

THOMAS JEFFERSON UNIVERSITY
JEFFERSON SCHOOL OF HEALTH PROFESSIONS
DEPARTMENT OF BIOSCIENCE TECHNOLOGIES

Medical Laboratory Sciences

Clinical Practicum Handbook

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**THOMAS JEFFERSON UNIVERSITY
JEFFERSON SCHOOL OF HEALTH PROFESSIONS
DEPARTMENT OF BIOSCIENCE TECHNOLOGIES
PROGRAM IN MEDICAL LABORATORY SCIENCE**

INTRODUCTION

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 organizing and organization abilities
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 prerequisite medical laboratory science course(s) specified in each listing.

To prepare students to take the Medical Laboratory Science board examination administered by the American Society of 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.

**THOMAS JEFFERSON UNIVERSITY
JEFFERSON SCHOOL OF HEALTH PROFESSIONS
DEPARTMENT OF BIOSCIENCE TECHNOLOGIES
PROGRAMS IN MEDICAL LABORATORY SCIENCE**

COURSE NUMBERS AND TITLES:

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

MT 412	Clinical Practicum I	- 4 credits Summer I Term
MT 422	Clinical Practicum II	- 4 credits Summer I Term
MT 442	Clinical Practicum III	- 4 credits Summer II Term
MT 454	Clinical Practicum IV	- 4 credits Summer I Term

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

LS 812	Practicum I: Med. Lab. Science	-2 credits Summer I Term
LS 813	Practicum II: Med. Lab. Science	- 2 credits Summer I Term
LS 814	Practicum III: Med. Lab. Science	- 2 credits Summer II Term
LS 815	Practicum IV: Med. Lab. Science	- 2 credits Summer II Term

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

MT 412	Clinical Practicum I	- 4 credits Fall Semester
MT 422	Clinical Practicum II	- 4 credits Fall Semester
MT 442	Clinical Practicum III	- 4 credits Spring Semester
MT 454	Clinical Practicum IV	- 4 credits Spring Semester

(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)

LS 812	Practicum I: Med. Lab. Science	-2 credits Fall Semester
LS 813	Practicum II: Med. Lab. Science	- 2 credits Fall Semester
LS 814	Practicum III: Med. Lab. Science	- 2 credits Spring Semester
LS 815	Practicum IV: Med. Lab. Science	- 2 credits Spring Semester

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

PROGRAM DIRECTOR: Richard Vandell, MS MT(ASCP)SC, SH

Contact Numbers tel: 215-503-8187
fax: 215-503-2189
email: richard.vandell@jefferson.edu

Program Contact Number call **215-503-8187** to report latenesses, sick time, emergencies

2011-2012 ACTIVE CLINICAL AFFILIATE SITES and CLINICAL INSTRUCTORS:

1. Thomas Jefferson University Hospitals – Philadelphia, PA

Microbiology	James Bondi, Supervisor	215-955-8744
	Mindy Tokarczyk, Education Coordinator	215-955-1863
Chemistry	Peggy Rapa, Senior Tech	215-955-8837
Hematology (TJUH)	Karen Smith, Supervisor	215-955-8841
Hematology (Methodist)	Donna Tavella, Supervisor	215-952-9056
Transfusion Services	Donna Goldner, Supervisor	215-955-1134
Immunology	Dr. Laura McCloskey, Director	215-955-1414
Tissue Typing	Dallas Nguyen, Supervisor	215-955-2251
Flow Cytometry	Linda Blumstein, Supervisor	215-955-1287
Special Coagulation lab	Megan Hevelow, Supervisor	215-955-8459

COURSE DESCRIPTIONS:

MEDICAL TECHNOLOGY 412, 422, 442, 454

Clinical Practica I, II, III, IV (4 each)

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 (immunodiagnosics, serology). Students also participate in relevant continuing education activities and engage in other professionally-related activities.

Prerequisites: Medical Technology 313, 324, 331, 343, 352

LABORATORY SCIENCES 812, 813, 814, 815

Practica I, II, III, IV (2 each)

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 program-specific didactic and laboratory coursework

PHILOSOPHY:

Medical Laboratory Science is a laboratory-based discipline whereby the physiological processes of the body are recognized, measured and monitored. The medical laboratory science curriculum applies the basic precepts of biochemistry and physics to clinical methodology and theory. The education of Medical Laboratory Scientists seeks to develop mastery of techniques as well as understanding of the relationship of results to normal and abnormal physiological processes within the body.

The graduate technologist should understand the necessity of considering the patient's welfare a part of each test that he performs. S/he should be committed to accuracy and reliability in his work. S/he should understand the importance of personal and professional ethics when dealing with patients and should treat any results or information received with utmost confidentiality.

Through sound training and supervision, a Medical Laboratory Scientist should develop a wholesome respect for his profession and what s/he contributes to health care delivery. S/he should also have an understanding of, and respect for, the roles of other health professionals. Such interdisciplinary cooperation will enhance the treatment of the "whole" patient and improve the continuity of care.

The goal of educating health professionals is to improve the quality of patient care. The goal of educating Medical Laboratory Scientists in particular is to produce a qualified practitioner to aid in the diagnosis and prevention, as well as to monitor the treatment, of disease. Through his/her commitment to the improvement of the quality of life, the Medical Laboratory Scientist should recognize the necessity of broadening and updating his/her knowledge and skills. S/he should continually seek new and better methods of producing more reliable and definitive results in the shortest possible time.

Ultimately, the goal of education is to provide the tools and direction for self-actualization of the individual. By providing a specific body of knowledge, serving as a role model, and increasing student self-esteem, the faculty can enhance the process whereby professional development complements personal growth.

COURSE OBJECTIVE(S):

During the Clinical 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 Clinical 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 (rated on a scale of 1 to 5), **(2)** ability to demonstrate basic theoretical and practical knowledge in the various areas of Medical Laboratory Science (rated on a scale of 1 to 5) 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 (*eg:* 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. **Graduate students are expected to complete at least two (2) additional essay test modules during the semester, and complete an additional essay component on the comprehensive exam.**

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, cytopathology laboratory techniques, diagnosis, quality assurance and regulatory requirements.

COURSE GRADING:

The numerical range for grades in the Practicum courses is considerably more stringent than the range for academic coursework. 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 and, where applicable (2) Practical student exam from clinical sites which choose to develop and administer such exams (not all clinical sites require examinations). Each will be given equal weight; for those sites that choose not to administer a practical examination, the grade will be based on the Student Evaluation form.

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:**

Grade	Technical/Professional Component	Written Exam Component	Quality Points for Computation	Final Quality Point Range=	Final Grade
A+	≥100	≥100	4.00	4.00	A+
A	99 - <100	99 - <100	4.00	4.00	A
A-	98 - <99	98 - <99	3.7	3.7 - <4.00	A-
B+	97 - <98	97 - <98	3.3	3.3 - <3.7	B+
B	96 - <97	96 - <97	3.00	3.00 - <3.3	B
B-	95 - <96	95 - <96	2.7	2.7 - <3.00	B-
C+	93 - <95	93 - <95	2.3	2.3 - <2.7	C+
C	91 - <93	91 - <93	2.00	2.00 - <2.3	C
C-	90 - <91	90 - <91	1.7	1.7 - <2.00	C-
D+	88 - <90	88 - <90	1.3	1.3 - <1.7	D+
D	86 - <88	86 - <88	1.00	1.00 - <1.3	D
D-	85 - <86	85 - <86	0.7	0.7 - <1.00	D-
F	<85	<85	0.00	0.00	F
Weight:	100% or 50%	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%)]. If the Clinical Site administers an additional exam, the weights are [General Competencies (40%), Discipline-specific Competencies (40%); Clinical Site Exam

(20%]]. 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:

	<u>Percent Earned:</u>	<u>Letter Equivalent:</u>	<u>Q.P.</u>	<u>x</u>	<u>=</u>	<u>=</u>	<u>Final Grade</u>
General Competencies	95.32%	B-	2.7	.50		1.350	
Discipline-specific Competencies	98.25%	A-	3.7	.50		<u>1.850</u>	
						3.200	= B
<i><u>If Clinical Site administers an exam:</u></i>							
General Competencies	95.32%	B-	2.7	.40		1.080	
Discipline-specific Competencies	98.25%	A-	3.7	.40		<u>1.480</u>	
Clinical Site Exam:	87.00%	D	1.0	.20		<u>0.200</u>	
						2.760	= B-

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.

DEPARTMENT POLICIES APPLICABLE TO CLINICAL/RESEARCH LABORATORY PRACTICE

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 *College 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 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.

STUDENT RESPONSIBILITIES

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 28 of the School of Health Professions Student Handbook.

