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2015-2016
rev April 2015
Clinical education is an integral part of the Program in Medical Laboratory Science and is designed to provide students with an opportunity to integrate and apply previously acquired knowledge and technical skills in actual clinical settings. Under the guidance of experienced Medical Laboratory Scientists and other qualified laboratory personnel and health professionals, students learn more about diagnostic test procedures, quality control methods and programs, and instrumentation in the clinical laboratory. They also gain an understanding of the roles and functions of the Medical Laboratory Scientist and other health care professionals.

Clinical education practica are applied learning experiences during which the student should:

1. practice skills learned in student laboratories
2. practice skills in problem-solving
3. perform quality control procedures
4. learn to adapt easily to new procedures
5. operate and maintain various instruments used in routine clinical testing
6. understand the responsibilities, roles, and functions of the Medical Laboratory Scientist
7. develop organizational skills
8. report accurate and precise results
9. relate test results to patient conditions

Clinical practica courses are conducted in the affiliated laboratories of the program, where students learn by participation in the workload of a supervising technologist. Emphasis in each course is on: (1) organization of work, (2) use of automated instrumentation, (3) the relation of laboratory results to patient diagnosis and management, and (4) the establishment and use of programs for quality control and preventive maintenance of laboratory instruments. Matriculation in practicum courses is permitted only after successful completion of all designated prerequisite medical laboratory science courses.

To prepare students to take the Medical Laboratory Science board examination administered by the Board of Certification of the American Society for Clinical Pathology, this handbook concludes with information about examination content. However, the granting of the degree or certificate is not contingent upon the student’s passing any type of external certification or licensure examination.
## COURSE NUMBERS AND TITLES:

(Students enrolled in one-year Baccalaureate Program should register for these courses for the academic terms indicated)

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
<th>Term</th>
</tr>
</thead>
<tbody>
<tr>
<td>MT 412</td>
<td>Clinical Practicum I</td>
<td>4</td>
<td>Summer I Term</td>
</tr>
<tr>
<td>MT 422</td>
<td>Clinical Practicum II</td>
<td>4</td>
<td>Summer I Term</td>
</tr>
<tr>
<td>MT 442</td>
<td>Clinical Practicum III</td>
<td>4</td>
<td>Summer II Term</td>
</tr>
<tr>
<td>MT 454</td>
<td>Clinical Practicum IV</td>
<td>4</td>
<td>Summer II Term</td>
</tr>
</tbody>
</table>

(Students enrolled in the one-year Professional Master of Science program register for these courses for the academic terms indicated)

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
<th>Term</th>
</tr>
</thead>
<tbody>
<tr>
<td>LS 812</td>
<td>Practicum I: Med. Lab. Science</td>
<td>2</td>
<td>Summer I Term</td>
</tr>
<tr>
<td>LS 813</td>
<td>Practicum II: Med. Lab. Science</td>
<td>2</td>
<td>Summer I Term</td>
</tr>
<tr>
<td>LS 814</td>
<td>Practicum III: Med. Lab. Science</td>
<td>2</td>
<td>Summer II Term</td>
</tr>
<tr>
<td>LS 815</td>
<td>Practicum IV: Med. Lab. Science</td>
<td>2</td>
<td>Summer II Term</td>
</tr>
</tbody>
</table>

(Senior students enrolled in the two-year Baccalaureate Program register for these courses for the academic terms indicated)

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
<th>Term</th>
</tr>
</thead>
<tbody>
<tr>
<td>MT 412</td>
<td>Clinical Practicum I</td>
<td>4</td>
<td>Fall Semester</td>
</tr>
<tr>
<td>MT 422</td>
<td>Clinical Practicum II</td>
<td>4</td>
<td>Fall Semester</td>
</tr>
<tr>
<td>MT 442</td>
<td>Clinical Practicum III</td>
<td>4</td>
<td>Spring Semester</td>
</tr>
<tr>
<td>MT 454</td>
<td>Clinical Practicum IV</td>
<td>4</td>
<td>Spring Semester</td>
</tr>
</tbody>
</table>

(Year 2 students enrolled in the two-year Master of Science Program or Advanced Masters program register for these courses for the academic terms indicated)

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
<th>Term</th>
</tr>
</thead>
<tbody>
<tr>
<td>LS 812</td>
<td>Practicum I: Med. Lab. Science</td>
<td>2</td>
<td>Fall Semester</td>
</tr>
<tr>
<td>LS 813</td>
<td>Practicum II: Med. Lab. Science</td>
<td>2</td>
<td>Fall Semester</td>
</tr>
<tr>
<td>LS 815</td>
<td>Practicum IV: Med. Lab. Science</td>
<td>2</td>
<td>Spring Semester</td>
</tr>
</tbody>
</table>

Practica encompass the clinical areas of Hematology/Coagulation, Urinalysis, Clinical Chemistry, Microbiology, Clinical Immunology, and Immunohematology

### PROGRAM DIRECTOR:
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karen.giordano@jefferson.edu

Messages may also be left at the Department of Bioscience Technologies:  
tel: 215-503-8187; -7844  
fax:215-503-2189  
call 215-503-7844 to report latenesses, sick time, emergencies
ACTIVE CLINICAL AFFILIATE SITES:

Abington Memorial Hospital – Abington, PA
Albert Einstein Medical Center – Philadelphia, PA
American Red Cross – Philadelphia, PA
Aria Health System – Torresdale – Philadelphia, PA
AtlantiCare Regional Medical Center – Pomona and Atlantic City, NJ
Bureau of Laboratory Services, Department of Public Health – Philadelphia, PA
Children’s Hospital Of Philadelphia Microbiology Lab – Philadelphia, PA
Cooper/MD Anderson University Hospital, Camden, NJ
Hahnemann University Hospital – Philadelphia, PA
Health Network Labs, Lehigh Valley Hospital – Allentown, PA
Hospital of the University of Pennsylvania – Philadelphia, PA
Jefferson Hospital for Neuroscience – Philadelphia, PA
Kennedy Health System – Cherry Hill, NJ
Main Line Health Clinical Laboratories, Lankenau Hospital – Wynnewood, PA
Mercy Hospital – Philadelphia, PA
Methodist Hospital – Philadelphia, PA
New Bolton Center Hospital for Large Animals, PennVet – Kennet Square, PA
Our Lady of Lourdes Medical Center – Camden, NJ
St. Mary Medical Center – Langhorne, PA
Thomas Jefferson University Hospitals – Philadelphia, PA
Temple University Hospital – Philadelphia, PA
Veterans’ Administration Medical Center – Philadelphia, PA
Virtua Health, Memorial Campus, Mt. Holly and Voorhees Campus, Voorhees, NJ
Doylestown Hospital, Doylestown, PA

AFFILIATION AGREEMENT AND SERVICE WORK
Contractual affiliation agreements are maintained with all clinical affiliate sites. Each agreement stipulates that the clinical facility must have sufficient staff so that the student does not perform service work in lieu of staff. Students may be employed by clinical affiliates. However, employment must be scheduled outside of scheduled clinical practice hours, and must not conflict with the student’s learning experience and/or performance evaluation.
COURSE DESCRIPTIONS:

MEDICAL TECHNOLOGY 412, 422, 442, 454
Clinical Practica I, II, III, IV (4 each)
Undergraduate practical internships in clinical and/or research laboratories. Students participate in all phases of laboratory functions common to contemporary clinical laboratory practice including, but not limited to, microbiology (routine and specialized procedures in bacteriology, mycology, parasitology, virology and serology), chemistry (routine and specialized procedures in general chemistry, toxicology, therapeutic drug monitoring and chemical immunoassay), hematology (routine and specialized procedures in clinical hematology, coagulation and other biologic fluids), immunohematology (routine and specialized procedures in blood banking and transfusion medicine) and immunopathology (immunodiagnostics, serology). Students also participate in relevant continuing education activities and engage in other professionally-related activities.
Prerequisites: Completion of pre-practicum Medical Laboratory Science and Core Curriculum coursework

LABORATORY SCIENCES 812, 813, 814, 815
Practica I, II, III, IV (2 each)
Graduate internships in affiliated laboratories. Students rotate through all phases of laboratory work and functions in their respective disciplines. Components include practical work experience, participation in and/or observation of specialty area(s), quality assurance and continuing education activities, seminar attendance and adjunct technologies. Advanced master’s students may also expect to participate in undergraduate teaching or management internships.
Prerequisite: Completion of pre-practicum discipline-specific and Core Curriculum coursework

COURSE PHILOSOPHY:
Integration of prior didactic and classroom laboratory education into varied clinical settings prepares students to become effective, professional medical laboratory scientists. The attributes of a professional medical laboratory scientists encompass more than those of diagnostic expertise. Health professionals must be accountable not only for knowledge within their laboratory specialty, but for demonstrating dependable, ethical and disciplined behavior in order to deliver optimal patient care.

COURSE OBJECTIVE(S):
During the Practicums, students must be able to demonstrate competence in preparing and interpreting a variety of clinical specimens, including appropriate documentation which may include working with laboratory information systems. Students must also exhibit appropriate behaviors with respect to interpersonal relationships, dependability, integrity and professionalism. Students will have met the objectives of the Practicum courses by demonstrating competence in:

✓ Conducting themselves in accordance with laboratory policies and procedures at each clinical site.
✓ Exposure to and responsibility for professional behavior of a practicing Medical Laboratory Scientist.
✓ Exposure to and supervised work responsibility in the clinical laboratory, including adjunct diagnostic technologies where available and appropriate.
✓ Accountability for accurate, independent pre-resulting interpretation a variety of clinical specimens.
✓ Participation in staff review of procedures with Medical Laboratory Scientists and Laboratory Directors.
✓ Observation of and participation in laboratory organization, including manual and/or computerized record keeping and reporting systems, quality control and quality assurance procedures and documentation methods, and personal interactions.
COURSE REQUIREMENTS:
Students are required to achieve and maintain pre-determined levels of competence for technical proficiency, professionalism and correlation of theoretical and practical learning during their course of study, including the clinical practicum. Criteria and further explanation of these components can be found in specific sections of this Handbook.

Grades for the Clinical Practicums are based on:
1. Technical performance, as assessed by Clinical Faculty; and
2. Professionalism, as assessed by Clinical Faculty
3. Clinical Examination (if required)

Evaluation of Technical and Professional Performance:
Professional behavior and technical performance are evaluated using an evaluation instrument designed to reflect guidelines and entry-level competencies as outlined in National Accreditation Agency for Clinical Laboratory Science (NAACLS) documents. The documents outline core content that students are expected to achieve on completion of their Medical Laboratory Science program.

This evaluation is organized into three parts: (1) affective behavior while at the rotation site (2) ability to demonstrate basic theoretical and practical knowledge in the various areas of Medical Laboratory Science and (3) technical ability in performing various clinical laboratory procedures (rated on percent competency), including assessment of activities that are in the normal course of the practicum laboratory’s daily routine and that the laboratory’s technical personnel would normally attend (e.g.: seminars/lectures, Journal Clubs, in-service workshops).

Concurrent Course: LS 416 or LS 816: Comprehensive Examination

LS 416/816 is designed as a web-based review and practice examination activity, leading to administration of a modified computer adaptive Comprehensive Examination in the subject area. Students complete readings and submit scheduled quizzes/exams for Instructor evaluation and readiness assessment. Students unable to perform at a minimum level of competence at 4-week intervals can expect to be assigned additional readings, review sources, and/or practice quizzes/tests.

Course Objective for LS 416: On successful completion of this course, students will demonstrate acquisition of knowledge in their discipline at a level sufficient to assure a reasonable expectation of passing their respective national certification and/or qualification examination(s).

Course Objectives for LS 816: On successful completion of this course, graduate students will (1) demonstrate acquisition of knowledge in their discipline at a level sufficient to assure a reasonable expectation of passing their respective national certification and/or qualification examination(s); and (2) demonstrate critical thinking, reasoning and writing skills by completing essays on routine and problematic issues in molecular, clinical laboratory techniques, diagnosis, quality assurance and regulatory requirements.

