in ENGL 211C or 221C or 231C, and a C (2.0) or better in the writing intensive W course (MEDT 403W) of the major. Failure to meet the writing requirements will jeopardize scheduled graduation dates and rotation assignments.

2. Students are responsible for knowing what course requirements are needed in order to graduate. This involves knowing what one’s catalog year is, reading that catalog, checking DegreeWorks, and knowing all the university and departmental requirements for the Bachelor of Science degree in Medical Technology.

3. MEDT 457 (Medical technology Seminar) is a required course for graduation. Students must meet and complete all the requirements for this course, which include successfully
passing a final comprehensive exam in all the areas of Medical Technology with a minimum passing grade of 70%. The grade option for the course is P/F.

4. Students are responsible for meeting the university’s deadline for application for graduation.

**Student Health, Malpractice and Background Checks**

1. Clinical malpractice coverage is provided free of charge by the University for all Medical Technology students registered in practicum courses.

2. Students are responsible for their own health care coverage.

3. **In the event of an injury or accident, a report must be made immediately to the supervising faculty or clinical instructor, the MT/MLS Program Director, and the Student Health Center. A College of Health Sciences Incident Report must be completed and sent to the MT/MLS Program Director and the Student Health Center within 24 hours. If the injury or accident is one that involves significant biohazard exposure, the protocol described in the MT/MLS Student Handbook is to be strictly followed. Emergency treatment for any injuries incurred during on-campus laboratory or clinical course activities must be covered through the student's own insurance plan or resources. Follow-up health care and testing is the student's responsibility.**

4. Students are required to have a two-step PPD and other required immunizations prior to any clinical experience. This includes Clinical Elective Practicum (phlebotomy rotation) as well as any other rotation. The PPD is good for only 12 months and it is the student’s responsibility to see that it is redone annually. The testing may be done at the Student Heath Center or by a physician of one’s choosing. In either case, it is the student’s responsibility to see that a record of required immunizations is uploaded to the Immunization Tracker located at [www.castlebranch.com](http://www.castlebranch.com). Failure to do so can negatively affect rotation assignments. Any time lost from a rotation will be made up at the preceptor’s discretion.

5. Starting any clinical rotation course (including phlebotomy), without having previously registered for it, will result in permanent dismissal from the program. Students must report all injuries that occur while in on-campus labs or in clinical rotations to the designated instructor and request documentation of same.

6. Student’s must have on their person at all times, while in clinical rotation, proof of registration for that rotation. This rule also applies to Phlebotomy rotation.

7. All students must obtain a criminal background check prior to entering clinical rotations. The background check is obtained from [www.castlebranch.com](http://www.castlebranch.com). The results will be conveyed to the site coordinator. Each student is responsible for keeping documentation of background checks up to date. Students deemed unacceptable by a facility due to the results of a criminal background check forfeit that assignment and will not be allowed to complete the program of study.
University Honor System

All students will be bound by the University Honor Code in all university courses and practicum courses. All violations will be dealt with according to the University Honor System Policy and are subject to review by the MT/MLS Advisory Committee. The committee’s decision will be final with regard to program continuance.

Student Appeal Process

1. Academic and non-academic disciplinary actions may be appealed first to the Program Director and/or the MT/MLS Continuance Committee. An unfavorable decision may then be appealed to the Chair of the School of Medical Diagnostic and Translational Sciences. In the event of an unfavorable decision by the Chair, an appeal may be made to the MT/MLS Advisory Committee. The committee’s decision will be final. All appeals must be submitted in writing. All appeals will be documented using written communication and/or a counseling record form which will become part of the student’s permanent file.

2. Students must follow the Grade Appeals Policy and Procedures as outlined in the University Catalog.

Student Complaints

Student complaints not addressed above will be handled in the following manner:

1. Address the faculty involved; if no resolution is reached or the decision is unsatisfactory, then

2. Petition the Program Director and/or the MT/MLS Continuance Committee; if no resolution is reached or the decision is unsatisfactory, then

3. Petition the School Chair; if no resolution is reached or the decision is unsatisfactory, then

4. Petition, in writing, the MT/MLS Advisory Committee whose recommendations will be final. All complaints will be documented using written communication and/or a counseling record form which will become part of the student’s permanent file.

5. If appropriate, the student may follow the steps outlined in Student Complaint Procedure in ODU Catalog.

Admission Categories*

The following are conditions and requirements of acceptance:

A. Full Acceptance - student has met all requirements and was found acceptable after interview by the MT/MLS Advisory/Admissions Committee. The student must start MT/MLS courses by the next fall term following acceptance, or relinquish their appointment for candidacy into the MT/MLS Program.

B. Conditional Acceptance - accorded to those students, after interview by the MT/MLS Advisory/Admissions Committee, who have not completed all freshman and sophomore prerequisites at the time of interview or have marginal academic qualifications in one,
but not more, of the stated standards. All deficiencies must be met by the end of the summer term (with a grade of \( \geq \text{“C”} \)) following acceptance or they relinquish their appointment to full candidacy within the MT/MLS Program. Reapplication for admission to the next class is required.

C. Provisional Deferred - (approved February 21, 1996) accorded those applicants without enough credentials for proper evaluation by the Admissions Committee. These students may not be interviewed, and can be accorded this status by the MT/MLS faculty board, that will outline a program of study for them. This status implies no obligation on the part of the program to accept the student, even when all obligations are met.

1. Provisional status will allow the student to declare Medical Technology as a major, but denies the individual admission to the clinical internships until formal acceptance is granted after interview by the MT/MLS Advisory/Admissions Committee. Provisional status allows students a Medical Technology faculty advisor, who will mentor them until they qualify for reapplication, or if warranted, advise them to seek another major.

2. Student may hold the provisional status only until the end of the following fall or spring semester the status is granted. The student must undergo the entire admission process again, including an interview by the MT/MLS Advisory/Admissions Committee, in order to gain full acceptance.

3. Student must strictly comply with the program of study and specific conditions outlined by the assigned Medical Technology faculty advisor. The student's reapplication eligibility must include the assigned faculty advisor's recommendation for continuance.

*No pre-program student will be considered for admission who has earned less than a C in the same Medical Technology course twice or in two different courses. Furthermore, no obligation to either admit to the program or assign clinical rotations is owed to students who continue to take MT/MLS courses against advisor’s advice and/or without satisfying the requirements in A.
Program Policies Acknowledgement

I HAVE READ THE ABOVE AND UNDERSTAND THE POLICIES PRESENTED. I UNDERSTAND THAT THIS SIGNATURE PAGE WILL BECOME A PERMANENT PART OF MY STUDENT FILE. I ALSO UNDERSTAND THAT THESE POLICIES ARE SUBJECT TO CHANGE AND THAT I WILL BE INFORMED AND HELD RESPONSIBLE FOR ANY CHANGES.

I further agree to provide immediate notification of any change in address, phone number, or academic status to the MT/MLS Program Director.

I also grant permission for the release of my Criminal Background Check results to Clinical Affiliates prior to assignment to a clinical rotation.

My Catalog Year Is ________________________________

My Projected Date of Graduation Is ________________________________ Month/Year

Student Name (Please Print) ________________________________________

Student Signature _________________________________________________

UIN# _____________________________________________________________

Current E-mail Address _____________________________________________

Date _____________________________________________________________

Advisor and/or witness present ________________________________________ (Signature)

Date _____________________________________________________________
OLD DOMINION UNIVERSITY
College of Health Sciences
School of Medical Diagnostic and Translational Sciences
Medical Technology/Medical Laboratory Science Program

CLINICAL COURSE POLICIES

THESE POLICIES ARE SUBJECT TO CHANGE. STUDENTS WILL BE INFORMED AND HELD RESPONSIBLE FOR ANY CHANGES.

As a student in the Medical Technology/Medical Laboratory Science (MT/MLS) Program I am aware of the following:

Attendance, Continuance, and Grade Requirements

1. Internships/practica will be assigned by the Program Director and Education Coordinator as they become available and may be made for evening, night, as well as day shifts. Student learning experiences in clinical practicum courses are performed under the supervision of a preceptor. Student learning experiences, however, are not substituted for the work of the staff. Service work performed by students outside of academic hours is not required or permitted to fulfill practicum requirements.

2. Internships/practica assignments will be made on a priority basis, i.e., preference will be given to those students who are ready for graduation immediately upon completion of practicum courses. In case of a shortage of clinical sites, assignments will be made based on academic performance, centered on cognitive, psychomotor as well as affective behaviors. Every effort will be made to avoid a delay of scheduled graduation dates.

3. Students may be required to attend several different clinical sites. Transportation is the student’s responsibility. Internships/practica may be local or at distant sites. Newly acquired clinical sites may require relocation for the assignment period.

4. The first day of each clinical course begins at variable times. After the first day you will be informed of the regular starting time for the rest of that rotation. Clinical instructors welcome introductory calls from students a week in advance of the starting date so that special instructions or directions can be conveyed.

5. Students must follow the hospital’s dress code at all times. Contact the site ahead of time to find out the site’s dress requirements. Students are required to have visible, and on their person at all times, the approved ODU badge.
6. All hospital personnel policies, rules, and regulations must be followed. Violations of hospital policies constitute grounds for suspension and/or dismissal from the program. Individual site policies will be detailed during the first day.

7. The amount of time required in each clinical course is basically inflexible. If you miss time for whatever reason, it must be made up. This should be discussed and arranged with your instructor.

8. The objectives and competencies for each clinical course are enclosed in your student handbook and on Blackboard. You are expected to be familiar with the objectives and to review notes from your preclinical courses; a failing grade may jeopardize your continuance. Any perceived lack of preparation on your part, by the clinical instructor, may prevent you from continuing in the rotation and possibly jeopardize continuance in the MT/MLS program.

9. While in rotations, students are to follow the site’s vacation policy and not that of the university.

10. If classes are canceled at ODU due to inclement weather, you are required to attend your rotation if you can travel safely, unless otherwise advised by the clinical site.

11. All senior MT/MLS students in the rotations are required to take and complete the MT Seminar class (MEDT 457) review exams as instructed. The first meeting is mandatory and you are responsible for acquiring the information discussed if you cannot attend.

12. Students must sign their evaluation forms at the end of each course. Signing does not imply that you agree with everything on the evaluation. It simply means that you have seen it and read it. If you have concerns over areas of the evaluation there is space provided to address this or you may follow the procedure outlined in the “Student Appeal Process” section.

13. During any rotation you will be graded on theory, technical skills, and professional characteristics according to the following percentages:

<table>
<thead>
<tr>
<th>Evaluation Category</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Written Exams</td>
<td>50%</td>
</tr>
<tr>
<td>Technical Skills</td>
<td>50%</td>
</tr>
<tr>
<td>Professional Characteristics</td>
<td>P/F</td>
</tr>
</tbody>
</table>

All clinical competencies must be met. An action plan will be used to remediate deficiencies.

The clinical grading scale is as follows:

<table>
<thead>
<tr>
<th>Grade</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>93-100%</td>
</tr>
<tr>
<td>B</td>
<td>86-92%</td>
</tr>
<tr>
<td>C</td>
<td>76-85%</td>
</tr>
<tr>
<td>D</td>
<td>65-75%</td>
</tr>
<tr>
<td>F</td>
<td>Below 65%</td>
</tr>
</tbody>
</table>

14. You must obtain a passing grade of at least 76% in the graded areas of the evaluation in order to pass that rotation. A grade of “D” or below in any of the two areas will require you to
repeat that rotation at the convenience of our clinical affiliates, if it can be rescheduled. There is no guarantee that the rotation can be repeated that same semester or any other semester if none is available. A grade of “D” or “F” will require you to re-register. All students must earn a “P” when evaluated for each of the Affective Behaviors/Professional Characteristics in clinical courses. An action plan will be used to remediate deficiencies that occur during the rotation. Failure to “meet” minimum standards will result in an “F” in the course.

15. A grade below 76% in any of the two areas (theory, or technical, will result in a grade of “D” in the course. A grade below 65% in any of the areas will result in a grade of “F”.

16. If you fail a rotation course you will be placed on an inactive status and reassigned that rotation the following semester only if one becomes available. You, in turn, will be required to register for it and pay full tuition again.

17. A second failure in the same rotation will result in dismissal from the program.

18. Failure of any two different rotations will result in dismissal from the program.

19. Please remember that you will be removed from any rotation, or from the program itself, for any willful infraction of any university, departmental, or hospital policy including honor code violations.

20. Students will be suspended from the program for failure to appear for a rotation course without prompt and proper notification, and/or permission of the Clinical Instructor and MT/MLS Program Director.

21. Students will be suspended from the program for leaving a rotation without authorization from the Clinical Instructor and Program Director.

22. Starting any clinical rotation course, without having previously registered for it, will result in permanent dismissal from the program.

**Student Health, Injury, and Malpractice**

1. Clinical malpractice coverage is provided free of charge by the University for all Medical Technology Students registered for rotation courses. You must have on your person at all times, while in the clinical rotation, proof of registration for that rotation.

2. All students must have proof of a PPD skin test (second of a 2 step) performed within the last 12 months and other immunization records as specified in the MT/MLS Program Policies. Immunization documents must be uploaded to the Immunization Tracker database provided by CastleBranch.com. Students are responsible for their own health care coverage. Documentation of coverage must be available to the Program Director prior to entering rotations.

3. **In the event of an injury or accident, a report must be made immediately to the supervising faculty or clinical instructor, the MT/MLS Program Director, and the Student Health Center.** A College of Health Sciences Incident Report must be
completed and sent to the MT/MLS Program Director and the Student Health Center within 24 hours. If the injury or accident is one that involves significant biohazard exposure, the protocol described in the MT/MLS Student Handbook is to be strictly followed. Emergency treatment for any injuries incurred during on-campus laboratory or clinical course activities must be covered through the student's own insurance plan or resources. Follow-up health care and testing is the student's responsibility. See the Student Handbook for specific steps to take in the event of a significant biohazard exposure.

4. All students must obtain a criminal background check prior to entering clinical rotations. The background check is obtained from CastleBranch.com. The results will be conveyed to the site preceptor. Each student is responsible for keeping documentation of background checks up to date. Students deemed unacceptable by a facility due to the results of a criminal background check forfeit that assignment and will not be allowed to complete the program of study.

University Honor System

All Students shall be bound by the University Honor Code in all University courses and clinical rotations. All violations will be dealt with according to the University Honor System Policy and are subject to review by the MT/MLS Advisory Committee. The committee’s decision will be final with regard to Program continuance.

Student Appeal Process

Academic and non-academic problems or issues arising in any clinical course should be handled using the following procedure:

a. Discuss with Clinical Instructor.

b. Discuss with Education Coordinator/Clinical Liaison at the involved hospital/healthcare facility.

c. Discuss with ODU MT/MLS Program Education Coordinator and, if needed, with Program Director.

Note: In no case should the Program Director be involved unless the student has already followed steps a and b.

d. If the problem cannot be resolved at any of the above levels, students may utilize the formal procedure outlined in the MT/MLS Program Policies.

Note: All appeals will be documented using written communication and/or a counseling record form which will become part of the student’s permanent file.

Student Complaints

Student complaints not addressed above will be handled in the following manner:

a. Address the clinical faculty involved; if no resolution is reached or the decision is satisfactory then

b. Petition the Education Coordinator/Liaison at the involved facility; if no resolution is reached or the decision is unsatisfactory then.

c. Petition ODU MT/MLS Program Education Coordinator and, if needed, the Program Director.
Note: In no case should the Program Director be involved unless the student has already followed steps a and b.

d. If the problem cannot be resolved at any of the above levels, students may utilize the formal procedure outlined in the MT/MLS Program Policies.

e. If appropriate, the student may follow the steps outlined in Student Complaints Procedure in the University Catalog.

Note: All appeals will be documented using written communication and/or a counseling record form which will become part of the student’s permanent file.
Clinical Course Policies Acknowledgement

I HAVE READ THE ABOVE AND UNDERSTAND THE POLICIES PRESENTED. I UNDERSTAND THAT THIS SIGNATURE PAGE WILL BECOME A PERMANENT PART OF MY STUDENT FILE. I ALSO UNDERSTAND THAT THESE POLICIES ARE SUBJECT TO CHANGE AND THAT I WILL BE INFORMED AND HELD RESPONSIBLE FOR ANY CHANGES.

I further agree to provide immediate notification of any change in address, phone number, or academic status to the MT/MLS Program Director.

I also grant permission for the release of my Criminal Background Check results to Clinical Affiliates prior to assignment to a clinical rotation.

My Catalog Year Is

My Projected Date of Graduation Is

Month/Year

Student Name (Please Print)

Student Signature

UIN#

Current Email Address

Date

Advisor and/or witness present (Signature)

Date
Appendix B
Old Dominion University
Medical Technology/Medical Laboratory Science Program

MEDT 404

CLINICAL HEMATOLOGY PRACTICUM

COURSE DIRECTOR:  Faye E. Coleman
E-MAIL: fcoleman@odu.edu


Note: Additional references are available at the clinical site.

CREDIT HOURS - 4

COURSE DESCRIPTION

Direct clinical experience offered in automated and manual hematology procedures used in distinguishing blood dyscrasias and coagulation abnormalities.

GOAL

Students will perform basic hematology/hemostasis laboratory procedures in a clinical setting, correlate laboratory results with specific hematologic and non-hematologic disease states, and understand the operation and full scope of services provided in a clinical hematology laboratory.

Expectations of the following behaviors are the same as outlined for preclinical courses unless superseded by Clinical Course policies.

Attendance
Communication
Preparation
Conduct
Honor Code

STUDENTS WITH DISABILITIES

Reasonable accommodations are provided for student with disabilities. Students should self-identify to the instructor as early in the semester as possible in order to establish an accommodation process. See accessibility site: http://www.odu.edu/educationalaccessibility

I INTRODUCTION

Clinical Hematology Practicum is a four week, hospital-based course designed to follow MEDT 311/312 (Hematology lecture and lab), MEDT 327 (Hemostasis lecture & lab), and MEDT 337 (Advanced Hematology lecture & lab), which are based at the University. The course is specifically intended to develop new practice-oriented skills and to refine previously acquired technical skills in the performance and interpretation of hematology and coagulation tests. Students are expected to enter this course well versed in theory and with basic knowledge of the technical aspects of a clinical hematology laboratory. At the completion of this course students will be able to demonstrate the competencies that should be
possessed by an entry-level laboratory scientist in a typical hematology laboratory. A pre-test will be administered prior to attending this practicum.

II COMPETENCIES

A. Operationalize mechanisms for the procurement, processing, and analysis of hematologic specimens.
B. Perform standard hematology and hemostasis analyses, automated and manual, on blood, plasma, and other body fluids.
C. Demonstrate accurate morphologic identification skills.
D. Recognize discrepant results, using relevant numerical, morphologic, and interlaboratory data.
E. Institute solutions or corrective actions for problems related to verification of abnormal results, quality control data, and quality assurance issues.
F. Initiate and perform preventative maintenance, identify equipment and instrument problems, and institute corrective action.
G. Utilize computer-based technology for input and retrieval of data and instrument operation.
H. Research and develop a relevant hematology topic and deliver a presentation to department colleagues.
I. Demonstrate professional characteristics and conduct with laboratory personnel, other healthcare professionals, and patients.

III BEHAVIORAL OBJECTIVES

Cognitive/Psychomotor

After completing this clinical practicum course, studying assigned materials, procedures and methodologies, and performing assigned tasks, the student will be able to demonstrate an overall achievement of ≥76% on written and practical evaluations with ± 10% accuracy on practical evaluations.

A. General

The student will be able to:

1. Process specimens including distribution to proper work areas, maintaining accession of specimens, and, with supervision, verifying completion and reporting of results, as institutional protocol dictates.
2. Identify precautions and/or special handling techniques for particular procedure requests.
3. Inspect and evaluate quality and suitability of the specimen for the request analysis.
4. Identify factors that contribute to pre-analytical, analytical & post-analytical variability.
5. Select the appropriate dilution, kit, and/or reagents as needed for particular assays, and determine appropriate substitutes for unavailable supplies.
6. Identify sources of biohazard, employing appropriate safeguards.
7. Recognize unsafe laboratory practices.
8. Perform computer related functions where applicable, including data input, retrieval and instrument operation.
9. Identify stages of blood cells in each cell line.
10. Identify/describe normal and abnormal (shape, size, color, inclusion) cells in each cell line.
11. Correlate numerical hematologic data with morphology.
12. Apply appropriate calculations in blood and body fluid analyses.
13. Identify coagulation factors and hemostatic components measured in each procedure.
14. Explain the INR, its calculation, use, therapeutic and diagnostic advantage.
15. Interpret ratios and results for the purpose of selecting therapeutic dosages.
16. Compare the criteria used to classify leukemias and other hematologic diseases, including the FAB and WHO systems.
17. Identify tests/findings used to make definitive cell and disease identification, including cytochemical stains, surface and cytoplasmic markers, chromosomal and molecular abnormalities.
18. Demonstrate affective behavior/professional characteristics and conduct by achieving a “met” or “exceeded” for each at terminal evaluation.