2. TRANSPORTATION, ACCOMMODATIONS AND CLINICAL 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

A clean, white full-length lab coat is required for all students while on rotation at Thomas Jefferson University and at most other practicum sites. Professional attire should be worn at all times during practicum rotations. **Sandals, very high heeled shoes, long dresses, T-shirts, shorts and jeans are prohibited.** Jefferson student identification badges must be worn on lab coat breast pocket. Students may wear surgical scrubs when working in clinical diagnostic labs at Thomas Jefferson University Hospital. NOTE: Attire at practicum sites may also require lab whites and/or appropriate sterile attire to conform with CDC Universal Precautions and/or OSHA regulations for protection against transmittal of bloodborne pathogens. Students are to confirm dress codes before beginning each rotation.

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 clinical 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 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 Xeroxing machines for personal reasons is not permitted. DBST policy regarding use of cell phone 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.

Students must return these forms, in a bound format, to the Program office no more than 72 hours (3 days) after completion of each rotation. *Failure to accurately document practicum work or to submit worksheets in a timely manner may result in significant point deductions, 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 can not 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.

- If you wish to schedule an appointment in the Career Development Center, to talk with the Coordinator, or to use the computer, call 503-5805. You may also stop by the Career Development Center, located on the seventh floor of the Edison Building, and schedule an appointment, or browse through the materials and job listings.

12. WEATHER EMERGENCY POLICY

Should weather conditions necessitate, the Dean (or in his absence, his designee) may 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.

CLINICAL AFFILIATE SITE & CLINICAL FACULTY RESPONSIBILITIES

Medical Laboratory Scientist Clinical Faculty at clinical 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.

RESPONSIBILITIES OF CLINICAL FACILITIES

1. Demonstrate an interest in providing educational experiences to clinical 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.

GENERAL GUIDELINES FOR CLINICAL FACILITIES

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:

Programs in Medical Laboratory Science
130 South 9th Street, Suite 1924
Thomas Jefferson University
Philadelphia, PA 19107-5233
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 AND GUIDELINES FOR CLINICAL EDUCATION PRACTICA

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 reports patient test results only to appropriate authorized persons.
- e) The student handles patient specimens carefully to avoid contamination of the specimen and himself or others in the laboratory.
- f) The student consistently cleans instruments and work counter and keeps the work area well supplied.
- g) The student performs all assigned tasks willingly.
- h) The student offers assistance to others in the laboratory when his or her work is completed or when otherwise appropriate.
- i) The student asks pertinent questions to further his or her knowledge of clinical laboratory sciences.
- j) Given assigned duties and tasks, the student works in a consistent and organized manner and completes his or her work in a timely fashion.
- k) 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 identify the proper time to collect various specimens which are sent to the laboratory.
- e) The student will be able to accurately perform routine statistical calculations used in the clinical laboratory.
- f) Given the necessary data, the student will be able to perform the calculations needed to convert findings into appropriate units for reporting.
- g) The student will be able to explain the principal and theory of the various tests he or she is performing in the clinical laboratory.
- h) After completing assigned test procedures, the student will be able to explain the clinical significance of his or her findings.
- i) When performing analyses in the laboratory, the student will recognize panic values and immediately report these findings to the appropriate authorized persons.
- j) The student will be able to select appropriate formulas for converting laboratory findings into units for reporting.
- k) 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.
- l) When given data generated from various divisions of the clinical laboratory, the student will be able to identify any possible discrepancies in test results.
- m) Given appropriate quality control parameters, the student will be able to evaluate the validity of test results and institute proper procedures to remedy discrepancies.

CLINICAL CHEMISTRY OBJECTIVES AND GUIDELINES

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. Atomic absorption spectrophotometry
 - b. Blood gas analysis
 - c. Chromatography -- GC, Column and HPLC
 - d. Discrete analyzer
 - e. Electrophoresis
 - f. Enzyme analyzer
 - g. 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. Atomic absorption spectrophotometry
2. Electrophoresis
3. Gamma Counter and RIA
4. Chromatography-GC, Column and HPLC
5. Blood gas analysis, with emphasis on sample handling technique, care of instrument, and review of interpretation of results.
6. Enzyme analyzer on modern instruments - analysis of enzymes (manual or automated)
7. Discrete analyzer
8. Centrifugal Fast Analyzer
9. Multiple channel analyzer
10. 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. Students are told that they
- 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 leukemiasStudent 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 least 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.
3. Report accurate, precise results.
4. 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.
Differentiate between emergency situations and massive transfusion.
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.
13. Describe the basic principles of operation of the Heamonetics system for pheresis and cite examples where pheresis may be indicated.

- ___*2. Observe how to register a donor and obtain donor history:
- ___*3. Observe a venipuncture site preparation, materials and instruments needed.
- ___*4. Observe care of a donor during and after donation.
- ___*5. Observe the Heamonetics blood processor.
- ___*6. 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.
5. Log specimens and record and report appropriate results.
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. Diptheroids
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

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

Clinical Site _____ Student: _____
 Lab Section **Clinical Chemistry** _____ Date _____
 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".

Graduate /Undergraduate:	A+	A	A-	B+	B	B-	C+	C	C-	D+	D	D-	F
<u>Under minimal supervision, the student was able to:</u>	100	99	98	97	96	95	94	92	90	89	87	85	<85
GENERAL CLINICAL COMPETENCIES & OBJECTIVES													
I. AFFECTIVE DOMAIN (attitudes, values, interests)													
a. wear appropriate protective clothing in all laboratories at all times													
b. consistently arrive in the laboratory at the assigned time at the beginning of the shift and after breaks..													
c. consistently adhere to safety rules in all areas of the laboratory.													
d. report patient test results only to appropriate authorized persons.													
e. handle patient specimens carefully to avoid contamination of the specimen and himself or others in the laboratory.													
f. consistently clean instruments and work counter and keep the work area well supplied.													
g. perform all assigned tasks willingly													
h. offer assistance to others in the laboratory when his or her work is completed or when otherwise appropriate.													
i. ask pertinent questions to further his or her knowledge of clinical laboratory sciences AND/OR reading relevant materials during slack periods.													
j. Given assigned duties and tasks, work in a consistent and organized manner and complete his or her work in a timely fashion													
k. explain the importance of a quality assurance program in the clinical laboratory.													
l. respect the confidentiality of patient test results.													
n. follow oral/written directions													
II. COGNITIVE DOMAIN (knowledge, integration, problem-solving)													
a. 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. select appropriate quality control products and specimens from supplies provided in the laboratory													
d. identify the proper time to collect various specimens which are sent to the laboratory.													

Graduate /Undergraduate: **A+ A A- B+ B B- C+ C C- D+ D D- F**

<u>Under minimal supervision, the student was able to:</u>	A+ A A-	B+ B B-	C+ C C-	D+ D D-	F
	100 99 98	97 96 95	94 92 90	89 87 85	<85
e. accurately perform routine statistical calculations used in the clinical laboratory.					
f. Given the necessary data, the student will be able to perform the calculations needed to convert findings into appropriate units for reporting					
g. explain the principal and theory of the various tests he or she is performing in the clinical laboratory					
h. After completing assigned test procedures, the student will be able to explain the clinical significance of his or her findings					
i. recognize panic values and immediately report these findings to the appropriate authorized persons					
j. select appropriate formulas for converting laboratory findings into units for reporting.					
k. recognize abnormal test results/ identify abnormal results from test procedures performed, and suggest additional tests to aid in further diagnosis of the suspected pathology.					
l. When given data generated from various divisions of the clinical laboratory, the student will be able to identify any possible discrepancies in test results					
m. Using appropriate quality control parameters, the student will be able to evaluate the validity of test results and institute proper procedures to remedy discrepancies					
n. recognize his/her erroneous results					
o. 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. select all appropriate QC products before performing assigned tests.					
3. After appropriate instruction, routinely perform preventive maintenance procedures on those instruments to which he or she is assigned.					
4. prepare (where appropriate), store, and maintain the supply of reagents needed for his or her assigned workload.					
5. 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. Manual methods (list): _____					
c. Chromatography -- GC, Column and HPLC					
d. Discrete analyzer (toxicology, TDM's, endocrine, specific proteins, other					
e. Electrophoresis					
f. Immunochemistry_analyzer					
g. 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					

Graduate /Undergraduate:

	A+ A A-	B+ B B-	C+ C C-	D+ D D-	F
Under minimal supervision, the student was able to:	100 99 98	97 96 95	94 92 90	89 87 85	<85
GUIDELINES FOR CLINICAL CHEMISTRY					
While in the clinical laboratory, the student is expected to participate in the routine activities of that laboratory. Indicate level of competence at which student performed the following technical tasks: <i>[Indicate N/A (not applicable) if not performed]</i>					
- 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 (if applicable)					
- Perform blood gases.					
- Perform chemical analyses on body fluids other than serum/plasma, if sufficient specimen is available					
- Perform therapeutic drug analyses.					
- Other: please specify:					

CLINICAL SITE EXAMINATION (OPTIONAL. 20% OF STUDENT GRADE IF GIVEN BY SITE)

- 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 medical laboratory scientist?*

2. How would you rate this student as a possible candidate **for employment** in your area?
 - Highly recommended (A) Recommended with reservations (C)
 - Recommended (B) Not recommended (D or F)

Student's Signature_____

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

Clinical Site _____ Student: _____
 Lab Section Hematology Date _____
 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: 86% would be entered under column D) If you feel a category or sub-category is not applicable to your clinical situation, please mark "N/A".

