

**HOUSTON COMMUNITY COLLEGE
COLEMAN COLLEGE FOR HEALTH SCIENCES**

MEDICAL LABORATORY TECHNICIAN PROGRAM (MLT)

COURSE SYLLABUS

MLAB 1266 – Practicum III Chemistry and Urinalysis/Body Fluids
Sophomore

CRN 70075 - Fall 2013

Practicum Rotation Site

HCC Coleman College

Spring Hours: 15 lab/7 weeks/Monday-Thursday 7:00 am – 3:30 pm

Credit: 2 Hours

240 Contact Hours

Type of Instruction: Practicum experience

Administrative Notes

Clinical Coordinators

Theresa Spain M.Ed., MT(ASCP) CLS(NCA)

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Robbe Hallmark, BS in Ed, BS MT (ASCP)

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Office Hours

Monday-Friday 8:30am - 5:00pm

Course Schedule

Semester:

CRN Aug. 26, 2013 – Oct. 20, 2013

Course Description

Practical, general workplace training supported by an individualized learning plan that is developed by the employer, college, and student. The college and the employer develop and document an individualized plan for the student. The plan relates the workplace training and experiences to the student's general and technical course of study. The guided external experiences are unpaid and course may be repeated if topics and learning outcomes vary.

Course Prerequisite

Department Approval and MLAB 2270, 2271, 1211

Course Goals

MLAB 1266 is designed to reinforce the student's knowledge in blood and body fluids, to aid in diagnosis and management of patient health. This course is designed toward terminal vocational training as an MLT. Emphasis is placed on thorough knowledge of basic chemistry, special chemistry, body fluids, and urinalysis and the development of manipulative skills, performing quality control, performing preventive maintenance, infection control, and interpretation of patient results in the above-mentioned areas. Students will perform laboratory procedures in assigned department of clinical laboratory under the general supervision of clinical personnel.

Course Student Learning Outcomes

1. Apply principles of safety, quality assurance, and quality control.
2. Apply the cognitive theories of Chemistry, Urinalysis and Body Fluids to the practical setting.
3. Perform practical laboratory work skills.
4. Demonstrate ethical and professional behavior.

Student Learning Objectives

- 1.1 Demonstrate safe laboratory practices at all times.
- 1.2 Review the cognitive theories of Chemistry, Urinalysis, and Body Fluids and transfer the information to correlate with the practices of the clinical site .
- 2.1 Observe the operation of clinical site equipment and demonstrate the ability to operate the equipment independently.
- 2.2 Perform quality control and all clinical site procedures and practices.
- 3.1 Illustrate ethical and professional behavior by adhering to attendance polices, dress codes, and general rules and regulations..
- 3.2 Demonstrate respect and appropriate interpersonal skills with all health care professionals in the health care setting.

Cognitive Objectives: It is the responsibility of the student to demonstrate knowledge of the following by scoring 75% or better on a prerotation exam given by HCCS instructor:

1. List and discuss safety within the clinical laboratory following OSHA regulations.
2. Differentiate between internal and external quality control.
3. Define automation and differentiate between batch analysis sequential analysis, continuous flow, discrete analysis, random analysis, ion-selective electrodes, osmometer, protein electrophoresis and immunoelectrophoresis.
4. Explain methodologies and correlate laboratory findings from a glucose tolerance, serum glucose, glycosylated hemoglobin, CSF glucose, insulin, c-peptide, and urine glucose with clinical pathology.
5. Explain analytical procedure for each of the following analytes (sodium, potassium, chloride, bicarbonate, magnesium. osmolality, iron/TIBC, ferritin), specimen collection, sources of error, calculate anion gap and discuss conditions causing increased and decreased anion gap.
6. Discuss Acid Base balance, base excess, base deficit, and osmolality. Given a patient's serum sodium, blood glucose, and blood urea nitrogen value, calculate the osmolal gap and explain the clinical significance of an increase or decrease

