STUDENT MANUAL

Department of Clinical Laboratory Science

Howard University

MAY 1, 2021

Table of Contents

PREFACE

This manual is dedicated to you, the Clinical Laboratory Science student. It has been prepared thoughtfully with your success in the program as its primary objective.

The manual traces the development of the Department of Clinical Laboratory Science and the Division of Allied Health Sciences and outlines the historical foundation of the partnership between the Howard University Hospital and the educational programs in the Health Sciences.

This document contains a great deal of information and will be a valuable resource during your tenure in the Department. Please read it carefully as it contains the goals, objectives, and standards of the Department as well as important policies, regulations, and awards as they pertain to you.

The faculty of the Department of Clinical Laboratory Science is committed to your intellectual development and professional growth and strives to provide an outstanding educational experience to all students.

HOWARD UNIVERSITY POLICY ON EQUAL OPPORTUNITY

Howard University does not discriminate on the basis of race, color, national or ethnic origin, gender, marital status, religion, disability, age, sexual preference, political affiliation or any other basis prohibited by Federal or District of Columbia law. This policy covers administration of the University's educational policies, admission policies, scholarship and loan programs, other University administered programs, and employment. Inquiries regarding provisions for handicapped persons, equal opportunity and Title IX should be addressed to the appropriate person listed below:

Section 504 Coordinator (handicapped)
Howard Center

Title IX Coordinator
Office of the General Counsel
Administration Building

Equal Opportunity Officer
C.B. Powell Building

Howard University complies with all federal, state, and local laws concerning equal opportunity and non-discrimination in both employment and in provision of educational benefits to our students. All employees are required to read and comply with Howard University's Policy and Procedure on Equal Opportunity in Employment and Education Programs and Activities and Howard University's Policy and Procedure on Sexual Harassment.
The Howard University Policy on Equal Opportunity in Employment and Education is found in the Howard University Undergraduate Bulletin.

The ASCLS Code of Ethics

The Code of Ethics of the American Society for Clinical Laboratory Science (ASCLS) outlines the principles and standards by which students admitted to professional education programs and qualified laboratory professionals practice their profession.

Integral to this code is the following pledge:

PLEDGE TO THE PROFESSION

As a Medical Laboratory Professional, I pledge to uphold my duty to Patients, the Profession and Society by:

- Placing patients' welfare above my own needs and desires.
- Ensuring that each patient receives care that is safe, effective, efficient, timely, equitable and patient-centered.
- Maintaining the dignity and respect for my profession.
- Promoting the advancement of my profession.
- Ensuring collegial relationships within the clinical laboratory and with other patient care providers.
- Improving access to laboratory services.
- Promoting equitable distribution of healthcare resources.
- Complying with laws and regulations and protecting patients from others' incompetent or illegal practice
- Changing conditions where necessary to advance the best interests of patients.

You may read the entire code at: https://www.ascls.org/about-us/code-of-ethics

WELCOME

Congratulations on your admission to the program and welcome to the Department of Clinical Laboratory Science. We are pleased that you have chosen clinical laboratory science as your major.

This student manual is a reference for departmental policies and procedures during the upper division of the Clinical Laboratory Science program and will assist you as you progress toward graduation. Read it carefully and familiarize yourself with the details provided including the procedures for addressing student grievances and other policies that affect your matriculation and retention in the program.

The CLS faculty encourage you to contact them whenever you have questions or need assistance. We are committed to your success and believe that as our students develop personally and professionally, they contribute to the legacies of the Department and Howard University.

We wish you a productive and successful future.

The Faculty and Staff
The Department of Clinical Laboratory Science

The Department of Clinical Laboratory Science is fully accredited by the National Accrediting Agency for Clinical Laboratory Sciences (NAACLS), 5600 N. River Rd, Suite 720 Rosemont IL 60018-5119; ph: 773.714.8880; fx: 773.714.8886; info@naacls.org

HISTORY

The Clinical Laboratory Science Program at Howard University has an interesting and unique history that is entwined with the history of its hospital.