COURSE GRADING:
A high level of technical proficiency is essential to Medical Laboratory Scientist practice. It is essential that Medical Laboratory Scientists (and therefore Medical Laboratory Scientist students) strive to achieve the highest level of technical performance using current technology and knowledge. The expected level of professional behavior is correspondingly high, to reflect the importance of integrity, judgment and skill required in dealing with patient materials and with other health care practitioners.
Grades for the Medical Laboratory Science Practica courses are calculated using the Student Evaluation Form, i.e. the evaluation of the student by the laboratorian(s) at the clinical site.

Department policy for conversion of numerical grades to letter grades in Practicum Courses is listed below: **For the each of the components the grading scale is:**

<table>
<thead>
<tr>
<th>Grade</th>
<th>Technical/Professional Component</th>
<th>Written Exam Component</th>
<th>Quality Points for Computation</th>
<th>Final Quality Point Range=</th>
<th>Letter Equivalent</th>
</tr>
</thead>
<tbody>
<tr>
<td>A+</td>
<td>98 - &lt;100</td>
<td>98 - &lt;100</td>
<td>4.00</td>
<td>4.00</td>
<td>A+</td>
</tr>
<tr>
<td>A</td>
<td>93 - &lt;98</td>
<td>93 - &lt;98</td>
<td>4.00</td>
<td>4.00</td>
<td>A</td>
</tr>
<tr>
<td>A-</td>
<td>90 - &lt;93</td>
<td>90 - &lt;93</td>
<td>3.7</td>
<td>3.7 - &lt;4.00</td>
<td>A-</td>
</tr>
<tr>
<td>B+</td>
<td>87 - &lt;90</td>
<td>87 - &lt;90</td>
<td>3.3</td>
<td>3.3 - &lt;3.7</td>
<td>B+</td>
</tr>
<tr>
<td>B</td>
<td>83 - &lt;87</td>
<td>83 - &lt;87</td>
<td>3.00</td>
<td>3.00 - &lt;3.3</td>
<td>B</td>
</tr>
<tr>
<td>B-</td>
<td>80 - &lt;83</td>
<td>80 - &lt;83</td>
<td>2.7</td>
<td>2.7 - &lt;3.00</td>
<td>B-</td>
</tr>
<tr>
<td>C+</td>
<td>77 - &lt;80</td>
<td>77 - &lt;80</td>
<td>2.3</td>
<td>2.3 - &lt;2.7</td>
<td>C+</td>
</tr>
<tr>
<td>C</td>
<td>73 - &lt;77</td>
<td>73 - &lt;77</td>
<td>2.00</td>
<td>2.00 - &lt;2.3</td>
<td>C</td>
</tr>
<tr>
<td>C-</td>
<td>70 - &lt;73</td>
<td>70 - &lt;73</td>
<td>1.7</td>
<td>1.7 - &lt;2.00</td>
<td>C-</td>
</tr>
<tr>
<td>D+</td>
<td>67 - &lt;70</td>
<td>67 - &lt;70</td>
<td>1.3</td>
<td>1.3 - &lt;1.7</td>
<td>D+</td>
</tr>
<tr>
<td>D</td>
<td>63 - &lt;67</td>
<td>63 - &lt;67</td>
<td>1.00</td>
<td>1.00 - &lt;1.3</td>
<td>D</td>
</tr>
<tr>
<td>D-</td>
<td>60 - &lt;63</td>
<td>60 - &lt;63</td>
<td>0.7</td>
<td>0.7 - &lt;1.00</td>
<td>D-</td>
</tr>
<tr>
<td>F</td>
<td>&lt;60</td>
<td>&lt;60</td>
<td>0.00</td>
<td>0.00</td>
<td>F</td>
</tr>
</tbody>
</table>

**Weight:** 100% or 50% (if applicable)

**COMPUTATION OF FINAL GRADE:**

A separate percentage grade is calculated for each practicum course. For students in the baccalaureate, BS/MS or professional MS programs the grade is computed as follows: Percentage grades for each evaluation component [General Competencies (50%), Discipline-specific Competencies (50%)]. Percents/grades are determined based on performance in each of the components. The percentage component grades are then converted to letter grades and assigned quality points as indicated in the table above. Quality points are multiplied by the weight for each component and then totaled. The total quality points determine the final letter grade for the clinical course. Please see the “Forms” section at the end of this manual to view the Clinical Summary Evaluation form. Calculated percentage grades are not rounded up or down. Examples of a final practicum grade computation:

<table>
<thead>
<tr>
<th>Component</th>
<th>Percent Earned</th>
<th>Letter Equivalent</th>
<th>Q.P.</th>
<th>x</th>
<th>=</th>
<th>Final Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>General Competencies</td>
<td>81.32%</td>
<td>B-</td>
<td>2.7</td>
<td>.50</td>
<td>1.350</td>
<td></td>
</tr>
<tr>
<td>Discipline-specific Competencies</td>
<td>92.25%</td>
<td>A-</td>
<td>3.7</td>
<td>.50</td>
<td>1.850</td>
<td>3.200 = B</td>
</tr>
</tbody>
</table>

The **minimum passing grade for individual practicum courses is a C- for undergraduate students; B- for graduate students.** Undergraduate students are required to maintain a GPA of at least 2.00; graduate students are required to maintain a GPA of at least 3.00. See the School Catalog for further information regarding program requirements on academic performance.
Definitions:

Unsafe conduct: action(s) which poses a potential threat to the well-being, health or safety of patients, faculty, health care workers, fellow students, or self.

Unprofessional conduct: malicious, intentional or negligent action(s) which fall below, compromise or disregard the practice and ethical standards of the professional discipline, the health care community, and/or the educational climate.

Unsatisfactory performance: knowledge, skill(s) and/or time-in-practice insufficient to meet the minimum competencies, objectives, performance criteria, or scheduled experiences of the clinical practicum.

The determination of unsatisfactory performance, unprofessional conduct or unsafe conduct will be made by the faculty, who will determine when or if a student will be removed from or return to clinical or laboratory practice, the condition(s) for doing so, and the level of clinic or laboratory activity permitted. Depending on the severity of the incident(s) and/or number of prior incidents, the faculty's sanctions may result in dismissal from the program and/or department; repeating the clinical course; mandatory clinical time extensions; and/or remedial instruction prior to readmission to the department or re-entry into clinical or laboratory courses.

Department recommendations for dismissals based on clinical performance are subject to review and approval by the Committee on Student Promotions. Students who wish to appeal a Departmental action, including a Departmental or Program dismissal, may do so by following the provisions of the Grade Appeal Protocol (see School Catalog, and Student Handbook).

POLICY FOR UNPROFESSIONAL OR UNSAFE CLINICAL/RESEARCH LABORATORY CONDUCT

To successfully complete each practicum course, students are expected to demonstrate clinical and laboratory competencies consistent with the policies and standard procedures taught in program courses and described in course syllabi, the College’s Catalog and Student Handbook, and the Practicum Handbook. If, in the judgment of a clinical and/or program faculty member, the student demonstrates behavior that is detrimental to the well-being of patients, fellow students, faculty members or him/herself, the student's clinical laboratory activities will be terminated immediately. Examples of such unprofessional or unsafe conduct include, but are not limited to:

1. tampering with, destruction or theft of equipment, specimens or teaching materials;
2. verbally abusive, physically threatening or harmful behavior;
3. falsification of documentation (laboratory or student records);
4. gross interference with the educational process or health care services;
5. gross impairment (physical or cognitive) by illicit or prescription drugs;
6. inappropriate or unauthorized use of laboratory equipment, supplies, reagents, data, laboratory information systems, or communications systems;
7. unsupervised clinical practice or unauthorized presence in a laboratory facility;
8. creating unnecessary risk of exposure to or harm from environmental, chemical- and/or bio-hazards; and
9. unauthorized, unreported and/or excessive absence during scheduled clinic time.
10. non-compliance with the work rules, policies and/or procedures of the laboratory and/or institution.
(11) non-compliance with HIPAA, CLIA, FDA or other mandated regulatory programs, as applicable to students.

**POLICY FOR UNSATISFACTORY CLINICAL/RESEARCH PERFORMANCE**

The minimum passing grade for practicum courses is C- (B- for graduate). Students demonstrating unsatisfactory clinical performance will earn a grade less than C- (B- for graduate). The letter grades of I (Incomplete) or IP (In progress) will not be used to extend an otherwise unsatisfactory rotation or practicum course.

A student who demonstrates unsatisfactory performance in a clinical practicum course must repeat that clinical course. The student will earn a grade of C- (B- for graduate) if he/she passes the repeated practicum course, or a grade of F if he/she does not pass. The repeat grade will be used to compute the grade point average. Students may repeat only one practicum course in this manner.

Scheduling of the repeat rotation or clinical course is subject to availability of an appropriate clinical affiliate site and adequate clinical supervision. It may be necessary for the student to wait until a rotation site becomes available. Unsatisfactory performance in the repeated rotation or clinical course may result in dismissal from the Department, in accordance with the Department's requirements for academic, clinical and technical standards (see Catalog).

**EFFECT OF POLICIES ON PROGRAM COMPLETION**

Students must recognize that penalties for unsafe, unprofessional and unsatisfactory performance; course failure; repeated courses; dismissals; make-up time; or additional assignments are likely to delay scheduled completion of program requirements, and may jeopardize scheduled eligibility for graduation, registry certification, and/or subsequent employment.
1. SCHEDULING AND ASSIGNMENT OF PRACTICUM ROTATIONS

Practicum rotations are scheduled to assure (1) a broad variety of Practicum environments; (2) adequate supervision, staff interaction and representative caseload; (3) a reasonable expectation that students are able to travel to their assigned sites; and (4) that to the extent possible, student site preferences are considered during scheduling. Students may be offered the opportunity to make a preliminary selection of preferred rotation sites. In most cases, students are assigned to sites for which they have indicated a preference. However, student pre-selection of preferred rotation sites does not guarantee assignment to those sites. If the number of available Practicum sites will not accommodate all students, one or more students may be assigned to an on-site, program faculty-supervised rotation in the Department's Simulation Laboratory. Scheduling for all Practicum courses, including assignment to specific sites or times, is contingent on availability of an appropriate Practicum affiliate site and adequate supervision.

Practicum rotations (days, times and sites) are scheduled and confirmed by the Program Faculty in consultation with Clinical Faculty. No further schedule changes can be made unless (a) the student is able to demonstrate that attendance at an assigned rotation site has or will create undue or unreasonable hardship, or (b) the Clinical Instructor must alter the schedule. **In no event is the student permitted to make his or her own arrangements for practicum rotations or to change scheduled rotation days, times or sites without a prior request to and approval by the Program Faculty and Clinical Faculty.**

Students are advised that even when a practicum hardship is demonstrated, it may not be possible to assign the student to an alternate site. When this is the case, the student may choose to postpone a rotation until a site becomes available. Postponement may result in delay of program completion.

**IF YOU HAVE A DISABILITY AND REQUIRE ACCOMMODATION,** you must submit a request and documentation to the Office of Student Affairs. Refer to page 25 of the School of Health Professions Student Handbook. [http://www.jefferson.edu/content/dam/tju/jshp/Files/JSHP_Handbook.pdf](http://www.jefferson.edu/content/dam/tju/jshp/Files/JSHP_Handbook.pdf)

2. TRANSPORTATION, ACCOMMODATIONS AND PRACTICUM EXPENSES

Students are responsible for arranging their transportation to and from clinical sites. With few exceptions, Philadelphia city and area sites are accessible using public transportation (train, bus or subway). The Department does not have the capacity to provide students with rental cars, shuttle service, fares, tokens, or parking fees, or other cash payments for meals or
accommodations at clinical sites. Students selecting or assigned to distant clinical sites must arrange their own transportation and housing.