B. Specific

The student will be able to:

1. Perform the following analyses according to prescribed methodology. These must be completed with an accuracy of ± 10%.

<table>
<thead>
<tr>
<th>Required Tests</th>
<th>Number of Specimens</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Hematocrits</td>
<td>5</td>
</tr>
<tr>
<td>b. Indices</td>
<td>4 sets</td>
</tr>
<tr>
<td>c. Platelets counts - estimated &amp; performed</td>
<td>10</td>
</tr>
<tr>
<td>d. Erythrocyte sedimentation rates</td>
<td>10</td>
</tr>
<tr>
<td>e. Preparation of blood smears for routine differentials</td>
<td>20</td>
</tr>
<tr>
<td>f. Complete blood smear examination - normal</td>
<td>50</td>
</tr>
<tr>
<td>g. Complete blood smear examination - abnormal</td>
<td>50</td>
</tr>
<tr>
<td>h. Histogram/scattergram interpretation</td>
<td>50</td>
</tr>
<tr>
<td>i. Leukocyte counts (manual)</td>
<td>5</td>
</tr>
<tr>
<td>j. Prothrombin Times/INRs</td>
<td>25</td>
</tr>
<tr>
<td>k. Activated Partial Thromboplastin Times</td>
<td>25</td>
</tr>
<tr>
<td>l. Fibrinogen assay</td>
<td>3</td>
</tr>
<tr>
<td>m. D-dimers</td>
<td>3</td>
</tr>
<tr>
<td>n. Body fluids (counts/microsc. eval. - var. sources)</td>
<td>10</td>
</tr>
</tbody>
</table>

2. Perform the following optional tests from the list below:

<table>
<thead>
<tr>
<th>Optional Tests</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Bone marrow slide preparation</td>
</tr>
<tr>
<td>b. Osmotic fragility test</td>
</tr>
<tr>
<td>c. Sudan Black B stain</td>
</tr>
<tr>
<td>d. Leukocyte Alkaline Phosphatase stain</td>
</tr>
<tr>
<td>e. Esterase stain</td>
</tr>
<tr>
<td>f. Prussian blue stain</td>
</tr>
<tr>
<td>g. Thrombin time</td>
</tr>
<tr>
<td>h. Protamine sulfate</td>
</tr>
<tr>
<td>i. Factor assays</td>
</tr>
<tr>
<td>j. Bleeding time (automated)</td>
</tr>
<tr>
<td>k. Glucose -6- phosphate dehydrogenase</td>
</tr>
<tr>
<td>l. Hemoglobin</td>
</tr>
<tr>
<td>m. Flow Cytometry - CD4/CD8</td>
</tr>
<tr>
<td>n. Activated Protein C - Factor V Leiden</td>
</tr>
<tr>
<td>o. Protein C - Functional &amp; Ag.</td>
</tr>
</tbody>
</table>
p. Protein S - Activity & Ag
q. Eosinophil counts
r. Platelet Aggregation Studies
s. Ristocetin Co-factor
t. Kleihauer-Betke stain
u. Manual reticulocyte counts (staining and counting)
v. Sickle cell screening tests

3. For each of the performed test procedures in 1 and 2 above, identify the reference range.

4. Calibrate and operate the following instruments following the standard protocol.
   a. Multi-parameter hematology analyzer.
   b. Slide Stainer
   c. Microscope
   d. Coagulation instrumentation
      i. automated
      ii. semi-automated

5. Explain the principle of operation of all methods and instrumentation including mode of analysis, and substance measured.

6. Identify errors (pre-analytical, analytical, and post analytical) in performed procedures including those due to technique, reagents, mechanical malfunction, etc.

7. Isolate and identify errors due to sample, reagents, instrument malfunction, or physical causes.

8. Identify/follow established quality control procedures including the development of a Levy Jennings chart.

9. Recognize and identify the basic criteria of a good quality assurance program.

10. Validate the accuracy of test results based on an assessment of obtained quality control values.

11. Evaluate situations where the control samples are inside/outside of acceptable limits and prescribe corrective actions, where appropriate, using established criteria and applicable statistical measures.

12. Demonstrate knowledge of the chemical and physical principles utilized in test performances.

13. Assess the clinical significance of obtained test results.

14. Correlate normal and abnormal hematologic and coagulation data with other clinical and/or laboratory findings in the identification of specific disease states.

15. Given clinical, morphologic, numerical, cytochemical, and molecular data, identify/suggest specific hematologic or coagulation disease state.

16. Suggest additional tests that may be used to aid in making definitive diagnoses.

Affective:

1-12 must be “MET” or exceeded according to established evaluation guidelines.

POLICY COMPLIANCE
1. Demonstrate an appreciation for the value and necessity of maintaining an orderly and safe laboratory environment by adhering to OSHA safety regulations, program and facility safety policies, and to practices outlined by the instructor.

2. Display professional/workplace responsibility by adhering to guidelines and policies outlined by the program, individual courses, and affiliated clinical facilities.

PROMPTNESS/ATTENDANCE

3. Develop the highly valued professional characteristic of maintaining a blemish free attendance and punctuality record by reporting to classes, laboratories, and assigned clinical sites on time, notifying instructors/supervisors promptly when absence is anticipated and meeting all established deadlines.

INITIATIVE

4. Display appropriate initiative and motivation in all academic and practical performances by completing both assigned and unsolicited tasks satisfactorily, addressing problems or interferences appropriately.

RESPONSIBILITY

5. Demonstrate an appreciation of the role of active participation in the education process by displaying preparedness and engagement in the classroom, laboratory, and clinical learning environments.

6. Display professional responsibility by accepting direction, adapting to the learning environment, and completing required assignments as outlined.

RELIABILITY

7. Demonstrate the ability to maintain intellectual and emotional stability and maturity under stress, by producing results that meet appropriate performance standards.

8. Demonstrate, by attitude and performance, an appreciation of the value and importance of procedural consistency and technical accuracy and precision.

PROFESSIONAL /WORKPLACE Demeanor

9. Display appropriate professional/workplace decorum during both the preclinical and clinical phases of the program by complying with the guidance, instructions, and direction outlined by faculty and clinical preceptors/mentors.

10. Comply with accepted rules of conventional professional/workplace behavior during both the preclinical and clinical phases of the program by exhibiting a cooperative, respectful, and collegial demeanor in interactions with faculty, classmates, clinical preceptors/mentors, and patients.

INTEGRITY

11. Display, through appropriate professional/workplace behavior and performance, recognition and respect for honest laboratory testing, patient confidentiality, and high quality patient outcomes.

12. Comply with the Old Dominion University Honor Code by submitting only work which is the product of one’s own effort (I pledge... to be noted on submitted work).

An Affective Behavior/Professional Characteristics Evaluation Form will be used to evaluate each student at the end of the full rotation with the assignment of a grade of Pass or Fail (P/F).
A grade of "P" must be obtained on the Professional Evaluation with all behavioral criteria met or exceeded. A grade of "F" will be assigned if all behavioral criteria are not met.

IV  WRITTEN/ORAL ASSIGNMENT

The student will be able to:

1. Prepare an organized paper and presentation on an appropriate topic (assigned or selected) that represents the outcome of scholarly efforts such as literature research, special projects or case history/study analysis.

2. Deliver an inservice to staff on an assigned or selected topic utilizing guidelines and principles of professional presentations obtained in pre-clinical and senior courses.

V. EVALUATION

Grade percentages:

50% Written/Oral

50% Technical/Practical

A minimum grade of "C" based on the following scale must be attained in each of the above areas:

A  93-100
B  86-92
C  76-85
D  65-75
F  Below 65

Competencies:

Students must meet or exceed all competencies (See Competency Task List on the following pages).
Old Dominion University  
Medical Technology/Medical Laboratory Science Program  
MEDT 404 Clinical Hematology Practicum Competency Task List

Student Name:__________________________________________________________

Clinical Site:____________________________________________________________

Evaluator(s):____________________________________________________________

For each of the required tasks/competencies listed below, please indicate in the appropriate column the student’s degree of performance and level (C or CE) for each task. Refer to the performance requirements under “Required Tests” Practicum Syllabus. Also, for each optional task performed (see “Optional Tests” in the Practicum Syllabus), complete the form in the spaces provided.

C = Competent (entry-level) = successfully completes the assigned task to the degree indicated  
CE = entry-level competence exceeded

The student must be competent (performance “Met” or “Exceeded”) in all required tasks.

<table>
<thead>
<tr>
<th>Required Tasks (± 10%)</th>
<th>Minimum Number</th>
<th>Performance</th>
<th>Evaluation</th>
<th>Comments:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Not Met</td>
<td>Met</td>
<td>Exceeded</td>
</tr>
<tr>
<td>Hematocrits</td>
<td>5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Indices</td>
<td>4 (sets)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Platelet Counts, est. &amp; performed</td>
<td>10</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ESR</td>
<td>10</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Preparation of Bld. Smears</td>
<td>20</td>
<td></td>
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<tr>
<td></td>
<td>5</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Complete Blood Smear Examination (including differentials) - Normal</td>
<td>50</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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<table>
<thead>
<tr>
<th>Test Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Complete Blood Smear Examination (including differentials) - Abnormal</td>
<td>50</td>
</tr>
<tr>
<td>Scattergram and Histogram Interpretation</td>
<td>50</td>
</tr>
<tr>
<td>Leukocyte Counts (manual)</td>
<td>5</td>
</tr>
<tr>
<td>Prothrombin times/INR</td>
<td>25</td>
</tr>
<tr>
<td>Activated Partial Thromboplastin Times</td>
<td>25</td>
</tr>
<tr>
<td>Fibrinogen Assay</td>
<td>3</td>
</tr>
<tr>
<td>D-Dimers</td>
<td>3</td>
</tr>
<tr>
<td>Body Fluids Exam. (counts &amp; microscopics)</td>
<td>10</td>
</tr>
</tbody>
</table>

**Optional Tests (± 10%)** Perform/Observe tests on the optional list below.

<table>
<thead>
<tr>
<th>Test Description</th>
<th>Performed (P)/Observed (O)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Met</td>
<td>Exceeded</td>
</tr>
<tr>
<td>Bone marrow slide preparation</td>
<td></td>
</tr>
<tr>
<td>Sugar water test</td>
<td></td>
</tr>
<tr>
<td>Ham's test</td>
<td></td>
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<tr>
<td>Osmotic fragility test</td>
<td></td>
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<tr>
<td>Sudan Black B stain</td>
<td></td>
</tr>
<tr>
<td>Test Description</td>
<td></td>
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<tr>
<td>------------------------------------------</td>
<td></td>
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<tr>
<td>Leukocyte Alkaline Phosphatase stain</td>
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<tr>
<td>Esterase stain</td>
<td></td>
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<tr>
<td>Prussian blue stain</td>
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<tr>
<td>Thrombin time</td>
<td></td>
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<tr>
<td>Protamine sulfate</td>
<td></td>
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<tr>
<td>Factor assay</td>
<td></td>
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<tr>
<td>Bleeding time (automated)</td>
<td></td>
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<tr>
<td>Glucose -6-PD</td>
<td></td>
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<tr>
<td>Hemoglobin</td>
<td></td>
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<tr>
<td>FCM - CD4/CD8</td>
<td></td>
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<tr>
<td>Activated Protein C-Factor V Leiden</td>
<td></td>
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<tr>
<td>Protein C - Functional &amp; Ag.</td>
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<tr>
<td>Eosinophil counts</td>
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<tr>
<td>Platelet Aggregation</td>
<td></td>
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<tr>
<td>Ristocetin Co-factor</td>
<td></td>
</tr>
<tr>
<td>Kleihauer-Betke stain</td>
<td></td>
</tr>
<tr>
<td>Reticulocytes (staining &amp; counting)</td>
<td></td>
</tr>
<tr>
<td>Sickle Cell Screening</td>
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</tbody>
</table>
### Other Tests

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</tr>
<tr>
<td>Identify reference range for each of the above</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Select appropriate supplies for assays</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Identify/validate specimens</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Employ safe laboratory practices</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Perform computer related functions</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Calibrate/Operate the following instruments according to standard protocol.**

<table>
<thead>
<tr>
<th>Instrument</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Multiparameter Hematology Analyzer</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Slide Stainer</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Microscope</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Automated Coagulation Instrumentation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Semi-automated Coagulation Instrumentation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Explain the principle of operation of the above</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Identify/isolate/ troubleshoot procedural errors</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Identify normal and abnormal blood cells</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Apply appropriate calculations/correlate data</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Demonstrate the ability to recognize analytical errors</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Identify/follow QC/QA procedures</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Validate accuracy of test results</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Prescribe appropriate action when controls are unacceptable</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Assess clinical significance of test results</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Correlate data, identify specific disease states</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Suggest additional tests for definitive diagnoses

Clinical instructors please complete:

1. THIS Form
2. Grade Form
3. Affective Behavior/Professional Characteristics Form
4. Oral Presentation Evaluation Form

Return all forms via email (preferred) to: Faye E. Coleman at fcoleman@odu.edu
or via Fax: (757) 683-5028
Old Dominion University
Medical Technology/Medical Laboratory Science
MEDT 406
CLINICAL MICROBIOLOGY PRACTICUM

COURSE DESCRIPTION
Direct clinical experience offered in isolating and identifying human pathogens such as bacteria, fungi, and parasites from various clinical specimens.

CONTACT INFORMATION
Angela M. Wilson, M(ASCP): amwilson@odu.edu

GOAL
Students will apply knowledge obtained during microbiology, bacteriology as well as parasitology/mycology virology didactic courses in clinical setting and accurately interpret clinical data pertinent to microbial disease diagnosis.

Expectations of the following behaviors are the same as outlined for preclinical courses unless superseded by Clinical Course Policies:
Attendance
Communication Skills
Preparation
Conduct
Honor Code

I. INTRODUCTION
Clinical Microbiology (MEDT 406) is a 5 credit hour clinical rotation at an affiliated local hospital. Specific subjects to be covered include:

- Routine Bacteriology
- Anaerobic Bacteriology
- Mycobacteriology
- Mycology
- Parasitology
- Virology
- Microscopy

The student is expected to enter the rotation with a basic knowledge of the theory of laboratory isolation and identification of the microorganisms in each specific subject area. This information is taught in the University courses MEDT 307, 308, 309, 319, 339, and 340.

A minimum grade of "C" based on the following scale must be obtained in all listed areas.

A 93-100
A Clinical Professional Evaluation form will be completed at the end of the full rotation with the assignment of a grade of PASS or FAIL (P/F). A grade of “P” must be attained on the Professional Evaluation with all behavioral criteria met or exceeded.

References

COMPETENCIES
A. Operationalize mechanisms for the procurement, processing, and analysis of microbiological specimens.
B. Demonstrate knowledge of procedure for handling improperly collected/handled specimens.
C. Demonstrate knowledge of appropriate media used for each specimen type.
D. Demonstrate proper inoculation, isolation and quantitation techniques for microbiology specimens.
E. Perform and interpret Gram stains.
F. Identify colonial characteristics of normal flora and pathogens from various body sites.
G. Identify specific isolates based on Gram stain, microscopic morphology, colonial morphology, and biochemical reactions for clinically-significant microorganisms.
H. State principle, perform and interpret the differential biochemical tests used in the microbiology laboratory.
I. Determine the appropriate environmental conditions for each type of specimen plated.
J. Discuss the theory and perform any rapid identification tests used in the specific laboratory.
K. Perform serological procedures routinely used in the microbiology laboratory.
L. Process routine blood cultures.
M. Perform appropriate work-up procedure for positive blood cultures and other sterile body fluids.
N. State principle, perform and interpret antimicrobial susceptibility tests.
O. Draw correlations between the more commonly isolated organisms and their expected susceptibility patterns.
P. State principle, and operation of any automated equipment used in the specific microbiology laboratory.
Q. Initiate and perform preventative maintenance, identify equipment and instrument problems, and institute corrective action.
R. Perform quality assurance procedures on all equipment, media, and tests.
S. Demonstrate knowledge of safe work practices such as autoclave operation, specimen disposal, and universal precautions.

T. Utilize computer-based technology for input and retrieval of data and instrument operation.

U. Demonstrate professional characteristics and conduct with laboratory personnel, other health care professionals, and patients.

**BEHAVIORAL OBJECTIVES**

**Cognitive/Psychomotor**

After completing this clinical practicum course, studying assigned materials, procedures and methodologies, and performing assigned tasks, the student will be able to demonstrate an overall achievement of ≥76% on written and practical evaluations.

**A. General**

The student should be able to:

1. Assist and advise medical personnel in the proper collection and transport of specimens.

2. Process all appropriate clinical specimens to ensure the optimal recovery and identification of microorganisms.

3. Assist in bookkeeping, recording, reporting of results, and computer operation.

4. Perform appropriate quality control on all reagents, media, and equipment and how to initiate proper corrective action for QC failure.

5. List criteria for evaluating specimen quality and solve problems arising from improper collection and/or labeling.

6. Select the appropriate media and demonstrate proper inoculation and isolation procedures for specimens submitted for microbiological analysis.

7. Determine the appropriate environmental conditions for each type of specimen plated.

8. Perform the various staining procedures (e.g. Gram, acridine orange, acid-fast, trichrome etc.) used in the specific laboratory and correctly interpret the results.

9. Operate, maintain, and perform routine maintenance on all instruments and equipment.

10. Discuss the theory and perform any rapid identification tests used in the specific laboratory.

11. Identify those organisms established by hospital infection control as well as state and federal bureaus which require notification.

12. Demonstrate safe techniques in handling the disposal of infectious materials according to laboratory protocol.

**B. Bacteriology**

The student should be able to:

1. State the expected presence or absence of microbial flora from a given source.
2. Name the most likely pathogens from a given source.
3. Describe the procedures used for the quantitation of organisms isolated from routine cultures and urine colony counts.
4. State the principles of any biochemical tests including disks, strips, and serological tests used in the identification of an isolate.
5. Explain the significance of a positive blood culture, CSF, or other body fluid/tissue specimen.
6. Discuss the susceptibility tests including Kirby-Bauer disk diffusion, MIC/MBC, SIL/SOL, beta-lactamase, and any automated procedures.
7. Recognize the colony characteristics of pathogens and normal flora from the various body site specimens submitted for analysis.
8. Identify significant isolates from specimens using the appropriate laboratory protocols.
9. Initiate the steps to be taken if an identification cannot be made (i.e. further testing, reference lab submission, consultation with physician etc.).
10. Draw correlations between the more commonly isolated organisms and their susceptibility patterns including the usual drugs of choice.
11. Discuss the value of testing body fluids for bacterial antigens.
12. Perform serotyping *Salmonella/Shigella/E.coli* as part of an identification scheme.
13. Perform serologic testing for bacterial identification including such rapid tests as for group A strep as offered by the specific laboratory as well as any toxin testing (*C. difficile*).

In addition, the student should be able to:
1. Discuss identification systems used in the specific laboratory.
2. Process routine blood cultures according to specific lab procedures.
3. Discuss any automated blood culture systems used in the specific laboratory.
4. Follow up a positive blood culture and CSF including notification and preliminary reporting procedures.
5. Discuss various molecular techniques.
6. Discuss specimen collection/integrity/processing employed in molecular diagnostic methodologies.
7. Identify instruments used in the performance of molecular methods.
8. Describe the principle of operation of each of the instruments.
9. Prepare test samples and controls for molecular analysis according to established guidelines.
10. Employ quality control/assurance measures related to molecular identification methodologies.

11. Perform analyses as assigned by the instructor.

12. Interpret the results of each method as they relate to the presence or absence of microbes.

13. Discuss the sentinel microbiology laboratories’ role in the handling of suspected agents of bioterrorism.

Students are expected to rotate through the following areas of microbiology if the specific laboratory offers such services:

C. Anaerobes
The student should be able to:

1. Discuss the basic principles of anaerobiosis.

2. Process anaerobic cultures.

3. Set up the system used to create an anaerobic environment (GasPak, Bio-Bags, anaerobic chamber etc.).

4. Discuss methods of anaerobic identification according to the specific laboratory.

5. Recognize potential pathogens by their gross morphology on special plating media.

D. Mycobacteriology
The student should be able to:

1. Differentiate the clinical agents of pulmonary and extrapulmonary mycobacterial disease.

2. Demonstrate precautions required in dealing with patients and / or specimens suspected of having mycobacteria.

3. Discuss three decontamination and concentration methods including advantages and disadvantages of each.

4. Discuss current mycobacterial identification technologies (ex. DNA probes).

5. Process TB specimens for reference labs for speciation and susceptibility testing.

6. Recognize a positive AFB culture.

7. State screening tests for mycobacteria including the procedures involved in speciation.

8. Discuss procedures involved in susceptibility testing and current recommendations for chemotherapy.

9. Identify the types of media used to culture mycobacteria.

10. Classify the *Mycobacterium* species according to the Runyon classification.
E. Mycology
The student should be able to:

1. State the special safety considerations required in a mycology lab.

2. Perform a direct examination of a specimen using one of the following methods: saline wet mount, LPCB wet mount, KOH prep, India ink, calcofluor white.