Graduate /Undergraduate:	A+ A A-	B+ B B-	C+ C C-	D+ D D-	F
<u>Under minimal supervision, the student was able to:</u>	100 99 98	97 96 95	94 92 90	89 87 85	<85
GENERAL CLINICAL COMPETENCIES & OBJECTIVES					
<u>I. AFFECTIVE DOMAIN (attitudes, values, interests)</u>					
a. wear appropriate protective clothing in all laboratories at all times					
b. consistently arrive in the laboratory at the assigned time at the beginning of the shift and after breaks..					
c. consistently adhere to safety rules in all areas of the laboratory.					
d. report patient test results only to appropriate authorized persons.					
e. handle patient specimens carefully to avoid contamination of the specimen and himself or others in the laboratory.					
f. consistently clean instruments and work counter and keep the work area well supplied.					
g. perform all assigned tasks willingly					
h. offer assistance to others in the laboratory when his or her work is completed or when otherwise appropriate.					
i. ask pertinent questions to further his/her knowledge of medical laboratory sciences and/or read relevant materials during slack periods.					
j. Given assigned duties and tasks, work in a consistent and organized manner and complete his or her work in a timely fashion					
k. explain the importance of a quality assurance program in the clinical laboratory.					
l. respect the confidentiality of patient test results.					
n. follow oral/written directions					
<u>II. COGNITIVE DOMAIN (knowledge, integration, problem-solving)</u>					
a. 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. select appropriate quality control products and specimens from supplies provided in the laboratory					
d. identify the proper time to collect various specimens which are sent to the laboratory.					

<u>Under minimal supervision, the student was able to:</u>	100 99 98	97 96 95	94 92 90	89 87 85	<85
e. accurately perform routine statistical calculations used in the clinical laboratory.					
f. Given the necessary data, the student will be able to perform the calculations needed to convert findings into appropriate units for reporting					
g. explain the principal and theory of the various tests he or she is performing in the clinical laboratory					
h. After completing assigned test procedures, the student will be able to explain the clinical significance of his or her findings					
i. recognize panic values and immediately report these findings to the appropriate authorized persons					
j. select appropriate formulas for converting laboratory findings into units for reporting.					
k. recognize abnormal test results/ identify abnormal results from test procedures performed, and suggest additional tests to aid in further diagnosis of the suspected pathology.					
l. When given data generated from various divisions of the clinical laboratory, the student will be able to identify any possible discrepancies in test results					
m. Using appropriate quality control parameters, the student will be able to evaluate the validity of test results and institute proper procedures to remedy discrepancies					
n. recognize his/her erroneous results					
o. offer reasonable explanations as to why he/she obtained erroneous test results.					
DISCIPLINE COMPETENCIES: CLINICAL HEMATOLOGY					
1. assemble and organize all specimens, reagents, and supplies needed to perform the tests assigned.					
2. Given selected specimens, gather reagents, supplies, and QC products needed to perform a CBC and a differential.					
3. Perform the following tests, with an acceptable level of accuracy and rate of performance as determined by the laboratory, on selected specimens:					
a. CBC (minimum 50)					
b. Differentials (<i>indicate # in each completed correctly</i>):					
(1) minimum 5 with abnormal RBC morphology					
(2) minimum 7 with abnormal WBC morphology					
(3) minimum 3 leukemias					
(4) correlate 15 scattergrams, normal and abnormal.					
c. PT and APTT (minimum 20)					
d. Body fluid cell count by hemocytometer					
e. ESR					
f. Sickle cell screen					
g. Fibrin Split Products and/or D-Dimer					
h. Fibrinogen					
i. Special coagulation studies as available:					
(1) Anti-thrombin III					
(2) factor assays					
(3) platelet studies					
4. After appropriate instruction, routinely perform preventive maintenance procedures on those instruments to which he or she is assigned.					
5. prepare (where appropriate), store, and maintain the supply of reagents needed for his or her assigned workload.					
6. After performing assigned tests, evaluate QC parameters obtained and institute proper procedures to remedy discrepancies.					

Graduate /Undergraduate:

	A+ A A-	B+ B B-	C+ C C-	D+ D D-	F
Under minimal supervision, the student was able to:	100 99 98	97 96 95	94 92 90	89 87 85	<85
7. review instrument components, principles of operation, and limitations for those instruments to which he is assigned.					
8. routinely check instruments to which he or she is assigned for proper functioning and correct any malfunctions detected, or, when indicated, refer problem to the appropriate person or agency.					
9. accurately interpret results of tests performed, including scatter plots/scatter grams for automated differentials.					
10. demonstrated gain in proficiency/efficiency/accuracy from 1st to last day of rotation					
GUIDELINES FOR CLINICAL HEMATOLOGY					
While in the clinical laboratory, the student is expected to participate in the routine activities of that laboratory. Indicate level of competence at which student performed the following technical tasks: <i>[Indicate N/A (not applicable) if not performed]</i>					
- Perform instrument set-up.					
- Run daily controls and evaluate for acceptability.					
- Evaluate specimens for suitability for testing.					
- Perform necessary specimen preparation for testing.					
- Perform factor assays					
- Perform hemoglobin electrophoresis					
- 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 PT's and APTT's.					
- Run fibrinogen/thrombin and D-dimer.					
Other: Please specify:					

CLINICAL SITE EXAMINATION (OPTIONAL. 20% OF STUDENT GRADE IF GIVEN BY SITE)

- 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 medical laboratory scientist?

2. How would you rate this student as a possible candidate **for employment** in your area?
 Highly recommended (A) Recommended with reservations (C)
 Recommended (B) Not recommended (D or F)

Student's Signature_____

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

Clinical Site _____ Student: _____

Lab Section Urinalysis/Biologic Fluids Date _____

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: 86% 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".

Graduate /Undergraduate:	A+ A A-	B+ B B-	C+ C C-	D+ D D-	F
<u>Under minimal supervision, the student was able to:</u>	100 99 98	97 96 95	94 92 90	89 87 85	<85
GENERAL CLINICAL COMPETENCIES & OBJECTIVES					
<u>I. AFFECTIVE DOMAIN (attitudes, values, interests)</u>					
a. wear appropriate protective clothing in all laboratories at all times					
b. consistently arrive in the laboratory at the assigned time at the beginning of the shift and after breaks..					
c. consistently adhere to safety rules in all areas of the laboratory.					
d. report patient test results only to appropriate authorized persons.					
e. handle patient specimens carefully to avoid contamination of the specimen and himself or others in the laboratory.					
f. consistently clean instruments and work counter and keep the work area well supplied.					
g. perform all assigned tasks willingly					
h. offer assistance to others in the laboratory when his or her work is completed or when otherwise appropriate.					
i. ask pertinent questions to further his/her knowledge of medical laboratory sciences and/or read relevant materials during slack periods.					
j. Given assigned duties and tasks, work in a consistent and organized manner and complete his or her work in a timely fashion					
k. explain the importance of a quality assurance program in the clinical laboratory.					
l. respect the confidentiality of patient test results.					
n. follow oral/written directions					
<u>II. COGNITIVE DOMAIN (knowledge, integration, problem-solving)</u>					
a. accurately state normal values for the various test procedures he or she is performing in the clinical laboratory.					
b. Given appropriate reagents and supplies, select what is needed for each test procedure he or she is performing.					
c. select appropriate quality control products and specimens from supplies provided in the laboratory					
d. identify the proper time to collect various specimens which are sent to the laboratory.					