3. **HEALTH CLEARANCE; CHILD ABUSE CLEARANCE; CRIMINAL BACKGROUND CHECK**

Up-to-date documentation of these clearances is now required by clinical affiliate sites. No student will be approved to begin clinical practice until he/she has demonstrated that all appropriate health requirements and background checks have been met. Health Clearance requirements include documentation of physical examination, and immunizations required by the University (see School Catalog), and any specific requirements related to program accreditation or professional standards. A student attending a practicum rotation without the appropriate Clearances will be immediately removed from the practicum site, and will not be allowed to resume his/her rotation until the Clearance(s) is/are produced.

4. **PRACTICUM ROTATION DRESS CODES**

Students are required to dress in a professional manner at all times during practicum rotations. For the purposes of health, safety, and professionalism, **sandals, open-toe or open-back, very high heels or cloth shoes, long dresses, T-shirts, shorts and jeans are prohibited.** Students may wear surgical scrubs or professional attire that is clean and free of wrinkles. Students are to confirm dress codes with each practicum site before beginning each rotation. Jefferson student identification badges must displayed at all times while on rotation.

**NOTE:** Attire at practicum sites may also require appropriate sterile attire to conform with CDC Universal Precautions and/or OSHA regulations for protection against transmittal of bloodborne pathogens. The practicum site will provide appropriate PPE as necessary.

5. **ATTENDANCE AT ASSIGNED PRACTICUM ROTATION SITE(S)**

Unless specified in the practicum schedule, there is no "time off" from practicums. Students are expected to be at the rotation site during the dates and daily times scheduled. Students are required to spend a minimum of 7 hours per day of rotation, excluding breaks, lunchtime, etc. Should the student need to leave earlier than the regularly scheduled time, he or she must make arrangements to make up the time lost (ie by coming in earlier that day or other mechanism determined by the clinical instructor). Absences are recognized only for sick time, for doctor appointments that cannot reasonably be made during non-clinic hours, or for special circumstances only when pre-approved by the Clinical Instructor and Program Faculty. Students must inform both the Program Office (215-503-8187) and the Clinical Faculty member at
the rotation site in the event of an absence no later than 9:00 a.m. for each day of absence.

a. *Any* absentee time, *including time taken for job interviews*, *in excess of eight hours over the entire practicum experience*, must be made up during the term in which the absence occurs and before a grade is recorded, unless Program Faculty expressly waive this requirement and the documentation of the waiver is in writing in the student's program file.

b. Scheduled time off *must* receive prior approval from the Program Faculty.

c. Whenever possible, absentee time should be made up at the site from which the student was absent and should be arranged with the Clinical Instructor at that site.

d. Occasionally, a Clinical Instructor will tell a student not to report to the Practicum Site on a scheduled practicum day, or will let a student leave early or come in late. Under no circumstances are students to construe this as free/vacation time off. When this occurs, students are to report to the Department Simulation Laboratory for that clinical day/time.

e. Program Faculty will assume absences have not been made up unless make-up time is clearly indicated on the student's worksheets, noted with the Clinical Instructor's signature.

f. Each day or part thereof of unauthorized absence will result in a 5% reduction in the final course percentage grade for the technical/professional evaluation. Students should be aware that this 5% reduction may affect successful completion of the clinical course.

g. GRADUATE STUDENTS PLEASE NOTE: Time spent/required to perform and complete Graduate Research Projects is NOT included in scheduled practicum time. Research Projects conducted in the same laboratory as the assigned practicum site will necessitate assigning additional practicum days/hours as appropriate. Graduate students must keep meticulous time records for both practicum and research activities that clearly indicate that the minimum number of days and hours of practicum time have been met.

6. PROFESSIONALISM

Students are expected to abide by the guidelines incorporated in their professional Codes of Ethics, and by standards and regulations applicable to clinical laboratory practice. Students should strive to establish good working relationships with all personnel with whom they come in contact during the Practica. Students must demonstrate responsibility in the care of equipment and materials they use and the integrity and confidentiality of specimens they process during the assigned practicum rotations. Students should seek consultation with the Clinical Faculty member at the rotation site for problems that may arise during the practicum. In the event that a problem arises that is not resolved to the satisfaction of the Clinical Faculty member or the student, consultation will take place with the student, Clinical Faculty member and the Program Faculty.
7. **DEPARTMENT, LABORATORY and AFFILIATE INSTITUTION POLICIES**

Except as indicated in paragraph 5.d., above, students are expected to abide by the established daily work routine and attendance schedule at the Practicum rotation site or to the schedule prepared by the Program in conjunction with Clinical Faculty. If preparation or monitoring of techniques/experiments necessarily extends attendance beyond scheduled hours, it is the student’s professional duty to follow through to complete the necessary work. However, **at no time is unsupervised practice or unauthorized presence in a laboratory facility permitted.** Since the purpose of practicum rotations is to maximize student exposure to and competence in laboratory practice, **the use of practicum time to work on other course or program assignments (e.g. research papers, class projects) is not permitted.** Likewise, use of practicum site laboratory computers (for email/internet searches/text messaging), laboratory phones, or photocopiers for personal reasons is not permitted. DBST policy regarding use of cell phones and pagers remains in effect, i.e. they must be silenced and are not to be used while on duty.

Student practicum performance (technical/professional components), is evaluated on a par with a laboratory position description for an entry level staff technologist. Therefore, it is in the students' best interest to familiarize themselves with laboratory policies regarding employee conduct, disciplinary procedures and laboratory technical standards. Students should familiarize themselves with these policies on arrival at the rotation site.

8. **DAILY WORKSHEETS: MAINTENANCE AND DOCUMENTATION**

Maintenance of work records and accurate documentation of work product are essential to practice in clinical laboratories. The Medical Laboratory Science Program provides blank daily worksheets to students and to Clinical Instructors. Each student is responsible for maintaining **LABORATORY WORKSHEETS**, in which **ALL LABORATORY ACTIVITY MUST BE ENTERED AND DOCUMENTED** for each day of rotation. In addition, the student must complete a daily log which is to be signed off by your immediate supervisor on a weekly basis. To satisfactorily document casework, **worksheets AND DAILY LOGs must** include and clearly indicate the date, and the nature of the work carried out on a given day. Students should ensure that their daily worksheets are reviewed and initialed by the Clinical Instructor on at least a WEEKLY basis during the rotation and at the completion of each rotation. **It is the student’s responsibility to submit to the Program Director his/her daily worksheets for review and evaluation no less than 72 hours (3 days) after completion of each practicum course and/or as required for Program review.** Please see the “Forms” section for the log form. **Failure to accurately document practicum work or to submit worksheets in a timely manner will result in significant point deductions (1% deduction for every day late), delay of grade reports or failure of the Clinical Practicum course.**
9. CLINICAL AFFILIATE SITE ASSESSMENT

Students evaluate rotation sites as part of our reciprocal evaluation procedure. Students must return these forms to the Program office no more than seven (7) calendar days after completion of each rotation. Please see the “Forms” section for the form. Anonymous, composite evaluations, completed by students are returned to each site at the completion of rotations for each academic year. A copy is maintained in the Program's Practicum Site files.

10. EMPLOYMENT INTERVIEWS

Students should make every effort to schedule appointments for job interviews on days when practicums and classes are not scheduled. However, students in good standing may be approved for a maximum of one practicum day (8 hours) for a job interview(s) only if the following conditions are understood and met. Note that the eight hour maximum spans the entire practicum phase of the program. This policy should not be construed to mean one day off within each clinical course.

a. A request for interview time off must be submitted to the Program Faculty at least one week in advance of the tentative date of the interview.

b. Program Faculty must pre-approve requested time off for interviews.

c. Sick leave and/or required clinical time cannot be used or substituted for interview time.

d. Time off granted for interviews in excess of eight (8) hours must be made up. Time approved for interviews during regularly scheduled classes or clinical rotations does not excuse students from meeting requirements for that class or clinical rotation, including required time in clinical practice.

e. Program Faculty determine where and when missed time for job interviews will be made up.

11. CAREER DEVELOPMENT CENTER

The School’s Career Development Center offers a variety of career-related services, free of charge, to students of the School of Health Professions. The Center will help you set short and long range career goals, prepare a resume, write letters (such as cover and thank you letters), make contacts and schedule employment interviews, prepare for interviews, evaluate job offers, select a graduate program, and investigate financing for graduate education.

- The Career Development Center keeps a list of job opportunities available to Jefferson students and graduates, including part-time work for students and full time professional positions for graduates of each program.

- The Center also provides the computerized career planning program Discover, which guides you step by step through the career evaluation and planning process.

- The Career Development Center has evening hours by appointment.

- While your job search may seem far away, applying and interviewing will come sooner than you think. Below is a career checklist to get you started:
• **Create your account on Symplicity** *(it takes less than a minute!)*  
Symplicity allows you to view job postings, upload your resume, research employer contacts, sign up for career events and workshops. ([https://jefferson-csm.symplicity.com/students](https://jefferson-csm.symplicity.com/students)).

• **Attend a career workshop.** Topics include resumes, cover letters, interviewing, LinkedIn, job search strategies, and salary negotiation.

• **Create a profile on LinkedIn and join the Jefferson Career Center Network**  
LinkedIn is a great tool for making career connections and researching organizations. ([http://www.linkedin.com/groups?home=&gid=135587&trk=anet_ug_hm](http://www.linkedin.com/groups?home=&gid=135587&trk=anet_ug_hm))

• **To create/update your resume**  
Check out our website for our resume writing handbook, along with our other resources! ([www.jefferson.edu/career_services](http://www.jefferson.edu/career_services))

• **To contact the Career Development Center**  
Call 215-503-5805 to schedule a one-on-one appointment with a counselor, or email career.development@jefferson.edu.  
130 9th S. St. Edison Bldg., Suite 1120  
Philadelphia PA 19107

### 12. EMERGENCY POLICIES

**EMERGENCY PREPAREDNESS**
Thomas Jefferson University has taken steps to support our campus community during times of heightened concern. The Department of Emergency Management has established an emergency plan that includes emergency procedures for all university buildings and occupants, as well as information that would be helpful in the event of an emergency. Students are encouraged to visit the Emergency Preparedness site at [www.jefferson.edu/security](http://www.jefferson.edu/security).

**JEFFALERT EMERGENCY NOTIFICATION SYSTEM**
With JeffALERT, the University can send simultaneous alerts in minutes through text messaging, voicemail and email to numerous devices such as cellular phones, landline phones, fax machines and PDAs. It is important that students keep their contact information current so that they can be properly notified during an emergency. For detailed information about the JeffALERT Emergency Notification System, please visit our website at [http://jeffalert.jefferson.edu](http://jeffalert.jefferson.edu).

Should **WEATHER** conditions necessitate, the Dean (or in his/her absence, his/her designee) declare a School of Health Professions Weather Emergency. The parameters of the Weather Emergency policy are as follows:

- Once a weather emergency is declared, **all** on-campus and off-campus classes (clinical and non-clinical) are cancelled.
- Students scheduled to be at off-campus clinical locations should contact their immediate clinical supervisor at the rotation site to inform him/her of the Jefferson Weather Emergency.
- JSHP Weather Emergencies are announced on local radio stations* as a school closing by the number **173** for daytime classes and **2173** for afternoon and evening classes (including the Department of General Studies). **Call 215-503-7844 for Department-specific information.**
- *Local radio stations using the Philadelphia School Closing Service are KYW (1060-AM); WCAU (1210-AM); WDAS (1480-AM); WDAS (105.3-FM); WPEN (950-AM).
- School closing information can be accessed online at **kyw1060.com**. The KYW Newsradio School Closing Line is **1-900-737-1060**. Each call is $.95.
13. **STUDENT PROFESSIONAL LIABILITY COVERAGE**

The School of Health Professions maintains insurance coverage for professional and general liability for all matriculated students while they are on authorized practicum affiliate assignments. Only students officially registered for clinical courses are covered by this policy. Only when participating in activities specifically designed for the practicum or other approved courses are students covered by this policy.
Medical Laboratory Scientist Clinical Faculty at affiliate sites share responsibility with Program Faculty and the students themselves for the professional education of Medical Laboratory Sciences students enrolled in the Department of Bioscience Technologies. Clinical Faculty occupy a key role in making the students' clinical experience a successful and meaningful one.