Howard University Hospital, formerly named Freedmen's Hospital, is located on Georgia Avenue at V Street, NW in Washington, D.C. In 1865, the Congress of the United States passed an act "to establish a Bureau for the Relief of the Freedmen and Refugees." The hospital was built and operated under the supervision of the Secretary of War until 1874, when it was transferred to the Department of the Interior. It was later placed under the jurisdiction of the Commissioners of the District of Columbia and returned in 1905 to the Department of the Interior. In 1940, it was placed under the jurisdiction of the Federal Security Agency, which became the U.S. Department of Health, Education and Welfare in 1953. In September 1961, President Kennedy signed into law a bill transferring Freedmen's Hospital to Howard University.

Howard University is a private institution and the only comprehensive predominantly African American institution of higher learning in the world. It is named for General Oliver Otis Howard, who helped found the University in 1867 to provide an educational experience of exceptional quality to students who were denied equal access to higher education opportunities. In 1879, Congress authorized an appropriation to the University. The charter was amended on December 18, 1928, authorizing federal appropriations for construction, development and maintenance of the University.

Today, this unique and irreplaceable institution offers annually degrees in 191 specialized areas, including 29 doctoral degree programs, to approximately 11,000 students. Its student body, while predominantly reflective of its traditional mission, mirrors the diversity and academic potential of the world's best and brightest.

Since Howard University Medical School opened in 1866, Freedmen's Hospital has always served as a teaching hospital not only for doctors and dentists, but also for pharmacists, nurses and technologists. The present Department of Clinical Laboratory Science (formerly Medical Technology) was established in 1963. At that time, the school was accredited by the Council on Medical Education of the American Medical Association – Board of Schools (BOS) of the American Society for Clinical Pathology (ASCP). The original program was a 12-month hospital–based certificate program. In March 1971, Howard University created the Department of Allied Health Professions in the College of Medicine. In 1974, the Board of Trustees established the College of Allied Health Sciences. The first Medical Technology program in the College had a 3+1 format. In 1981, through a grant from the Department of Health, Education and Welfare, the program was changed to the present 2+2 curriculum.

The present College of Nursing and Allied Health Sciences through its Division of Allied Health Sciences offers a wide range of professional programs leading to the degree of Bachelor of Science in seven fields; Clinical Nutrition, Physician Assistant, Clinical Laboratory Science, Occupational Therapy, Physical Therapy, Radiological Sciences and Health Sciences.

While important history has been recorded, this prelude to the future promises opportunities for even greater progress and contributions to the profession and the community.

ACCREDITATION

Howard University is fully accredited by the Middle States Association of Colleges and Schools/Commission on Higher Education, and by more than twenty additional professional Associations/Committees germane to the degree programs offered in the University's schools and colleges.

Inquiries regarding accreditation may be addressed to:
The Executive Director
Middle States Commission on Higher Education
3624 Market Street
Philadelphia, PA 19104
(215) 662-5606

The Department of Clinical Laboratory Sciences received full national accreditation until 2022 from the National Accrediting Agency for Clinical Laboratory Sciences (NAACLS).

NAACLS 5600 N. River Rd,
Suite 720 Rosemont IL 60018-5119
Telephone: 773.714.8880
Fax: 773.714.8886
info@naacls.org

FACULTY and STAFF

Marguerite E. Neita, Ph.D., MLS (ASCP)CM
Chairperson & Program Director
Associate Professor
mneita@howard.edu
202-672-3096

Bentley Reid, MBA, MT (ASCP)
Clinical Coordinator
Clinical Instructor
breid2@howard.edu

Carol Porter, Ph.D., MT (ASCP)
Assistant Professor
cporter@howard.edu

Gezahegn Gorfu Tolla, Ph.D., MLS (ASCP)I
Assistant Professor
gezahegngorfu.tolla@howard.edu