<u>Under minimal supervision, the student was able to:</u>	100 99 98	97 96 95	94 92 90	89 87 85	<85
e. accurately perform routine statistical calculations used in the clinical laboratory.					
f. Given the necessary data, perform calculations needed to convert findings into appropriate units for reporting					
g. explain the principal and theory of the various tests he or she is performing in the clinical laboratory					
h. After completing assigned test procedures, explain the clinical significance of his or her findings					
i. recognize panic values and immediately report these findings to the appropriate authorized persons					
j. select appropriate formulas for converting laboratory findings into units for reporting.					
k. recognize abnormal test results/ identify abnormal results from test procedures performed, and suggest additional tests to aid in further diagnosis of the suspected pathology.					
l. When given data generated from various divisions of the clinical laboratory, identify any possible discrepancies in test results					
m. Using appropriate quality control parameters, evaluate the validity of test results and institute proper procedures to remedy discrepancies					
n. recognize his/her erroneous results					
o. -offer reasonable explanation(s) for any erroneous test result(s) obtained.					
DISCIPLINE COMPETENCIES: URINALYSIS/OTHER FLUIDS					
1. Demonstrate theoretical knowledge of formed and cellular elements seen in urinary sediments					
2. perform the following tests, with an acceptable level of accuracy and 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					
a. perform urinalysis (minimum 25) at an overall accuracy rate of at least 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					
3. Biochemical Analysis, Other Fluids (list): _____					
4. Microscopic Exam, Other Fluids: <i>Indicate N/A if not applicable.</i>					
- Cerebrospinal					
- Synovial					
- Cavity Effusion					
- 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 (OPTIONAL. 20% OF STUDENT GRADE IF GIVEN BY SITE)

- 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 medical laboratory scientist?

2. How would you rate this student as a possible candidate **for employment** in your area?
 Highly recommended (A) Recommended with reservations (C)
 Recommended (B) Not recommended (D or F)

Student's Signature_____

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

Clinical Site _____ Student: _____
 Lab Section Immunohematology _____ Date _____
 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".

Graduate /Undergraduate:	A+	A	A-	B+	B	B-	C+	C	C-	D+	D	D-	F
<u>Under minimal supervision or with minimal assistance, the student was able to:</u>	100	99	98	97	96	95	94	92	90	89	87	85	<85
GENERAL CLINICAL COMPETENCIES & OBJECTIVES													
<u>I. AFFECTIVE DOMAIN (attitudes, values, interests)</u>													
a. wear appropriate protective clothing in all laboratories at all times													
b. consistently arrive in the laboratory at the assigned time at the beginning of the shift and after breaks.													
c. consistently adhere to safety rules in all areas of the laboratory.													
d. report patient test results only to appropriate authorized persons.													
e. handle patient specimens carefully to avoid contamination of the specimen and himself or others in the laboratory.													
f. consistently clean instruments and work counter and keep the work area well supplied.													
g. perform all assigned tasks willingly													
h. offer assistance to others in the laboratory when his or her work is completed or when otherwise appropriate.													
i. ask pertinent questions to further his or her knowledge of clinical laboratory sciences AND/OR or reading relevant materials during slack periods.													
j. Given assigned duties and tasks, work in a consistent and organized manner and complete his or her work in a timely fashion													
k. explain the importance of a quality assurance program in the clinical laboratory.													
l. respect the confidentiality of patient test results.													
n. follow oral/written directions													
<u>II. COGNITIVE DOMAIN (knowledge, integration, problem-solving)</u>													
a. accurately state normal values for the various test procedures he or she is performing in the clinical laboratory.													
b. Given appropriate reagents and supplies, select what is needed for each test procedure he or she is performing.													
c. select appropriate quality control products and specimens from supplies provided in the laboratory													
d. identify the proper time to collect various specimens which are sent to the laboratory.													

Graduate /Undergraduate:

	A+ A	A- 98	B+ B	B- 95	C+ C	C- 90	D+ D	D- 85	F <85
Under minimal supervision, the student was able to:	100	99	98	97	96	95	94	92	90
e. accurately perform routine statistical calculations used in the clinical laboratory.									
f. Given the necessary data, perform the calculations needed to convert findings into appropriate units for reporting									
g. explain the principal and theory of the various tests he or she is performing in the clinical laboratory									
h. After completing assigned test procedures, explain the clinical significance of his or her findings									
i. recognize panic values and immediately report these findings to the appropriate authorized persons									
j. select appropriate formulas for converting laboratory findings into units for reporting.									
k. recognize abnormal test results/ identify abnormal results from test procedures performed, and suggest additional tests to aid in further diagnosis of the suspected pathology.									
l. When given data generated from various divisions of the clinical laboratory, the student will be able to identify any possible discrepancies in test results									
m. Using appropriate quality control parameters, evaluate the validity of test results and institute proper procedures to remedy discrepancies									
n. recognize his/her erroneous results									
o. offer reasonable explanation(s) for any erroneous test result(s) obtained.									
DISCIPLINE COMPETENCIES: IMMUNOHEMATOLOGY									
1. Conduct and maintain quality control procedures on equipment, reagents and products following instrument, reagent and product check systems									
2. Select appropriate control samples to monitor procedures.									
3. Compare proficiency testing programs: internal and external.									
4. Follow and maintain recordkeeping systems (<i>i.e.</i> specimen accession and retention, instrument maintenance, quality control samples).									
5. Discuss the procedures performed with daily, monthly and periodic quality control in terms of specificity, sensitivity and reactivity.									
6. Describe titer and its role in blood bank.									
7. List factors which result in false positive and/or false negative direct antihuman globulin tests.									
8. Discuss the purpose and preparation of Coombs control cells and complement sensitized cells.									
9. Assess and/or respond to clinical considerations to rank the order of performance of procedures. (routine, STAT, diagnosis, treatment).									
10. Inspect and evaluate suitability of a specimen for the analysis requested, fulfilling all internal and external policies and regulations.									
11. Maintain an environmentally safe work area.									
12. Discuss, and perform as appropriate, procedures for processing ARC & hospital-collected units, as well as washing, freezing and thawing of RBC.									
13. Organize test tubes for performing multiple tests.									
14. Wash test tubes for antiglobulin tests.									
15. Perform and interpret the following tests, with acceptable level of accuracy and rate of performance as determined by laboratory, on selected specimens using manual and automated methods (if applicable):									
a. ABO and RH typing (minimum 25) at a minimum accuracy of 98%									
b. Compatibility testing (minimum 25 multi-unit) at a minimum accuracy of 98%. At least one must be a 4-unit crossmatch									
c. Direct antiglobulin test									
d. Antigen typing									
e. Rh globulin work-up									
f. Antibody screening and identification (minimum 10) at a minimum accuracy of 95%									
g. Absorption and elution techniques									

Graduate /Undergraduate: **A+ A A- B+ B B- C+ C C- D+ D D- F**

<u>Under minimal supervision, the student was able to:</u>	100 99 98	97 96 95	94 92 90	89 87 85	<85
16. prepare red blood cell suspensions for testing					
17. perform manual test procedures with reasonable speed while maintaining accuracy, recognizing that proficiency and efficiency are critical to appropriate patient management.					
<i>Interpretation/Diagnosis:</i> analyze data and interpret results, implementing corrective actions when indicated.					
18. Read strengths of agglutination reactions					
19. On specimens <i>previously tested</i> by the laboratorian, perform ABO and Rh typing at an accuracy rate of 100%.					
20. Using specimens and reagents provided, identify specificity of an antibody at an accuracy rate of 95%.					
21. Using specimens and reagents provided, the student will perform compatibility tests at an accuracy rate of 98%.					
22. Given selected patient specimens, perform ABO and Rh typings detecting any discrepancies and suggesting possible solutions.					
23. perform and interpret a minimum of 10 antibody screens:					
a. single antibody					
b. multiple antibody panel					
24. Given selected patient specimens, recognize rouleaux and hemolysis while reading reactions .and give plausible explanations for their occurrence.					
25. When performing Rh testing on selected specimens, resolve a positive Rh ₀ control, if used.					
26. Obtain patient information by review of medical records as pertinent to test performance and/or evaluation of results (<i>eg: drugs administered, pregnancy status</i>).					
27. observe/perform component preparations and release of components <i>Indicate whether student observed or performed. If observation only, student accurately described and/or responded to questions on procedure and result parameters.</i>					
28. perform/observe elution/transfusion reaction work-up/ HDN and fetal screen work-up <i>Indicate whether student observed or performed. If observation only, student accurately described and/or responded to questions on procedure and result parameters.</i>					

CLINICAL SITE EXAMINATION (OPTIONAL. 20% OF STUDENT GRADE IF GIVEN BY SITE)

- 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 medical laboratory scientist?