- osmolal gap. Describe specimen collection and handling for arterial, venous and capillary blood gases, precautions, and normal /abnormal values.
7. Outline procedures to quantitate total proteins, serum albumin, haptoglobin, and urine albumin (quantitative). Discuss specimen collection and preparation for performing ferritin, transferrin, iron, TIBC, troponin and correlate findings of these procedures with clinical diseases.
 8. Describe specimen collection and procedures for urea, creatinine, uric acid and correlate values with renal function and clinical conditions. Given values calculate creatinine clearance.
 9. Outline procedure for diagnosis of liver function (bilirubin, urobilinogen, plasma ammonia, enzyme determinations, hepatitis testing); correlate values with disease process.
 10. Compare and contrast methods used for enzyme analysis; outline procedure for amylase, lipase, acid phosphatase, PSA, AST, CK, LD, ALP, ALT, GGT, CK isoenzymes, LD isoenzymes and discuss how enzymes aid in diagnosis of clinical disorders (liver, heart, bone, pancreas, prostate, muscles).
 11. Describe specimen collection, handling and procedure for cholesterol, HDL-cholesterol, LDL-cholesterol, triglycerides, lipoproteins and apoproteins. Correlate clinical conditions with lipid profile analysis.
 12. Describe the proper collection and handling procedures for thyroid, parathyroid, endocrine and tumor markers (T3, T4, TBG, TSH, Ca⁺⁺, PO⁴⁻⁻, hCG, FSH, LH, estriol, progesterone, estradiol, cortisol, alpha-fetoprotein, CEA, PSA, corticoids, 5HIAA, VMA, catecholamines), and correlate clinical conditions with obtained values.
 13. Describe the proper specimen collection and handling procedures of toxicology testing for drugs of abuse and toxic elements (lead). Differentiate between quantitative and qualitative analytical procedures and screening methods and confirmatory methods.
 14. Define therapeutic drug monitoring and state conditions in which it is indicated. Describe proper sample collection procedures.
 15. Describe proper specimen collection and handling procedures for assessing vitamins and trace elements.
 16. Outline procedure for routine urinalysis, synovial fluid and serous fluids and correlate obtained values with clinical conditions.
 17. Explain collection, handling, storage, preparation for collection of random, clean catch, and 24 hour urine specimens.
 18. Explain procedure, identify and correlate with clinical conditions all body fluid's macroscopic analysis (color, appearance) and microscopic analysis(cells, cast, crystals, artifacts).
 19. Explain principle of automated urine reagent strip analyzers at affiliate (Clinitek, Atlas, Chemstrip) performing complete body fluid analysis(urinalysis, CSF, synovial and serous fluid)
 20. Explain principle of automated imaging systems available at affiliate for performing complete body fluids analysis (urine, CSF, pleural, peritoneal and synovial).
 21. Outline preventive maintenance and quality control on all automated

equipment.

Psychomotor

Demonstrate competent psychomotor skills as determined by the instructor.

During clinical rotation, the student should:

1. Verify identifications of samples (blood, urine, etc.) by comparing name, room number, date, hospital number, computer number with information on request.
2. After observing routine task, perform task within time limit and standard of performance according to verbal instructions provided by the clinical instructors.
3. Display a professional attitude toward patients and colleagues.
4. Demonstrate interpersonal communication skills with patients, laboratory personnel, other health professionals and with the public.
5. Prepare and mail samples to reference laboratories with appropriate forms.
6. Experience the pace, stress and responsibility of performing tests in the clinical setting.

Terminal Performance Objectives: It is the responsibility of the student to:

1. Demonstrate a willingness to prepare for the role of a Clinical Laboratory Technician by:
 - a. arriving at clinical affiliate at the assigned time
 - b. observing safety rules and regulations
 - c. keeping records
 - 1) legibly record results
 - 2) record results exactly as determined
 - d. cooperating with the instructor to maintain laboratory and equipment in good condition
 - e. observing clinical affiliate rules and regulations
 - f. adhering to HCCS dress code
2. Demonstrate the ability to perform laboratory tests by:
 - a. following written and verbal instructions
 - b. demonstrating increasing dexterity in the performance of procedures
 - c. demonstrating progressive accuracy, precision and speed
 - d. obtaining results within the limits set for each test
3. Demonstrate a knowledge of theoretical concepts involved in the tests performed in the laboratory by:
 - a. recognizing results which do not correlate and reporting them to the instructor
 - b. associating unusual test results with the condition or disease which might be indicated.

Behavioral

Upon receiving appropriate instructions, the student will demonstrate the following attitudes and behaviors at all times as determined by mid-term and end-term evaluations.

During the course of the semester, the students will:

1. attentively attend to verbal and demonstrative instruction

2. follow written and verbal instructions
3. communicate effectively in written and spoken English
4. engage in class/laboratory discussions by asking pertinent questions and responding respectfully to other student's comments
5. demonstrate a willingness to learn and apply new ideas/technical skills to future endeavors
6. demonstrate a positive teamwork ethic by being willing to assist and cooperate with others
7. develop confidence by gradually working independently in a competent manner
8. prioritize and manage work flow within a restricted time frame
9. handle themselves at all times in a professional manner and perform at the highest level of standards
10. demonstrate honesty and integrity and abide by the Medical Code of Ethics
11. demonstrate commitment to the Medical Laboratory Technician profession
12. be punctual to class and do not abuse break times.