Fikru Bedada, Ph.D.,MLS (ASCP)I
Assistant Professor
fikru.bedada@howard.edu

Tewodros Bejiga, MLS (ASCP)
Department Laboratory Assistant
Tewodros.bejiga@howard.edu

Mrs. Carolyn Crittendon
Administration/Phlebotomy Technician Training Program
carolyn.crittendon@howard.edu

MISSION STATEMENT

The Department of Clinical Laboratory Science believes that quality healthcare is an individual right. We seek to produce compassionate healthcare professionals who will maintain professional competence, excel as leaders, and promote health education for America and the global community. Therefore, the mission of the Department of Clinical Laboratory Science at Howard University is to educate highly skilled and proficient laboratory scientists committed to providing quality health care nationally and worldwide. Special emphasis is placed on developing and empowering promising African American students.

GOALS OF THE DEPARTMENT OF CLINICAL LABORATORY SCIENCE

The goals of the Department of Clinical Laboratory Science are to:

1. Prepare laboratory scientists capable of contributing to the delivery of quality healthcare by their ability to understand and interpret new technologies and protocols as they embark on the ever-advancing field of laboratory sciences

2. Imbue our students with a sense of responsibility, compassion, and professionalism towards those they serve and with the ability to work successfully among a diverse group of individuals as participating team members

3. Develop laboratory professionals who seek to expand their horizons and contribute to the development of the profession through lifelong learning and participation in professional organizations and continuing education programs

4. Become nationally recognized as a leading academic center in the biomedical laboratory sciences whose graduates are equipped to serve in healthcare delivery, informatics, and advanced scientific areas.

OBJECTIVES OF THE DEPARTMENT OF CLINICAL LABORATORY SCIENCE

A graduate of the Department of Clinical Laboratory Science should be proficient in the following entry level competencies:

1. Effective communication with peers, supervisors, other health professionals and consumers
2. Professional consultation with other laboratory and technical support personnel
3. Mastery of appropriate procedures for collecting, processing, and analyzing biological specimens
4. Accurate performance of standard, complex, and specialized analytical tests on biological specimens
5. Recognition, interpretation, and correlation of abnormal laboratory data with disease states
6. Evaluation, validation and implementation of new laboratory procedures and instrumentation in compliance with regulatory agencies
7. Investigation and verification of quality control and quality assurance measures, and the introduction of appropriate corrective procedures to achieve accuracy and precision
8. Management and application of the principles of laboratory information systems
9. Establishment and maintenance of effective laboratory safety protocols in accordance with regulatory standards
10. Pursuit of continuing education activities that enhance professional growth and competence
11. Evaluation and provision of effective educational and technical instruction in laboratory practice to students, laboratory personnel, other health professionals and consumers
12. Comprehension and application of the theories of personnel, fiscal, and administrative principles of management
13. Critical evaluation and analysis of information, and the application of problem-solving skills to real world challenges
14. Application of the principles and practices of clinical study design, implementation, and dissemination of results
15. Modeling and reinforcing the ethical standards of professional conduct

Adapted from NAACLS *Description of Entry Level Competencies of the Medical Laboratory Scientist.* Retrieved from http://www.naacls.org

HOWARD UNIVERSITY
1867

TECHNICAL STANDARDS

The Department of Clinical Laboratory Science

Technical Standards are non-academic requirements vital to the successful completion of all aspects of the clinical laboratory science curriculum and the preparation of graduates for positive work experiences. Clinical Laboratory Scientists work in shifts to cover the 24-hour workday including weekends and holidays and must be able to fulfil these requirements. They will be provided in the letter of acceptance to the program and students must confirm by signing that you are able to do the following:

1. **Use the appropriate written and spoken English and medical terminology to communicate effectively with diverse groups in the classroom and in professional settings**

2. **Understand and comply with prescribed OSHA Standards, workplace safety policies and instructions.**

3. **Demonstrate proficiency in the computer skills necessary to effectively retrieve, use, present, transmit, and record information**

4. **Exhibit the manual dexterity (fine motor skills) required to perform laboratory techniques including the manipulation of small instruments and adaptive devices when gloved**