2. How would you rate this student as a possible candidate **for employment** in your area?
- | | |
|---|--|
| <input type="checkbox"/> Highly recommended (A) | <input type="checkbox"/> Recommended with reservations (C) |
| <input type="checkbox"/> Recommended (B) | <input type="checkbox"/> Not recommended (D or F) |

Student's Signature_____

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

Clinical Site _____ Student: _____
 Lab Section **Microbiology** _____ Date _____
 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".

Graduate /Undergraduate:	A+ A A-	B+ B B-	C+ C C-	D+ D D-	F
<u>Under minimal supervision, the student was able to:</u>	100 99 98	97 96 95	94 92 90	89 87 85	<85
GENERAL CLINICAL COMPETENCIES & OBJECTIVES					
<u>I. AFFECTIVE DOMAIN (attitudes, values, interests)</u>					
a. wear appropriate protective clothing in all laboratories at all times					
b. consistently arrive in the laboratory at the assigned time at the beginning of the shift and after breaks..					
c. consistently adhere to safety rules in all areas of the laboratory.					
d. report patient test results only to appropriate authorized persons.					
e. handle patient specimens carefully to avoid contamination of the specimen and himself or others in the laboratory.					
f. consistently clean instruments and work counter and keep the work area well supplied.					
g. perform all assigned tasks willingly					
h. offer assistance to others in the laboratory when his or her work is completed or when otherwise appropriate.					
i. ask pertinent questions to further his or her knowledge of clinical laboratory sciences AND/OR reading relevant materials during slack periods.					
j. Given assigned duties and tasks, work in a consistent and organized manner and complete his or her work in a timely fashion					
k. explain the importance of a quality assurance program in the clinical laboratory.					
l. respect the confidentiality of patient test results.					
n. follow oral/written directions					
<u>II. COGNITIVE DOMAIN (knowledge, integration, problem-solving)</u>					
a. 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. select appropriate quality control products and specimens from supplies provided in the laboratory					
d. identify the proper time to collect various specimens which are sent to the laboratory.					
e. accurately perform routine statistical calculations used in the clinical laboratory.					

Graduate /Undergraduate: **A+ A A- B+ B B- C+ C C- D+ D D- F**

<u>Under minimal supervision, the student was able to:</u>	A+ A A-	B+ B B-	C+ C C-	D+ D D-	F
	100 99 98	97 96 95	94 92 90	89 87 85	<85
f. Given the necessary data, the student will be able to perform the calculations needed to convert findings into appropriate units for reporting					
g. explain the principal and theory of the various tests he or she is performing in the clinical laboratory					
h. After completing assigned test procedures, explain the clinical significance of his or her findings					
i. recognize panic values and immediately report these findings to the appropriate authorized persons					
j. select appropriate formulas for converting laboratory findings into units for reporting.					
k. recognize abnormal test results/ identify abnormal results from test procedures performed, and suggest additional tests to aid in further diagnosis of the suspected pathology.					
l. When given data generated from various divisions of the clinical laboratory, the student will be able to identify any possible discrepancies in test results					
m. Using appropriate quality control parameters, the student will be able to evaluate the validity of test results and institute proper procedures to remedy discrepancies					
n. recognize his/her erroneous results					
o. offer reasonable explanations as to why he/she obtained erroneous test results.					
DISCIPLINE COMPETENCIES: MICROBIOLOGY					
1. Select appropriate media for planting all assigned specimens.					
a. aerobic					
b. anaerobic					
2. Determine appropriate incubation temperatures and atmospheric requirements for all assigned specimens.					
3. Select and organize reagents, supplies, and materials needed to process, plant, and identify all assigned specimens.					
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. Grade according to percent acceptable performance					
6. Correctly process, plant, and incubate assigned specimens Grade according to percent acceptable performance					
7. Given selected cultures, perform tests and procedures necessary to accurately identify the following categories of pathogens:					
a. aerobic bacterium(ia) Minimum: 25					
b. anaerobic bacterium(ia) Minimum: 1					
c. fungi Minimum 1 mold and 1 yeast					
d. parasite(s)					
e. virus(es)					
8. Perform and accurately interpret automated antimicrobial sensitivity testing on all appropriate cultures. Grade according to percent acceptable performance					
9. Perform and interpret manual antibiotic susceptibility Grade according to percent acceptable performance					
10. Work independently to identify pathogens present, interpret results, and report appropriate findings.					
11. Correlate identification of pathogens with antimicrobial sensitivity patterns and perform appropriate tests to remedy any discrepancies.					

Graduate /Undergraduate: **A+ A A- B+ B B- C+ C C- D+ D D- F**

<u>Under minimal supervision, the student was able to:</u>	100 99 98	97 96 95	94 92 90	89 87 85	<85
12. perform and interpret testing in routine bacteriology					
13. observe/perform testing in AFB/mycology/parasitology <i>Indicate whether student observed or performed. If observation only, student accurately described and/or responded to questions on procedure and result parameters.</i>					
a. Tuberculosis					
b. Other: specify					
14. Observe/perform Molecular Pathology Techniques/Applications <i>Indicate whether student observed or performed. If observation only, student accurately described and/or responded to questions on procedure and result parameters. Indicate which techniques apply:</i>					
a. <u>Separation and Detection:</u>					
- Probe hybridization / Hybrid capture					
- In-situ hybridization (fluorescent-FISH / chromogenic-CISH)					
- Nucleic acid purification					
- Blotting and probing procedures					
b. <u>Nucleic Acid Amplification:</u>					
- Polymerase chain reaction (PCR)					
- PCR variations (e.g., RT, nested, multiplex)					
- Sequence based (NASBA)					
- Transcription-mediated technology (TMA)					
- Strand displacement amplification (SDA)					
c. <u>DNA Sequence Analysis:</u>					
- Chain terminators					
- Manual gel sequencing					
- Automated sequence analyzer					
- Restriction fragment length polymorphism (RFLP)					
- Other (e.g., pyrosequencing)					
d. <u>Other Techniques:</u>					
- Denaturing gradient gel					
- Denaturing HPLC					
- Heteroduplex and single strand conformation analysis					
- Melting curves analysis					
<i>Laboratory Operations:</i>					
15. Log specimens; record and report appropriate results					
16. Participate in quality control procedures.					
17. Evaluate acceptability of quality control					
18. Assist in preparation of specimens for analysis					

CLINICAL SITE EXAMINATION (OPTIONAL. 20% OF STUDENT GRADE IF GIVEN BY SITE)

- 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 **Microbiology**

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 medical laboratory scientist?

2. How would you rate this student as a possible candidate **for employment** in your area?
 Highly recommended (A) Recommended with reservations (C)
 Recommended (B) Not recommended (D or F)

Student's Signature_____

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

Clinical Site _____ Student: _____
 Lab Section **Immunopathology** (flow cytometry, tissue typing, immunology, serology, virology) Date _____
 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".

Graduate /Undergraduate:	A+ A A-	B+ B B-	C+ C C-	D+ D D-	F
Under minimal supervision, the student was able to:	100 99 98	97 96 95	94 92 90	89 87 85	<85
GENERAL CLINICAL COMPETENCIES & OBJECTIVES					
I. AFFECTIVE DOMAIN (attitudes, values, interests)					
a. wear appropriate protective clothing in all laboratories at all times					
b. consistently arrive in the laboratory at the assigned time at the beginning of the shift and after breaks..					
c. consistently adhere to safety rules in all areas of the laboratory.					
d. report patient test results only to appropriate authorized persons.					
e. handle patient specimens carefully to avoid contamination of the specimen and himself or others in the laboratory.					
f. consistently clean instruments and work counter and keep the work area well supplied.					
g. perform all assigned tasks willingly					
h. offer assistance to others in the laboratory when his or her work is completed or when otherwise appropriate.					
i. ask pertinent questions to further his or her knowledge of clinical laboratory sciences AND/OR or reading relevant materials during slack periods.					
j. Given assigned duties and tasks, work in a consistent and organized manner and complete his or her work in a timely fashion					
k. explain the importance of a quality assurance program in the clinical laboratory.					
l. respect the confidentiality of patient test results.					
n. follow oral/written directions					
II. COGNITIVE DOMAIN (knowledge, integration, problem-solving)					
a. 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. select appropriate quality control products and specimens from supplies provided in the laboratory					
d. identify the proper time to collect various specimens which are sent to the laboratory.					
e. accurately perform routine statistical calculations used in the clinical laboratory.					