Clinical sites maintain active affiliate status by providing at least one student rotation experience in each academic term (i.e.: during each of the Fall, Spring, Pre-Summer, Summer semesters). The list of active clinical affiliate sites is updated annually.

RESPONSIBILITIES OF CLINICAL FACILITIES AND GENERAL GUIDELINES
1. Demonstrate an interest in providing educational experiences to medical laboratory science students.
2. Provide qualified personnel for the guidance and supervision of students.
3. Allow the clinical supervisor adequate time to administer, participate in and evaluate the student practica.
4. Encourage professional growth of students and staff.

To acquaint the student with your facility and with the daily operations and workflow of your laboratory, we suggest the following:
1. Give the student a brief orientation of the building (cafeteria, lounges, etc.) in which your laboratory is located.
2. Review the administrative hierarchy of your laboratory areas as well as that of the parent institution.
3. Discuss the student's daily time schedule (starting time, breaks, lunch period and quitting time). Students are expected to follow the working schedule of each laboratory.
4. Introduce the laboratory staff to the student.
   a. Note those with whom the student will be working.
   b. Note those to whom the student will be responsible.
5. Give the student an overview of the laboratory.
   a. Outline the work flow pattern of the lab and the range of diagnostic tests performed.
   b. Emphasize those tests the student will ultimately be responsible for performing.
   c. Try to establish the order in which the student will perform tasks and tests.
   d. Establish a flexible time schedule (by day) for performing the various tests.
6. Review the student's knowledge gained from previous course work at the University as it applies to the tests performed in your laboratory.
7. Discuss with the student who will be contributing to his/her evaluation and when the evaluation will be completed. We ask that you review the evaluation with the student and obtain his/her signature on the form.
8. Evaluate the student's performance using the evaluation forms provided by the Program in Medical Laboratory Science, Thomas Jefferson University, and return the signed evaluation forms to the Program Director within 7 days of the completion of the practicum experience.
9. Students must keep an accurate record of attendance in each laboratory area. Attendance sheets for each practicum are included in the handbook. It is the student's responsibility to have this record completed and signed by each area supervisor (or his designee) and to return the record to the Program Director at the end of the practicum rotation.
OBJECTIVES FOR CLINICAL EDUCATION

The following objectives apply to all areas of the clinical laboratory. Specific objectives are included separately under each discipline area.

I. AFFECTIVE DOMAIN (attitudes, values, interests)
   a) The student wears appropriate protective clothing in all laboratories at all times.
   b) The student consistently arrives in the laboratory at the assigned time at the beginning of the shift and after breaks.
   c) After an appropriate orientation at the clinical facility, the student consistently adheres to safety rules in all areas of the laboratory.
   d) The student handles patient specimens carefully to avoid contamination of the specimen and himself or others in the laboratory.
   e) The student consistently cleans instruments and work counter and keeps the work area well supplied.
   f) The student performs all assigned tasks willingly.
   g) The student offers assistance to others in the laboratory when his or her work is completed or when otherwise appropriate.
   h) The student asks pertinent questions to further his or her knowledge of clinical laboratory sciences.
   i) Given assigned duties and tasks, the student works in a consistent and organized manner and completes his or her work in a timely fashion.
   j) The student will explain the importance of a quality assurance program in the clinical laboratory.

II. COGNITIVE DOMAIN (knowledge, integrating, problem-solving)
   a) The student will accurately state normal values for the various test procedures he or she is performing in the clinical laboratory.
   b) Given appropriate reagents and supplies, the student will be able to select what is needed for each test procedure he or she is performing.
   c) The student will be able to select appropriate quality control products and specimens from supplies provided in the laboratory.
   d) The student will be able to explain the principal and theory of the various tests he or she is performing in the clinical laboratory.
   e) After completing assigned test procedures, the student will be able to explain the clinical significance of his or her findings.
   f) When performing analyses in the laboratory, the student will recognize panic values and immediately report these findings to the appropriate authorized persons.
   g) After identifying abnormal results from test procedures performed, the student will be able to suggest additional tests to aid in further diagnosis of the suspected pathology.
   h) When given data generated from various divisions of the clinical laboratory, the student will be able to identify any possible discrepancies in test results.
   i) Given appropriate quality control parameters, the student will be able to evaluate the validity of test results and institute proper procedures to remedy discrepancies.
Goals
Because of the tremendous variety of clinical chemistry techniques in current use and of the wide variety and range of sophistication of instrumentation, the goals are stated in terms of desirable types of learning experiences rather than in terms of specific techniques to be mastered. These include providing the student with the opportunity to:
1. Assume responsibility for some clinical tests
2. Learn a few specific techniques thoroughly
3. Receive broad exposure to a variety of additional techniques
4. Receive exposure to techniques of laboratory operation and supervision.

Objectives
1. The student will assemble and organize all specimens, reagents, and supplies needed to perform the tests assigned.
2. The student will select all appropriate QC products before performing assigned tests.
3. After appropriate instruction, the student will routinely perform preventive maintenance procedures on those instruments to which he or she is assigned.
4. The student will prepare (where appropriate), store, and maintain the supply of reagents needed for his or her assigned workload.
5. The student will produce test results, with an acceptable level of accuracy predetermined by the laboratory, using the following types of instrumentation or methodologies (where available):
   a. Blood gas analysis
   b. Discrete analyzer
   c. Enzyme analyzer
   d. Multiple channel analyzer
6. After performing assigned tests, the student will evaluate QC parameters obtained and institute proper procedures to remedy discrepancies.
7. The student will routinely check instruments to which he or she is assigned for proper functioning and correct any malfunctions detected, or, when indicated, refer the problem to the appropriate person or agency.

Guidelines
The goals and objectives can be met by teaching the student some set of procedures each week such that the student can produce and be responsible for the patient runs on the procedure for the last day or two of the week. The most appropriate procedures for each laboratory, or for each week, are left to the discretion of the supervisor. We feel that the knowledge of how it feels to be responsible for patient data using a newly learned technique is as valuable a learning experience as any other in the clinical chemistry practicum.

Student Preparation
The students complete two Clinical Chemistry lecture and laboratory courses and one Biochemistry lecture course at the University prior to their clinical practicum.
   The student Clinical Chemistry laboratory courses include:
1. Spectrophotometry: theory, calibration and operation
2. Standard colorimetric bench procedures: creatinine (Jaffe), total protein (biuret), magnesium, calcium, glucose oxidase, iron and IBC, total and direct bilirubin, cholesterol and HDL and salicylates.
3. Bench procedures for enzymatic reactions: CPK, MBX, and amylase
4. Osmometry: Freezing-point depression osmometer
5. Blood gasses and cooximetry: hands on and Corning demonstration lab
6. Potentiometric determinations: ISE (Novo demonstration) and hands on chloride titrater
7. Electrophoresis and densitometry: Each student worked with normal and abnormal serum proteins.
8. Extraction using organic solvents: porphobilinogen and urobilinogen
9. Drugs of abuse: qualitative evaluation of urine using triage bedside testing
10. Chemiluminescence: cortisol and LH
11. Pregnancy: beta HCG using target method
12. Use of the following equipment: spectrophotometer, densitometer, pH meter, vortex mixer, electronic balance, heating blocks, pipette washer and dryer, distilled water apparatus, cuvettes, calibrated glassware and serological, volumetric and automatic pipettes.
13. Use of the following safety equipment and precautions: lab coats, safety glasses, gloves, fume hood, eyewash station, sharps and waste disposal, benching cleaning with bleach, hand washing and chemical safety.
14. Use of the following lab math: acid-base problems, Beer's law, calibration and standard curves, conversion between units (mg%, mM/L and mEq/L), determination of mean, SD and CV from class generated data and calculation of creatinine clearance using body-surface area

Within the framework of suggestions made above, it would be desirable, to teach, or at least to expose the student to some of the following instrumentation or activities:

1. Electrophoresis
2. Chromatography-GC, Column and HPLC
3. Blood gas analysis, with emphasis on sample handling technique, care of instrument, and review of interpretation of results.
4. Enzyme analyzer on modern instruments - analysis of enzymes (manual or automated)
5. Discrete analyzer
6. Multiple channel analyzer
7. Osmometer
8. Instrumental and/or procedural trouble shooting activities.

**LEARNING EXPERIENCES- CLINICAL CHEMISTRY**

While in the clinical laboratory, the student is expected to participate in the routine activities of that laboratory.

**GUIDELINES:**
- Perform instrument set-up for all routine analyzers.
- Run daily controls and evaluate for acceptability.
- Evaluate specimens for suitability for testing.
- Perform necessary specimen preparation for testing.
- Run patient specimens for all routine testing and evaluate results.
- Perform electrophoresis and evaluate results.
- Perform blood gases.
- Perform chemical analyses on body fluids other than serum/plasma, if sufficient specimen is available.
- Perform therapeutic drug analyses.
HEMATOLOGY OBJECTIVES AND GUIDELINES

Goals
Routine hematological tests, although previously covered in lecture and student lab, should be performed by the student during clinical practicum so that the student can:

1. Collect and perform the CBC and differential (as it is done in your particular lab).
2. Use different techniques and/or equipment available for performing routine tests, i.e. platelet counting, ESR, sickle cell screening, etc.
3. Perform quality control procedures.
4. Relate test results to patient conditions.
5. Report accurate and precise results.
6. Increase skill and speed in performing hematologic tests.
7. Develop organizing ability.

Objectives
1. After appropriate instruction and orientation, the student will assemble reagents and supplies needed to collect requested blood samples.
2. Given selected specimens, the student will gather the reagents, supplies, and QC products needed to perform a CBC and differential.
3. The student will perform the following tests, with an acceptable level of accuracy predetermined by the laboratory, on selected specimens:
   a. CBC
   b. Differential
   c. PT and APTT
   d. Platelet count
   e. ESR
   f. Sickle cell screen
   g. Fibrin Split Products and/or D-Dimer
   h. Fibrinogen
   i. Special coagulation studies as available (e.g. Anti-thrombin III, factor assays, platelet studies)
4. After appropriate instruction, the student will routinely perform preventive maintenance procedures on those instruments to which he or she is assigned.
5. The student will prepare (where appropriate), store, and maintain the supply of reagents needed for his or her assigned workload.
6. After performing assigned tests, the student will evaluate QC parameters obtained and institute proper procedures to remedy discrepancies.
7. The student will review instrument components, principle of operation, and limitations for those instruments to which he is assigned.
8. The student will routinely check instruments to which he or she is assigned for proper functioning and correct any malfunctions detected, or, when indicated, refer the problem to the appropriate person or agency.
9. The student will interpret results of tests performed, including scatter plots/scatter grams for automated differentials.

Guidelines
The amount of time each student spends on performance of routine tests may vary with the student's ability to satisfy the above criteria. This should be decided by the technologist supervising the student. Emphasis should be placed on performance of differentials.

Student Preparation
The students complete two 3-credit courses in hematology, prior to the clinical practicum. Each course consists of two hours of lecture and 2-hour lab each week for the 15 week term. These courses involve the study of the formation and development of blood and its coagulation mechanism, including diagnostic tests, methods, and instruments used.
LEARNING EXPERIENCES - HEMATOLOGY

While in the clinical laboratory, the student is expected to participate in the routine activities of that laboratory.