Scans, Core Curriculum Competencies, and Foundations

Apply principles of safety, quality assurance, and quality control.

Foundation Skills – Thinking –Decision Making

Foundation Skills – Thinking –Creative

Foundation Skills – Thinking –Problem Solving

Identify the cognitive theories of Chemistry, Urinalysis, and Body Fluids.

Foundation Skills – Thinking –Creative

Perform Laboratory work skills.

Workplace Competencies – Technology –Applies Technology to Task

Workplace Competencies – Technology –Maintains & Troubleshoots

Demonstrate ethical and professional behavior.

Workplace Competencies – Interpersonal –Participates as Team Member

Workplace Competencies – Interpersonal –Negotiates to Arrive at a Decision

Workplace Competencies – Interpersonal –Works with Cultural Diversity

Instructional Methods and Materials

The student will use all textbooks, notes, and packets that were received by the student.

Clinical Laboratory Chemistry by Sunheimer and Urinalysis and Body Fluids by Strasinger.

Course Calendar

The student rotation is determined by Coleman College and the Practicum Rotation Site.

Disability Notification

Any student with a documented disability (e.g. physical, learning, psychiatric, vision, hearing, etc.) who needs to arrange reasonable accommodations must contact the Disability Services Office at their respective college at the beginning of each semester. Faculty are authorized to provide only the accommodations requested by the Disability Support Services Office. If you have any questions, please contact the Disability

Counselor at your college or the District Disability Office at 713-718-5165. Contact Coleman College ADA counselor at 713-718-7685.

Academic Honesty

Plagiarism, cheating, and other forms of academic dishonesty are not only violations of the college system and the rules of this class, but are unethical and unprofessional. Students engaging in any form of academic dishonesty are subject to immediate dismissal from the program. You are expected to be familiar with the College's Policy on Academic Honesty, found in the catalog and student handbook. Students are responsible for conducting themselves with honor and integrity in fulfilling course requirements. Penalties and/or disciplinary proceedings may be initiated by College System officials against a student accused of scholastic dishonesty. "Scholastic dishonesty": includes, but is not limited to, cheating on a test, plagiarism, and collusion.

Cheating on a test includes:

- Copying from another students' test paper;
- Using materials not authorized by the person giving the test;
- Collaborating with another student during a test without authorization;
- Knowingly using, buying, selling, stealing, transporting, or soliciting in whole or part the contents of a test that has not been administered;
- Bribing another person to obtain a test that is to be administered.

Plagiarism means the appropriation of another's work and the unacknowledged incorporation of that work in one's own written work offered for credit.

Collusion mean the unauthorized collaboration with another person in preparing written work offered for credit. Possible punishments for academic dishonesty may include a grade of 0 or F in the particular assignment, failure in the course, and/or recommendation for probation or dismissal from the College System. (See the Student Handbook).

Student Attendance, Repeat Course Fee, Withdrawals

Regular attendance and being on time for clinical is an important part of your preparation for being a dependable employee. Each workplace has attendance and tardy guidelines, which employees must follow. The MLT program has designed the following guidelines in order to emphasize the importance of this aspect of employment. The guidelines will also assure continuity of instructions since both MLT faculty and clinical instructors believe that sporadic attendance interferes with the learning process. Tardiness and absenteeism places undue hardship on others therefore, must be kept to a minimum.

1. Time on duty refers to the time you are on duty in your assigned work area, properly dressed, and ready to work. All students are to record their time of arrival and departure each day. Attendance records will be checked by clinical trainer and program faculty weekly and must be signed by the clinical instructor and turned in at the end of the rotation.
2. If absent, students must notify the Clinical Instructor by 7:00 am. Be sure to note the person's name and title. You must also call the CLT Program at 713-718-5518 by 8:00 am on the day of the absence. If the Program Director is not available, leave a message on the answering machine. **Failure to notify the clinical instructor and program faculty will result in immediate dismissal from the program.**

3. All absences will be made up double time. This means for every one day a student is absent, the student will make up two days. Three tardies will constitute one clinical absence.
4. If for any reason you leave the area to which you are assigned, it is your responsibility to be certain that the technologist in charge is informed.
5. PERMISSION TO BE ABSENT FROM PRACTICUM MUST BE OBTAINED FROM THE PROGRAM FACULTY PRIOR TO THE ABSENCE.
6. Under no circumstances will a student's school schedule be altered to fit work schedules.
7. When HCC is closed for a holiday and this falls on a clinical rotation day, the student will not attend rotation except in order to make up missing days. The student is responsible for informing the rotation site of the impending HCC holiday.