Graduate /Undergraduate:

A+ A A- B+ B B- C+ C C- D+ D D- F

	A+	A	A-	B+	B	B-	C+	C	C-	D+	D	D-	F
Under minimal supervision, the student was able to:	100	99	98	97	96	95	94	92	90	89	87	85	<85
f. Given the necessary data, the student will be able to perform the calculations needed to convert findings into appropriate units for reporting													
g. explain the principal and theory of the various tests he or she is performing in the clinical laboratory													
h. After completing assigned test procedures, explain the clinical significance of his or her findings													
i. recognize panic values and immediately report these findings to the appropriate authorized persons													
j. select appropriate formulas for converting laboratory findings into units for reporting.													
k. recognize abnormal test results/ identify abnormal results from test procedures performed, and suggest additional tests to aid in further diagnosis of the suspected pathology.													
l. When given data generated from various divisions of the clinical laboratory, the student will be able to identify any possible discrepancies in test results													
m. Using appropriate quality control parameters, the student will be able to evaluate the validity of test results and institute proper procedures to remedy discrepancies													
n. recognize his/her erroneous results													
o. 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.													
2. observe and/or perform, with at an accuracy of 95%, the following tests: <i>Indicate whether student observed or performed. If observation only, student accurately described and/or responded to questions on procedure and result parameters.</i>													
a. RPR													
b. Monospot													
c. ELISA method for infectious disease Specify_____													
d. other routine Immunologic testing as available Specify_____													
3. observe and/or perform the following tests as available: <i>Indicate whether student observed or performed. If observation only, student accurately described and/or responded to questions on procedure and result parameters.</i>													
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. store and maintain supply of reagents needed for assigned workload													
5. evaluate QC parameters obtained and institute proper procedures to remedy discrepancies.													
6. relate test results to patient conditions													
Laboratory Operations:													
7. Log specimens; record and report appropriate results													
8. Participate in quality control procedures.													
9. Evaluate acceptability of quality control													
10. Assist in preparation of specimens for analysis													

CLINICAL SITE EXAMINATION (OPTIONAL. 20% OF STUDENT GRADE IF GIVEN BY SITE)

- 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 medical laboratory scientist?

2. How would you rate this student as a possible candidate **for employment** in your area?
 Highly recommended (A) Recommended with reservations (C)
 Recommended (B) Not recommended (D or F)

Student's Signature_____

Evaluator's Signature_____

Date_____

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

III. Clinical Experience

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

2. List the 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 learning experience within the University with the practical 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

Thomas Jefferson University
Jefferson School of Health Professions
Department of Bioscience Technologies
Program in Medical Laboratory Science
CLINICAL SUMMARY EVALUATION

THIS IS A PERMANENT STUDENT RECORD

Term: _____ Year: 20____ Student: _____

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

<input type="checkbox"/> Practicum I	<input type="checkbox"/> MT 412	<input type="checkbox"/> LS 812	Discipline: _____
<input type="checkbox"/> Practicum II	<input type="checkbox"/> MT 422	<input type="checkbox"/> LS 813	Discipline: _____
<input type="checkbox"/> Practicum III	<input type="checkbox"/> MT 442	<input type="checkbox"/> LS 814	Discipline: _____
<input type="checkbox"/> Practicum IV	<input type="checkbox"/> MT 454	<input type="checkbox"/> 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: _____

Clinical Evaluation: _____ (40%)
General Competencies

Clinical Evaluation: _____ (40%)
Discipline-specific Competencies

Clinical Site Exam: _____ (20%)
(If required by Clinical Site)

Additions/Deductions to Assessment (explain) _____%

Total: _____%

Letter Grade: _____

Faculty Signature: _____ Date: _____

Notes: _____

SCHEDULE FOR PRACTICUM ROTATIONS
ACADEMIC YEAR 2011-2012 (SEPTEMBER 11 – AUGUST 12)
for Undergraduate and/or Graduate Practicum Courses

**Fall
'11**

	M	T	W	R	F	
Sept	5	6	7	8	9	
	12	13	14	15	16	Block I (9/12 Student Practicum Meetings) 9/13 - 10/14 T,W,R,F 20 Days
	19	20	21	22	23	
	26	27	28	29	30	
Oct	3	4	5	6	7	
	10	11	12	13	14	
Oct	17	18	19	20	21	
	24	25	26	27	28	
Nov	31	1	2	3	4	Block II 11/1 - 12/09 T,W,R,F 20 Days (Nov 21-25 Thanksgiving/Practicum Break)
	7	8	9	10	11	
	14	15	16	17	18	
	21	22	23	24	25	
Dec	28	29	30	1	2	
	5	6	7	8	9	
	12	13	14	15	16	
	19	20	21	22	23	
	26	27	28	29	30	

Spring

	M	T	W	R	F	
Jan	2	3	4	5	6	
	9	10	11	12	13	
	16	17	18	19	20	Block III 1/17 – 2/17 T,W,R,F 20 Days
	23	24	25	26	27	
Feb	30	31	1	2	3	
	6	7	8	9	10	
	13	14	15	16	17	
	20	21	22	23	24	
Mar	27	28	29	1	2	
	5	6	7	8	9	(March 5-9: Spring/Practicum Break)
	12	13	14	15	16	Block IV 3/13 – 4/13
	19	20	21	22	23	

Apr	26	27	28	29	30	T,W,R,F 20 Days
	2	3	4	5	6	
	9	10	11	12	13	
	16	17	18	19	20	
	23	24	25	26	27	

ACADEMIC YEAR 2011-2012 (SEPTEMBER 11 – AUGUST 12)
for Undergraduate and/or Graduate Practicum Courses

SUMMER '12 SCHEDULE

Summer I '12						
	M	T	W	R	F	
April	23	24	25	26	27	(4/26 or 27 Student Practicum Meetings)
May	30	1	2	3	4	Block I 4/30 - 5/25
	7	8	9	10	11	M,T,W,R,F = 19 Days
	14	15	16	17	18	(May 14 Commencement)
	21	22	23	24	25	
May/June	28	29	30	31	1	Block II 5/29 - 6/22 (May 28: Holiday)
June	4	5	6	7	8	M,T,W,R,F = 19 Days
	11	12	13	14	15	
	18	19	20	21	22	
	25	26	27	28	29	Block III 6/25 - 7/20
July	2	3	4	5	6	M,T,W,R,F = 19 Days (July 4: Holiday)
	9	10	11	12	13	
	16	17	18	19	20	
	23	24	25	26	27	Block IV 7/23 - 8/17
	30	31	1	2	3	M,T,W,R,F = 20 Days
Aug	6	7	8	9	10	
	13	14	15	16	17	
	20	21	22	23	24	August 20-30 Available for Make-Up days
	27	28	29	30	31	Program Completion - Aug 31

Minimum Total Days Required Summer = 77

MEDICAL LABORATORY SCIENTIST EXAMINATION CONTENT

This document should serve as a useful guide for examination preparation. The Board of Certification criterion-referenced examinations are constructed to measure the competencies described in the Certification Levels Definitions. These competency statements are specified into task definitions, linked to each of the content outlines, and measured by the test items.

It should be noted that, for the Medical Laboratory Scientist, the Certification Levels Definitions refer to skills and abilities expected at career entry, not those that may be acquired with subsequent experience. Certification Levels are hierarchical and it is assumed that the technologist level encompasses knowledge and skills of the preceding technician level.

TECHNOLOGIST LEVEL

Knowledge

The technologist has an understanding of the underlying scientific principles of laboratory testing as well as the technical, procedural, and problem-solving aspects. The technologist has a general comprehension of the many factors that affect health and disease, and recognizes the importance of proper test selection, the numerous causes of discrepant test results (patient and laboratory), deviations of test results, and ethics including result confidentiality. The technologist correlates abnormal laboratory data with pathologic states, determines validity of test results, and need for additional tests. The technologist understands and enforces regulatory requirements, safety regulations, uses statistical methods and applies business and economic data in decision making. The technologist has an appreciation of the roles and interrelationships of paramedical and other health related fields and follows the ethical code of conduct for the profession.

Technical Skills

Performs full range of chemical, microbiologic, immunologic, hematologic, and immunohematologic laboratory procedures.

Participates in the evaluation of new techniques and procedures in the laboratory.

The technologist is capable of performing and interpreting standard, complex, and specialized tests. The technologist has an understanding of quality assurance sufficient to implement and monitor quality control programs. The technologist is able to participate in the introduction, investigation and implementation of new procedures and in the evaluation of new instruments. The technologist evaluates computer-generated data and troubleshoots problems. The technologist understands and uses troubleshooting, validation, statistical, computer, and preventive maintenance techniques to insure proper laboratory operation.

Problem Solving and Analytical Decision Making

Evaluates and solves problems related to collection and processing of biological specimens for analysis.

Differentiates and resolves technical, instrument, physiologic causes of problems or unexpected test results.