3. Discuss the fungal media used in the specific laboratory as well as incubation conditions.

4. Discuss three methods used to examine fungal cultures (slide culture, tease mount method, cellophane tape method, coverslip sandwich technique) including the advantages and disadvantages of each and perform one method.

5. Identify the macroscopic and microscopic morphology of various fungi.

6. Identify fungi using the laboratory’s standard operation procedure.

7. Evaluate the clinical significance of fungal isolates considering the source of the specimen and the patient’s condition.

F. Parasitology
The student should be able to:

1. Discuss the types of specimens required for parasite identification including those for malaria, intestinal and tissue parasites.

2. Discuss the use of proper transport media including the advantages and disadvantages of the more commonly used preservatives.

3. Discuss the purpose of the macroscopic exam and state the procedures used in the microscopic exam including direct wet mounts, concentration methods, and permanent stains.

4. Perform a concentration procedure.

5. Prepare thick and thin blood films for the detection of blood parasites.

6. Discuss immunologic tests available for parasite detection (complement fixation, direct agglutination, direct and indirect immunofluorescence, ELISA).

7. Discuss newer techniques for the diagnosis of parasitic diseases. (DNA probes, DNA restriction fragment length polymorphisms (RFLP), flow cytometry, & PCR).

8. Discuss the parasites that would normally be found in the following: urine, stool, sputum, urogenital tract, biopsy material, spinal fluid, perianal folds.

9. Identify the diagnostic stages for hemoflagellates, malaria, intestinal protozoa, helminths and recognize pseudoparasites.

10. Discuss alternative stains for the detection of Cryptosporidium, Microspora, Pneumocystis, and Cyclospora.
G. Virology and Chlamydiology

The student should be able to:

1. Discuss specimen collection and transport
2. Discuss various culture techniques.
3. List commonly isolated viruses.
4. Discuss rapid techniques available for viral testing.
5. Discuss specimen collection, transport, isolation and identification procedures for *Chlamydia*.

**Affective:**

1-12 must be “MET” or exceeded according to established evaluation guidelines.

**POLICY COMPLIANCE**

1. Demonstrate an appreciation for the value and necessity of maintaining an orderly and safe laboratory environment by adhering to OSHA safety regulations, program and facility safety policies, and to practices outlined by the instructor.

2. Display professional/workplace responsibility by adhering to guidelines and policies outlined by the program, individual courses, and affiliated clinical facilities.

**PROMPTNESS/ATTENDANCE**

3. Develop the highly valued professional characteristic of maintaining a blemish free attendance and punctuality record by reporting to classes, laboratories, and assigned clinical sites on time, notifying instructors/supervisors promptly when absence is anticipated and meeting all established deadlines.

**INITIATIVE**

4. Display appropriate initiative and motivation in all academic and practical performances by completing both assigned and unsolicited tasks satisfactorily, addressing problems or interferences appropriately.

**RESPONSIBILITY**

5. Demonstrate an appreciation of the role of active participation in the education process by displaying preparedness and engagement in the classroom, laboratory, and clinical learning environments.

6. Display professional responsibility by accepting direction, adapting to the learning environment, and completing required assignments as outlined.

**RELIABILITY**

7. Demonstrate the ability to maintain intellectual and emotional stability and maturity under stress, by producing results that meet appropriate performance standards.
8. Demonstrate, by attitude and performance, an appreciation of the value and importance of procedural consistency and technical accuracy and precision.

PROFESSIONAL / WORKPLACE Demeanor

9. Display appropriate professional/workplace decorum during both the preclinical and clinical phases of the program by complying with the guidance, instructions, and direction outlined by faculty and clinical preceptors/mentors.

10. Comply with accepted rules of conventional professional/workplace behavior during both the preclinical and clinical phases of the program by exhibiting a cooperative, respectful, and collegial demeanor in interactions with faculty, classmates, clinical preceptors/mentors, and patients.

Integrity

11. Display, through appropriate professional/workplace behavior and performance, recognition and respect for honest laboratory testing, patient confidentiality, and high quality patient outcomes.

12. Comply with the Old Dominion University Honor Code by submitting only work which is the product of one’s own effort (I pledge... to be noted on submitted work).

An Affective Behavior/Professional Characteristics Evaluation Form will be used to evaluate each student at the end of the full rotation with the assignment of a grade of Pass or Fail (P/F).

A grade of "P" must be obtained on the Professional Evaluation with all behavioral criteria met or exceeded. A grade of "F" will be assigned if all behavioral criteria are not met.

Written/Oral Assignment

The student will be able to:

1. Prepare an organized paper and presentation on an appropriate topic (assigned or selected) that represents the outcome of scholarly efforts such as literature research, special projects or case history/study analysis.

2. Deliver an inservice to staff on an assigned or selected topic utilizing guidelines and principles of professional presentations presented in pre-clinical courses.

Evaluation

Grade percentages:
50% Written/Oral
50% Technical/Practical

A minimum grade of "C" must be attained in each of the above areas.

Students With Disabilities
Reasonable accommodations are provided for students with disabilities. Students should self-identify to the instructor as early in the semester as possible in order to establish an accommodation process: Office of Educational Accessibility.

**Competencies:**

Students must meet or exceed all competencies. (See Competency Task List on the following pages).
Old Dominion University  
Medical Technology/Medical Laboratory Science  
MEDT 406 Clinical Microbiology Practicum Competency Task List

Student Name: ________________________________________________
Clinical Site: ________________________________________________

Evaluator(s): ________________________________________________

For each of the required tasks/competencies listed below, please indicate in the appropriate column the student’s degree of performance and level (C or CE) for each task. Refer to the performance requirements under “Required Tests” Practicum Syllabus. Also, for each optional task performed (see “Optional Tests” in the Practicum Syllabus), complete the form in the spaces provided.

C = Competent (entry-level) = successfully completes the assigned task to the degree indicated
CE = entry-level competence exceeded

The student must be competent (performance “Met” or “Exceeded”) in all required tasks.

<table>
<thead>
<tr>
<th>Required Tasks</th>
<th>Minimum Number</th>
<th>Performance</th>
<th>Evaluation</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Not Met</td>
<td>Met</td>
<td>Exceeded</td>
</tr>
<tr>
<td>Assist and advise in proper specimen collection and handling</td>
<td>All</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Demonstrates knowledge of procedures for handling improper/inappropriate specimens</td>
<td>All</td>
<td></td>
<td></td>
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<tr>
<td>Demonstrates knowledge of atmospheres (define ambient, anaerobic, increased CO\textsubscript{2}, and microaerophilic)</td>
<td>All</td>
<td></td>
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<tr>
<td>Determine appropriate media for initial isolation for each specimen/source</td>
<td>All</td>
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<tr>
<td>Demonstrate proper inoculation, isolation, incubation, and quantitation techniques for the following:</td>
<td>10</td>
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</tbody>
</table>

ODU MT Practicum Handbook, June 2017 74
<table>
<thead>
<tr>
<th>Source of Specimen</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Catheterized urine</td>
<td>10</td>
</tr>
<tr>
<td>Swabs</td>
<td>10</td>
</tr>
<tr>
<td>Sputum</td>
<td>10</td>
</tr>
<tr>
<td>Stool</td>
<td>10</td>
</tr>
<tr>
<td>Tissue</td>
<td>1</td>
</tr>
<tr>
<td>CSF/Other sterile body fluids</td>
<td>5</td>
</tr>
<tr>
<td>Miscellaneous</td>
<td>Var</td>
</tr>
</tbody>
</table>

Perform and interpret gram stain from a given source including:

<table>
<thead>
<tr>
<th>Source of Specimen</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sputum gram stain:</td>
<td></td>
</tr>
<tr>
<td>Suitability for culture</td>
<td></td>
</tr>
<tr>
<td>Urethral smear for GC</td>
<td></td>
</tr>
<tr>
<td>Wounds</td>
<td></td>
</tr>
<tr>
<td>Sterile Body Fluids</td>
<td></td>
</tr>
</tbody>
</table>

Identify colonial characteristics of normal flora and pathogens from a given source:

<table>
<thead>
<tr>
<th>Source of Specimen</th>
<th>Number</th>
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</thead>
<tbody>
<tr>
<td>Urine</td>
<td>20</td>
</tr>
<tr>
<td>Stool</td>
<td>10</td>
</tr>
<tr>
<td>Respiratory</td>
<td>10</td>
</tr>
<tr>
<td>Genital</td>
<td>10</td>
</tr>
<tr>
<td>Wound</td>
<td>10</td>
</tr>
<tr>
<td>Sterile body site</td>
<td>5</td>
</tr>
<tr>
<td>Other</td>
<td>Var</td>
</tr>
</tbody>
</table>

Identify specific isolates based on gram stain reaction, microscopic morphology, colonial morphology, & biochemical reactions to include:

<table>
<thead>
<tr>
<th>Source of Specimen</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Staphylococcus aureus</td>
<td></td>
</tr>
<tr>
<td>Coagulase-negative Staphylococci</td>
<td></td>
</tr>
<tr>
<td>Beta-hemolytic Streptococci</td>
<td></td>
</tr>
<tr>
<td>Enterococcus</td>
<td></td>
</tr>
<tr>
<td>Alpha-hemolytic Streptococci</td>
<td></td>
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<tr>
<td>------------------------------</td>
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</tr>
<tr>
<td>Enterobacteriaceae</td>
<td></td>
</tr>
<tr>
<td>Non-fermentative GNB</td>
<td></td>
</tr>
<tr>
<td>Neisseria</td>
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<tr>
<td>Haemophilus</td>
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<tr>
<td>Primary intestinal pathogens</td>
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<tr>
<td>including Salmonella,</td>
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<tr>
<td>Shigella,</td>
<td></td>
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<tr>
<td>Campylobacter, Vibrio</td>
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<tr>
<td>Other: _____________________</td>
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<tr>
<td>Other: _____________________</td>
<td></td>
</tr>
<tr>
<td>State principles of biochemical tests used in identification of bacterial isolates</td>
<td>All</td>
</tr>
<tr>
<td>Serotype bacteria based on serological procedures to include:</td>
<td></td>
</tr>
<tr>
<td>Salmonella/Shigella/E.coli</td>
<td>1</td>
</tr>
<tr>
<td>Beta Streptococci</td>
<td>5</td>
</tr>
<tr>
<td>Process routine blood cultures according to the procedure in the specific lab</td>
<td>25</td>
</tr>
<tr>
<td>Perform work-up procedure for positive blood cultures &amp; other sterile body fluids</td>
<td>10</td>
</tr>
<tr>
<td>Test a body fluid for bacterial antigens</td>
<td>1</td>
</tr>
<tr>
<td>State principle, perform, and interpret antimicrobial susceptibility tests:</td>
<td></td>
</tr>
<tr>
<td>Kirby Bauer</td>
<td>5</td>
</tr>
<tr>
<td>Beta lactamase test/screen</td>
<td>3</td>
</tr>
<tr>
<td>Other methodologies</td>
<td>Var</td>
</tr>
<tr>
<td>Draw correlations between the more commonly isolated organisms and their susceptibility patterns, including the usual antibiotic of choice</td>
<td>Var</td>
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<tr>
<td>Task Description</td>
<td>Var</td>
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<tr>
<td>----------------------------------------------------------------------------------</td>
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</tr>
<tr>
<td>State principle, perform, &amp; interpret any commercial identification kits used in the specific laboratory (Example API 20E)</td>
<td></td>
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<tr>
<td>Discuss current and emerging molecular techniques and their use</td>
<td></td>
</tr>
<tr>
<td>State the principle, perform &amp; interpret operation of any automated equipment used in the specific laboratory (Example: Vitek®, various serological and molecular platforms)</td>
<td>Var</td>
</tr>
<tr>
<td>Demonstrate safe work practices such as autoclave, disposal of biohazards, universal precautions, etc.</td>
<td>Var</td>
</tr>
<tr>
<td>Perform quality assurance (QA) procedures on equipment, media, &amp; tests</td>
<td>Var</td>
</tr>
<tr>
<td>Demonstrate knowledge of how to address QA failure</td>
<td>Var</td>
</tr>
<tr>
<td><strong>Unknown Specimens</strong></td>
<td></td>
</tr>
<tr>
<td>Demonstrate proper media selection, inoculation, incubation and quantitation techniques</td>
<td>Var</td>
</tr>
<tr>
<td>Perform and accurately interpret Gram stain</td>
<td>Var</td>
</tr>
<tr>
<td>Differentiate between normal flora and pathogens present in sample</td>
<td>Var</td>
</tr>
<tr>
<td>Identify isolates based on gram stain reaction, microscopic and colonial morphology, and biochemical reactions</td>
<td>Var</td>
</tr>
</tbody>
</table>

If the facility offers any of the procedures listed on the following pages, the student may be required to perform each task specified. Check those tasks that apply.
<table>
<thead>
<tr>
<th>MEDT 406 Optional Tasks</th>
<th>Minimum Number*</th>
<th>Performance Degree</th>
<th>Evaluation C or CE</th>
<th>Comments: Please comment on all tasks evaluated as CE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anaerobes</td>
<td></td>
<td>Not Met</td>
<td>Met</td>
<td>Exceeded</td>
</tr>
<tr>
<td>Discuss proper specimen, collection, and transport of anaerobic cultures</td>
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<tr>
<td>Select proper media selection for anaerobic cultures</td>
<td></td>
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<tr>
<td>Establish anaerobic environment for culture (GasPak, Bio-Bags, etc,)</td>
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<tr>
<td>Recognize microscopic and colonial morphology of normal flora and potential pathogens</td>
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<tr>
<td>Mycobacteriology</td>
<td></td>
<td>Not Met</td>
<td>Met</td>
<td>Exceeded</td>
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<tr>
<td>Discuss safety precautions for both patients and specimens</td>
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<tr>
<td>Process specimens including digestion and decontamination procedures</td>
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<tr>
<td>Perform and read acid fast stains, modified acid fast stains and fluorescent stains</td>
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<tr>
<td>Identify isolates based on colonial and biochemical characteristics</td>
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<tr>
<td>Perform and/or discuss antimycobacterial susceptibility testing and therapy</td>
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<tr>
<td>Identify mycobacterial culture media</td>
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<tr>
<td>Classify the Mycobacteria species according to Runyon groups</td>
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<tr>
<td>Examine department study slides</td>
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<tr>
<td>Mycology</td>
<td></td>
<td>Not Met</td>
<td>Met</td>
<td>Exceeded</td>
</tr>
<tr>
<td>Discuss proper specimen, collection, transport &amp; processing</td>
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<tr>
<td>Perform wet mounts (KOH, India Ink, or LPCB)</td>
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<tr>
<td>Task</td>
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<td>---------------------------------------------------------------------</td>
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<tr>
<td>Perform and read slide culture</td>
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<tr>
<td>Identify morphological features of clinically significant fungi</td>
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<tr>
<td>Identify and select proper fungal media for a given source</td>
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<tr>
<td>Discuss clinical significance of fungal isolates from a given source and patient</td>
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<tr>
<td>Identify molds and yeast following the procedures used in the lab</td>
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<tr>
<td>Examine department study slides</td>
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</tbody>
</table>

**Parasitology**

<table>
<thead>
<tr>
<th>Task</th>
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<td>Discuss proper specimen, collection, and processing</td>
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<td>Perform a concentration procedure</td>
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<td>Prepare fecal smears (direct smear, iodine prep, concentrated smears, &amp; permanent smears)</td>
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<td>Prepare thick and thin blood smears for hemoflagellates</td>
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<td>Examine departmental study slides</td>
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<td>Recognize diagnostic stages of the following:</td>
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<td>Hemoflagellates</td>
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**Virology**

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<tr>
<td>Discuss proper specimen, collection, transport &amp; processing</td>
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<td>Describe clinically significant viruses</td>
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<td>Perform and/or discuss identification methods (culture, serology, molecular methods, etc.)</td>
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Other

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<th>Task</th>
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<tbody>
<tr>
<td>Perform manual D-test, ESBL confirmation, E-test</td>
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<tr>
<td>Discuss role of Sentinel Laboratory in the Laboratory Response Network</td>
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<tr>
<td>Discuss proper specimen, collection, transport &amp; processing of suspected agents of bioterrorism</td>
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</tbody>
</table>

* The minimum number is one for each optional task performed at a specific laboratory.

Clinical instructors please complete:

THIS Form  
Grade Form  
Affective Behavior/Professional Characteristics Form  
Oral Presentation Form

Return all forms via email (preferred) to: Angela Wilson at amwilson@odu.edu
or via Fax: (757) 683-5028
Old Dominion University
Medical Technology/Medical Laboratory Science Program
MEDT 452
CLINICAL CHEMISTRY PRACTICUM

COURSE DESCRIPTION
Direct clinical experience offered in automated and manual clinical chemistry determinations with emphasis on the principles, instrumentation, interpretation, and diagnostic significance.

CREDIT HOURS – 5

COURSE DIRECTOR: Ellie Luethy, MT (ASCP), MHS
EMAIL: eluethy@odu.edu
Phone (cell) 757-618-6588

I. INTRODUCTION
Clinical Chemistry Practicum is a five week, hospital-based course designed to follow MEDT 324/325 (Instrumentation lecture and lab) & MEDT 351 (Biochemistry lecture) which are based at the University. The course is designed to give the student practical experience in a generalized chemistry laboratory. During the practicum, the student will develop new practice-oriented skills as well as build on the skills introduced during the didactic portion of the curriculum. The student is expected to come into the practicum with a solid foundation of the theoretical and technical aspects of a chemistry laboratory and will be expected to apply this knowledge during the practicum. The student may also be given additional information, assigned readings and projects during the rotation. Upon completion of the practicum, the student will have acquired the skills and competencies required of an entry-level Medical Technologist in a typical Clinical Chemistry laboratory.

GOAL
Students will perform both automated and manual procedures in a clinical laboratory setting, correlate laboratory results with specific disease and non-disease states. An emphasis is placed on instrumentation principles used in chemical analysis. The student will gain understanding of the full scope of services provided in a clinical chemistry laboratory.

Expectations of the following behaviors are the same as outlined for preclinical courses unless superseded by Clinical Course Policies:

Attendance
Communication Skills
Preparation
Conduct
Honor Code
STUDENTS WITH DISABILITIES

Reasonable accommodations are provided for students with disabilities. Students should self-identify to the instructor as early in the semester as possible in order to establish an accommodation process. See accessibility site: http://www.odu.edu/educationalaccessibility

II. REFERENCES


III. COMPETENCIES

1. Operationalize mechanisms for the procurement, processing, and analysis of chemistry specimens.
2. Demonstrate knowledge of procedures for handling improperly collected/handled specimens.
3. Perform standard analytical testing on serum, plasma, urine and other body fluids.
4. Properly analyze quality control and patient samples and demonstrate the knowledge of procedures for evaluating generated data.
5. Demonstrate ability to institute corrective actions for problems related to verification of discrepant patient results, quality control data, and quality assurance issues.
6. Demonstrate appropriate skills in the daily assessment, operation and routine maintenance of automated instrumentation.
7. Appropriately identify instrument problems, initiate and perform preventative maintenance and institute corrective action.
8. Utilize computer-based technology for input, verification and retrieval of data and instrument operation.
9. Demonstrate ability to correlate patient data with clinical diagnosis.
10. Demonstrate professional characteristics and conduct with laboratory personnel, other health care professionals, and patients.

IV. BEHAVIORAL OBJECTIVES

Cognitive/Psychomotor

After completing this clinical practicum course, studying assigned materials, procedures and methodologies, and performing assigned tasks, the student will be able to demonstrate an overall achievement of ≥76% on written and practical evaluations.

A. General

The student will be able to:

1. Properly process specimens to include distribution to appropriate work areas. List criteria for evaluating specimen quality and, according to protocol, identify and evaluate patient specimens in regard to their acceptability for analysis.
2. Identify precautions and/or special handling techniques for particular procedure requests.
3. Assist in bookkeeping, recording, verification of results, and computer operation according to established clinical chemistry protocol.

4. Select appropriate reagents and/or kits as needed for analytical procedures and determine appropriate substitutes for unavailable supplies.

5. Assist in the daily operation of the chemistry analyzers to include performing routine maintenance, analyzing, evaluating and reporting quality control and patient data and troubleshooting.

6. Perform appropriate computer related functions where applicable.

7. Identify the areas in the laboratory where safety equipment is located and demonstrate basic knowledge of operation for each piece of equipment.

8. Identify sources of potential biohazard in the lab and recognize unsafe laboratory practices. Employ appropriate safeguards as outlined in the departmental procedure manual.


10. State appropriate safety procedures for various laboratory accidents and demonstrate knowledge of proper protocol for reporting and handling exposure incidents.

11. According to laboratory protocol, demonstrate safety techniques in the handling and disposal of infectious materials.

B. Instrumentation

For each analyzer employed by the clinical site, the student will be able to:

1. State the principle of operation of each analyzer.

2. Identify the essential components of each analyzer and explain the function of each component.

3. Demonstrate working knowledge of the reagents used on each analyzer and appropriately prepare and replace reagents as needed.

4. Demonstrate ability to properly operate each analyzer according to laboratory protocol to include calibration and specimen analysis.