5. **Discriminate between colors and identify cellular components and microscopic organisms on stained slides or wet mounts using a microscope**

6. **Stand and sit for prolonged periods of time (reasonable prolonged period is about 1- 3 hours in lecture room and 2 - 4 hours in classroom laboratory. Clinical practicums may require longer periods of sitting or standing)**

7. **Accomplish the basic physical and motor functions (bending, stretching, and carrying low weight objects required for satisfactory performance of all aspects of laboratory testing**

8. **Develop appropriate professional, ethical, and supportive relationships with faculty, staff, peers, patients, and other health professionals**

*Please return the signed copy of the ***Technical Standards*** included in your acceptance package.

DEPARTMENT POLICIES

ATTENDANCE POLICY

Prompt and regular attendance is a hallmark of professionalism. As potential laboratory professionals, students are required to attend all lectures, examinations (see specific examination policy), student laboratory sessions, and clinical practicums regularly and punctually.

When a student is unable to attend classes due to personal illness or an unexpected emergency the appropriate Clinical Laboratory Science faculty member must be informed as soon as possible. During the clinical rotation both the laboratory supervisor at the clinical affiliate and the Department of Clinical Laboratory Science clinical coordinator must be notified promptly. In case of extended illness (three or more days), documentation from a physician must be provided Other emergencies will be evaluated on an individual basis. Students may be permitted to make up class work or examinations at the discretion of each instructor.

Review and remediation of course material and course examinations missed due to absences are the responsibility of the individual student and at the discretion of each course instructor. Most laboratory sessions cannot be repeated. Absences that occur during the clinical rotations require the student to make-up the missed competencies (see Clinical Rotation Policy).

EXAMINATION POLICY

Students must take examinations as scheduled. Questions will be primarily multiple-choice type and may include images, essays, or short answer questions. . Students will not be allowed to leave the classroom before completion of the examination and submission of the exam unless special circumstances exist, and permission is granted by the professor.

Students must bring their own supplies, including pencils, calculators, and laptop computers or tablets, when required, to each examination. Sharing calculators or writing implements and the use of cell phones are NOT permitted during the examination .

Examinations are timed, allowing 1.5 minutes for each multiple-choice question. A student who is more than 15 minutes late for an examination will be marked absent and will not be allowed to take the examination. Absence from any examination will result in a grade of zero (0). Makeup examinations will be allowed only in case of an excused absence.

ONLINE EXAMINATION POLICY (revised Fall, 2020)

All CLS examinations are given online using *Examsoft*. Blackboard and other formats may be used for quizzes and assignments. The following procedures are to maintain fairness and ensure the integrity of examinations. It is each student's responsibility to adhere to an appropriate examination environment by following the policy and all examination

instructions from the course director. Failure to do so may result in an examination grade penalty (up to and including a grade of zero).

An appropriate examination environment includes:

- initial identification check - students must present their University issued identification card during the ID verification process
- initial environmental scan
- intermittent scanning during the examination
- An external camera is required for all exams proctored online
- No headsets, earbuds, earphones
- No other background computer programs are running
- No other electronic devices (tablets, smart watches, gaming consoles)
- A hard-surfaced workspace (desk) that is free of clutter. A bed is not appropriate examination environment. Students should maintain access to a phone or email to contact the instructor if they encounter technical issues during the examination
- A properly lighted environment in which the student's full face, including eyes and test area are always in view of the webcam . Do not sit in front of a window or light source which can obscure the view of the camera.
- External calculators are not permitted. Students may use only the embedded *ExamSoft* calculator
- One blank sheet of 8.5 by 11" paper is allowed for scratch paper. Both sides must be visible and presented to the camera during room scans. Scratch paper must be properly destroyed (tearing the scratch paper in small 1" pieces) in front of the webcam after examination
- The environment must be free of any other individuals

Taking the Online Examination:

Appropriate conditions during an examination includes:

- Remote monitoring by *virtual proctor*
- Proctors will continuously monitor video feeds from student computers and prompt students to complete appropriate environmental scans. The number of scans is dictated by a random process but can be increased if students are detected as not adhering to examination instructions.
- Students must download and start their exam within 15 minutes of the start of the exam window. The exam window **will not be extended** for students who are late starting the exam.
-
-

- Students must conduct an initial environmental scan to ensure that the area is free of any inappropriate material before getting access to the examination. The initial environment scan must include:
  - the desk/workspace
  - a complete view of the computer including USB ports and power cord connections
  - a 360-degree view of the complete examination environment including the floor
- The proctor may ask the student to repeat their scans until the entire environment is viewed and may ask students to alter their environment until it is deemed suitable

  for the examination. A student may be prohibited from starting the exam until the proctor is satisfied that the environment is free of inappropriate materials.
  - During the examination, students are required to maintain a secure examination environment by conducting the following actions:
  - Keeping full face, hands, workspace including desk, keyboard, monitor, and scratch paper, in full view of the webcam
  - Not leaving the examination environment.
  - Remaining in the originally scanned examination environment for the entirety of the examination
  - Contacting the instructor immediately if problems cannot be resolved.

Students must upload the examination by the deadline set by the instructor. It is the responsibility of each students to verify that exams are uploaded. Immediately report technical problems such as if a problem is encountered when uploading completed exams.
The student may not be permitted to retake the examination or be given additional time if:

- the exam is not downloaded and uploaded by the deadline.
- A secure examination environment is not maintained (moving from one area to another during an examination may trigger the software to notify the instructor that the student did not adhere to the exam policy)
- If a student moves from one area to another area during the examination or something occurs that may be construed as examination misbehavior, it is in the student's best interest to perform a scan to document the secure environment, even if the student is not prompted to do so by the live proctor.
- Environmental scans are designed to not only ensure the integrity of the examination, but also to protect students from being falsely accused of inappropriate examination behavior.
- Repeating scans will expend time designated for the examination, thus reducing the amount of time to complete the examination.
- If the students' progress during an examination is flagged or if the student does not adhere to the Examination Policy and the Academic Code of Student Conduct their process will be reviewed at the conclusion of the exam by the faculty and appropriate action will be determined. Appropriate action may include a **Point Penalty** up to and including a **Grade of Zero** for the exam.

GRADING POLICIES

Summative evaluations of students' performance in the CLS program are performed in each course. Students receive mid-term status reports and are encouraged to discuss their academic progress with individual course faculty and with the Chairperson/Program Director. To pass a course, students must earn a minimum grade of 'C' or better and maintain the required 2.5 semester and cumulative grade point average (GPA).

Blackboard allows you to check your grades "anywhere, anytime," so take advantage of this opportunity to monitor your progress. Grades will not be adjusted after they are submitted to the registrar unless there is a computational error.

Extra Credit is offered only during the term and only to the entire class. Therefore, you cannot improve your grade at the last minute by requesting additional work.

Quizzes and Examinations given on-line will be scored electronically via Blackboard so that you will receive instant and detailed feedback. Some quizzes and examinations may be on-site (i.e. in class) or in an assigned HU Computer Laboratory.

GRADING SCALE FOR CLS COURSES

Grades are determined using the 4.0 grading scale.

A	90-100%
B	80-89%
C	70-79%
D	60-69%
F	59% or below

- **I - (Incomplete)** to receive an "I" (incomplete) a student must have a passing grade (75% or better) in the course, have completed 80% of the course work and is unable to finish the semester due to a documented emergency or unforeseen circumstance. The student initiates the request for an INCOMPLETE and must adhere to the specific conditions for completion of the course as designated by the faculty. The course must be completed by the last day of classes in the semester in which the student is next in residence

- **W – (Withdrawal)**
    - Students who wish to withdraw from the course must obtain a Course Withdrawal form from the department head. It is the student's responsibility to carry out the withdrawal procedure to completion.
    - **NOTE**: The last day to withdraw from the course is published in the University Calendar**.**

LABORATORY SAFETY

Working in any clinical laboratory can expose you to many hazardous and infectious agents. It is important that you are aware of the practices and procedures instituted for your protection and for the safety of others who use the laboratory. Standard Precautions require you to consider every specimen as potentially infectious material (POIM). The safety precautions outlined below are important and should be adhered to in every laboratory session.