GUIDELINES:
- Perform a minimum of 50 Complete Blood Counts (CBCs)
- Correctly perform the following minimum number of differentials:
  (1) minimum 5 with abnormal RBC morphology
  (2) minimum 7 with abnormal WBC morphology
  (3) minimum 3 leukemias
  Student results must be consistent with the laboratory’s criteria for reproducibility.
- Perform instrument set-up.
- Run daily controls and evaluate for acceptability.
- Evaluate specimens for suitability for testing.
- Perform necessary specimen preparation for testing.
- Run, correlate and evaluate scattergrams for at least 15 patients, normal and abnormal.
- Set up an erythrocyte sedimentation rate (ESR).

COAGULATION:
- Perform instrument set-up.
- Run daily controls and evaluate for acceptability.
- Evaluate specimens for suitability for testing.
- Perform necessary specimen preparation for testing.
- Run and evaluate a minimum of 20 PT’s and APTT’s.
- Run fibrinogen/thrombin and D-dimer.

- Participate in esoteric or special testing, such as factor assays and hemoglobin electrophoresis*, as available.
*Note: If electrophoresis is performed in chemistry, and the student is scheduled for chemistry at the same facility, this can be done in chemistry.
URINALYSIS/BIOLOGIC FLUIDS OBJECTIVES AND GUIDELINES

**Goals**
During the clinical practicum the student should perform routine urinalysis examinations so that the student can:
1. Demonstrate knowledge of formed elements seen in urinary sediments.
2. Perform various procedures for the qualitative and quantitative measure of substances found in urine.
3. Participate in quality control procedures.
4. Relate test results to patient conditions.

**Objectives**
1. The student will gather appropriate reagents and supplies needed and perform:
   a. manual macroscopic routine urinalysis, including specific gravity and confirmatory tests
   b. automated routine urinalysis.
2. The student will gather and organize the reagents and supplies needed to perform a microscopic urinalysis.
3. perform urinalysis (minimum 25) within an acceptable time frame and at an overall accuracy rate of at east 95%, to include the following abnormalities:
   1) minimum 2 with cellular elements
   2) minimum 2 with crystals
   3) minimum 2 with casts
   4) minimum 2 with abnormal macroscopic results
4. Given the results of reagent strip tests, the student will perform appropriate confirmatory procedures on selected urine specimens as done in the particular laboratory.
5. Perform microscopic examination and/or biochemical analysis of other fluids, as available, to include:
   - Cerebrospinal
   - Synovial
   - Cavity Effusion
   - Seminal
   - Cyst fluid
   - Other: specify

The amount of time each student spends on the performance of routine tests may vary with the student's ability to satisfy the above criteria, and is at the discretion of the supervisor. Emphasis should be placed upon recognition of microscopic elements.

**Student Preparation**
The students complete a 1-credit course in biologic fluids, which is approximately 2/3 urinalysis prior to their clinical practicum. This course is taught in the Program in Medical laboratory science at Thomas Jefferson University and includes:
1. The principles of all reagent strip and tablet screening tests commonly performed in clinical urinalysis laboratories.
2. Lectures covering the classical manual procedures for qualitatively and quantitatively measuring substances found in urine.
3. Laboratory sessions in which students use reagent test strips and tablets and measure specific gravity by the refractometer.
4. Lab sessions in which students study slides of formed elements.

**Guidelines**
As guidelines for the objectives to be accomplished we ask that the student:
1. Perform routine urinalysis testing as it is performed in the particular laboratory.
2. Participate in quality control procedures.

**URINALYSIS/BODY FLUIDS:**
- Perform instrument set-up.
- Run daily controls and evaluate for acceptability.
- Perform complete urinalysis, including microscopic.
- Perform a fluid cell count, if extra fluid is available.
IMMUNOHEMATOLOGY OBJECTIVES AND GUIDELINES

Goals
The primary objective of the Blood Bank clinical practicum is for the student to develop technical accuracy and self-confidence by clinically experiencing routine functions of an immunohematology laboratory. Supervisors will stimulate deductive thinking by guiding the student into answering his/her own questions, recognizing and resolving discrepancies, and applying theory in the clinical environment.

Objectives
1. The student will gather reagents and supplies needed and perform the following procedures:
   a. ABO and RH typing (minimum 25)
   b. Compatibility testing (minimum 25)
   c. Direct antiglobulin test
   d. Antigen typing
   e. Rh globulin work-up
   f. Antibody screening and identification (minimum 10)
   g. Absorption and elution techniques
2. The student will perform and/or observe the following procedures:
   a. Issuing of blood or blood derivatives for transfusion purposes
   b. Preliminary transfusion reaction investigation procedures
   c. Inventory of blood supplies
   d. Administration of blood components
   e. Quality control
3. The student will prepare appropriate red blood cell suspensions for testing.
4. Given specimens for which the results were previously determined by the laboratorian, the student will perform ABO and Rh typing with no errors.
5. Using specimens and reagents provided, the student will identify the specificity of an antibody with 95% accuracy.
6. Using specimens and reagents provided, the student will perform compatibility tests with no errors.
7. Given selected patient specimens, the student will perform ABO and Rh typings, detect any discrepancies and suggest possible solutions.
8. Given selected patient specimens, the student will recognize rouleaux and hemolysis while reading reactions and give plausible explanations for their occurrence.
9. When performing Rh testing on selected specimens, the student will be able to resolve a positive Rh0 control, if used.

Guidelines
A period of orientation is recommended at the beginning of the clinical practicum. During this time the student should practice the following:
1. Organization of test tubes for performing multiple tests.
2. Preparation of red blood cell suspensions for testing.
3. Reading strengths of agglutination reactions.
4. Washing test tubes for antiglobulin tests.

Student Preparation
Students complete all coursework in Immunohematology prior to their clinical practicum, including a 3-credit lecture course in Immunology, and a 3-credit course in blood banking. MT 352/552 Immunohematology, is taught in the Department of Bioscience Technologies, School of Health Professions, Thomas Jefferson University and consists of two hours of lecture and a minimum 2-hour lab weekly, during Spring Term. Emphasis is on serological and cellular antigens and antibodies, including the theories of blood banking, cell typing, and antibody identification.
I-2 Compatibility Testing

Objectives
Upon completion of the rotation, the student will be able to:
1. Discuss the procedures involved in a routine crossmatch and a "problem" crossmatch (e.g., patients with antibodies, patients with panagglutinable serum).
2. Recognize and list common interactions which may be detected by the crossmatching test.
3. State the reasons for false negative and/or false positive crossmatch results.
4. Complete compatibility testing, including a 4 unit crossmatch, on one patient in one hour or less.
5. Recognize reasons for cases where all donors seem incompatible.
6. List the type of transfusion reactions along with their symptoms.
7. Perform and interpret an alleged transfusion reaction workup.
8. List the steps necessary for safe transfusion.
9. Explain the procedure for the release of uncrossmatched blood.
10. Under the supervision of a technologist perform a minimum of 10 multiple unit crossmatches; be able to do each of them within one hour's time. Have the technologist check your results.

I-3 Independent Blood Bank - Antibody Identification

Behavioral Objectives
Upon completion of the rotation, the student will be able to:
1. Resolve any discrepancies in forward and reverse ABO grouping using any of the following procedures:
   - anti A, B, lectins, absorbed serum, absorption-elution technique, secretor studies and modification of
     ABO grouping methods.
2. Discuss the role of antigen-antibody reactions in Hemolytic disease of the Newborn, transfusion reactions
   and multiple transfusions.
3. Perform workup to determine Hemolytic Disease of the Newborn, to determine maternal eligibility for Rh
   immunoglobulin. Select appropriate blood for transfusion and exchange transfusion for baby.
4. Identify single and multiple antibodies in patient specimens.

Learning Experiences
___1. Perform at least one single and one multiple antibody identification
___2. Determine Rho (D) Immune Globulin eligibility.
___3. Perform HDN work-up.

I-4 Independent Blood Bank - Donor Selection and Blood Components

Behavioral Objectives
Upon completion of the rotation, the students will be able to:
1. Maintain records of donation in accordance with applicable regulations.
2. Determine donor eligibility, recognizing those procedures which require general medical knowledge;
situations when regulations require that a physician's consent is obtained.
3. Perform donor screening and prepare for phlebotomy.
4. Appraise unit to see if it meets the volume set forth by the AABB and FDA standards.
5. Describe donor criteria, defining acceptable limits.
6. State the procedure for preparing an arm for phlebotomy.
7. List and define the possible reactions a donor might experience (symptoms and treatment).
8. Follow an established protocol to yield a blood product which meets acceptable quality in terms of
   regulations, potency, viability, safety and established quality assurance.
9. Convey information to the user regarding blood products (i.e., indication, biological characteristics,
   quality of the product and utilization parameters).
10. Explain the difference between an open and a closed system for obtaining components.
11. Define the outdates and storage temperatures for blood products including whole blood, cryoprecipitate,
    packed red cells, FFP, platelets, frozen washed RBC and white blood cells.
12. Discuss the therapeutic advantages to the use of blood components and derivatives as compared to
    whole blood.

___*1. Observe how to register a donor and obtain donor history:
___*2. Observe a venipuncture site preparation, materials and instruments needed.
___*3. Observe care of a donor during and after donation.
___*4. Observe anticoagulant used for collection of WBC and platelets.

*Observations are not required. However, if the student is at a clinical facility that draws blood/platelet
donors, students are encouraged to observe.
MICROBIOLOGY OBJECTIVES AND GUIDELINES

Goals
Microbiological examinations (although basically covered in the lecture and student laboratories) should be performed by the student during the clinical practicum so that the student can:
1. Choose appropriate media for various clinical specimens.
2. Plant and process specimens.
3. Identify microorganisms encountered in the clinical laboratory.
4. Demonstrate knowledge of environmental influences on microbial growth.
5. Differentiate between normal flora and pathogens.
6. Interpret antimicrobial sensitivity patterns.
7. Apply methods of sterile technique in the laboratory at all times.

Objectives: The student will
1. select appropriate media for planting all assigned specimens.
2. determine appropriate incubation temperatures and atmospheric requirements for all Assigned specimens.
3. select and organize the reagents, supplies, and materials needed to process, plant, and identify all specimens he or she is assigned.
4. use methods of sterile technique in the laboratory at all times.
5. differentiate between normal flora and possible pathogens in various assigned clinical specimens.
6. Given selected specimens, process, plant, and incubate them appropriately.
7. Given selected cultures, perform the tests and procedures necessary to accurately identify all pathogenic bacteria (both aerobes and anaerobes), fungi, parasites, and viruses present.
8. perform and accurately interpret antimicrobial sensitivity testing on all appropriate cultures.
9. Given selected specimens, work independently to identify the pathogens present, interpret results, and report appropriate findings.
10. correlate identification of pathogens with antimicrobial sensitivity patterns and perform appropriate tests to remedy any discrepancies.

Guidelines
As guidelines for the objectives to be accomplished, students should:
1. Plant and process specimens both aerobically and anaerobically.
2. Read cultures and learn protocol for identification of microorganisms and pattern recognition of common isolates.
3. Perform testing for identification of fungi and parasites.
4. Read and perform antibiotic susceptibility tests.
6. Participate in quality control procedures.

The amount of time a student spends in any of the above areas may vary and determined by the clinical supervisor. However, it is necessary that students spend time in all facets of activity in Microbiology.