5. Perform routine maintenance on each analyzer according to laboratory protocol.

6. Correctly recognize equipment malfunctions and identify appropriate steps to successfully troubleshoot the analyzer.

7. Demonstrate a basic knowledge of the statistics involved in the analysis of quality control data.

8. Correctly perform and report quality control data on each analyzer according to laboratory protocol.

9. Appropriately analyze quality control data according to site-specific protocol. Demonstrate ability to recognize and handle data that falls outside of established limits.
10. Validate the accuracy of test results based on assessment of obtained quality control data.

11. Demonstrate proper knowledge of the storage and stability requirements for quality control and calibrator materials.

12. Recognize and identify the basic criteria of a good quality assurance program.

C. Testing Methodologies

The student will be able to:

1. Describe the principle of each of the following methodologies and identify which analyzers at the clinical site employ each methodology.

2. Identify which analytes are being tested at the clinical site using each methodology.

   a. Spectrophotometry
   b. Potentiometry/ISE
   c. Fluorimetry
   d. Osmometry
   e. Enzyme Kinetics
   f. Immunoassays (i.e. EIA, ELISA)
   g. Nephelometry
   h. Chemiluminescence
   i. Electrophoresis
   j. Chromatography
   k. Atomic Absorption

*The student should be able to discuss the above methodologies even if the tests are not performed on site.

D. Testing Procedures

The student will be able to:

1. Perform each test procedures listed below according to site-specific protocol.

2. For each test procedure, explain the chemical principle used to measure the analyte.

3. Demonstrate a basic working knowledge of the analytes included in each of the following chemistry panels and in any additional panels used at the clinical site.

   a. BMP
   b. CMP
   c. Electrolyte Panel
   d. Liver Panel
   e. Thyroid Panel
   f. Cardiac Panel
   g. Lipid Panel

4. Become familiar with the reference range for each analyte. State specific reference ranges as determined by the clinical instructor.

5. Evaluate and report patient results according to site-specific protocol.
6. Demonstrate ability to identify erroneous patient results and institute the appropriate corrective action.

7. Demonstrate ability to evaluate abnormal patient results and correlate the results to a possible clinical diagnosis.

8. Correlate results from various tests on the same patient to aid in determining a possible clinical diagnosis.

9. Identify and perform any back-up methods for the analytes being measured.

10. As determined by the clinical instructor, perform the following calculations using patient data
    a. creatinine clearance
    b. osmolality
    c. anion gap

11. Perform testing on unknown samples as determined by the clinical instructor.

12. Demonstrate proper knowledge of the storage and stability requirements for each specimen.

13. The student must demonstrate proficiency in each of the following test procedures:
    **Required**
    a. Glucose/HgbA1C
    b. Electrolytes
    c. Total Protein
    d. Albumin
    e. AG Ratio
    f. Urine Protein
    g. Microalbumin
    h. Uric Acid
    i. BUN
    j. Creatinine
    k. Ammonia
    l. Total Bilirubin
    m. Direct Bilirubin
    n. Iron
    o. TIBC
    p. Ferritin
    q. HDL
    r. LDL
    s. Triglycerides
    t. Cholesterol
    u. Liver enzymes
    v. Amylase
    w. Lipase
    x. Cardiac Markers**
y. Therapeutic Drug Monitoring**

z. Drugs of Abuse**

aa. Endocrinology**

**perform testing as appropriate to each clinical site

14. The student will demonstrate competency in the following optional test procedures as applicable to each clinical site, (“optional” at the assigned site -may need to perform at another site as part of “special chemistry” days):

1. POCT
2. Serum Proteins
   a. Transferrin
   b. Haptoglobin
   c. Ceruloplasmin
   d. Immunoglobulins
   e. α-1 Antitrypsin
   f. Prealbumin
   g. CRP
3. Fetal Lung Maturity
4. Serum & CSF Electrophoresis
5. Immunofixation
6. Toxicology
7. Blood Gases
8. Acid Phosphatase
9. Tumor Markers
10. Esoteric Endocrinology Tests

E. Molecular Diagnostics

The student will be able to:

1. Discuss specimen collection/integrity/processing employed in molecular diagnostic methodologies if encountered during clinical chemistry rotation.
2. Identify extra/special specimen precautions and considerations employed in a molecular diagnostic laboratory compared to the general clinical laboratory.
3. Identify instruments used in the performance of molecular diagnostic methods.
4. Describe the principle of operation quality control/assurance issues related to the instruments in #3.

Affective:

1-12 must be “MET” or exceeded according to established evaluation guidelines.

POLICY COMPLIANCE

1. Demonstrate an appreciation for the value and necessity of maintaining an orderly and safe laboratory environment by adhering to OSHA safety regulations, program and facility safety policies, and to practices outlined by the instructor.
2. Display professional/workplace responsibility by adhering to guidelines and policies outlined by the program, individual courses, and affiliated clinical facilities.

PROMPTNESS/ATTENDANCE

3. Develop the highly valued professional characteristic of maintaining a blemish free attendance and punctuality record by reporting to classes, laboratories, and assigned clinical sites on time, notifying instructors/supervisors promptly when absence is anticipated and meeting all established deadlines.

INITIATIVE

4. Display appropriate initiative and motivation in all academic and practical performances by completing both assigned and unsolicited tasks satisfactorily, addressing problems or interferences appropriately.

RESPONSIBILITY

5. Demonstrate an appreciation of the role of active participation in the education process by displaying preparedness and engagement in the classroom, laboratory, and clinical learning environments.

6. Display professional responsibility by accepting direction, adapting to the learning environment, and completing required assignments as outlined.

RELIABILITY

7. Demonstrate the ability to maintain intellectual and emotional stability and maturity under stress, by producing results that meet appropriate performance standards.

8. Demonstrate, by attitude and performance, an appreciation of the value and importance of procedural consistency and technical accuracy and precision.

PROFESSIONAL /WORKPLACE DEMEANOR

9. Display appropriate professional/workplace decorum during both the preclinical and clinical phases of the program by complying with the guidance, instructions, and direction outlined by faculty and clinical preceptors/mentors.

10. Comply with accepted rules of conventional professional/workplace behavior during both the preclinical and clinical phases of the program by exhibiting a cooperative, respectful, and collegial demeanor in interactions with faculty, classmates, clinical preceptors/mentors, and patients.

INTEGRITY

11. Display, through appropriate professional/workplace behavior and performance, recognition and respect for honest laboratory testing, patient confidentiality, and high quality patient outcomes.

12. Comply with the Old Dominion University Honor Code by submitting only work which is the product of one’s own effort (I pledge... to be noted on submitted work).
An Affective Behavior/Professional Characteristics Evaluation Form will be used to evaluate each student at the end of the full rotation with the assignment of a grade of Pass or Fail (P/F).

A grade of "P" must be obtained on the Professional Evaluation with all behavioral criteria met or exceeded.

A grade of "F" will be assigned if all behavioral criteria are not met.

V WRITTEN/ORAL ASSIGNMENT

The student will be able to:

1. Prepare an organized paper and presentation on an appropriate topic (assigned or selected) that represents the outcome of scholarly efforts such as literature research, special projects or case history/study analysis.

2. Deliver an inservice to staff on an assigned or selected topic utilizing guidelines and principles of professional presentations presented in pre-clinical courses.

VI EVALUATION:

Grade percentages:

50% - Written/Oral (Tests, Projects, Paper)

50% - Technical/Practical

A minimum grade of "C" based on the following scale must be attained in each of the above areas.

A  93-100
B  86-92
C  76-85
D  65-75
F  Below 65

Competencies: Students must meet or exceed all competencies. (See Competency Task List on the following pages).
Old Dominion University
Medical Technology/Medical Laboratory Science Program
MEDT 452 Clinical Chemistry Practicum Competency Task List

Student Name: _____________________________________________________

Date: _____________________________________________________

Clinical Site: _____________________________________________________

Instruction:

1) A separate checklist must be completed for each major instrument utilized in clinical chemistry at the clinical site.

2) For each of the tasks/procedures listed, indicate the method of evaluation and the level of competence by completing the form in the spaces provided. Attach additional documentation where appropriate.

3) The student must be competent in all assigned tasks to pass the competency evaluation.

4) Student may demonstrate ability in one manual back-up procedure for the automated chemistry analyzer(s).

Example:
Instrument: Name of instrument
Analytes: BMP

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<tr>
<th>Task</th>
<th>Method of Evaluation</th>
<th>Evaluation:</th>
<th>Comments:</th>
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<tbody>
<tr>
<td>Instrument Theory of Operation</td>
<td>X</td>
<td>C</td>
<td>CE</td>
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Key:
C = Competent (entry-level) = successfully completes the assigned task within the degree indicated
CE = entry-level competence exceeded
Old Dominion University

Medical Technology/Medical Laboratory Science Program

MEDT 452 Competency Task List

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<th>Task</th>
<th>Method of Evaluation</th>
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<td>Operation/ Performance</td>
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<td>Comparison of Results</td>
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<td>Observation/ Review</td>
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Instrument Theory of Operation

Physiological Significance of Tests

Instrument Methodologies

Instrument Calibration

Preventative Maintenance

Reagent Preparation

Reagent Storage, and Stability

Sample Preparation and Handling

Accurate Verification of patient results

Identify discrepant patient results & variables affecting results

Identify Reference Ranges for each major analyte

Knowledge of appropriate calculations

Knowledge of Back-up Methodologies for each primary analyzer

Analysis of Quality Control Data

Identify and take appropriate action for QC data that is not within established limits

Correlation with other clinical lab results

Correlation with pathological conditions

Trouble-shooting Techniques

Comments:

(Required for all tasks evaluated as CE or not met)
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<td>Statistical Knowledge of Method Comparison</td>
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Clinical instructors please complete:

- THIS Form
- Grade Form
- Affective Behavior/Professional Characteristics Form
- Oral Presentation Form

Return all forms via email (preferred) to: Ellie Luethy at eluethy@odu.edu

or via Fax: (757) 683-5028
Old Dominion University
MEDICAL TECHNOLOGY/MEDICAL LABORATORY SCIENCE PROGRAM
MEDT 454
CLINICAL IMMUNOHEMATOLOGY PRACTICUM

COURSE DESCRIPTION
Direct clinical experience offered in the theories and principles of blood banking with emphasis on the instruction of technical procedures used in an AABB approved blood bank. (This course is offered on campus in an accelerated format followed by a 2 week rotation at an assigned clinical site.)

GOAL
Students will apply knowledge obtained of in vivo and in vitro blood cell antigen/antibody interactions, and accurately interpret serologic and clinical data in the procurement, selection, and preparation of safe transfusion products.

CONTACT INFORMATION
Cristina S. Ruffy, MT(AMT), direct practicum oversight: cristina.f.ruffy.civ@mail.mil (preferred), cruffy@odu.edu
Barbara Kraj, PhD, MLS(ASCP)CM, MBCM, ODU MT Program director: bkraj@odu.edu; phone: 757-683-6039

STUDENTS WITH DISABILITIES
Reasonable accommodations are provided for student with disabilities. Students should self-identify to the instructor as early in the semester as possible in order to establish an accommodation process through the Office of Educational Accessibility.

TEXTBOOK

Note: Additional references are available at the clinical site.

Expectations of the following behaviors are the same as outlined for preclinical courses unless superseded by Clinical Course policies.

Attendance
Communication
Preparation
Conduct
Honor Code
I. INTRODUCTION

This course is designed to follow the prerequisite University-based course, MEDT 326/336 (Immunohematology lecture and laboratory). This course emphasizes the refinement of basic technical skills, the development of new practice-oriented skills and the enhancement of the theoretical foundation that the student possesses. At the completion of this course, students will be able to demonstrate the competencies that should be possessed by an entry-level laboratory scientist in a typical Blood Bank. **A pre-test will be administered at the beginning of this practicum.**

II. Competencies

A. Operationalize mechanisms for the procurement, identification, processing, and analysis of blood bank specimens.

B. Perform, according to standards, serological testing of donor and recipient samples providing safe transfusion events.

C. Recognize testing and clerical discrepancies and irregularities when processing donor and recipient samples.

D. Employ approved standards and procedures when evaluating donor and recipient status.

E. Employ proper quality control procedures in the identification, testing, and labeling of donor/component units and recipient samples.

F. Institute preventive and corrective action, according to standards, designed to ensure accurate sample processing, component selection and processing, and transfusion.

G. Employ approved record keeping procedures to ensure the provision of safe therapeutic blood products.

H. Research and develop a relevant blood banking topic and deliver a presentation to department colleagues.

I. Demonstrate professional characteristics and conduct with laboratory personnel, other health care professionals, and patients.

III. BEHAVIORAL OBJECTIVES

Cognitive/Psychomotor

After completing this clinical practicum course, studying assigned materials, mastering procedures and methodologies, and performing assigned tasks, the student will be able to demonstrate an overall achievement of ≥76% on written and practical evaluations with stated accuracy on practical evaluations.

A. **General** - The student will be able to:

1. Identify critical measures that ensure accurate and reliable pre-analytical, analytical, and post-analytical processing of patient and donor samples
2. Identify/employ established procedures in the identification and processing of patient samples, donor units, and components. Distinguish acceptable from non-acceptable specimens.
3. Identify precautions and/or special handling techniques for routine and special requests.
4. Select the appropriate reagents as needed for specific and routine tests.
5. Identify sources of biohazard, and employ safeguards as outlined by OSHA regulations.
6. Identify/employ criteria established for adequate and correct record keeping.
7. Outline basic quality control procedures.
8. Identify medico-legal issues in Blood Bank.
9. Employ safeguards related to medico-legal issues as outlined by laboratory procedures and policies.
10. Demonstrate compliance with all laboratory and hospital policies.
11. Perform computer related functions where applicable, including data input, retrieval and storage.
12. Demonstrate affective behavior/professional characteristics and conduct by achieving a “met” or “exceeded” for each at terminal evaluation.

B. **Blood Group Serology** - The student will be able to:

1. Explain or define basic immunologic terms and principles.
2. Distinguish the structural, serological and physical properties of IgG and IgM immunoglobulins.
3. Identify conditions and techniques that influence antigen-antibody reactions for the purpose of detection and/or elimination of clinically significant antibodies.
4. Identify conditions that interfere with the interpretation of antigen antibody reactions.
5. Identify the pertinent serological and physical characteristics of antibodies in the ABO, Rh and significant “other” blood group systems.
6. Identify the frequency of the major antigens in the ABO, Rh and significant "other" blood group systems.
7. Explain the clinical significance of ABO, Rh and "other" blood group systems.
8. Employ knowledge of basic genetic principles in the interpretation of inheritance patterns and blood types.
9. Given problems, inconclusive or discrepant results, identify cause, suggest/employ steps and methods to achieve a resolution based on knowledge of the principles of blood group serology and characteristics of blood group antigens and antibodies.

C. **ABH System** - The student will be able to:

1. Given the appropriate test results on patient or donor samples, correctly interpret the ABO group.
   a. Recognize normal, discrepant, and anomalous results.
   b. Identify causes of discrepant and inconclusive results including:
      1) serum antibody problems
      2) red cell/antigen problems
      3) subgroups, e.g. A₃, Aₓ, Aₘ
      4) anomalous phenotypes
   c. distinguish H antigen and its relationship to subgroups and Bombay phenotype.
d. Identify technical sources of error.

2. Suggest/employ methods to resolve testing problems.
   a. RBC/ag tests
   b. serum/ab tests

D. **Rh System** - The student will be able to:

1. Given the appropriate test results on patient or donor samples, correctly interpret the Rh phenotype and/or most probable genotype.
   a. Compare the genetic theories of inheritance of Tippett, Fisher-Race, and Wiener.
   b. Employ the nomenclature of Fisher-Race and Wiener interchangeably.
   c. Identify nomenclatures of Rosenfield and the ISBT.
   d. Compare the various Rh typing procedures including reagent composition and testing limitations.
   e. Identify/resolve sources of error.

2. Identify/explain Rh variants and anomalous phenotypes.
   a. Wk D testing requirements
   b. rh<sup>56</sup>
   c. compound antigens
   d. Rh null
   e. deletion
   f. LW

E. **ABO, Rh, and Other Blood Group Systems** (to include, but not limited to Lewis, I, Kell, P, Duffy, Kidd, MNS, Lutheran, certain high frequency and low frequency antigens) - The student will be able to:

1. Analyze each blood group system with emphasis on the immunogenic potential of the antigens and the potential of antibodies to cause HTR and HDFN.
   a. Identify symbols used to designate antigens and phenotypes.
   b. Compare and contrast the serological and physical characteristics of antibodies in the various systems including:
      1) immunoglobulin class
      2) unique characteristics that aid in antibody identification, including but not limited to dosage, neutralization, increased serum-cell ratios, and enzymes
      3) complement dependency
      4) potential for causing HTR or HDFN

2. Evaluate antigen/antibody testing results for presumed genotype/phenotype.
3. Evaluate the clinical significance of the various blood group antibodies when selecting blood for transfusion.
4. Correlate medical history with serological results
5. Identify frequency of clinically significant antigens.

F. **Antiglobulin Test (Direct and Indirect)** - The student will be able to:

1. Evaluate the AGT, direct and indirect, identifying the clinical significance of the information obtained.
a. Explain the principle/procedure of the tests (direct and indirect), including enhancement and QC of negative results.

b. Identify clinical conditions and situations for which the direct and indirect AGT are used.

c. Compare the composition and specificity of the various antiglobulin sera (polyspecific, monospecific, and anti-complement).

d. List sources of error.

e. Identify factors affecting the sensitivity of the test.

f. Explain the role of complement in antiglobulin reactions.

2. Evaluate the role of IgG coated cells.

G. Antibody Detection and Identification - The student will be able to:

1. Given appropriate antibody detection and identification results, correctly identify auto- and/or alloantibody(ies).
   
a. Explain the rationale of procedural steps including: testing, phase requirements, methods to rule out the presence of additional antibodies, and phenotyping to confirm antibody identity.
   
b. Record results as read according to established criteria and policy.
   
c. Explain the role of the autocontrol.

2. Given inconclusive identification (panel) results, suggest/employ techniques that will allow correct identification.

3. Employ/suggest enhancement techniques and techniques that will aid in identification including but not limited to:
   absorption
   elution
   inhibition/neutralization
   enzymes
   selected cell panel
   antigen typing
   temperature reduction
   increased serum-to-cell ratio
   increased incubation time
   polyethylene glycol (PEG)
   alteration of pH
   titration
   prewarmed technique

4. Explain the importance of medical history in identification of antibodies

5. Employ/select techniques to identify and differentiate warm and cold autoantibodies.
a. without underlying alloantibodies
b. with underlying alloantibodies.

6. Employ select techniques to identify and differentiate the various causes of drug-induced warm autoantibodies.

H. **Pretransfusion Testing** - The student will be able to:

1. Explain the purpose of pretransfusion testing.
2. Employ proper procedures for pretransfusion testing as outlined by laboratory policy.
3. Evaluate requirements for pretransfusion testing including but not limited to requirements for:
   a. requests
   b. specimens
      i. labels
      ii. nature
      iii. age
      iv. special requirements for neonates
      v. confirming identity
      vi. retention/storage
4. Explain the value of checking previous records
5. Explain/perform serological testing as outlined by laboratory policy
6. Interpret antibody screening and crossmatch results
7. Explain/employ "Type and Screen" policy
8. Explain/employ for compatibility testing requirements for exchange and non-exchange transfusion.

I. **Compatibility Tests** - The student will be able to:

1. Analyze the compatibility test with respect to purpose, required testing procedures on patient and donor samples, and expected results that are consistent with suitability for transfusion.
   a. Discuss acceptable patient and donor samples, including identification, age, source, testing requirements, storage, etc.
   b. Check previous records and requests for special needs including but not limited to sickle negative, CMV negative, irradiated and leukocyte reduced products.
   c. Select the appropriate type of donor blood for testing and transfusion according to procedures as applicable to the following situations:
      i. non-emergent requests
      ii. emergency requests
      iii. massive transfusion
      iv. least incompatible
      v. unexpected allo- and/or auto antibody(ies)
2. Employ established guidelines and policies in testing of donor and patient samples, and recording results and information.
3. Identify causes of problems and/or incompatible tests.
4. Specify/employ procedures used to resolve problems and/or incompatible results.
5. Given compatibility test problems:
   a. identify the cause and
   b. suggest/employ steps that will lead to a resolution.
6. Predict random number of units to screen given the recipient antibody and (frequency).
7. Identify special criteria for neonatal transfusions.

J. Transfusion Reactions - The student will be able to:
1. Compare the types of transfusion reactions with regard to clinical severity, symptoms
   and investigation requirements.
   a. Identify testing requirements for transfusion reaction investigations.
   b. Identify clerical requirements for transfusion reaction investigations.
2. Explain the rationale that governs the selection of blood for transfusions.
3. Discuss/identify transfusion transmitted viruses and the value of lookback policies.

K. Donor Selection and Processing - The student will be able to:
1. Identify criteria for selection.
2. Compare requirements for testing by the collecting agency with those of the transfusing
   institution.
3. Identify various anticoagulants and additives currently in use, indicating advantages, and
   shelf life.
4. Identify labeling, storage, and shipping requirements.
5. Compare and contrast the advantages and disadvantages of autologous versus
   homologous donor requirements.
6. Identify requirements for directed donor units.