The technologist has the ability to exercise initiative and independent judgment in dealing with the broad scope of procedural and technical problems. The technologist is able to participate in, and may be delegated, the responsibility of decisions involving: quality control/quality assurance programs, instrument and methodology selection, preventive maintenance, safety procedures, reagent purchases, test selection/utilization, research procedures, and computer/statistical data.

Communication

Provides administrative and technical consulting services on laboratory testing.

The technologist communicates technical information such as answering inquiries regarding test results, methodology, test specificity and sensitivity and specific factors that can influence test results to other health professionals and consumers. The technologist develops acceptable criteria, laboratory procedure manuals, reports, guidelines, and research protocols.

October 2009

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Teaching and Training Responsibilities

Incorporates principles of educational methodology in the instruction of laboratory personnel, other health care professionals and consumers.

The technologist provides instruction in theory, technical skills, safety protocols, and application of laboratory test procedures. The technologist provides continuing education for laboratory personnel and maintains technical competence. The technologist may participate in the evaluation of the effectiveness of educational programs.

Supervision and Management

Gives direction and guidance to technical and support personnel.

The technologist has an understanding of management theory, economic impact and management functions. The technologist participates in and takes responsibility for establishing technical and administrative procedures, quality control/quality assurance, standards of practice, safety and waste management procedures, information management and cost effective measures. The technologist supervises laboratory personnel.

THE EXAMINATION MODEL

The Board of Certification criterion-referenced examination model consists of three interrelated components:

COMPETENCY STATEMENTS describe the skills and tasks that Medical Laboratory Scientists should be able to perform.

CONTENT OUTLINE delineates general categories or subtest areas of the examination.

TAXONOMY levels describe the cognitive skills required to answer the question.

Level 1 - Recall: Ability to recall or recognize previously learned (memorized) knowledge ranging from specific facts to complete theories.

Level 2 - Interpretive Skills: Ability to utilize recalled knowledge to interpret or apply verbal, numeric or visual data.

Level 3 - Problem Solving: Ability to utilize recalled knowledge and the interpretation/application of distinct criteria to resolve a problem or situation and/or make an appropriate decision.

EXAMINATION REPORTING MECHANISMS

After the examination administration, preliminary test results (pass or fail) will appear on the computer screen. An official examination performance report will be mailed to the examinee within 10 business days of the examination administration, provided all official documents have been received.

The examinee Performance Report provides the scaled score on the total examination and pass/fail status for all candidates. In addition, failing candidates receive scaled scores for each subtest (see content outline for subtests). This information may help the examinee identify areas of strengths and weaknesses in order to develop a study plan for future examinations. A total scaled score of 400 is required to pass the examination.

SUBTEST	MLS
Blood Bank (BBNK)	17%
Chemistry (CHEM)	21%
Hematology (HEMA)	20%
Immunology (IMMU)	8%
Laboratory Operations (LO)	6%
Microbiology (MICR)	20%
Urinalysis and Other Body Fluids (UA)	8%

COMPETENCY STATEMENTS MEDICAL LABORATORY SCIENTIST

For the laboratory areas of Body Fluids, Blood Bank, Chemistry, Hematology, Immunology and Microbiology, the following competencies are tested:

APPLIES KNOWLEDGE OF

- theory and principles related to:
 - anatomy (Body Fluids)
 - biochemistry (Chemistry and Hematology)
 - education
 - genetics (Blood Bank)
 - growth characteristics/diagnostic and infective forms (Microbiology)
 - immunology (Blood Bank and Immunology)
 - laboratory information systems
 - physiology (Body Fluids, Chemistry, Hematology, Immunology)
- data security/patient confidentiality
- fundamental biological characteristics related to laboratory testing
- medical terminology
- principles of performing basic/special laboratory procedures
- sources of error in laboratory testing
- standard operating procedures
- theory and practice related to laboratory operations (management/safety/education/R&D)

SELECTS APPROPRIATE

- controls for test performed
- course of action
- instruments for new laboratory procedures
- instruments to perform requested test
- quality control procedures
- reagents/media/blood products
- routine/special procedures to verify test results
- type of sample and method for test requested

PREPARES / PROCESSES

- controls
- equipment and instruments
- reagents/media/blood products
- specimens

CALCULATES RESULTS

ASSESSES TEST RESULTS BY CORRELATING LABORATORY DATA WITH

- clinical or other laboratory data
- physiologic processes to validate test results and procedures
- quality control data
- results obtained by alternate methodologies

EVALUATES

- appropriate actions and methods
- corrective actions
- patient-related requirements
- possible sources of error or inconsistencies
- quality control procedures
- specimen-related requirements

EVALUATES LABORATORY DATA TO

- assess test for procedural validity/accuracy
- assure personnel safety
- check for procedural/technical problems
- make identifications
- recognize and report abnormal test results and/or the need for additional testing
- recognize and resolve possible inconsistent results/sources of error
- recognize related disease states
- take corrective action
- verify test results for reporting

CONTENT OUTLINE MEDICAL LABORATORY SCIENTIST

Refer to the MLS Competency Statements for the competencies tested in each subtest.

- I. **BLOOD BANK (17% of total exam)**
 - 1. **ABO and Rh**
 - A. ABO
 - B. Rh
 - 2. **Antibody Screen and Identification**
 - A. Antibody Screen
 - B. Antibody Identification
 - 1) Duffy
 - 2) Ii
 - 3) Kell
 - 4) Kidd
 - 5) Lewis
 - 6) MNS
 - 7) P
 - 8) Rh
 - 9) Multiple antibodies
 - 3. **Crossmatch and Special Tests**
 - A. Crossmatch
 - B. Special Tests
 - 1) DAT
 - 2) Phenotyping and genotyping
 - 3) Elution/adsorption
 - 4) Antibody titer
 - 5) Pre-warm technique
 - 6) Rosette and Kleihauer-Betke
 - 4. **Blood Donation, Transfusion Therapy, Transfusion Reactions and Hemolytic Disease of the Fetus and Newborn (HDFN)**
 - A. Blood Donation
 - 1) Donor requirements
 - 2) Donor testing
 - B. Transfusion Therapy
 - 1) RBC
 - 2) PLT
 - 3) FFP
 - 4) Cryoprecipitated AHF
 - 5) RhIG
 - C. Transfusion Reactions
 - D. HDFN
 - II. **URINALYSIS & OTHER BODY FLUIDS (8% of total exam)**
 - 1. **Urinalysis**
 - A. Pre-Analytical
 - B. Physical
 - 1) Color and clarity
 - 2) Specific gravity/osmolality
 - C. Chemical
 - 1) Reagent strip
 - 2) Confirmatory tests
 - D. Microscopic
 - 1) Cells
 - 2) Casts
 - 3) Crystals
 - 4) Contaminants
 - 5) Artifacts/microorganisms
 - E. Complete Urinalysis (includes physical, chemical, and microscopic)
 - F. Physiology
 - 2. **Other Body Fluids**
 - A. CSF
 - B. Amniotic, Gastric, and Synovial Fluids, Serous Body Fluids, Sweat, Semen and Feces
- III. **CHEMISTRY (21% of total exam)**
 - 1. **Carbohydrates, Acid Base and Electrolytes**
 - A. Carbohydrates
 - 1) Glucose
 - 2) Glycosylated hemoglobin
 - 3) Other carbohydrates (e.g. lactate)
 - B. Acid Base
 - 1) pH, pCO₂, pO₂
 - 2) Osmolality, base excess
 - C. Electrolytes
 - 1) Sodium, potassium, chloride, bicarbonate, anion gap
 - 2) Calcium, magnesium, phosphorus
 - 2. **Proteins and Other Nitrogen-Containing Compounds**
 - A. Protein and Other Nitrogen-Containing Compounds
 - 1) Total protein, albumin
 - 2) Globulins (alpha 1, alpha 2, beta, gamma)
 - 3) Ferritin, transferrin
 - 4) Iron and TIBC
 - 5) Ammonia
 - 6) Creatinine, BUN
 - 7) Uric acid
 - 8) Troponin
 - 9) Other (e.g., BNP)
 - B. Heme Derivatives
 - 1) Hemoglobin (S, fetal, A₂, plasma)
 - 2) Bilirubin, urobilinogen
 - 3) Other (e.g., myoglobin)

3. Enzymes, Lipids and Lipoproteins

- A. Enzymes
 - 1) Amylase, lipase
 - 2) AST, ALT
 - 3) CK, LD
 - 4) ALP
 - 5) GGT
 - 6) Other
- B. Lipids and Lipoproteins
 - 1) Cholesterol (total, HDL, LDL)
 - 2) Triglycerides
 - 3) Phospholipids (PG)
 - 4) Other lipids and lipoproteins