Student Preparation
The students complete two 3-credit courses in microbiology prior to their clinical practicum. In the student laboratories in microbiology and parasitology, the following techniques, procedures, media and organisms are used:

A. Organisms
1. Staphylococcus
2. Streptococcus
3. Erysipelothrix
4. Bacillus
5. Diphtheroids
6. Enterobacteriaceae
7. Haemophilus
8. Listeria monocytogenes
9. Neisseria
10. Moraxella catarrhalis
11. Nonfermenting and unusual gram-negative rods
12. Acid fast bacillus
13. Parasites
14. Fungi (molds & yeast)

B. Media

1. Sheep blood Agar
2. Chocolate Agar
3. MacConkey medium
4. MTM media
5. Columbia CNA agar
6. Hektoen Enteric medium
7. Chrome orientation agar
8. Mueller Hinton agar
9. Haemophilus quad plates
10. TSI (triple sugar iron) Slants

3. Techniques and procedures

1. Isolation streaking
2. Gram stain
3. Catalase
4. Coagulase & Staph latex kit
5. Optochin discs
6. Novobiocin discs
7. Spot oxidase
8. Spot indole
9. Rapid ID kit
10. API 20 E
11. Bauer-Kirby antibiotic sensitivity test
12. germ tube
13. Carbohydrate assimilation
14. Touch prep
IMMUNOPATHOLOGY OBJECTIVES AND GUIDELINES

Goals
The primary objective of the Immunopathology clinical practicum is for the student to develop technical skills and accuracy by performing the routine immunological procedures that were performed in the student laboratory and review the principle of the test system as discussed in lecture. Exposure, by observation or hands-on experience, of more sophisticated techniques in Immunology will also take place. Immunology procedures are to include both testing for infectious disease and testing for immunologic/autoimmune disease.

Objectives
1. The student will gather appropriate reagents, supplies, and QC products needed to perform the routine immunologic procedures.
2. The student will perform, with an acceptable level of accuracy as predetermined by the laboratory, the following tests:
   a) RPR
   b) Monospot
   c) ELISA method for infectious disease
   d) other routine Immunologic testing as available
3. The student will observe or have hands-on experience with the following tests as available:
   a) ANA
   b) ELISA or other enzyme immunoassays
   c) other Fluorescent Antibody assays
   d) Hepatitis testing
   e) HLA/Tissue Typing
   f) Flow Cytometry
   g) other tests as available
4. The student will store and maintain the supply of reagents needed or his or her assigned workload.
5. After performing assigned tests, the student will evaluate QC parameters obtained and institute proper procedures to remedy discrepancies.
6. The student will relate test results to patient conditions.

Guidelines
The amount of time each student spends on performance of routine tests should vary with the student's ability to satisfy the criteria as predetermined by the technologist supervising the student.

Student Preparation
The students complete a 3 credit course in Immunology prior to the clinical practicum. The course consists of three hours of lecture each week with some laboratory exposure to certain techniques during the fall semester. The course involves discussion of the structure, function, and generation of antibodies, cellular recognition, response and regulation of the immune response. Immunological diagnostic testing is discussed using clinical correlation. The course also covers hypersensitivity, autoimmunity, transplantation, and tumor immunology.
EVALUATION FORMS
**EVALUATION OF STUDENT BY CLINICAL SITE**

**Lab Section:** Clinical Chemistry  
**Clinical Site:** ____________________  
**Rotation Dates (from/to):** ____________________  
**Student:** ____________________  
**Evaluator:** ____________________

**Instructions to Evaluator:** The columns indicate numerical grades and equivalent letter grades. Please indicate, by assigning a numerical grade within one column, the level of competence at which the student performed in each category while on rotation in your laboratory. (eg: 96% would be entered under column B) If you feel a category or sub-category is not applicable to your clinical situation, please mark "N/A".

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<th>A+</th>
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<td>GENERAL CLINICAL COMPETENCIES &amp; OBJECTIVES</td>
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**I. AFFECTIVE DOMAIN (attitudes, values, interests)**
1. Wears appropriate protective clothing in all laboratories at all times  
2. Consistently arrive in the laboratory at the assigned time at the beginning of the shift and after breaks.  
3. Consistently adhere to safety rules in all areas of the laboratory.  
4. Handles patient specimens carefully to avoid contamination of the specimen and himself or others in the laboratory.  
5. Consistently clean instruments and work counter and keep the work area well supplied.  
6. Performs all assigned tasks willingly  
7. Offers assistance to others in the laboratory when his or her work is completed or when otherwise appropriate.  
8. Asks pertinent questions to further his or her knowledge of clinical laboratory sciences AND/OR or reading relevant materials during slack periods.  
9. Given assigned duties and tasks, work in a consistent and organized manner and complete his or her work in a timely fashion  
10. Explain the importance of a quality assurance program in the clinical laboratory.  
11. Follows oral/written directions

**II. COGNITIVE DOMAIN (knowledge, integration, problem-solving)**
1. accurately state normal values for the various test procedures he or she is performing in the clinical laboratory.  
2. Given appropriate reagents and supplies, the student will be able to select what is needed for each test procedure he or she is performing.  
3. select appropriate quality control products and specimens from supplies provided in the laboratory  
4. identify the proper time to collect various specimens which are sent to the laboratory.  
5. explain the principal and theory of the various tests he or she is performing in the clinical laboratory  
6. After completing assigned test procedures, the student will be able to explain the clinical significance of his or her findings  
7. recognize panic values and immediately report these findings to the appropriate authorized persons  
8. recognize abnormal test results/ identify abnormal results from test procedures performed, and suggest additional tests to aid in further diagnosis of the suspected pathology.
Under minimal supervision, the student was able to:

9. Using appropriate quality control parameters, the student will be able to evaluate the validity of test results and institute proper procedures to remedy discrepancies.

10. Recognize his/her erroneous results and offer reasonable explanations as to why he/she obtained erroneous test results.

**DISCIPLINE COMPETENCIES: CLINICAL CHEMISTRY**

1. Assemble and organize all specimens, reagents, and supplies needed to perform the tests assigned.

2. Perform instrument set-up for all routine analyzers.

3. Select all appropriate QC products before performing assigned tests.

4. Prepare (where appropriate), store, and maintain the supply of reagents needed for his or her assigned workload.

5. Evaluate specimens for suitability for testing and performs necessary specimen preparation for testing.

6. Produce test results, with a minimum of 95% accuracy, using the following types of instrumentation or methodologies (where available):
   - Blood gas analysis
   - Manual methods (list):
   - Discrete analyzer (toxicology, TDM’s, endocrine, specific proteins, other (please specify))
   - Immunoochemistry analyzer
   - Multiple channel analyzer
   - Other (please specify): ___________________________

7. After performing assigned tests, the student will evaluate QC parameters obtained and institute proper procedures to remedy discrepancies.

8. Check instruments for proper functioning and correct any malfunctions detected, or, when indicated, refer the problem to the appropriate person or agency.

**CLINICAL SITE EXAMINATION**

- [ ] Not required by clinical site
- [ ] Provided to student by clinical site. Exam grade________

**ADDITIONAL COMMENTS**

1. In what area(s) did the student demonstrate outstanding ability(ies)?

2. In what area(s) do you feel the student needs to improve?

**OVERALL PERFORMANCE Clinical Chemistry**

1. Was the student’s overall performance in your lab **Satisfactory** or **Unsatisfactory**? (Circle one). If unsatisfactory, what recommendations would you make to help the student perform as an entry level MLS?

2. How would you rate this student as a possible candidate for employment in your area?
   - [ ] Highly recommended (98-100%)
   - [ ] Not recommended (less than 90%)
   - [ ] Recommended (90-97%)
   - [ ] Unable to evaluate

Student’s Signature________________________________________ Date________________________

Evaluator’s Signature_______________________________________ Date________________________
### Instructions to Evaluator

The columns indicate numerical grades and equivalent letter grades. Please indicate, by assigning a **numerical grade within one column**, the level of competence at which the student performed in each category while on rotation in your laboratory. (eg: 86% would be entered under column D) If you feel a category or subcategory is not applicable to your clinical situation, please mark "N/A".

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### GENERAL CLINICAL COMPETENCIES & OBJECTIVES

#### I. AFFECTIVE DOMAIN (attitudes, values, interests)

1. Wears appropriate protective clothing in all laboratories at all times
2. Consistently arrives in the laboratory at the assigned time at the beginning of the shift and after breaks.
3. Consistently adheres to safety rules in all areas of the laboratory.
4. Handles patient specimens carefully to avoid contamination of the specimen and himself or others in the laboratory.
5. Consistently cleans instruments and work counter and keeps the work area well supplied.
6. Performs all assigned tasks willingly
7. Offers assistance to others in the laboratory when his or her work is completed or when otherwise appropriate.
8. Asks pertinent questions to further his/her knowledge of medical laboratory sciences and/or read relevant materials during slack periods.
9. Given assigned duties and tasks, work in a consistent and organized manner and complete his or her work in a timely fashion.
10. Respects the confidentially of patient test results.
11. Follows oral/written directions

#### II. COGNITIVE DOMAIN (knowledge, integration, problem-solving)

1. Accurately state normal values for the various test procedures he or she is performing in the clinical laboratory.
2. Given appropriate reagents and supplies, the student will be able to select what is needed for each test procedure he or she is performing.
3. Selects appropriate quality control products and specimens from supplies provided in the laboratory.
4. Explains the principal and theory of the various tests he or she is performing in the clinical laboratory.
5. After completing assigned test procedures, the student will be able to explain the clinical significance of his or her findings.
6. Recognize panic values and immediately report these findings to the appropriate authorized persons.
7. Recognizes abnormal test results and suggest additional tests to aid in further diagnosis of the suspected pathology.
Under minimal supervision, the student was able to:

8. Evaluate the validity of test results and institute proper procedures to remedy discrepancies

9. Recognizes his/her erroneous results and offers reasonable explanations as to why he/she obtained erroneous test results.

**DISCIPLINE COMPETENCIES: CLINICAL HEMATOLOGY**

1. Evaluate specimens for suitability for testing and perform necessary specimen preparation for testing.

2. Perform the following tests, with a minimum of 95% accuracy and acceptable rate of performance as determined by the laboratory, on selected specimens:
   a. CBC (minimum 50)
   b. Differentials (indicate # in each completed correctly):
      (1) minimum 5 with abnormal RBC morphology
      (2) minimum 7 with abnormal WBC morphology
      (3) minimum 3 leukemias
   c. PT and APTT (minimum 20)
   d. ESR
   e. Fibrin Split Products and/or D-Dimer
   f. Fibrinogen

3. After appropriate instruction, routinely perform preventive maintenance procedures on those instruments to which he or she is assigned.

4. Prepares (where appropriate), store, and maintain the supply of reagents needed for his or her assigned workload.

5. After performing assigned tests, evaluate QC parameters obtained and institute proper procedures to remedy discrepancies.

6. Reviews instrument components, principles of operation, and limitations for those instruments to which he is assigned.

7. Routinely checks instruments for proper functioning and correct any malfunctions detected, or refer problem to the appropriate person or agency.

8. Accurately interprets results of tests performed, including scatter plots/scatter grams for automated differentials.

9. Demonstrated gain in proficiency/efficiency/accuracy from 1st to last day of rotation

**CLINICAL SITE EXAMINATION**

- Not required by clinical site
- Provided to student by clinical site. Exam grade________

**ADDITIONAL COMMENTS**

1. In what area(s) did the student demonstrate outstanding ability(ies)?

2. In what area(s) do you feel the student needs to improve?

**OVERALL PERFORMANCE Hematology**

1. Was the student’s overall performance in your lab **Satisfactory** or **Unsatisfactory**? (Circle one).
   If unsatisfactory, what recommendations would you make to help the student perform as an entry level MLS?

2. How would you rate this student as a possible candidate for employment in your area?
   [ ] Highly recommended (98-100%)  [ ] Not recommended (less than 90%)
   [ ] Recommended (90-97%)  [ ] Unable to evaluate

Student’s Signature___________________________________________  Date_________________________

Evaluator’s Signature__________________________________________ Date_________________________
THOMAS JEFFERSON UNIVERSITY
Jefferson School of Health Professions / Department of Bioscience Technologies
Medical Laboratory Science Clinical Practicum
EVALUATION OF STUDENT BY CLINICAL SITE

Lab Section: Urinalysis/Biologic Fluids
Clinical Site: ____________________  Student: ____________________  Evaluator: ____________________
Rotation Dates: ____________________

Instructions to Evaluator: The columns indicate numerical grades and equivalent letter grades. Please indicate, by assigning a numerical grade within one column, the level of competence at which the student performed in each category while on rotation in your laboratory. (e.g.: 96% would be entered under column B) If you feel a category or sub-category is not applicable to your clinical situation, please mark "N/A".