In the event of bad weather, the student is advised to listen to local radio or television stations for information about school closure.

Repeat Course Fee

The State of Texas encourages students to complete college without having to repeat failed classes. To increase student success, students who repeat the same course more than twice, are required to pay extra tuition. The purpose of this extra tuition fee is to encourage students to pass their courses and to graduate. Effective fall 2006, HCC will charge a higher tuition rate to students registering the third or subsequent time for a course. If you are considering course withdrawal because you are not earning passing grades, confer with your instructor/counselor as early as possible about your study habits, reading and writing homework, test taking skills, attendance, course participation, and opportunities for tutoring or other assistance that might be available.

Withdrawals

Students are responsible for officially withdrawing from classes. The last day to drop with a "W" is 9/30/13 before 4:30 pm. Students who fail to withdraw from a class before this date will receive a grade of "F". Before you withdraw from your course, please take the time to meet with the instructor to discuss why you feel it is necessary to do so. The instructor may be able to provide you with suggestions that would enable you to complete the course. Your success is very important.

To help you avoid having to drop/withdraw from any class, contact your professor regarding your academic performance. You may also want to contact your counselor to learn about helpful HCC resources (e.g. online tutoring, child care, financial aid, job placement, etc.). HCC has instituted an Early Alert process by which your professor may "alert" you and the counselors that you might fail a class because of excessive absences and/or poor academic performance.

- **Students should check HCC’s Academic Calendar by Term for drop/withdrawal dates and deadlines. Student may also check the course syllabus for the withdrawal date.**
- **If a student decides to drop or withdraw from a class upon careful review of other options, the student can drop online prior to the deadline through their HCC Student Service Center:**
<https://hccsaweb.hccs.edu:8080/psp/csprd/?cmd=login&languageCd=ENG>

Course Withdrawals-First Time Freshmen Students-Fall 2007 and Later

Under Section 51.907 of the Texas Education Code “an institution of higher education may not permit a student to drop more than six courses, including any course a transfer student has dropped at another institution of higher education.” Beginning in fall 2007, the Texas Legislature passed a law limiting first time entering freshmen to no more than **SIX** total course withdrawals **throughout** their educational career in obtaining a certificate and/or degree.

HCC Student Services Information

Early alert: HCC has instituted an Early Alert process by which your professor will “alert” you through written contact actions and through counselors of concerns that you might fail a class because of excessive absences and/or poor academic performance. It is your responsibility to visit with your professor or a counselor to learn about what, if any, HCC interventions might be available to assist you – online tutoring, child care, financial aid, job placement, etc. – to stay in class and improve your academic performance.

EGLS₃ -- Evaluation for Greater Learning Student Survey System

At Houston Community College, professors believe that thoughtful student feedback is necessary to improve teaching and learning. During a designated time, you, the students, will be asked to answer a short online survey of research-based questions related to instruction. The anonymous results of the survey will be made available to your professors and division chairs for continual improvement of instruction. Look for the survey as part of the Houston Community College Student System online near the end of the term.

Meningitis Vaccination Requirement

Texas Senate Bill 1107 passed in May 2011, requires that new HCC students and former HCC students returning after an absence of at least one fall or spring semester who are under the age of 30 are required to present a physician-signed certificate showing they have been vaccinated against bacterial meningitis. The immunization must be administered at least 10 calendar days before the start date of your classes and must have been received within the last five years. As of Spring 2012, all students will be prevented from enrolling in PeopleSoft unless they have met one of the above requirements mentioned above or qualify for an exemption. New pages and processes have been created and provided to campus users to insure that HCC is in compliance. For additional information: [New Meningitis Vaccination Requirement](#). The link address is: <http://www.hccs.edu/portal/site/hccs/menuitem.a12520d901466b1f3227a2ced07401ca/?v>