4. Special Chemistry (Endocrinology, Tumor Markers, TDM, Toxicology)

- A. Endocrinology and Tumor Markers
 - 1) T₃, T₄, TBG, TSH
 - 2) hCG, FSH, LH, estriol, estradiol
 - 3) Other hormones (e.g. cortisol)
 - 4) Tumor markers (alpha fetoprotein, CEA, hCG, PSA)
- B. TDM and Toxicology
 - 1) Therapeutic drug monitoring
 - 2) Drugs of abuse
 - 3) Other toxicology (e.g., lead)

IV. HEMATOLOGY (20% of total exam)

1. Erythrocytes and Leukocytes

- A. Red Blood Cells and Indices
 - 1) RBC count
 - 2) Hemoglobin, hematocrit and indices
- B. White Blood Cells
 - 1) WBC count
 - 2) Cytochemical stains
- C. CBC (includes count, morphology and/or differential)

2. Other Tests

- A. Reticulocyte Count and Other RBC Inclusions
- B. ESR
- C. Tests for Hemoglobin Defects
 - 1) Sickle cell tests
 - 2) Hemoglobin electrophoresis
- D. Other

3. Morphology and Differentials

- A. Red Blood Cell Morphology
- B. White Blood Cell Morphology
- C. Differential (Whole Blood and Bone Marrow)
- D. Platelet Morphology

4. Platelets and Hemostasis

- A. Platelets
 - 1) Platelet count
 - 2) Bleeding time and platelet function
- B. Hemostasis
 - 1) PT, aPTT, TT
 - 2) Fibrinogen, FDP, D-dimer
 - 3) Factor assays, antithrombin III
 - 4) Circulating anticoagulants, plasminogen
 - 5) Mixing studies
 - 6) Anticoagulant therapy

7) Other

V. IMMUNOLOGY (8% of total exam)

1. Immunity

- A. Autoimmunity
 - 1) ANA, anti-DNA
 - 2) CRP/RF
 - 3) Thyroid antibodies
 - 4) Other autoimmunes (e.g., extractable nuclear antigen)
- B. Pre-Analytical, Test Principles

2. Infectious Diseases

- A. Viral
 - 1) EBV/infectious mononucleosis
 - 2) Hepatitis
 - 3) HIV/HTLV/CMV
 - 4) Rubella/measles
 - 5) Other viruses
- B. Microbial
 - 1) Cold agglutinins
 - 2) Syphilis
 - 3) Other microorganisms

VI. MICROBIOLOGY (20% of total exam)

1. General Microbiology, Preeanalytical, and Aerobic Gram-positive Cocci

- A. General Microbiology, Pre-Analytical and Susceptibility Testing
- B. Aerobic Gram-positive Cocci: *Staphylococcus*, *Streptococcus*, *Enterococcus*, other (e.g., *Gemella*, *Leuconostoc*, *Micrococcus*)

2. Gram-negative Bacilli

- A. *Enterobacteriaceae*: *Citrobacter*, *Escherichia*, *Enterobacter*, *Klebsiella*, *Morganella*, *Proteus*, *Providencia*, *Salmonella*, *Serratia*, *Shigella*, *Yersinia*
- B. Other Gram-negative Bacilli: *Acinetobacter*, *Aeromonas*, *Bordetella*, *Brucella*, *Campylobacter*, *Eikenella*, *Francisella*, *Haemophilus*, *Helicobacter*, *Legionella*, *Pasteurella*, *Plesiomonas*, *Pseudomonas*, *Burkholderia*, *Stenotrophomonas*, *Chryseobacterium*, *Vibrio*, *HACEK*, *Bartonella*, *Capnocytophaga*

3. Gram-negative Cocci, Gram-positive Bacilli and Anaerobes

- A. Aerobic Gram-negative Cocci (e.g., *Neisseria*, *Moraxella*)
- B. Aerobic or Facultative Gram-positive Bacilli: *Bacillus*, *Corynebacterium*, *Erysipelothrix*, *Gardnerella*, *Lactobacillus*, *Listeria*, *Nocardia*, *Streptomyces*
- C. Anaerobes
 - 1) Gram-positive: *Bifidobacterium*, *Clostridium*, *Eubacterium*, *Actinomyces*, *Peptostreptococcus*, *Propionibacterium*
 - 2) Gram-negative: *Bacteroides*, *Fusobacterium*, *Porphyromonas*, *Prevotella*, *Veillonella*

4. Fungus, Viruses, Mycobacteria and Parasites

- A. Fungi
 - 1) Yeast (e.g., *Candida*, *Cryptococcus*, *Geotrichum*, *Malassezia*)
 - 2) Dimorphic fungi (e.g., *Blastomyces*, *Coccidioides*, *Histoplasma*, *Sporothrix*)
 - 3) Dermatophytes (e.g., *Epidermophyton*, *Microsporum*, *Trichophyton*)
 - 4) Zygomycetes (e.g., *Absidia*, *Mucor*, *Rhizopus*)
 - 5) Opportunistic molds/septate hyaline molds (e.g., *Aspergillus*, *Penicillium*)
 - 6) Dermatiaceous molds
- B. Mycobacteria
 - 1) *Mycobacterium tuberculosis* complex (e.g., *M. tuberculosis*)
 - 2) Other Mycobacteria (e.g., *M. avium*, *M. avium-intracellulare*, *M. fortuitum*, *M. gordonae*, *M. kansasii*, *M. leprae*, *M. marinum*, *M. scrofulaceum*)
- C. Viruses and Other Microorganisms
 - 1) Viruses (rapid antigen detection)
 - 2) Other microorganisms (e.g., *Chlamydia*, *Mycoplasma*)
- D. Parasites
 - 1) Blood and tissue protozoa (e.g., *Plasmodium*, *Pneumocystis*, *Trypanosoma*)
 - 2) Intestinal and urogenital protozoa (e.g., *Cryptosporidium*, *Entamoeba*, *Giardia*, *Trichomonas*)
 - 3) Intestinal and tissue helminths (e.g., *Ascaris*, *Enterobius*, hookworm, *Schistosoma*, *Strongyloides*, *Taenia*, *Trichinella*, *Trichuris*)

VII. LABORATORY OPERATIONS

(6% of total exam)

- 1. Quality Assessment
 - A. Pre-Analytical
 - B. Quality Control
 - C. Compliance
 - D. Regulation
- 2. Safety
- 3. Management
 - A. Purchasing
 - B. Inventory Control
 - C. Competency
- 4. Laboratory Mathematics
- 5. Instrumentation and Analytical Techniques
 - A. Molecular Techniques
- 6. Education and Communication
- 7. Laboratory Information Systems

All Board of Certification examinations use conventional units for results and reference ranges.

END OF CONTENT GUIDELINE

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TJU Career Development Center
Services for Students & Alumni
215-503-9834

The Career Development Center currently serves students in the Jefferson College of Graduate Studies, as well as the Jefferson Schools of Health Professions, Nursing, Pharmacy, and Population Health. Below is a brief overview of the services offered.

WORKSHOPS:

- Resume Writing
- Job Searching
- Interviewing Skills
- Evaluating & Negotiating Job Offers
- Digital Dirt
- Introduction to *Symlicity* online career management system (coming soon!)

RESOURCES – FOR CAREER EXPLORATION & JOB SEARCH:

- [Symlicity, on-line career management system:](#)
 - Students & Alumni post resumes/CVs, search for jobs and find employer contacts;
 - Career Center staff then reviews & approves posted resumes & CVs and provides feedback;
 - Students register for Career Development Center workshops and events;
 - Employers post job openings and search for student and alumni candidates
- Career Resource Library (Print and electronic):
 - Regional and industry-specific employer guides
 - Resources on networking, negotiating, writing cover letters and CVs, interview questions, and more
 - Trade publications providing leads on potential employers
 - Guides on working/volunteering abroad
 - Frequently requested handouts available via pdf format on site
- Career Development Center website:
 - “Ask a career-related question” e-mail link
 - Frequently requested handouts available via pdf format on site

CAREER COUNSELING:

Individual Appointments:

- Job search strategies (includes local and long-distance)
- Review and critique of Resumes, CVs, and cover letters
- Mock Interviews – practice with students and provide feedback (includes phone mock interviews)
- Career Inventories/Assessments – MBTI, Strong Interest Inventory
- Phone career counseling to alumni and students who live at a distance (includes phone mock interviews)
- Special topics: (i.e. Disclosing a disability to an employer, Over 40 in the job search, Overcoming potential barriers to employment such as criminal background, Career changing, Stay-at-home parents returning to workforce, etc.)

Walk-in Hours:

- Quick career-related questions and resume critiques
- Offered every Tuesday & Thursday, 12:00-2:00