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II. COGNITIVE DOMAIN (knowledge, integration, problem-solving)

1. Accurately state normal values for the various test procedures he or she is performing in the clinical laboratory.
2. Given appropriate reagents and supplies, the student will be able to select what is needed for each test procedure he or she is performing.
3. Selects appropriate quality control products and specimens from supplies provided in the laboratory.
4. Explains the principal and theory of the various tests he or she is performing in the clinical laboratory.
5. After completing assigned test procedures, the student will be able to explain the clinical significance of his or her findings.
6. Recognize panic values and immediately report these findings to the appropriate authorized persons.
7. Recognizes abnormal test results and suggest additional tests to aid in further diagnosis of the suspected pathology.
### Under minimal supervision, the student was able to:

<table>
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<th>Grade</th>
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8. Evaluate the validity of test results and institute proper procedures to remedy discrepancies

9. Recognizes his/her erroneous results and offers reasonable explanations as to why he/she obtained erroneous test results.

### DISCIPLINE COMPETENCIES: URINALYSIS/BIOLOGIC FLUIDS

1. perform the following tests, with a minimum of 95% accuracy and an acceptable rate of performance as determined by the laboratory, on selected specimens:

   a. perform macroscopic routine urinalysis including specific gravity and confirmatory tests
   
   b. perform microscopic urinalysis, identify and quantify all formed and cellular elements present
   
   c. perform urinalysis (minimum 25) at an overall accuracy rate of at least 90%, to include the following abnormalities:
      1. minimum 2 with cellular elements
      2. minimum 2 with crystals
      3. minimum 2 with casts
      4. minimum 2 with abnormal macroscopic results

2. Biochemical Analysis, Other Fluids (list):

3. Microscopic Exam, Other Fluids: *Indicate N/A if not applicable.*

   - Synovial
   - Cerebrospinal
   - Seminal
   - Cyst fluid
   - Other: specify

### All Fluids:

   - perform instrument set-up
   - participate in and explain principles of quality control/assurance
   - run daily controls and evaluate for acceptability
   - recognize abnormal test results
   - relate abnormal test results to pathological conditions

### CLINICAL SITE EXAMINATION

- [ ] Not required by clinical site
- [ ] Provided to student by clinical site. Exam grade_______

### ADDITIONAL COMMENTS

1. In what area(s) did the student demonstrate outstanding ability(ies)?

2. In what area(s) do you feel the student needs to improve?

### OVERALL PERFORMANCE Urinalysis/Biologic Fluids

1. Was the student's overall performance in your lab **Satisfactory** or **Unsatisfactory**? (Circle one).

   *If unsatisfactory, what recommendations would you make to help the student perform as an entry level MLS?*

2. How would you rate this student as a possible candidate for employment in your area?

   - [ ] Highly recommended (98-100%)
   - [ ] Recommended (90-97%)
   - [ ] Not recommended (less than 90%)
   - [ ] Unable to evaluate

Student's Signature__________________________________________  Date________________________

Evaluator's Signature________________________________________  Date________________________
Lab Section **Immunohematology**  
Clinical Site ____________________________________   Student:_____________________________  
Rotation Dates(from/to): ____________________________     Evaluator:___________________________

**Instructions to Evaluator:** The columns indicate numerical grades and equivalent letter grades. Please indicate, by assigning a **numerical grade within one column**, the level of competence at which the student performed in each category while on rotation in your laboratory. (eg: 96% would be entered under column B) If you feel a category or sub-category is not applicable to your clinical situation, please mark "N/A".

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<td>1. Wear appropriate protective clothing in all laboratories at all times.</td>
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<td>2. Consistently arrive in the laboratory at the assigned time at the beginning of the shift and after breaks.</td>
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<td>3. Consistently adhere to safety rules in all areas of the laboratory.</td>
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<td>4. Handle patient specimens carefully to avoid contamination of the specimen and himself or others in the laboratory.</td>
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<td>5. Consistently clean instruments and work counter and keep the work area well supplied.</td>
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<td>6. Perform all assigned tasks willingly</td>
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<td>7. Offer assistance to others in the laboratory when his or her work is completed or when otherwise appropriate.</td>
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<td>8. Ask pertinent questions to further his or her knowledge of clinical laboratory sciences AND/OR or reading relevant materials during slack periods.</td>
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<td>9. Given assigned duties and tasks, work in a consistent and organized manner and complete his or her work in a timely fashion</td>
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<td>10. Explain the importance of a quality assurance program in the clinical laboratory.</td>
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<td>11. Follow oral/written directions</td>
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<td>II. COGNITIVE DOMAIN (knowledge, integration, problem-solving)</td>
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<td>2. Select appropriate quality control products and specimens from supplies provided in the laboratory</td>
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<td>3. Explain the principal and theory of the various tests he or she is performing in the clinical laboratory</td>
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<td>4. After completing assigned test procedures, explain the clinical significance of his or her findings</td>
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<td>5. When given data generated from various divisions of the clinical laboratory, the student will be able to identify any possible discrepancies in test results</td>
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<td>6. Using appropriate quality control parameters, evaluate the validity of test results and institute proper procedures to remedy discrepancies</td>
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<td>7. Recognize his/her erroneous results and offers reasonable explanation(s).</td>
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Under minimal supervision, the student was able to:

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<th>Grade</th>
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<th>B+</th>
<th>B-</th>
<th>C+</th>
<th>C-</th>
<th>D+</th>
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<td>Score</td>
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<td>69 - 60</td>
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**DISCIPLINE COMPETENCIES: IMMUNOHEMATOLOGY**

1. Select appropriate control samples to monitor procedures.
2. Discuss the procedures performed with daily, monthly and periodic quality control in terms of specificity, sensitivity and reactivity.
3. Describe titer and its role in blood bank.
4. List factors which result in false positive and/or false negative direct antihuman globulin tests.
5. Processing ARC and hospital-collected units, as well as washing, freezing and thawing of RBC.
6. Inspect and evaluate suitability of a specimen for the analysis requested, fulfilling all internal and external policies and regulations.
7. Organize test tubes for performing multiple tests.
8. Prepare red blood cell suspensions for testing.
9. Read strengths of agglutination reactions.
10. Wash test tubes for antiglobulin tests.
11. Perform manual test procedures with reasonable speed while maintaining accuracy, recognizing that proficiency and efficiency are critical to appropriate patient management.
12. Perform and interpret the following tests on selected specimens using manual and automated methods (if applicable):
   a. ABO and RH typing (minimum 25) at a **minimum accuracy of 100%**
   b. Compatibility testing (minimum 25 multi-unit) at a **minimum accuracy of 98%**.
   c. Direct antiglobulin test
   d. Antigen typing
   e. Rh globulin work-up
   f. Antibody screening and identification (minimum 10) with a **minimum accuracy of 95%**
      1. single antibody
      2. multiple antibody panel
   g. Absorption and elution techniques
13. Given selected patient specimens, recognize rouleaux and hemolysis and give plausible explanations for their occurrence.
14. Observe/perform preparation and release of components. **Indicate whether student observed or performed.**
15. Perform/observe transfusion reaction work-up/HDN work-up. **Indicate whether student observed or performed.**

**CLINICAL SITE EXAMINATION**

- [ ] Not required by clinical site
- [ ] Provided to student by clinical site. Exam grade________

**ADDITIONAL COMMENTS**

1. In what area(s) did the student demonstrate outstanding ability(ies)?
2. In what area(s) do you feel the student needs to improve?

**OVERALL PERFORMANCE Immunohematology**

1. Was the student’s overall performance in your lab **Satisfactory** or **Unsatisfactory**? (Circle one).
   - If unsatisfactory, what recommendations would you make to help the student perform as an entry level MLS?
2. How would you rate this student as a possible candidate for employment in your area?
   - [ ] Highly recommended (98-100%)
   - [ ] Recommended (90-97%)
   - [ ] Not recommended (less than 90%)
   - [ ] Unable to evaluate

Student’s Signature__________________________________________________ Date__________________________

Evaluator’s Signature_________________________________________________ Date__________________________
**Medical Laboratory Science Clinical Practicum**

**EVALUATION OF STUDENT BY CLINICAL SITE**

<table>
<thead>
<tr>
<th>Lab Section</th>
<th>Microbiology</th>
</tr>
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<tbody>
<tr>
<td>Clinical Site</td>
<td>Student: _______________________________</td>
</tr>
<tr>
<td>Rotation Dates (from/to):</td>
<td>Evaluator: _____________________________</td>
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</tbody>
</table>

**Instructions to Evaluator:** The columns indicate numerical grades and equivalent letter grades. Please indicate, by assigning a **numerical grade within one column**, the level of competence at which the student performed in each category while on rotation in your laboratory. (eg: 96% would be entered under column B) If you feel a category or sub-category is not applicable to your clinical situation, please mark “N/A”.

<table>
<thead>
<tr>
<th>Under minimal supervision, the student was able to:</th>
<th>A+</th>
<th>A-</th>
<th>B+</th>
<th>B-</th>
<th>C+</th>
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**GENERAL CLINICAL COMPETENCIES & OBJECTIVES**

**I. AFFECTIVE DOMAIN (attitudes, values, interests)**

1. Wear appropriate protective clothing in all laboratories at all times
2. Consistently arrive in the laboratory at the assigned time at the beginning of the shift and after breaks.
3. Consistently adhere to safety rules in all areas of the laboratory.
4. Handle patient specimens carefully to avoid contamination of the specimen and himself or others in the laboratory.
5. Consistently clean instruments and work counter and keep the work area well supplied.
6. Perform all assigned tasks willingly
7. Offer assistance to others in the laboratory when his or her work is completed or when otherwise appropriate.
8. Ask pertinent questions to further his or her knowledge of clinical laboratory sciences AND/OR or reading relevant materials during slack periods.
9. Given assigned duties and tasks, work in a consistent and organized manner and complete his or her work in a timely fashion
10. follow oral/written directions

**II. COGNITIVE DOMAIN (knowledge, integration, problem-solving)**

1. Given appropriate reagents and supplies, the student will be able to select what is needed for each test procedure he or she is performing.
2. explain the principal and theory of the various tests he or she is performing in the clinical laboratory
3. After completing assigned test procedures, explain the clinical significance of his or her findings
4. Recognize his/her erroneous results
5. Offer reasonable explanations as to why he/she obtained erroneous test results.

**DISCIPLINE COMPETENCIES: MICROBIOLOGY**

1. Assist in preparation of specimens for analysis
2. Select appropriate media for planting all assigned specimens.
Under minimal supervision, the student was able to:

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<th>Grade</th>
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<td>A+</td>
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<td>A</td>
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<td>B</td>
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3. Determine appropriate incubation temperatures and atmospheric requirements for all assigned specimens.

4. Select and organize reagents, supplies, and materials needed to process, plant, and identify all assigned specimens.

5. Use methods of sterile technique in the laboratory at all times.

6. Differentiate between normal flora and possible pathogens in various assigned clinical specimens. Grade according to percent acceptable performance.

7. Correctly process, plant, and incubate assigned specimens. Grade according to percent acceptable performance.

8. Given selected cultures, perform tests and procedures necessary to identify the following categories of pathogens with a minimum of 95% accuracy:
   - a. aerobic bacterium (ia) Minimum: 25
   - b. anaerobic bacterium (ia) Minimum: 1
   - c. fungi Minimum 1 mold and 1 yeast
   - d. parasite(s)

9. Perform and accurately interpret antimicrobial sensitivity testing on all appropriate cultures. Grade according to percent acceptable performance.