Responsibilities of Clinical Instructor

1. Instruct by demonstrating clinical laboratory procedure.
2. Orient the student to hospital and departmental protocol and procedures and the location of manuals and reference materials.
3. Supervise the student as he/she gains practical experience performing clinical procedures and practicing skills by:
 - a. observing student performance
 - b. providing guidance and performance feedback as formative evaluation
4. Counsel students concerning non-compliance with hospital policies.
5. Evaluate the student's performance in clinical by:
 - a. verifying the student's ability to function in a clinical laboratory by completing the following forms
 - 1) attendance record
 - 2) laboratory performance evaluation
 - 3) behavioral performance evaluation
 - 4) weekly progress report
 - b. checking off the student as competent to perform all task performed at affiliate by allowing the student to report laboratory results under your supervision
6. Participate in program review process by recommending changes in curriculum, library holdings, textbooks, etc.
7. Have a laboratory representative attend semi-annual advisory committee meetings to plan instruction for the coming year and evaluate the past school year
8. Help recruit students at every opportunity

Responsibilities of Student in Clinical Practicum

1. Review clinical objectives prior to clinical rotation.
2. Report to clinical session on time.
3. Phone prior to start of clinical session when going to be absent or late.
4. Record hours in attendance in designated area.
5. Sign and date evaluations after having clinical instructors complete them.
6. Take the initiative to observe and practice procedures.
7. Take the initiative to seek clarification when needed from procedure manuals, reference material, and/or the clinical instructor.
8. Report laboratory results only after the clinical instructor has checked off the student as being competent to perform the procedure
9. HIPAA is the Health Insurance Portability and Accountability Act (HIPAA), which involves patients' rights to the security and protection of their identifiable patient health information. HITECH is the Health Information Technology for Economic and Clinical Health Act. Its main goal is to encourage the use of electronic health records (EHRs), which will strengthen Federal privacy and security laws in order to protect identifiable health

information from misuse. It is understood by all students in clinical rotations that all identifiable patient health information is private and the security of protected health information will be maintained.

Program/Discipline Requirements

The Program prepares individuals, under the supervision of clinical laboratory scientists/medical technologists, to perform routine medical laboratory procedures and tests and to apply preset strategies to record and analyze data. Includes instruction in general laboratory procedures and skills; laboratory mathematics; medical computer applications; interpersonal and communications skills; and the basic principles of hematology, medical microbiology, immunohematology, immunology, clinical chemistry, and urinalysis.

Program Learning Outcomes:

1. Safely apply techniques according to standard operating procedures in the collection and analysis of biological samples.
2. Demonstrate the cognitive theory necessary to pass the national certification exam and be a successful Medical Laboratory Technician.
3. Integrate ethical and professional behavior in the clinical laboratory setting.
4. Use problem solving skills to integrate laboratory data for patient results.

Course Requirements, Grading Scale, and Grading Criteria

In order to go to the practicum, the student must score 75% or better on a prerotation exam given by HCC instructor. The student must make 75% or higher on the Laboratory Performance grade and the Behavioral Evaluation grade. Laboratory Performance grade and the Behavioral Evaluation grade are given to the student by the rotation site. The student's grade for this course will be determined by the following:

Laboratory Performance Evaluation	25%
Behavioral Evaluation	25%
Pre-Rotation Exam	25%
Weekly Communication Log	25%
All BOC Study Questions Complete with 100% accuracy.	

The following grading scale is used for all MLAB courses:

90 - 100	=	A
80 - 89	=	B
75 - 79	=	C
0 - 74	=	F

The student is required to communicate with the HCC instructor via Eagle Online email once a week while at the clinical site (7 weeks). The communication must be a minimum of 5 sentences each week. Failure to participate fully will result in points being deducted from the student's course grade. In addition, the student must complete 240 clock hours at the clinical site. Failure to complete emails and BOC Study Questions will result in an "F".

Student User ID: Your Eagle Online ID is now the same as your HCC User ID which is used for Online Registration. [For example: W0034567]. If you don't know your HCC User ID, you can contact the Coleman Computer Center for help. The Center is located on the first floor. Your default Eagle Online password at the beginning of the term is: "distance"; this is all lower case without the quote marks. You will be required to change your password when you first log in and should make this password something that will be remembered easily. If a student forgets their password for Eagle Online, they must get help from the Computer Center on the first floor; the instructor does not know the password.

Please log on to Eagle Online at home computer to make sure that you have access there. Turn off the "pop-up blocker" and click Firefox. Firefox is the optimal browser for all your Eagle Online courses. You can also use Microsoft Explorer. (Safari will not work.). A free Firefox download is located under Start Here in Eagle Online. Eagle Online E-mail is encouraged and is a good aid for asking questions both of the instructor and other students in the class. Do not hesitate to use it.

THIS SYLLABUS IS SUBJECT TO CHANGE WITHOUT PRIOR NOTICE.