L. Component Preparation and Therapy - The student will be able to:
1. Analyze each component with emphasis on the following:
   a. Method of preparation
   b. Maximum age requirement for preparation.
   c. Anticoagulant used.
   d. Shelf life.
   e. Storage requirement.
   f. Indications and use.
   g. Quality control requirements
   h. Usual dosage.
2. Given a patient's history, select the appropriate component, dosage, and filter.

M. Investigation of HDFN - The student will be able to:
1. Compare the clinical manifestations and serological characteristics of ABO, Rh and
   "other" HDFN.
2. Identify maternal and infant prenatal and postnatal tests used for the detection and
   evaluation of HDFN, including ABO, Rh, ab screen, DAT, elution, and Kleihauer- Betke
   acid elution.
3. Select appropriate components for transfusion, exchange and non exchange, satisfying
requirements for age, quantity and type, as well as serological test results (sickle, CMV, antibody status of the mother, etc.).
4. Evaluate criteria which establishes candidacy for prenatal and postnatal RhIG
5. Calculate/select dosage of RhIG.

N. **HLA Testing** - The student will be able to:
1. Describe the HLA system.
   a. explain the present system of nomenclature
   b. identify cellular locations of antigens
2. Describe the inheritance of HLA antigens.
3. Identify the principle of the various testing procedures.
4. List the clinical applications of HLA typing.

O. **Paternity Testing** - The student will be able to:
1. Identify the role of blood group systems in paternity testing.
2. Differentiate criteria for direct and indirect exclusion.

P. **Quality Control** - The student will be able to:
1. Explain quality management practice in the transfusion laboratory including managerial components, objectives, cell/serum controls, equipment controls and routine testing intervals and frequencies.
2. Identify quality control violations that may lead to inaccurate testing results.

**Specific Performance Objectives**

A. **General**

The student will be able to:
1. Recognize correctly labeled specimens with 100% accuracy.
2. Perform/assist in routine quality assurance procedures, reagent testing, equipment monitoring and records maintenance.
3. Assist in the processing and release of blood and blood components.
4. Assist in the inventory/ordering of blood and blood components, reagents, and general operating supplies.
5. Employ measures designed to reduce pre-analytical, analytical & post-analytical variability.
6. Identify errors (preanalytical, analytical, and post analytical) in performed procedures including those due to technique, reagents, mechanical malfunction, etc.

B. **Test Procedures**

The student will be able to perform and complete the minimum number of tests with the accuracy indicated or those established by the instructor.
1. ABO and Rh tube type, including Wk D – test 10 with 100% accuracy.
2. Indirect Coombs- test 3 with 100% accuracy.
3. Direct Coombs – test 6 with 100% accuracy.
4. Crossmatches - test 2 with 100% accuracy.
5. Exchange Transfusion Workup- perform 1 with 100% accuracy.
6. RhlG Workup- test 2 with 100% accuracy.
7. Transfusion Reaction Workup-test 1 with 100% accuracy.
8. Antibody Identification: at least one sample is to contain a minimum of 3 antibodies.
9. Type and Screen- 2 with 100% accuracy
10. Cord Blood Workup- 2 with 100% accuracy
11. Antigen Typing:
   a. Direct
   b. Indirect
12. Quality Control Reagent Rack- Daily QC with 100% accuracy.
13. Processing Units- 10 in 30 minutes with 100% accuracy.
14. Elutions:
   a. Lui Easy Freeze- 1 with 100% accuracy
   b. Acid Elution- 1 with 100% accuracy.
15. Case histories- as assigned
16. Antibody Titer- 1 with 100% accuracy.
17. Kleihauer- Betke – 1-2 slides with accuracy as assigned

C. Optional:
1. Donor workup and phlebotomy- 1 in 45 minutes
2. Component preparation
3. Viral testing
4. Slide typing
5. Neonatal transfusion workup:
   a. exchange
   b. non-exchange
      i. (PUBS) Peri-umbilical blood sampling (Including ABO, Rh, DAT and other antigen typings as required to differentiate mother from fetus).
      ii. Absorptions
   c. warm autoabsorptions
   d. cold autoabsorptions

Affective:
1-12 must be “MET” or exceeded according to established evaluation guidelines.

POLICY COMPLIANCE
1. Demonstrate an appreciation for the value and necessity of maintaining an orderly and safe laboratory environment by adhering to OSHA safety regulations, program and facility safety policies, and to practices outlined by the instructor.
2. Display professional/workplace responsibility by adhering to guidelines and policies outlined by the program, individual courses, and affiliated clinical facilities.

PROMPTNESS/ATTENDANCE
3. Develop the highly valued professional characteristic of maintaining a blemish free attendance and punctuality record by reporting to classes, laboratories, and assigned clinical sites on time, notifying instructors/supervisors promptly when absence is anticipated and meeting all established deadlines.

**INITIATIVE**

4. Display appropriate initiative and motivation in all academic and practical performances by completing both assigned and unsolicited tasks satisfactorily, addressing problems or interferences appropriately.

**RESPONSIBILITY**

5. Demonstrate an appreciation of the role of active participation in the education process by displaying preparedness and engagement in the classroom, laboratory, and clinical learning environments.

6. Display professional responsibility by accepting direction, adapting to the learning environment, and completing required assignments as outlined.

**RELIABILITY**

7. Demonstrate the ability to maintain intellectual and emotional stability and maturity under stress, by producing results that meet appropriate performance standards.

8. Demonstrate, by attitude and performance, an appreciation of the value and importance of procedural consistency and technical accuracy and precision.

**PROFESSIONAL /WORKPLACE DEEMANOR**

9. Display appropriate professional/workplace decorum during both the preclinical and clinical phases of the program by complying with the guidance, instructions, and direction outlined by faculty and clinical preceptors/mentors.

10. Comply with accepted rules of conventional professional/workplace behavior during both the preclinical and clinical phases of the program by exhibiting a cooperative, respectful, and collegial demeanor in interactions with faculty, classmates, clinical preceptors/mentors, and patients.

**INTEGRITY**

11. Display, through appropriate professional/workplace behavior and performance, recognition and respect for honest laboratory testing, patient confidentiality, and high quality patient outcomes.

12. Comply with the Old Dominion University Honor Code by submitting only work which is the product of one’s own effort (I pledge... to be noted on submitted work).

A grade of "P" must be attained on the Professional Characteristics Evaluation form, with all behavioral criteria met or exceeded. **A grade of "F" will be assigned if all behavioral criteria are not met.**
Note: A formative affective/behavioral evaluation is completed at the end of the on-campus phase.

IV. WRITTEN/ORAL ASSIGNMENT

The student will be able to:

1. Prepare an organized paper and presentation on an appropriate topic (assigned or selected) that represents the outcome of scholarly efforts such as literature research, special projects or case history/study analysis.

2. Deliver an inservice to staff on an assigned or selected topic utilizing guidelines and principles of professional presentations presented in pre-clinical courses.

V. EVALUATION

Grade percentages:

50% Written/Oral + 50% Technical

A minimum grade of "C" based on the following scale must be attained in each of the above areas:

A 93-100  D 65-75
B 86-92  F below 65
C 76-85

Competencies: Students must meet or exceed all competencies. (See Competency Task List on the following pages).
Old Dominion University  
Medical Technology/Medical Laboratory Science Program  
MEDT 454 Clinical Blood Bank Practicum Competency Task List

Student Name: ____________________________________________________________

Clinical Site: _____________________________________________________________

Evaluator: _______________________________________________________________

For each of the required tasks/competencies listed below, please indicate in the appropriate column the student’s degree performance and level (C or CE) for each task. Refer to the performance requirements under “Test Procedures” in the Practicum Syllabus. Also, for each optional task performed (see “Optional List” in the Practicum Syllabus), complete the form in the spaces provided.

C = Competent (entry-level) = successfully completes the assigned task within the degree indicated  
CE = entry-level competence exceeded

The student must be competent in all required tasks. The highlighted tasks are expected to be completed at the clinical site, while the others are completed during the on-campus phase of this practicum.

<table>
<thead>
<tr>
<th>Required Tasks</th>
<th>Minimum/Accuracy</th>
<th>Performance Degree</th>
<th>Evaluation: C or CE</th>
<th>Comments: (Required for all tasks evaluated as CE)</th>
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</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Not Met</td>
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<td>Exceeded</td>
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<tr>
<td>Identifies incorrectly labeled specimens</td>
<td>All</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Preparation of 5% RBC suspension</td>
<td>10/100</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ABO &amp; Rh Tube Typing (including Weak D testing)</td>
<td>10/100</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>IAT</td>
<td>3/100</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DAT</td>
<td>6/100</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Crossmatch</td>
<td>2/100</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Exchange Tx Workup</td>
<td>1/100</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RhIG workup</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Task</td>
<td>Percentage</td>
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<tr>
<td>----------------------------------------------</td>
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<td></td>
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</tr>
<tr>
<td>Transfusion reaction workup</td>
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<td></td>
</tr>
<tr>
<td>Antibody Identification (single ab.)</td>
<td>var/100</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Antibody Identification (multiple ab.)</td>
<td>var/100</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Type &amp; Screen</td>
<td>2/100</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Cord blood workup</td>
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<td></td>
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<td></td>
</tr>
<tr>
<td>Antigen Typing</td>
<td>2/100</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Participates in ordering/inventory activities</td>
<td>Variable</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Quality Control Reagent rack</td>
<td>daily/100</td>
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<td></td>
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</tr>
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<td>Processing and Release of blood and blood Components</td>
<td>10/100</td>
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<tr>
<td>Lui Freeze / Thaw Elution</td>
<td>1/100</td>
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<td>Acid Elution</td>
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<tr>
<td>Antibody Titer</td>
<td>1/100</td>
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<td></td>
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<tr>
<td>Kleihauer-Betke Acid elution stain</td>
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<td></td>
</tr>
<tr>
<td>Other:</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

| Optional Tasks                               |            |

Clinical instructors please complete: Return all forms to:
THIS Form
Oral Presentation Form
Professional Characteristics Form
 Barbara Kraj at bkraj@odu.edu
or via fax: 757-683-5028
Old Dominion University
Medical Technology/Medical Laboratory Science Program

CLINICAL URINALYSIS PRACTICUM OBJECTIVES

I INTRODUCTION
Clinical Urinalysis is designed to give the student practical experience in the urinalysis lab. The student is expected to come into this course with a sound background in the basic theory and techniques of urinalysis, basic knowledge of normal and abnormal physiology, clinical correlations, and microscopic technique. The student is expected to begin to correlate theory and practice and upon completion of the course, the student should be able to perform at entry level, the physical, chemical and microscopic examination of the urine. The student may also be given additional information, assigned readings and projects as determined by the clinical instructor.

II COMPETENCIES
The student will be able to:

1. Process and prepare urine and other body fluid specimens for analysis.
2. Distinguish between acceptable and unacceptable specimens received in the lab.
3. Perform routine quality control procedures per laboratory protocol.
4. Verify and report patient results to include recognizing discrepant results. Utilize computer-based technology for input and retrieval of data.
5. Institute solutions or corrective actions for problems related to specimen integrity, verification of abnormal results, quality control data, and quality assurance issues.
6. Perform any necessary calculations as determined by clinical site.
7. Assist in the maintenance of urinalysis equipment and demonstrate an ability to calibrate, operate, maintain and perform routine troubleshooting on any equipment (if available) used to include:
   a. Automated Analyzer(s)
   b. Osmometer
   c. Bright field microscope
   d. Phase contract microscope
   e. Polarizing microscope
   f. Centrifuge
8. Perform physical, chemical and microscopic testing on urine specimens.
9. Demonstrate professional characteristics and conduct with laboratory personnel, other health care professionals, and patients.

III Routine Urinalysis
A. Physical Examination of the Urine
The student will be able to:

1. Perform and interpret tests for specific gravity.
2. Describe the effects of interfering substances, such as glucose and protein, on the specific gravity.
3. List the normal ranges of specific gravity for urine.
4. Recognize normal and abnormal odors, color and appearance of urine. Discuss the significance of any abnormal findings and identify probable causes for these abnormalities.
5. Perform color and clarity on at least 50 urine specimens.

B. Chemical Examination of the Urine

The student will be able to:

1. Perform chemical analysis using reagent strip testing on at least 50 urine specimens, both normal and abnormal, with 100% accuracy utilizing either visual readings or automated readers.
2. State the principle, normal ranges and interfering substances of all reactions on the reagent strips utilized.
3. Perform microalbumin testing using the reagent strip method if applicable.

C. Microscopic Examination of the Urine

The student will be able to:

1. Perform at least 25 microscopic examinations on urinary sediment, both normal and abnormal, utilizing the brightfield microscope with 100% accuracy.
2. Correctly identify, count and report all of the following with 100% accuracy:
   a. Red blood cells
   b. White blood cells
   c. Epithelial cells
   d. Yeast, Bacteria, and Parasites
   e. Casts
   f. Crystals, both normal & abnormal
   g. Oval fat bodies.
3. Discuss the effects of pH, temperature, bacteria and time on formed elements in the urine.
4. Identify and correlate normal and abnormal crystals based on the pH of the urine.
5. Distinguish artifacts from urinary constituents.

D. Evaluation

The student will be able to:

1. Perform 50 complete routine urinalysis examinations, automated or manual, with 100% accuracy.
2. Correlate microscopic findings with physical and chemical results.
3. Interpret results, both normal and abnormal, and discuss their clinical significance.
4. Correlate abnormal results with other clinical tests performed on the patient, if applicable.
5. Analyze results and determine their validity on the basis of appropriate quality control mechanisms.

IV Osmolarity Testing (as available at the rotation site)

The student will be able to:

1. Describe the theory and essential components of the osmometer utilized in the clinical laboratory. Assist in performing routine maintenance on the analyzer as indicated by laboratory protocol.
2. Perform routine quality control procedures per laboratory protocol.
3. Perform at least 4 osmolalities on serum and urine as indicated by laboratory protocol if applicable.
4. Verify and report patient results. Identify reference ranges of both serum and urine osmolalities and explain the clinical significance of abnormal test results.

V Biohazard and Safety Procedures

The student will be able to:

1. Demonstrate all laboratory safety techniques when dealing with biohazards in a urinalysis laboratory.
2. Demonstrate appropriate safety procedures when dealing with fires, chemical burns, eye accidents, and explosions.
3. Identify the areas in the laboratory where safety equipment is located.

VI Quality Control

The student will be able to:

1. Identify factors that contribute to pre-analytical, analytical & post-analytical variability.
2. Employ measures designed to reduce pre-analytical, analytical & post-analytical variability.

Suggested References:


The cognitive objectives will be evaluated using study questions and case studies which will be graded as “P” if completed within the stated guidelines. The psychomotor objectives as outlined in the competency checklist must be “met”. Failure to meet either requirement will require resubmission and/or repeat, respectively.
Old Dominion University
Medical Technology/Medical Laboratory Science Program
Urinalysis Practicum Checklist

Student Name: _________________________________________________

Note: Procedures may be performed at multiple clinical sites.

<table>
<thead>
<tr>
<th>Procedure</th>
<th>Clinical Site</th>
<th>Objectives &amp; Competencies</th>
<th>Instructor Comments*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Routine Chemical &amp; Physical Analysis (50)</td>
<td></td>
<td>Met</td>
<td>Not Met</td>
</tr>
<tr>
<td>Microscopic Examination (25)</td>
<td></td>
<td>Met</td>
<td>Not Met</td>
</tr>
<tr>
<td>Complete Urinalysis (50)</td>
<td></td>
<td>Met</td>
<td>Not Met</td>
</tr>
</tbody>
</table>
Complete Urinalysis cont.

<table>
<thead>
<tr>
<th>Tests as available:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Osmolality</td>
</tr>
<tr>
<td>Others; please list</td>
</tr>
</tbody>
</table>

Student should return the form (along with study questions and case studies) via email (preferred) to: Ellie Luethy at eluethy@odu.edu

or via Fax: (757) 683-5028
Urinalysis Rotation Study Questions and Case Studies

These study questions and case studies are to be completed during your rotations. They may be submitted any time, but must be completed by the end of your graduating semester.

Responses to study questions and case studies are to be submitted as a word processed document. It is expected that your answers will be thorough, accurate, well researched and presented according to guidelines. Unacceptable responses will be returned for resubmission. The document will be posted on the Clinical Chemistry Practicum (MEDT 452) Blackboard site for download.

Evaluation:
Responses will be evaluated according to the attached grading scheme.
The assigned grade will be U or P. The scale is as follows:
P   = Pass
U   = Resubmit

1. What type of specimen is needed to obtain optimal results when performing a urinalysis?

2. What changes may occur in urine that has been left standing at RT for more than 2hrs?

3. What is the normal color of urine? What pigment is responsible for producing this color?

4. List the abnormal colors of urine and explain the cause of each.

5. What is the common terminology used to describe the clarity of a urine specimen, both normal and abnormal?

6. Discuss 3 pathological and nonpathological causes of a cloudy urine.

7. Explain the clinical significance of a cloudy, red urine vs. a clear, red urine.
8. Define specific gravity and discuss 2 ways in which it is measured in the lab to include how it is performed at your clinical site. Explain the clinical significance of performing a specific gravity on a urine specimen.

9. Describe the QC procedures are routinely performed with reagent strip testing as per your clinical site.

10. List the chemical tests performed on urine using a reagent strip. Briefly explain the clinical significance of each test.

11. Briefly describe the major sources of interference commonly seen when performing reagent strip testing.

12. List the confirmatory tests used at your clinical site and explain when each is used.

13. Name the 3 ketone bodies that may be found in a urine specimen. Which one is detected by the reagent strip?

14. What is the difference between hematuria and hemoglobinuria? Explain the clinical significance of each.

15. What type of bilirubin is detected in the urine by the reagent strip? Explain the clinical correlation between urine bilirubin and urobilinogen and the following disease states: bile duct obstruction, liver disease and hemolytic disorders.

16. List 3 possible causes of a false-negative result when performing reagent strip testing for nitrite.

17. Discuss the steps involved in preparing a urine sample for microscopic examination.

18. Describe the type(s) of microscopy used in the urinalysis lab to include what is being used at your clinical site.
19. List the formed elements, both normal and abnormal, that may be found in urinary sediment.

20. List the normal values for RBC’s, WBC’s and hyaline casts in a urinary sediment.

21. What is the major protein found in casts?

22. Explain how to differentiate between RBC’s and yeast in a urinary sediment.

23. List the different types of epithelial cells that can be seen in a urinary sediment and explain the clinical significance of each.

24. List the different types of casts that can be seen in a urinary sediment and explain the clinical significance of each.

25. Discuss the clinical significance of the presence of oval fat bodies in urinary sediment.

26. List the most common artifacts seen in urinary sediments and state the source of each.

27. Name the two types of amorphous and explain how they are different. When is amorphous most likely to be seen in a urinary sediment? How can you reduce the amount of amorphous before completing the microscopic analysis?

28. What physical and chemical findings may be seen when there are RBC’s, WBC’s and bacterial present in urinary sediment?

29. Under which conditions should a urine specimen be rejected by the lab?

30. Describe how urinalysis testing is performed as per your clinical facility.
URINALYSIS CASE STUDIES

I. A 26 yr. old man is seen by this physician and complains of sudden weight loss, polydypsia, and polyuria. A routine urinalysis and plasma glucose level are obtained. The patient was fasting before the blood collection.

Clinitest (5-drop): ≥2000*

Chemistry Results: Plasma Glucose: 230 mg/dl (reference range: fasting ≤110 mg/dl; diabetic ≥126 mg/dl)

Urinalysis Results

- Color: straw
- Clarity: clear
- Sp. Gravity: 1.010
- pH: 5.5
- Protein: negative
- Glucose: >2000

- Ketones: small
- Bilirubin: negative
- Urobilinogen: normal
- Nitrite: negative
- LE: negative
- Blood: negative

Confirmatory Tests:

- Refractometer: 1.029
- Clinitest (2-drop): ≥5000

*The pass-through effect was noted during performance of this test.

1. List any abnormal and/or discrepant urinalysis findings.

2. Explain the pass-through effect exhibited by the Clinitest method in this patient.
3. Is this patient showing any signs of renal damage or dysfunction? Why or why not?

4. Select the diagnosis that best accounts for the glucosuria observed in this patient.
   a. Normal; glucose renal threshold exceeded
   b. Type I Diabetes
   c. Type II Diabetes
   d. Impaired glucose tolerance

   Explain why you selected the answer you choose.

5. Explain why the ketones on the reagent strip are positive.

6. Explain the two different specific gravity results that were obtained. Which result most accurately reflects the renal concentrating ability in this patient?
II. A 22 year-old woman is seen in the emergency room with complaints of a painful burning sensation (dysuria) when urinating. She also states that she feels as if she has “to go” all the time. A midstream clean catch urine specimen was collected for a routine urinalysis and the following results were obtained.