10. Work independently to identify pathogens present, interpret results, and report appropriate findings.

11. Observe/perform testing in AFB/mycology/parasitology. Indicate whether student observed or performed. If observation only, student accurately described and/or responded to questions on procedure.

Clinical site examination:

- [ ] Not required by clinical site
- [ ] Provided to student by clinical site. Exam grade________

Additional comments:

1. In what area(s) did the student demonstrate outstanding ability(ies)?

2. In what area(s) do you feel the student needs to improve?

Overall performance

1. Was the student's overall performance in your lab Satisfactory or Unsatisfactory? (Circle one).

   If unsatisfactory, what recommendations would you make to help the student perform as an entry level MLS?

2. How would you rate this student as a possible candidate for employment in your area?
   - [ ] Highly recommended (98-100%)
   - [ ] Recommended (90-97%)
   - [ ] Not recommended (less than 90%)
   - [ ] Unable to evaluate

Student's Signature________________________________________________
Date__________________________

Evaluator's Signature________________________________________________
Date__________________________
**THOMAS JEFFERSON UNIVERSITY**
Jefferson School of Health Professions / Department of Bioscience Technologies

**Medical Laboratory Science Clinical Practicum**
EVALUATION OF STUDENT BY CLINICAL SITE

<table>
<thead>
<tr>
<th>Lab Section</th>
<th>Immunopathology (flow cytometry, tissue typing, immunology, serology, virology)</th>
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</thead>
<tbody>
<tr>
<td>Clinical Site</td>
<td>Student: ___________________________</td>
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<tr>
<td>Rotation Dates</td>
<td>___________________________</td>
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**Instructions to Evaluator:** The columns indicate numerical grades and equivalent letter grades. Please indicate, by assigning a **numerical grade within one column**, the level of competence at which the student performed in each category while on rotation in your laboratory. (eg: 96% would be entered under column B) If you feel a category or sub-category is not applicable to your clinical situation, please mark "N/A".

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<tr>
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<th>A (89 - 80)</th>
<th>A- (79 - 70)</th>
<th>B+ (69 - 70)</th>
<th>B (60 - 60)</th>
<th>B- (&lt;60)</th>
<th>F (&lt;60)</th>
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**GENERAL CLINICAL COMPETENCIES & OBJECTIVES**

**I. AFFECTIVE DOMAIN (attitudes, values, interests)**

1. Wear appropriate protective clothing in all laboratories at all times.
2. Consistently arrive in the laboratory at the assigned time at the beginning of the shift and after breaks.
3. Consistently adhere to safety rules in all areas of the laboratory.
4. Handle patient specimens carefully to avoid contamination of the specimen and himself or others in the laboratory.
5. Consistently clean instruments and work counter and keep the work area well supplied.
6. Perform all assigned tasks willingly.
7. Offer assistance to others in the laboratory when his or her work is completed or when otherwise appropriate.
8. Ask pertinent questions to further his or her knowledge of clinical laboratory sciences AND/OR or reading relevant materials during slack periods.
9. Given assigned duties and tasks, work in a consistent and organized manner and complete his or her work in a timely fashion.
10. follow oral/written directions

**II. COGNITIVE DOMAIN (knowledge, integration, problem-solving)**

1. Given appropriate reagents and supplies, the student will be able to select what is needed for each test procedure he or she is performing.
2. explain the principal and theory of the various tests he or she is performing in the clinical laboratory.
3. After completing assigned test procedures, explain the clinical significance of his or her findings.
4. Recognize his/her erroneous results.
5. Offer reasonable explanations as to why he/she obtained erroneous test results.

**DISCIPLINE COMPETENCIES: Immunopathology**

1. gather appropriate reagents, supplies, and QC products needed to perform routine immunologic procedures.
Under minimal supervision, the student was able to:

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2. observe and/or perform, with a minimum accuracy of 95%, the following tests:
   - Indicate whether student observed or performed. If observation only, student accurately described and/or responded to questions on procedure and result parameters.
   - a. RPR
   - b. Monospot
   - c. ELISA method for infectious disease Specify:__________________________

3. observe and/or perform the following tests as available:
   - Indicate whether student observed or performed. If observation only, student accurately described and/or responded to questions on procedure and result parameters.
   - a. ANA
   - b. ELISA or other enzyme immunoassays Specify:__________________________
   - c. Fluorescent Antibody assays Specify:__________________________
   - d. Hepatitis testing
   - e. HLA/Tissue typing Specify:__________________________
   - f. Flow Cytometry Specify:__________________________

4. evaluate QC parameters obtained and institute proper procedures to remedy discrepancies.

5. relate test results to patient conditions

Laboratory Operations:

6. Participate in quality control procedures.

7. Evaluate acceptability of quality control

8. Assist in preparation of specimens for analysis

CLINICAL SITE EXAMINATION

☐ Not required by clinical site
☐ Provided to student by clinical site. Exam grade________

ADDITIONAL COMMENTS

1. In what area(s) did the student demonstrate outstanding ability(ies)?

2. In what area(s) do you feel the student needs to improve?

OVERALL PERFORMANCE Immunopathology

1. Was the student’s overall performance in your lab Satisfactory or Unsatisfactory? (Circle one).
   - If unsatisfactory, what recommendations would you make to help the student perform as an entry level MLS?

2. How would you rate this student as a possible candidate for employment in your area?
   - [ ] Highly recommended (98-100%)
   - [ ] Not recommended (less than 90%)
   - [ ] Recommended (90-97%)
   - [ ] Unable to evaluate

Student’s Signature________________________________________________________
Date__________________________

Evaluator’s Signature_____________________________________________________
Date__________________________
Clinical Practicum Attendance Record

STUDENT NAME_________________________

LABORATORY___________________________  LAB. SECTION_____________________________

PLACEMENT DATES____________________________

Students: An accurate record of your attendance at clinical practicum rotation sites is required. Fill in the following information and have your Supervisor initial the completed record at the end of each day. It is your responsibility to return this form to the Department of Bioscience Technologies office at the University no less than three (3) calendar days after completion of this rotation.

<table>
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<tr>
<th>Date</th>
<th>Student Signature</th>
<th>Time In</th>
<th>Time Out</th>
<th>Instructor Initials</th>
<th>Date</th>
<th>Student Signature</th>
<th>Time In</th>
<th>Time Out</th>
<th>Instructor Initials</th>
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Daily Clinical Rotation Time must be a minimum of 7.0 hours, exclusive of breaks and lunch. For rotation days shorter or substantially longer than required, provide explanation on reverse side.
STUDENT EVALUATION OF CLINICAL SITE EDUCATION

Check Applicable Rotation: □ Microbiology    □ Clinical Chemistry
□ Hematology     □ Immunohematology
□ Immunopathology □ Urinalysis/Biol. Flds
□ Other (specify) ________________________________

Student Name: ____________________________________________ [please print]

Clinical Site_______________________ Clinical Section_______________________

TERM_____ YEAR_______

Name(s) of those to whom you were directly responsible [list first and last name(s)]:

__________________________________________________________________________
__________________________________________________________________________

I. Overview: Check description that most closely represents your evaluation of the facility.

1. Were your student responsibilities and privileges reviewed with you?

   _____ Very clearly presented.
   _____ Adequately discussed. Knew what was expected of me on a day-to-day basis.
   _____ In general, I knew what was expected of me on a day-to-day basis. Occasionally unclear as to my responsibilities.
   _____ Unclear. Left confusion in my mind as to what was expected of me.

2. Were you conscious of a well-planned program for students in this facility?

   _____ Excellent program. The site kept students occupied with pertinent work, allowing student to feel productive.
   _____ Good program. Student usually well occupied with pertinent work.
   _____ Adequately planned program. Student assigned pertinent tasks but work flow was somewhat slow.
   _____ Poorly planned program. Student was not assigned sufficient tasks to keep occupied. Student experienced a more than average amount of slack time.
3. Do you feel that the responsibilities you were given at this facility were adjusted to your ability to handle them?

_____ The responsibilities given me were suited to my ability to handle them. They were appropriate for a newly graduated medical technologist entering the workforce.

_____ Some of the responsibilities were above my ability to handle them. In my opinion, they were appropriate for a more experienced medical technologist.

_____ I felt competent in handling all responsibilities given me. However, in general, the amount of responsibility given me was somewhat limited and therefore not appropriately adjusted to my abilities.

_____ The responsibilities given me were not adjusted to my ability. The responsibilities were too limited and the amount of experience too narrow.

4. Do you feel the facility allowed flexibility for the individual student to gain maximum benefits?

_____ The student program was quite flexible. Students were encouraged to pursue additional tasks or interests when routine or assigned work was completed.

_____ The student program was somewhat flexible. If the student demonstrated a desire to pursue additional tasks or interest once assigned work was completed, the laboratory staff was helpful.

_____ Due to the amount and nature of the work the student did not have the opportunity to pursue additional tasks.

_____ A strict protocol was followed each day. Once assigned work was completed students were sent home.

II. Supervision and Instruction

Please rate the facility on each item below by circling the appropriate number on the rating scale.

The rating scale is:

0    1    2        3       4
not applicable poor   adequate  above average outstanding

A. Apparent interest in student progress 0   1   2       3       4
B. Supervision of student 0   1   2       3       4
C. Fostering of student learning 0   1   2       3       4
D. Amount of feedback given student 0   1   2       3       4
E. Receptivity toward students' question 0   1   2       3       4

F. I was able to access School / University websites, offices and/or personnel to address professional or personal issues when needed

G. Communications among me, my program and my clinical supervisors were timely and efficient and were available to address academic, professional or personal issues when needed.
III. Clinical Experience

1. List the instruments and other major equipment you operated.

_________________________________________________________________________
_________________________________________________________________________
_________________________________________________________________________

2. List types of tests you observed but did not perform.

_________________________________________________________________________
_________________________________________________________________________
_________________________________________________________________________

3. What additions and or deletions would you make to the program at this facility? Please explain.

_________________________________________________________________________
_________________________________________________________________________
_________________________________________________________________________

IV. Academic/Clinical Correlation

1. Did you find correlation between previously learned theories and concepts and their practical application at this facility? If your answer is "no", please explain.
   ( ) yes ( ) no

_________________________________________________________________________
_________________________________________________________________________
_________________________________________________________________________

2. What specific recommendations would you make to more successfully correlate your didactic learning experience with the practical learning experience in this facility?

_________________________________________________________________________
_________________________________________________________________________
_________________________________________________________________________

V. Student Signature

___________________________________________________

Dates of Practicum
___________________________________________________

Date of Evaluation
___________________________________________________

1/99- rev 06/01  rev 07/06 rev 12/10 rev 8/11  rev 10/13 rev 04/15
Term: _______ Year: 20___ Student: ____________________________________________

Program: ___ 2+2BS   ___ 3+1BS   ___ 4+1ProfMS   ___ 4+1AdvMS   ___ 3+2BSMS

☐ Practicum I  ☐ MT 412  ☐ LS 812  Discipline: __________________________

☐ Practicum II  ☐ MT 422  ☐ LS 813  Discipline: __________________________

☐ Practicum III  ☐ MT 442  ☐ LS 814  Discipline: __________________________

☐ Practicum IV  ☐ MT 454  ☐ LS 815  Discipline: __________________________

Other: __________________________

Clinical Site: ________________________________________________

Calendar Days Scheduled: ____ / ____ / ____  to ____ / ____ / ____ inclusive

Total Days Scheduled this Practicum: _____ Minimum # Days Required This Practicum_____

Total Days Attended: _______  Total Days Absent/Unaccounted: _______ (see notes below)

Performance Assessment:

Clinical Evaluation: _______ (50%)

General Competencies

Clinical Evaluation: _______ (50%)

Discipline-specific Competencies

Additions/Deductions to Assessment (explain) ______ %

Total: ________ %

Letter Grade: ________

Faculty Signature: __________________________   Date: ___________________

Notes:

_________________________________________________________________________________

_________________________________________________________________________________

_________________________________________________________________________________