**Physical & Chemical Results:**
- Color: yellow
- Ketones: negative
- Clarity: cloudy
- Bilirubin: negative
- Sp. Gravity: 1.015
- Urobilinogen: normal
- pH: 6.0
- Nitrite: negative
- Protein: trace
- LE: negative
- Glucose: negative
- Blood: trace

**Microscopic Examination:**
- RBC/hpf: 0-2
- WBC/hpf: 10-25
- Casts/hpf: 2-5 hyaline
- Epithelial Cells: few squamous cells/lpf; moderate transitional cells/hpf
- Bacteria: Moderate/hpf

1. List any abnormal and/or discrepant urinalysis findings.

2. Based on the patient’s symptoms and the urinalysis results, select the most probable diagnosis.
   a. normal urinalysis
   b. UTI
   c. acute glomerulonephritis
   d. nephrotic syndrome

Explain why you selected the answer you choose.
3. Assume no patient information was available and the number of squamous epithelial cells observed microscopically was “many”. Would your suspected diagnosis change? Explain why or why not.

4. State two reasons why the nitrite test was negative despite the presence of bacteriuria.

5. State two reasons why the LE test was negative despite the increased numbers of WBC in urine sediment.

6. What might be a cause of the increased number of transitional epithelial cells in the urine sediment?

7. Would this urine need to be sent to the microbiology lab for a culture? Why or why not?
Old Dominion University
Medical Technology/Medical Laboratory Science Program

CLINICAL IMMUNOLOGY/SEROLOGY PRACTICUM OBJECTIVES

INTRODUCTION
Clinical Serology Practicum is designed to follow the preclinical courses, MEDT 330/331 (Immunology/Serology Lecture and Laboratory) taken during students' junior year. This clinical experience builds on a previously acquired theoretical and technical foundation, and emphasizes the enhancement of acquired knowledge and skills. The menu for immunology/serologic procedures varies at each site. Therefore, these objectives should be satisfied during the entire length of your rotation period.

COMPETENCIES
1. Operationalize mechanisms for the procurement, processing, and analysis of specimens.
2. Perform standard immunologic analyses, automated and manual, on blood, plasma, and other appropriate fluids.
3. Recognize discrepant results, using relevant clinical and interlaboratory data.
4. Institute solutions or corrective actions for problems related to verification of abnormal results, quality control data, and quality assurance issues.
5. Initiate and perform preventative maintenance, identify equipment and instrument problems, and institute corrective action.
6. Utilize computer-based technology for input and retrieval of data and instrument operation.
7. Demonstrate professional characteristics and conduct with laboratory personnel, other health care professionals, and patients.

BEHAVIORAL OBJECTIVES
A. Basic Immunologic Principles
   The student will be able to:
   1. Identify each of the types of immunity involved in the body's response to microbial disease.
   2. Identify the factors that contribute to the development of immunologic disease.
   3. Discuss the chemical and physical properties of antigens.
   4. Differentiate the structure, function and physiological characteristics of each class of immunoglobulin.
   5. Describe the sequence of antibody synthesis.
   6. Describe the function of granulocytes and monocytes-macrophages in host defense.
   7. Identify the specific function of each type of lymphocyte.
   8. Identify major membrane markers use to classify T & B lymphocytes.
9. Describe the interrelated activities of the components of the immune system when mounting a response to antigenic challenge.
10. Describe the principle of each in vitro antigen – antibody reaction, to include agglutination, precipitation, and labeled assays.

B. General Laboratory Practice

The student will be able to:

1. Process specimens, including distribution to proper work areas, accessioning, and verification and reporting of results.
2. Identify precautions and/or special handling techniques for particular procedure requests.
3. Inspect and evaluate suitability of specimens for the requested analyses.
4. Select the appropriate kit and and/or reagents needed for particular assay, and determine appropriate substitutes for unavailable supplies.
5. Identify sources of biohazard, and employ appropriate safeguards.
6. Recognize unsafe laboratory practices by selecting safe practice measures.
7. Perform computer-related functions where applicable.
8. Calibrate and operate equipment, instruments, and microscopes, following standard protocol.
9. Explain the principle of operation of all instrumentation.
10. Identify sources of error in the performance of procedures due to sources such as technique, reagents, mechanical function, etc.
11. Follow established quality control procedures.
12. Validate the accuracy of test results based on an assessment of obtained quality control values.
13. Evaluate situations where the control results are unacceptable and prescribe appropriate actions.
15. Identify factors that contribute to pre-analytical, analytical & post-analytical variability.
16. Employ measures designed to reduce pre-analytical, analytical & post-analytical variability.
17. Correlate abnormal results with the disease that is indicated.

C. Specific Serological Procedures Group A

The student will be able to*:

1. Perform the following test procedures according to the site-specific protocol.
2. Obtain results within the limits of accuracy and time specified by the instructor.
3. Describe methodological principle of each procedure.
4. Discuss the clinical relevance of test results.
5. Identify and/or suggest specific disease states based the assessment of serological data.
6. Correlate normal and abnormal data with other clinical and/or laboratory findings in the identification of specific disease states.
7. Suggest additional tests that may be used to aid in making differential diagnoses.

**Group A Procedures:**

RPR
Rheumatoid Factor B EIA
Infectious Mono Test
Streptococcal Antibody Test
Pregnancy Test

D. **Specific Serological Procedures Group B**

The following tests are not performed at all clinical sites; however, where performed, students **must** satisfy* objectives 3-7 above as applied to each procedure.

**Group B Procedures:**

ANA
Toxoplasma Antibody Test
CMV Antibody Test, IgM and IgG
Thyroid Antibody, TG Microsomal (HA), and other organ specific tests
FTA-ABS
VDRL-CSF
Presumptive/differential Heterophile Antibody Test
CRP: Latex and Automated
Bacterial Antigen Tests, e.g., *Cryptococcus, C. difficile*
Febrile Agglutinins (RMSF)
EBV panel
HIV Antibody Tests
Hepatitis Tests
Cryoglobulin
T4/T8
Flow Cytometric Methods

*written documentation to be submitted by the student to the Program Director at the completion of all practica.

The cognitive objectives will be evaluated using study questions and case studies which will be graded as “P” if completed within the stated guidelines. The psychomotor objectives as outlined in the competency checklist provided on the next page must be “met.” Failure to meet either requirement will require resubmission and/or repeat, respectively.
### Immunology/Serology Practicum Checklist

**Student Name**

**Note:** Procedures may be performed at multiple clinical sites.

<table>
<thead>
<tr>
<th>Procedure (minimum # required)</th>
<th>Objective/Competency</th>
<th>Instructor* Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Clincial Site</strong></td>
<td><strong>Met</strong></td>
<td><strong>Not Met</strong></td>
</tr>
<tr>
<td>RPR (8)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rheumatoid Factor (4)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>[ ] Latex</td>
<td>[ ] EIA</td>
<td></td>
</tr>
<tr>
<td>[ ] Latex</td>
<td>[ ] EIA</td>
<td></td>
</tr>
<tr>
<td>Infectious Mono Test (4)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Streptococcal Antibody Test (2)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pregnancy Test (4)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Optional Tests (as available)**

- CRP
- GC/Chlamydia
- Rubella Antibody
- CMV Antibody
<table>
<thead>
<tr>
<th>Test Type</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>ANA</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Anti-ENA</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FTA-ABS</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>VDRL-CSF</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hepatitis Markers</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HIV Antibody/Ag</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>T4/T8</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bacterial Antigens, e.g.,</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cryotococcus, C. difficile</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Molecular/Genetic Tests</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other Tests</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- Employ safe laboratory practices
- Identify reference range for each of the above
- Select appropriate supplies for assays
- Identify/validate specimens
- Identify/follow QC/QA procedures
- Assess clinical significance of test results
- Correlate data, identify specific disease states
- Suggest additional tests for definitive diagnoses

Completed form must be returned by the student to the Program Director at the end of the rotation period.
Immunology/Serology Rotation Study Questions and Case Studies

These study questions and case studies are to be completed during your rotations. They may be submitted to Program Director any time, but must be completed by the end of your graduating semester.

Responses to study questions and case studies are to be submitted as a word document. It is expected that your answers will be thorough, accurate, well researched and presented according to guidelines. Unacceptable responses will be returned for resubmission. The document will be posted on the Clinical Chemistry Practicum MEDT 452 Blackboard site for download.

Evaluation:

Responses will be evaluated according to the attached grading scheme.

The assigned grade will be U or P. The scale is as follows:

P = Pass
U = Resubmit

1. List the five classes of immunoglobulins and briefly discuss each one. Name the primary characteristics of each.

2. Define monoclonal and polyclonal antibodies.

3. Briefly define complement and discuss its major roles. Discuss the classic and alternative pathways and their relationship to the terminal complement cascade.

4. Define phagocytosis. What is its role in the immunologic response?

5. Briefly discuss the four types of hypersensitivity reactions, including cell types involved, and primary immune component; give examples of each type.

6. Define immune status.

7. What information can rubella testing provide? What titer usually implies immunity?

8. Discuss the RPR and VDRL tests, defining each and what they measure.

9. Outline the tests used to confirm positive RPR results including the methodological principle and interpretation of each.

10. What are cold agglutinins? Discuss diseases associated with abnormal titers. What tests are currently considered definitive?
11. Discuss streptococcal antibody tests principle and the significance and value of positive tests.

12. Briefly discuss the principle of rapid tests for infectious mononucleosis. How long after an infectious mononucleosis infection will the involved antibodies remain detectable? What methodology is definitive? Explain the interpretive value.

13. Briefly discuss the Weil-Felix reaction. How can it be helpful diagnostically? What tests are currently considered definitive?

14. Discuss acute phase proteins, including definition, site of production, examples, and conditions associated with increased levels.

15. Explain the principle of labeled immunoassays. Give examples of 5 different types, identifying the analyte and methodological principle (automated and manual).

16. Discuss hepatitis B, including transmission, appearance of antigen and antibody, “core window,” serologic diagnosis, immunity, and chronicity. What panels are used for screening, chronicity, and immunity.

17. Discuss hepatitis A, including transmission, serologic diagnosis, immunity, and chronicity.

18. Discuss hepatitis C including transmission, serologic diagnosis, immunity, and chronicity.

19. Define tumor markers. Briefly discuss the diagnostic significance of PSA, CEA, AFP, and HCG.

20. Briefly discuss antinuclear antibodies, including definition, interpretation of tests, and conditions associated with ANAs.

21. Briefly discuss human immunodeficiency virus (HIV), including transmission, current screening methods, the window between infection and the presence of detectable antibodies, and confirmatory testing.

22. Explain:
   a. The principle of the latex agglutination test for rheumatoid factor. What is a significant titer?
   b. The principle of the EIA procedure for rheumatoid factor. How is a significant result determined?
   c. The principle of the Anti-CCP test, its principle and clinical significance.
**Immunology/Serology Case Studies**

**Case One**

Dawn, a 15 y.o. AA girl, was debating going on a spring ski trip. She had experienced stiffness in her hips and hands each morning recently. She went on the trip and a rash developed on her face which persisted after she returned. She was referred to a rheumatologist by her PCP. There was no arthritic disease in the family, though a cousin had an inflammatory bowel disorder. Laboratory test results were as follows:

- Urine – wnl
- CBC – mild anemia, neutropenia, lymphopenia, and severe TCP. An ANA titer was 1:2,560.

1. What is the most likely diagnosis?
2. Define ANA and explain the methods of detection.
3. What is likely the underlying cause of the rash and arthritis?
4. Why would a negative ANA r/o the diagnosis?
5. Why would a positive ANA not confirm the diagnosis?
6. Because she was anemic, Dawn’s PCP requested a DAT. Explain the rationale for requesting this test.
7. What additional test would support the presumptive diagnosis?

**Case Two**

A patient has undergone surgery for cancer of the colon. You are assisting in the surgery. After completion the surgeon asks you to draw a blood sample for a CEA level.

1. What is the rationale for the requested test?
2. What is the analyte?
3. What is the significance of measuring this analyte in this population?
4. Explain the term *tumor-specific antigen* and give examples.
5. Explain the term *tumor-associated antigen*. Give three examples.
6. Explain why CEA cannot be used as a specific marker for the detection of colon cancer.
7. Describe the assay used to detect CEA.
8. Regarding the patient in this case, what is the value of CEA measurement?

**Case Three**

John was born after an uneventful pregnancy and weighed 6 lbs. At 3 months, he developed otitis media and an upper respiratory tract infection. At the ages of 5 months and 11 months, he was admitted to hospital with *Haemophilus influenzae* pneumonia. The infections responded promptly to the appropriate antibiotics on each occasion. When 16 months old, he developed balanitis.
Because of the frequent infections, he was examined by a specialist. Examination showed a pale, thin, underweight child. He was otherwise normal. There were no other abnormal features. He had been fully immunized according to the ACIP schedule. John has a 6 y.o. sister. His mother recently learned that she is pregnant with twins, a boy and a girl.

An immunological evaluation revealed the following:

<table>
<thead>
<tr>
<th></th>
<th>Patient</th>
<th>Reference Range</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Blood Lymphocyte Subpopulations (x10^9/l)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total lymphocyte count</strong></td>
<td>3.5</td>
<td>[2.5-5.0]</td>
</tr>
<tr>
<td><strong>T lymphocytes (CD3)</strong></td>
<td>3.02</td>
<td>[1.5-3.0]</td>
</tr>
<tr>
<td><strong>B lymphocytes (CD23)</strong></td>
<td>&lt;0.03</td>
<td>[0.1-0.4]</td>
</tr>
<tr>
<td>(CD19)</td>
<td>&lt;0.1</td>
<td>[0.3-1.0]</td>
</tr>
<tr>
<td>(CD20)</td>
<td>&lt;0.1</td>
<td>[0.3-1.0]</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Quantitative Serum Immunoglobulins (g/l)</th>
<th>Patient</th>
<th>Reference Range</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>IgG</strong></td>
<td>0.17</td>
<td>[5.5-10.0]</td>
</tr>
<tr>
<td><strong>IgA</strong></td>
<td>Not detected</td>
<td>[0.3-0.8]</td>
</tr>
<tr>
<td><strong>IgM</strong></td>
<td>0.07</td>
<td>[0.4-1.8]</td>
</tr>
</tbody>
</table>

Immunization Titers, i.e. MMR, TD, Polio – all negative
 Isohemagglutinins (Anti-A & Anti-B) – absent [patient was A, Rh pos]

1. What is the most likely diagnosis?
2. What is definitive information is revealed by the lymphocyte population?
3. What definitive information is revealed by the immunization titers?
4. Are John’s siblings at risk? If so, which one(s)?
5. If left untreated what would be the outcome for John?
6. What other disorders are ruled out by the clinical and laboratory findings?
7. Is John’s disorder treatable? If so, with what?
Old Dominion University
MEDICAL TECHNOLOGY/MEDICAL LABORATORY SCIENCE PROGRAM
MEDT 458 CLINICAL ELECTIVE PRACTICUM (PHLEBOTOMY)

COURSE DESCRIPTION
Directed internship in any clinical area of interest (including phlebotomy) approved by the clinical instructor and Medical Technology program director (1 credit hour).

GOAL
Students will practically apply medical laboratory science knowledge in clinical setting at an assigned facility affiliated with Old Dominion University using behavioral objectives developed for the clinical area of interest.

CONTACT INFORMATION
Barbara Kraj, PhD, MLS(ASCP)CM, MBCM, ODU MT program director: bkraj@odu.edu; phone: 757-683-6039

STUDENTS WITH DISABILITIES
Reasonable accommodations are provided for student with disabilities. Students should self-identify to the instructor as early in the semester as possible in order to establish an accommodation process through the Office of Educational Accessibility.

TEXTBOOK: As prescribed for each clinical area of interest.

Expectations of the following behaviors are the same as outlined for preclinical courses unless superseded by the clinical site policies.

Attendance
Communication
Preparation
Conduct
Honor Code

BEHAVIORAL OBJECTIVES
Cognitive/Psychomotor: provided in a separate “MEDT 458 Objectives/Evaluation Form” document provided on the following pages (and posted in Blackboard).

Affective: 1-12 must be “MET” or exceeded according to established evaluation guidelines.

POLICY COMPLIANCE
1. Demonstrate an appreciation for the value and necessity of maintaining an orderly and safe laboratory environment by adhering to OSHA safety regulations, program and facility safety policies, and to practices outlined by the instructor.
2. Display professional/workplace responsibility by adhering to guidelines and policies outlined by the program, individual courses, and affiliated clinical facilities.

PROMPTNESS/ATTENDANCE

3. Develop the highly valued professional characteristic of maintaining a blemish free attendance and punctuality record by reporting to classes, laboratories, and assigned clinical sites on time, notifying instructors/supervisors promptly when absence is anticipated and meeting all established deadlines.

INITIATIVE

4. Display appropriate initiative and motivation in all academic and practical performances by completing both assigned and unsolicited tasks satisfactorily, addressing problems or interferences appropriately.

RESPONSIBILITY

5. Demonstrate an appreciation of the role of active participation in the education process by displaying preparedness and engagement in the classroom, laboratory, and clinical learning environments.

6. Display professional responsibility by accepting direction, adapting to the learning environment, and completing required assignments as outlined.

RELIABILITY

7. Demonstrate the ability to maintain intellectual and emotional stability and maturity under stress, by producing results that meet appropriate performance standards.

8. Demonstrate, by attitude and performance, an appreciation of the value and importance of procedural consistency and technical accuracy and precision.

PROFESSIONAL /WORKPLACE DEMEANOR

9. Display appropriate professional/workplace decorum during both the preclinical and clinical phases of the program by complying with the guidance, instructions, and direction outlined by faculty and clinical preceptors/mentors.

10. Comply with accepted rules of conventional professional/workplace behavior during both the preclinical and clinical phases of the program by exhibiting a cooperative, respectful, and collegial demeanor in interactions with faculty, classmates, clinical preceptors/mentors, and patients.

INTEGRITY

11. Display, through appropriate professional/workplace behavior and performance, recognition and respect for honest laboratory testing, patient confidentiality, and high quality patient outcomes.

12. Comply with the Old Dominion University Honor Code by submitting only work which is the product of one’s own effort (I pledge... to be noted on submitted work).
A grade of "P" must be attained on the Professional Characteristics Evaluation form, with all behavioral criteria met or exceeded. A grade of "F" will be assigned if all behavioral criteria are not met.

V. EVALUATION

Students are evaluated on 20 objectives listed in the Objective Evaluation Form using scores 1-5 defined as follows:

5 = Above average
4 = Average
3 = Acceptable
2 = Below average
1 = Unacceptable

Student’s final score (calculated as sum of all scores achieved on objectives 1-20) is divided by 20 (or by the number of items on the list not assigned an N/A) and the following scale is used to assign the final course grade:

<table>
<thead>
<tr>
<th>Letter Grade</th>
<th>Average Scale Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>4.5-5.0</td>
</tr>
<tr>
<td>B</td>
<td>4.0-4.4</td>
</tr>
<tr>
<td>C</td>
<td>3.2-3.9</td>
</tr>
<tr>
<td>D</td>
<td>2.1-3.1</td>
</tr>
<tr>
<td>F</td>
<td>&lt;2.0</td>
</tr>
</tbody>
</table>
# MEDT 458 PRACTICUM OBJECTIVES/EVALUATION FORM (PHLEBOTOMY)

**STUDENT NAME:** ____________________________________________

**LOCATION (SITE):** __________________________________________

**SCORES:**  5= Above average, 4= Average, 3= Acceptable, 2=Below average, 1=Unacceptable  

*♦ Please comment on any individual score lower than a 3.*

<table>
<thead>
<tr>
<th>Clinical Objective</th>
<th>Score</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Correctly identifies and evaluates requests for specimen collection for laboratory analysis.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Recognizes and initiates the correction of any discrepancy between a request for collection and the type of specimen required for testing.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Accurately and efficiently completes all paperwork associated with collection of the specimen test as requested.</td>
<td></td>
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<tr>
<td>4. Displays knowledge of the proper order of blood collection according to tube color.</td>
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<tr>
<td>5. Effectively greets patient and identifies reason for being there.</td>
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<tr>
<td>6. Effectively and appropriately communicates with the patient or the patient's guardian regarding the collection procedure.</td>
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<tr>
<td>7. Completely and accurately identifies the patient on whom the test are requested.</td>
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<tr>
<td>8. Selects all materials required for proper and efficient collection of the specimen.</td>
<td></td>
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<tr>
<td>9. Correctly applies tourniquet and locates vein for venipuncture.</td>
<td></td>
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<tr>
<td>10. Using aseptic techniques, correctly prepares the collection site.</td>
<td></td>
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<tr>
<td>11. Efficiently and properly collects the specimen.</td>
<td></td>
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<tr>
<td>13. Correctly disposes of biohazardous waste and sharps in appropriate containers.</td>
<td></td>
<td></td>
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<tr>
<td>14. Recognizes and provides for control of adverse reactions during and immediately following specimen collection.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>15. With 100% accuracy identifies, labels, and completes all paperwork required for proper distribution and processing of the specimens.</td>
<td></td>
<td></td>
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<tr>
<td>16. Expresses gratitude to the patient and/or others involved in obtaining the specimens.</td>
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<tr>
<td>17. Distributes specimens to proper individuals or sections for processing.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>18. Observes and practices those techniques required by the OSHA Bloodborne Pathogen Standard and institution specific infection control.</td>
<td></td>
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<tr>
<td>19. Demonstrates proper technique in finger and/or heel sticks.</td>
<td></td>
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<tr>
<td>20. Demonstrates the proper isolation techniques for any of the following as requested by the instructor:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>a. Strict Isolation</td>
<td></td>
<td></td>
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<tr>
<td>b. Respiratory Isolation</td>
<td></td>
<td></td>
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<tr>
<td>c. Enteric Isolation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>d. Protective Isolation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>e. Wound and Skin Isolation</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The following tasks are not required, but are optional as time and location permit:

1. Point of Care \ Bedside Testing
2. Glucose Tolerance Testing
3. Bleeding Times
4. Collection of Blood Cultures

A clinical Professional Evaluation Form will be completed at the end of the rotation with the assignment of a grade of Pass or Fail (P\F). A grade of “P” must be attained on the Professional Evaluation with all behavioral criteria met or exceeded in order to pass the clinical phlebotomy rotation. Return both forms to Barbara Kraj at bkraj@odu.edu or fax at (757) 683-5028

Student’s Final Number Score (add numbers in Score Column) = ________________

Average Scale Score (Final number score divide by 20*) = ________________

* or by the number of items which were not assigned an N/A

Professional Evaluation = ________________

Final Letter Grade = ________________

Grading Scale:

<table>
<thead>
<tr>
<th>Letter Grade</th>
<th>Average Scale Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
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<td>C</td>
<td>3.2-3.9</td>
</tr>
<tr>
<td>D</td>
<td>2.1-3.1</td>
</tr>
<tr>
<td>F</td>
<td>&lt;2.0</td>
</tr>
</tbody>
</table>

INSTRUCTOR’S SIGNATURE: ___________________________ Date ________________

STUDENT’S SIGNATURE: ___________________________ Date ________________

COMMENTS:
Appendix C
MEDT Clinical Practicum Assignments

STUDENT NAME: _____________________________________________________________

PREDICTED DATE OF GRADUATION: __________________________________________

<table>
<thead>
<tr>
<th>Clinical Course</th>
<th>Course Number</th>
<th>Credits</th>
<th>Semester Scheduled</th>
<th>Practicum Site</th>
<th>Course Dates</th>
<th>Grade Assigned</th>
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<tbody>
<tr>
<td>Hematology</td>
<td>MEDT 404</td>
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<tr>
<td>Microbiology</td>
<td>MEDT 406</td>
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<tr>
<td>Clin. Chemistry</td>
<td>MEDT 452</td>
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</tr>
<tr>
<td>Blood Bank</td>
<td>MEDT 454</td>
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<td></td>
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</tr>
<tr>
<td>Clin. Elec. Practicum/Phlebotomy</td>
<td>MEDT 458</td>
<td>1</td>
<td></td>
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</tr>
</tbody>
</table>

I agree to the above scheduled practica and understand that if I fail to appear, I forfeit my right to that assignment. I understand that I must achieve a passing grade in each of the 3 components (written, practical and professional) in order to receive a passing grade in each course.

Student signature: __________________________________________________________

Date: _____________________________________________________________________

ODU MT Practicum Handbook, June 2017 132
## OLD DOMINION UNIVERSITY

### MEDICAL TECHNOLOGY/MEDICAL LABORATORY SCIENCE PROGRAM

#### CLINICAL TIME AND ATTENDANCE LOG

**STUDENT NAME:** _______________________________________________________

<table>
<thead>
<tr>
<th>DATE</th>
<th>TIME IN</th>
<th>TIME OUT</th>
<th>INSTRUCTOR INITIALS AND SITE</th>
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**MEDT 404 CLIN. HEMATOLOGY PRACTICUM**

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<th>TIME IN</th>
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<th>INSTRUCTOR INITIALS AND SITE</th>
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**MEDT 454 BLOOD BANK PRACTICUM**

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<th>INSTRUCTOR INITIALS AND SITE</th>
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Completion: ______________________

Date: ____________________________
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<th>DATE</th>
<th>TIME IN</th>
<th>TIME OUT</th>
<th>INSTRUCTOR INITIALS AND SITE</th>
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<th>TIME IN</th>
<th>TIME OUT</th>
<th>INSTRUCTOR INITIALS AND SITE</th>
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<tbody>
<tr>
<td>MEDT 406 CLIN. MICRO PRACTICUM</td>
<td>MEDT 454 CLIN. CHEM. PRACTICUM</td>
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<tr>
<td>MEDT 458 CLINICAL ELECTIVE PRACTICUM (PHLEBOTOMY)</td>
<td></td>
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</tbody>
</table>
COLLEGE OF HEALTH SCIENCES INCIDENT REPORT
https://www.odu.edu/content/dam/odu/col-dept/school-nursing/docs/student-incident-form.pdf

OLD DOMINION UNIVERSITY
COLLEGE OF HEALTH SCIENCES
STUDENT INCIDENT REPORT

(Include accidents, exposure to hazardous substance or disease.)

1. PLEASE PRINT
Name ____________________________
Address ____________________________
City ____________________________ State _____ Zip Code ______
UIN ____________________________ Phone ____________________________
School ____________________________

2. OCCURRENCE DATE __________ Day of Week __________

3. OCCURRENCE TIME __________ AM / PM

4. REPORT DATE _______ / _______ / _______

5. LOCATION OF OCCURRENCE ____________________________

6. ACTIVITY INVOLVED (check all that apply)

   _____ Lifting Patient
   _____ Lifting Other
   _____ Invasive Procedure/Injection
   _____ Other Patient Care
   _____ Non-Work Activity
   _____ Transport Patient
   _____ Transport Equipment
   _____ Equipment Use/Repair
   _____ Walking
   _____ Hazardous Substance
   _____ Infectious Exposure

   Explain: ___________________________________________
   ___________________________________________
   ___________________________________________

   Other (explain) ___________________________________
7. **TYPE OF INJURY** (check all that apply)

- [ ] No Apparent Injury
- [ ] Laceration / Abrasion
- [ ] Puncture
- [ ] Burn
- [ ] Bruise / Crush
- [ ] Bite / Scratch
- [ ] Other (explain)

- [ ] Foreign Body
- [ ] Strain / Sprain
- [ ] Fracture
- [ ] Amputation
- [ ] Electrical Shock

8. **PART of BODY** (check all that apply)

<table>
<thead>
<tr>
<th>Left</th>
<th>Right</th>
<th>Left</th>
<th>Right</th>
</tr>
</thead>
<tbody>
<tr>
<td>Head</td>
<td></td>
<td>Elbow</td>
<td></td>
</tr>
<tr>
<td>Eye</td>
<td></td>
<td>Hand</td>
<td></td>
</tr>
<tr>
<td>Ear</td>
<td></td>
<td>Finger(s)</td>
<td></td>
</tr>
<tr>
<td>Face</td>
<td></td>
<td>Wrist</td>
<td></td>
</tr>
<tr>
<td>Neck</td>
<td></td>
<td>Leg</td>
<td></td>
</tr>
<tr>
<td>Chest</td>
<td></td>
<td>Groin</td>
<td></td>
</tr>
<tr>
<td>Abdomen</td>
<td></td>
<td>Knee</td>
<td></td>
</tr>
<tr>
<td>Back</td>
<td></td>
<td>Foot</td>
<td></td>
</tr>
<tr>
<td>Arm</td>
<td></td>
<td>Toe(s)</td>
<td></td>
</tr>
<tr>
<td>Shoulder</td>
<td></td>
<td>Ankle</td>
<td></td>
</tr>
</tbody>
</table>

9. **POSSIBLE CAUSES** (check all that apply)

- [ ] Unclear as to Policy/Procedure
- [ ] Patient Initiated Occurrence
- [ ] Improper Clothing/Equipment
- [ ] Equipment Defect/Malfunction
- [ ] Poor Illumination
- [ ] Other (explain)

- [ ] Unaware of Safety Hazard
- [ ] Foreign Material on Floor
- [ ] Building/Premises Defect
- [ ] Improper Body Handling

10. **ODU SUPERVISOR NOTIFIED AT TIME OF OCCURRENCE**

- [ ] Yes  
- [ ] No  

Name ________________________________

11. **DESCRIPTION OF OCCURRENCE**

__________________________________________________________________________________

12. **WITNESSED BY** (please print)

Name ________________________________ Phone __________________

Name ________________________________ Phone __________________
13. MEASURES TAKEN TO PREVENT REOCURRENCE

14. TREATMENT
   ______ No Treatment Necessary   ______ First-Aid
   ______ Employee Health          ______ Refused Treatment
   ______ Emergency Room           ______ Other
   Hospital

   Explain

15. REFERRED TO PHYSICIAN
   ______ Yes    ______ No    Treatment Facility
              Physician's Name

   Briefly Describe Treatment

   OR

   If incident is a blood or body fluid exposure, please adhere to Blood-Borne
   Pathogen Post Exposure guidelines. Document only as directed.

16. DISPOSITION
   ______ Returned to School
   ______ Released to Home
   ______ Hospitalized -- Name of Hospital
   ______ Fatality
   ______ Other (explain)

17. TIME LOSS
   ______ Yes    ______ No    Estimated Absence

18. SIGNATURES

   Student
   Clinical Supervisor
   ODU Course Supervisor
   Comments

   Date / /
What is an Exposure?

An exposure is a specific eye, mouth, other mucous membrane, non-intact skin, or parenteral contact with blood or other potentially infectious material that results from the performance of an employee's duties.

What Should You do if You Receive an Exposure?

1. Immediately report the incident to your supervisor and to the University's BBP Program Coordinator, Douglas Alexander at 683-4495.

2. Obtain medical care through the University's contracted occupational health care provider, NOWCARE Medical Center, at either one of their two locations listed in this pamphlet.

Note: It is not mandatory that you seek post-exposure medical care, however, the University strongly encourages you to do so. In addition, the Center for Disease Control and Prevention (CDC) recommends that you seek medical care immediately (within two hours) following an exposure.

3. Call NOWCARE to let them know that you will be coming in for post-exposure medical care and consultation. Be sure to tell them that you are an ODU employee.

4. Bring form BBP-2 with you to NOWCARE. This form can be found in Appendix E of the University's BBP Exposure Control Plan. Your supervisor should provide you with a copy of this form. The form should be completed and signed by the attending health care professional and signed by you.

5. Following your medical exam, forward a copy of the completed form BBP-2 to Douglas via campus mail to the Environmental Health & Safety Office or fax to 683-6025.

Note: If you choose not to seek medical care, you must complete form BBP-2 as follows: your name, social security number, date of birth, employee office, post-exposure medical care, and sign and date the form acknowledging that you have been offered consultation and medical care. Forward a copy of the form to Douglas via campus mail to the Environmental Health & Safety Office or fax to 683-6025.

If you choose not to seek immediate medical care you may do so anytime thereafter, however, the University strongly encourages you to seek medical care immediately following an exposure per the CDC's recommendation.

6. As soon as possible after the exposure (i.e. next work day) complete form BBP-1, which can be found in Appendix E of the University's BBP Exposure Control Plan. Your supervisor should provide you with this form. Forward the completed form to Douglas via campus mail to the Environmental Health & Safety Office or fax to 683-6025.

7. As soon as possible after the exposure (i.e. next work day), contact the University's Worker's Compensation representative at 683-3051 to file a report of injury.

What should you do if you receive an exposure outside of NOWCARE's normal operating hours?

1. Immediately report the incident to your supervisor and EHS at 683-4495.

2. Contact a NOWCARE medical provider, at 423-4500. NOWCARE will provide you with instructions as to which actions you should take next.

3. Complete forms BBP-2 and BBP-1 as instructed previously in this pamphlet.

HIV, Hepatitis B and Hepatitis C testing for source individual

1. The source individual (if known) will be given the opportunity to have their blood tested for HIV, HBV and HCV. The source individual must grant permission for the testing, as he/she is not required to have the testing. The source individual should be sent for testing immediately following an exposure. The University will cover the cost of the testing.

2. Sentara Healthcare laboratory, which is located in Sentara Norfolk General Hospital, 2nd floor of the Ralph Building (follow the signs for the lab), will conduct the testing. The lab provides services 24-hours per day, seven days per week.

3. The supervisor should notify Sentara lab at 668-1924 (6am-6pm) or 668-1968 (after 6pm) that an individual is coming in for testing.
CONTACT INFORMATION

ODU BBP Program Coordinator

Douglas Alexander
Environmental Health & Safety Office
5255 Hampton Blvd, Sproul Hall Suite 2501
Norfolk, VA 23529
Office Phone: 683-4495
Cell Phone: 403-0020
Fax: 683-6025
E-mail: dalexan4@odu.edu

NOWCARE Medical Centers

NOWCARE I
(0.3 Mile from Military Hwy)
6632 Indian River Road
VA Beach, VA 23464
Phone: 424-4300
Hours of operations:
M-F 8:00 AM - 8:00 PM
Sat 9:00 AM - 5:00 PM

NOWCARE II
7924 Chesapeake Boulevard
Norfolk, VA 23518
Phone: 587-1700
Hours of operations:
M-F 8:00 AM - 8:00 PM
Sat 9:00 AM - 3:00 PM
Sun 10:00 AM - 3:00 PM

NOWCARE After-Hours Medical Provider

424-4300

Bloodborne Pathogens

Procedures for Evaluation and Follow-up of Exposure Incidents
(rev. August 2013)

Old Dominion University
Environmental Health & Safety Office
After-Hours Assistance (Health Services)

ODU Student Health Services is open Monday through Friday from 8:00 AM until 5:00 PM with extended hours Monday through Thursday until 7:00 PM during the fall & spring semesters. Summer hours are Monday through Friday 8 AM until 5 PM. If you need assistance after hours, please call ODU Public Safety at (757) 683-4000. Their dispatcher will call the on-call clinician who will return your call.

If you have an emergency, please call 911 or ODU Public Safety at (757) 683-4000.

Local Hospitals
There are two local hospitals with emergency facilities offering care 24 hours a day/365 days a year.

Sentara Norfolk General Hospital
600 Gresham Drive
Norfolk, VA 23507
(757) 388-3551 (Emergency Room)
Directions: From ODU, go South on Hampton Blvd. for 1.8 miles. Bear left and go Southwest for 200 feet to Gresham Drive. Bear left on Gresham Drive and go South for 0.2 miles to 600 Gresham Drive.

Bon Secours DePaul Medical Center
150 Kingsley Lane
Norfolk, VA 23507
(757) 889-5111 (Emergency Room)
Directions: From ODU, go South on Hampton Blvd. to 38th Street. Turn left on 38th Street to Granby Street. Turn left on Granby Street and go north for 1.2 miles to Kingsley Lane. Turn left on Kingsley Lane and go west for 0.2 miles to 150 Kingsley Lane.

Urgent Care Facilities
The following is a list of urgent care facilities. Please call for directions and to verify hours. All urgent care centers listed offer X-rays at their facility.

Ghent Station Medical Associates
930 W. 21st, Suite #100
Norfolk, VA 23517
(757) 622-8358
M-F 7:00 a.m. - 5:00 p.m.
Sat. 8:00 a.m. - 5:00 p.m.

Minor Emergency Care and Family Care
1368 N. Great Neck Road
Virginia Beach, VA 23454
(757) 412-0006
M-F 8:00 a.m.- 6:00 p.m.
Sat. 9:00 a.m. - 4:00 p.m.
Sun 10:00 a.m. - 4:00 p.m.

Fort Norfolk Plaza Urgent Care
301 Riverview Ave.
Norfolk, VA 23510
(757) 333-0284
M-F 8:00 a.m. - 5:00 p.m.

Patient First
1239 Cedar Rd
Chesapeake, VA 23322
(757) 549-9935
8:00 a.m. - 10:00 p.m. daily

Patient First
332 Newtown Road
Virginia Beach, VA 23462
(757) 473-8400
8:00 a.m. - 10:00 p.m. daily

Sentara Urgent Care
1326 E. Little Creek Rd.
Norfolk, VA 23518
(757) 583-6338
8:00 a.m. - 8:00 p.m. daily

Sentara Urgent Care
747 J. Clyde Morris Blvd.
Newport News, VA 23601
(757) 599-6117
8:00 a.m. - 8:00 p.m. daily
### CDC Recommendations for Immediate Postexposure Interventions

From 57(RR06) available at: https://www.cdc.gov/mmwr/preview/mmwrhtml/rr5706a1.htm

<table>
<thead>
<tr>
<th>Type of Injury or Blood Exposure</th>
<th>HBV†</th>
<th>HCV‡</th>
<th>HIV§</th>
<th>Tetanus</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category 1. Penetrating injury/nonintact skin†</td>
<td>For persons for whom no reliable history of hepatitis B vaccination exists and for whom no contraindication to vaccine is known, initiate hepatitis B vaccine series, preferably within 24 hours and not later than 7 days.</td>
<td>No prophylaxis recommended. Consider testing (immediately or during a follow-up referral) if exposure is to a known or likely HCV-infected source or multiple sources. If testing is performed, obtain baseline (within 7-14 days) and follow-up (4-6 months) anti-HCV and ALT.</td>
<td>Generally, no PEP is warranted; consider only if exposure is to a known or highly likely HIV-infected source.</td>
<td>Clean and debride wound as appropriate. Give age-appropriate tetanus toxoid vaccine if date of receipt of last dose is unknown. No known history of vaccine contraindication exists. May consider administering Td (in addition to tetanus toxoid) if no reliable history of tetanus primary series exists (always use separate syringes and separate administration sites). If Td is in short supply, persons aged ≥60 yrs and immigrants from regions other than Europe or North America are most likely to derive benefit.</td>
</tr>
<tr>
<td>Category 2. Mucous membranes†‡</td>
<td>For persons for whom no reliable history of hepatitis B vaccination exists and for whom no contraindication to vaccine is known, initiate hepatitis B vaccine series, preferably within 24 hours and not later than 7 days.</td>
<td>Generally no action. Testing for early identification of HCV infection following mucous membrane exposure should be considered only in settings in which exposure to an HCV-infected source is known or thought to be highly likely.</td>
<td>Generally, no PEP is warranted. Consider only if exposure is to a known or highly likely HIV-infected source.</td>
<td>No action</td>
</tr>
<tr>
<td>Category 3. Superficial exposure of intact skin†¶</td>
<td>No action</td>
<td>No action</td>
<td>No action</td>
<td>No action</td>
</tr>
</tbody>
</table>

* † Hepatitis B vaccine.
†† Hepatitis C vaccine.
‡ Penetration of skin by a sharp object that was in contact with blood, tissue, or other potential infectious body fluid (i.e., semen, vaginal fluid, cerebrospinal fluid, synovial fluid, pleural fluid, peritoneal fluid, pericardial fluid, amniotic fluid or any other visibly bloody body fluid or tissue) before penetration. Nonintact skin exposure is defined as contact of nonintact skin with any of these potentially infectious tissues or fluids.
§ Postexposure prophylaxis. HIV PEP rarely is indicated. If PEP is indicated, the following procedures should be undertaken: 1) PEP should be started as soon as possible after exposure, without waiting for HIV test results; 2) PEP should be continued for 4 weeks; 3) Specimens should be collected for baseline testing, including HIV, complete blood count, liver function, creatinine, and pregnancy tests; 4) testing should be conducted in accordance with applicable state and local laws; 5) expert consultation should be obtained; sources of expert consultation include local persons with infectious diseases, hospital epidemiology, or occupational health expertise; local, state, or federal public health authorities; PEP line (available 24 hours/day via telephone 1-888-448-4911 [preferred] or online at http://www.nccoc.ucsf.edu/Helplines/PEPline.html); or the HIV/AIDS Rx information service at http://aidsinfo.nih.gov); 6) PEP should be continued for 4 weeks; 7) the patient should be discharged with written information, a 5-7 day supply of medication, and a follow-up appointment; and, 8) an HIV specialist should reassess the patient’s condition within 72 hours.
¶ Contact of mucous membranes (i.e., eyes, nose, mouth, or inner surfaces of the gut or genital areas) with blood, tissue, or other potential infectious body fluid (i.e., semen, vaginal fluid, cerebrospinal fluid, synovial fluid, pleural fluid, peritoneal fluid, pericardial fluid, amniotic fluid or any other visibly bloody body fluid or tissue).
‡‡ Superficial exposure of intact skin (but not of mucous membranes) with blood, tissue, or other potential infectious body fluid (i.e., semen, vaginal fluid, cerebrospinal fluid, synovial fluid, pleural fluid, peritoneal fluid, pericardial fluid, amniotic fluid or any other visibly bloody body fluid or tissue).
### TABLE 3. Summary of recommendations for issues in special situations potentially associated with immediate prophylactic intervention

<table>
<thead>
<tr>
<th>Issue/Situation</th>
<th>HBV†</th>
<th>HCV‡</th>
<th>HIV§</th>
<th>Tetanus</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vaccine supply shortage</td>
<td>Local public health departments, mutual aid agreements, or commercial vendors should be relied on. If local capacity is exceeded, local public health authorities should work through established communication channels with CDC and others.</td>
<td>NA ‡</td>
<td>NA</td>
<td>Age-appropriate vaccines are preferred. If age-appropriate vaccine supply is expended, any tetanus vaccine formulation may be used, as the tetanus toxoid content is adequate for tetanus prophylaxis in any age group. In this setting, the benefit of supplying tetanus prophylaxis outweighs the potential for adverse reactions from formulations from a different age indication. Local public health departments, mutual aid agreements, or commercial vendors should be relied on. If local capacity is exceeded, local public health authorities should work through established communication channels with CDC and others.</td>
</tr>
<tr>
<td>Counseling</td>
<td>Exposed persons should refrain from donating blood, plasma, organs, tissue, or semen.</td>
<td>Exposed persons should refrain from donating blood, plasma, organs, tissue, or semen.</td>
<td>Exposed persons should refrain from donating blood, plasma, organs, tissue, or semen. In addition, persons known to be exposed to HIV should avoid breastfeeding and organ/tissue donation and take precautions to avoid sexual transmission until HIV infection has been ruled out.</td>
<td>NA</td>
</tr>
<tr>
<td>HIV PEP** is initiated</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>HIV PEP rarely is indicated if it is recommended procedure should be followed. ††</td>
</tr>
</tbody>
</table>

* Hepatitis B vaccine.  
† Hepatitis C vaccine.  
‡ Human immunodeficiency virus.  
§ Not applicable.  
** Postexposure prophylaxis.  
†† If PEP is indicated, the following procedures should be undertaken: 1) PEP should be started as soon as possible after exposure, without waiting for HIV test results; 2) PEP should be continued for 4 weeks; 3) specimens should be collected for baseline testing, including HIV, complete blood count, liver function, creatinine, and pregnancy tests; 4) testing should be conducted in accordance with applicable state and local laws; 5) expert consultation should be obtained; sources of expert consultation include local persons with infectious diseases, hospital epidemiology, or occupational health expertise; local, state, or federal public health authorities; PEPline (available 24 hours/day at telephone 1-888-448-4911 [preferred] or at http://www.ncc.cdc.gov/Hofflines/PEPline.html); the HIV/AIDS Rx information service, available at http://aidsinfo.nih.gov; 6) PEP should be continued for 4 weeks; 7) the patient should be discharged with written information, a 5-7 day supply of medication, and a follow-up appointment; and 8) an HIV specialist should reassess the patient’s condition within 72 hours.
OLD DOMINION UNIVERSITY
MEDICAL TECHNOLOGY/MEDICAL LABORATORY SCIENCE PROGRAM

Affective Behavior/Professional Characteristics Policy

Rationale:
While it is difficult to define the subtle, intangible qualities that identify the professional Medical Laboratory Scientist, an attempt must be made to define and convey these affective behaviors to program students. Preclinical and Clinical students will be evaluated based on the Affective Behavior/Professional Characteristics Objectives and the levels of expected achievement outlined in Evaluation Guidelines. Behaviors that do not meet established criteria indicate that students have not satisfactorily completed the requirements and expectations of the course/program. Ratings below or above criteria must be accompanied by supporting statements in the comment section of the evaluation form. Any failure to meet criteria should be addressed with constructive remediation prior to the final, summative evaluation.

Objectives:
The student will be able to:

POLICY COMPLIANCE
1. Demonstrate an appreciation for the value and necessity of maintaining an orderly and safe laboratory environment by adhering to OSHA safety regulations, program and facility safety policies, and to practices outlined by the instructor.
2. Display professional/workplace responsibility by adhering to guidelines and policies outlined by the program, individual courses, and affiliated clinical facilities.

PROMPTNESS/ATTENDANCE
3. Develop the highly valued professional characteristic of maintaining a blemish free attendance and punctuality record by reporting to classes, laboratories, and assigned clinical sites on time, notifying instructors/supervisors promptly when absence is anticipated and meeting all established deadlines.

INITIATIVE
4. Display appropriate initiative and motivation in all academic and practical performances by completing both assigned and unsolicited tasks satisfactorily, addressing problems or interferences appropriately.

RESPONSIBILITY
5. Demonstrate an appreciation of the role of active participation in the education process by displaying preparedness and engagement in the classroom, laboratory, and clinical learning environments.
6. Display professional responsibility by accepting direction, adapting to the learning environment, and completing required assignments as outlined.
RELIABILITY

7. Demonstrate the ability to maintain intellectual and emotional stability and maturity under stress, by producing results that meet appropriate performance standards.

8. Demonstrate, by attitude and performance, an appreciation of the value and importance of procedural consistency and technical accuracy and precision.

PROFESSIONAL /WORKPLACE DEMEANOR

9. Display appropriate professional/workplace decorum during both the preclinical and clinical phases of the program by complying with the guidance, instructions, and direction outlined by faculty and clinical preceptors/mentors.

10. Comply with accepted rules of conventional professional/workplace behavior during both the preclinical and clinical phases of the program by exhibiting a cooperative, respectful, and collegial demeanor in interactions with faculty, classmates, clinical preceptors/mentors, and patients.

INTEGRITY

11. Display, through appropriate professional/workplace behavior and performance, recognition and respect for honest laboratory testing, patient confidentiality, and high quality patient outcomes.

12. Comply with the Old Dominion University Honor Code by submitting only work which is the product of one’s own effort (I pledge... to be noted on submitted work).
## Affective Behavior/Professional Characteristics Evaluation Guidelines

<table>
<thead>
<tr>
<th>Behavior/Professional Characteristic</th>
<th>Evaluation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Exceeded Standards</td>
</tr>
<tr>
<td><strong>POLICY COMPLIANCE</strong></td>
<td>No instances in which laboratory safety and maintenance policies were not adhered to</td>
</tr>
<tr>
<td></td>
<td>No instances in which guidelines and policies were not adhered to</td>
</tr>
<tr>
<td><strong>PROMPTNESS/ATTENDANCE</strong></td>
<td>No absences or failure to notify when absent</td>
</tr>
<tr>
<td></td>
<td>No tardiness</td>
</tr>
<tr>
<td></td>
<td>No instance of failure to meet deadlines</td>
</tr>
<tr>
<td><strong>INITIATIVE</strong></td>
<td>No instances of unwillingness to complete tasks or seek problem resolution</td>
</tr>
<tr>
<td></td>
<td>Several instances of willingness to attack and or complete unsolicited tasks</td>
</tr>
<tr>
<td><strong>RESPONSIBILITY</strong></td>
<td>No instances of unpreparedness or disengagement</td>
</tr>
<tr>
<td></td>
<td>No instances of failure to adapt or accept direction</td>
</tr>
<tr>
<td></td>
<td>No instances of failure to complete assignments as outlined or directed</td>
</tr>
<tr>
<td>Behavior/Professional Characteristic (cont.)</td>
<td>Evaluation</td>
</tr>
<tr>
<td>-------------------------------------------</td>
<td>------------</td>
</tr>
<tr>
<td></td>
<td>Exceeded Standards</td>
</tr>
<tr>
<td>RELIABILITY</td>
<td>No instances of intellectual or emotional instability that impairs performance</td>
</tr>
<tr>
<td></td>
<td>No instances of procedural inconsistency</td>
</tr>
<tr>
<td></td>
<td>No instances of inappropriate regard for technical accuracy or precision</td>
</tr>
<tr>
<td>PROFESSIONAL/WORKPLACE DEMEANOR</td>
<td>No instances in which there is a display of inappropriate professional/workplace decorum</td>
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<td></td>
<td>No instances of failure to follow directions related to professional/workplace behavior</td>
</tr>
<tr>
<td></td>
<td>No instances in which there is a lack of cooperation, respect or collegiality</td>
</tr>
<tr>
<td>INTEGRITY</td>
<td>No instances of inappropriate professional/workplace dishonesty, disregard for quality patient care, confidentiality or violation of academic integrity</td>
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Old Dominion University  
MEDICAL TECHNOLOGY/MEDICAL LABORATORY SCIENCE PROGRAM  
Evaluation of Affective Behavior/Professional Characteristics Form

<table>
<thead>
<tr>
<th>Affective Behavior/Professional Characteristic</th>
<th>Evaluation</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Policy Compliance</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Safety, administrative and course policies</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Promptness/Attendance</td>
<td></td>
<td></td>
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<tr>
<td>Punctuality, prompt notification, adherence to deadlines</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Initiative</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Motivation, completion of tasks, pursuit of unassigned tasks, resolution of problems</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Responsibility</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Academic preparedness, engagement, acceptance of direction, adaptability, completion of assignments</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reliability</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stability, production of results, adherence to practice standards, consistency</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Professional/Workplace Demeanor</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Professional/workplace decorum, attitude, temperament, cooperation, respect, collegiality</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Integrity</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Professional/workplace honesty, respect for quality patient outcomes, adherence to HIPPA guidelines and academic honor code</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Note: May need multiple forms for constructive, effective use of this tool. Early identification of deficiencies is important so that the student is able to remediate identified deficiencies prior to the summative, final evaluation.*

Student Name: __________________________________________ Date: ________________________ Course #:______________________________

Site: ______________________________________       Evaluator: __________________________________________

Student Comments: ________________________________________________________________

Student’s signature: ________________________________________________________________

Instructor’s signature: ____________________________

ODU MT Practicum Handbook, June 2017  147
### Old Dominion University

Medical Technology/Medical Laboratory Science Program

**Clinical Practicum Grade Sheet**

<table>
<thead>
<tr>
<th>Student Name</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Course Dates</td>
<td></td>
</tr>
<tr>
<td>Course Number &amp; Name</td>
<td></td>
</tr>
<tr>
<td>Clinical Site</td>
<td></td>
</tr>
</tbody>
</table>

**ALL CLINICAL SITES MUST COMPLY WITH THE FOLLOWING GRADING GUIDELINES:** The three written/online examinations provided by ODU are **REQUIRED** for students at all clinical sites. Proctoring is arranged by ODU faculty. Although the types of practical examinations may vary by discipline, **three (3) practical examinations are REQUIRED.** The three practical examinations may include written evaluation items. Both types should be sufficient to evaluate a full range of expected practical skills. Clinical instructors enter grades for the oral presentation and practical tests below. Final practicum grade is computed by ODU faculty.

**Written/Online Tests (grade x weight) | Practical Tests (grade x weight)**
--- | ---
Pre-test x .10 | #1 x .25
Test 1 x .35 | #2 x .25
Final x .45 | #3 x .50
Oral Presentation x .10 | |
Written Test Grade | Practical Test Grade

**Final Grade Requirements**

A minimum of 76% is required in both the written and practical components. A passing grade (P) for professional characteristics is required in order to receive a grade of C or better for the course. Any student with a grade below a C will be required to repeat the course.

**Final Grade Computation**

<table>
<thead>
<tr>
<th>Final Grade Computation</th>
<th>Grading Scale</th>
</tr>
</thead>
<tbody>
<tr>
<td>Written/Online Test Grade</td>
<td>X .50 = A - 93 -100%</td>
</tr>
<tr>
<td>Practical Test Grade</td>
<td>X .50 = B - 86 - 92%</td>
</tr>
<tr>
<td>Professional Characteristics</td>
<td>P/F* P C - 76 - 85%</td>
</tr>
<tr>
<td>D - 65-75%</td>
<td></td>
</tr>
<tr>
<td>Final Grade</td>
<td>F - Below 65%</td>
</tr>
</tbody>
</table>

*P = exceeded or met all Characteristics; F = Failed to meet one or more characteristics

Instructor Comments:

Instructor Signature ______________________ Date ____________

---

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ALL CLINICAL SITES MUST COMPLY WITH THE FOLLOWING GRADING GUIDELINES:

The three written/online examinations provided by ODU are **REQUIRED** for students at all clinical sites. Proctoring is arranged by ODU faculty. Although the types of practical examinations may vary by discipline, **three (3) practical examinations are REQUIRED.** The three practical examinations may include written evaluation items. Both types should be sufficient to evaluate a full range of expected practical skills. Clinical instructors enter grades for the oral presentation and practical tests below. Final practicum grade is computed by ODU faculty.

### Written/Online Tests (grade x weight) vs. Practical Tests (grade x weight)

<table>
<thead>
<tr>
<th>Written/Online Tests (grade x weight)</th>
<th>Practical Tests (grade x weight)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-test 76 x .10 7.6</td>
<td>#1 85 x .25 21.25</td>
</tr>
<tr>
<td>Test 1 85 x .35 29.75</td>
<td>#2 92 x .25 23</td>
</tr>
<tr>
<td>Final 87 x .45 39.15</td>
<td>#3 98 x .50 49</td>
</tr>
<tr>
<td>Oral Presentation 91 x .10 9.1</td>
<td></td>
</tr>
<tr>
<td>Written Test Grade 85.6</td>
<td>Practical Test Grade 93.25</td>
</tr>
</tbody>
</table>

**Final Grade Requirements**

A minimum of 76% is required in both the written and practical components. A passing grade (P) for professional characteristics is required in order to receive a grade of C or better for the course. Any student with a grade below a C will be required to repeat the course.

### Final Grade Computation

<table>
<thead>
<tr>
<th>Written/Online Test Grade 85.6</th>
<th>X .50 =</th>
<th>A - 93 -100%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Practical Test Grade 93.25</td>
<td>X .50 =</td>
<td>B - 86 - 92%</td>
</tr>
<tr>
<td>Professional Characteristics</td>
<td>P/F*</td>
<td>P</td>
</tr>
<tr>
<td></td>
<td></td>
<td>C - 76 - 85%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>D - 65-75%</td>
</tr>
<tr>
<td>Final Grade 89 = B</td>
<td>F</td>
<td>F - Below 65%</td>
</tr>
</tbody>
</table>

*P = exceeded or met all Characteristics; F = Failed to meet one or more characteristics

**Instructor Comments:**

Instructor Signature ____________________________ Date ____________
Old Dominion University  
MEDT 404, 406, 454, & 452 Clinical Practica  
Student Oral Presentations Evaluation Form

Presenter’s Name__________________________________________________________

Title______________________________________________________________________

<table>
<thead>
<tr>
<th>Rating Scale:</th>
<th>Excel. = 5</th>
<th>Good = 4</th>
<th>Sat. = 3</th>
<th>&lt; Sat. = 2</th>
<th>Poor = 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Criteria:</td>
<td>Exceeds</td>
<td>All Met</td>
<td>Most Met</td>
<td>Some Met</td>
<td>Few Met</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Did the presenter provide an introduction?</td>
<td></td>
</tr>
<tr>
<td>2. Was the subject presented in a logical and organized manner?</td>
<td></td>
</tr>
<tr>
<td>3. Were printed materials and/or media used effectively?</td>
<td></td>
</tr>
<tr>
<td>4. Did the presenter effectively encourage participation?</td>
<td></td>
</tr>
<tr>
<td>5. Was the information presented valuable to clinical laboratory science and laboratory medicine?</td>
<td></td>
</tr>
<tr>
<td>6. Did the presenter clearly relate the impact on, and the relevance to the practice of laboratory medicine?</td>
<td></td>
</tr>
<tr>
<td>7. Was the presenter prepared?</td>
<td></td>
</tr>
<tr>
<td>8. Did the presenter enunciate clearly?</td>
<td></td>
</tr>
<tr>
<td>9. Did the presenter summarize and achieve effective closure?</td>
<td></td>
</tr>
<tr>
<td>10. What is the presenter’s overall effectiveness?</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Total</th>
<th></th>
</tr>
</thead>
</table>

Grade = Total x 2

Note: Report presentation grade on Practicum Grade Form.
Old Dominion University
Medical Technology/Medical Laboratory Science Program

COGNITIVE/PSYCHOMOTOR COMPETENCIES

CLINICAL ROTATION ACTION PLAN FORM

Rotation/Discipline __________________________ Site ______________________________

Instructor:
1. Document specific skill student is deficient in the chart below.
2. Explain error to student and discuss and/or demonstrate correct method.

Student:
1. Review written procedure.
2. Explain procedure to instructor.
3. Perform procedure under direct supervision.
4. After repeating the procedure the instructor will check the appropriate column, “A for acceptable or “U” for unacceptable.
5. If “U” is checked, contact the Program Director or Education Coordinator immediately to schedule a meeting.
6. Upon completion of the Action Plan, both the student and instructor will initial and date the form.

<table>
<thead>
<tr>
<th>Student Name:</th>
<th>Instructor:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Date:</th>
<th>Competency Remediated</th>
<th>A</th>
<th>U</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Competency number:</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Competency number:</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Competency number:</td>
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<tr>
<td></td>
<td>Competency number:</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Competency number:</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Comments:

Action Plan Successful (circle one): YES NO

Student Signature: __________________________ Date: __________________

Faculty Signature: __________________________ Date: __________________

Note: Please return a copy of the completed form to the Program Director or Education Coordinator (Fax: 757-683-5028)
Old Dominion University
Medical Technology/Medical Laboratory Science Program

Student Evaluation of Clinical Instructors

Students: Please fill out for every clinical instructor and return to ODU Medical Technology office.

<table>
<thead>
<tr>
<th>Site</th>
<th>Practicum Course Number &amp; Name</th>
<th>Date</th>
<th>Clinical Instructor</th>
</tr>
</thead>
</table>

Place an “X” in the appropriate box that best matches your numerical rating of the Instructor based on the characteristics listed below.

<table>
<thead>
<tr>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Sometimes Agree &amp; Disagree</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
<th>Unable To Judge</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>0</td>
</tr>
</tbody>
</table>

1. Organized student experiences for effective and efficient learning
2. Gave clear explanations and directions
3. Exhibited sound knowledge of the content area
4. Showed a strong interest in teaching
5. Complied with course objectives and competencies
6. Was accessible for consultation
7. Encouraged participation in learning activities
8. Evaluated performances objectively
9. Feedback on my performance was provided in a reasonable time
10. Modeled a professional demeanor

Comments:
Old Dominion University  
Medical Technology/Medical Laboratory Science Program  
Student Evaluation of the Clinical Practicum/Rotation Program

Place an “X” in the appropriate box that best matches your numerical rating of the entire Clinical Practicum/Rotation Program based on the characteristics listed below. Please return to the Medical Technology office.

<table>
<thead>
<tr>
<th></th>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Sometimes Agree &amp; Disagree</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
<th>Unable To Judge</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. The clinical practicum/rotation program was organized.</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>2. The practicum/rotation program expectations were clearly outlined.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Exposure to more than one clinical site was a beneficial learning experience.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Exposure to fewer clinical sites was a beneficial learning experience.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. University faculty were supportive and helpful during the clinical practicum/rotation period.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. The laboratory practitioners that I encountered were advocates of the profession.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. The practicum/rotation course objectives were clearly defined.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. The length of the practicum/rotation courses was sufficient to complete course requirements.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. University MT courses prepared me for the clinical practicum/rotation courses.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10. The practicum/rotation courses prepared me for entry-level practice.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Comments:
Old Dominion University  
Medical Technology/Medical Laboratory Science Program  
Student Records Release Authorization Form

I hereby authorize ____________________________________________  
(Faculty Member)

to review my records for the purpose of recommending me for employment and/or further education. I give permission for the following information to be disclosed: grades, awards, class standing, dates of attendance, participation in official class activities, and any assessments of class and/or clinical participation.

This authorization covers both written and oral requests.

For responses that require a competed form or the generation of a letter,

________________________ I waive the right to receive a copy of the letter of recommendation from this faculty member.

________________________ I do not waive the right to receive a copy of the letter of recommendation from this faculty member.

Student Name ________________________________________________  
(Please Print)

Student Signature ________________________________________________

Date________________________

Please return the signed form and one copy to:

Faculty named above  
Medical Technology/Medical Laboratory Science Program  
School of Medical Diagnostic & Translational Sciences  
2118 Health Sciences Building  
Old Dominion University  
Norfolk, VA 23529
Old Dominion University  
Medical Technology/Medical Laboratory Science Program  
Alumni Registration Form  
(to be provided to Program Director prior graduation)

<table>
<thead>
<tr>
<th>Name</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>UIN</td>
<td></td>
</tr>
<tr>
<td>Address</td>
<td></td>
</tr>
<tr>
<td>Phone</td>
<td>Home</td>
</tr>
<tr>
<td></td>
<td>Work</td>
</tr>
<tr>
<td></td>
<td>Cell</td>
</tr>
<tr>
<td>FAX</td>
<td></td>
</tr>
<tr>
<td>Non-ODU E-mail Address</td>
<td></td>
</tr>
<tr>
<td>Date of Graduation</td>
<td></td>
</tr>
<tr>
<td>Employer</td>
<td></td>
</tr>
</tbody>
</table>

Was employment secured while completing the Clinical phase of your MT courses?

Yes______________  No ______________

Are you interested in participating in the ODU MT Alumni activities?

Yes______________  No ______________
Student Handbook Contact Information

Comments and questions regarding the content of the Student Manual may be directed to:

Barbara Kraj, PhD, MLS(ASCP)CM, MBCM
Associate Professor and Program Director
Medical Technology
School of Medical Diagnostic & Translational Sciences
Old Dominion University
College of Health Sciences
4608 Hampton Blvd, Rm 2122
Norfolk, VA 23508
757-683-6039
bkraj@odu.edu