- Experiments and procedures are to be carried out ONLY with the supervision of the instructor or laboratory coordinator
- If you have any questions about the procedure, equipment, materials, or reagents, **STOP** what you are doing and **ASK** the instructors for assistance
- All book bags, textbooks, and clothing should be left outside of the laboratory area. Place these items in the designated storage space. The only items on the benchtop should be your lab notebook and a pen or pencil
- Cell phones are not permitted in the student laboratory. Students may not leave the laboratory to answer their cell phone
- Your lab coat should be closed and buttoned; closed toe shoes should always be worn in the laboratory,
- Long hair should be tied back, long jewelry restrained, and gloves worn for all procedures. If you have a sensitivity to latex gloves speak to the instructor immediately
- Any breaks in the skin of your hands should be covered with sterile bandage (Bandaid™) before putting on gloves
- After putting on your lab coat, clean the bench-top by following the instructions for disinfecting contaminated surfaces below. Wash your hands thoroughly after the decontamination process.
- Clean and disinfect all reusable PPE such as face-shields and goggles after each use. You will receive specific instructions
- Handle face shields by the headband during removal to avoid contamination
- Eating, drinking, smoking, taking medication, applying cosmetics, licking labels, storing food or any activity which involves putting any item in your mouth is **STRICTLY PROHIBITED.**
- MOUTH PIPETTING IS STRICTLY FORBIDDEN. There will be NO eating, drinking, chewing gum, smoking, application of make-up or removal /insertion of contact lenses in the laboratory.
- Avoid touching your face with gloved hands.
- Avoid technical errors that may cause the formation of aerosols; remove stoppers carefully, do not squirt pipette or syringe contents etc.
-

- Gloves and other contaminated materials must be carefully discarded in the receptacles provided. **DO NOT DISCARD ANY contaminated MATERIALS IN THE TRASH!** This is a violation of OSHA requirements.
- Do not re-cap, shear, bend or lay open on the bench any contaminated needles or other sharps. Place all sharps in the designated puncture-proof sharps containers.
- Never attempt to open a centrifuge lid while the centrifuge is in motion.
- Except when specifically instructed, do not centrifuge uncapped specimens or containers and ensure that the centrifuge is properly balanced before use.
- If a spill occurs in the centrifuge, follow this procedure:
    - Wait 30 -60 minutes to allow aerosols to settle before opening the lid
    - Clean-up spill as instructed by faculty
- Notify the instructor immediately of any spills, cuts, needle sticks or other laboratory accident.
- In the event of a spill of potentially infectious material follow this procedure.
    - Remove your lab coat if it has been contaminated
    - Cover the spill with paper towels and flood with 10% Clorox solution.
    - Allow the Clorox to stay in contact with the spill for approx. 20 minutes
    - Do not touch broken glass with your hands
    - Use a dustpan to clean up the spill and discard the material in the biohazard bags
    - **WASH YOUR HANDS**
- Remove gloves by grasping the cuff and removing the gloves inside-out. Never wash and reuse gloves
- Wash your hands with the hand soap provided any time you leave the laboratory, and at the end of the laboratory session
- Before leaving the laboratory, clean your work area and disinfect with 10% Clorox solution.
- Remove your lab coat and then wash your hands. Lab coats, other PPE, pencils and pens should remain in the laboratory
- Visitors are never allowed in the student laboratory

ACCIDENT /EXPOSURE POLICY

Any laboratory accident or exposure that occurs in the student laboratory require immediate attention and the following procedure must be followed:

1. **Notify** the instructor or laboratory coordinator IMMEDIATELY
2. **Assess** the incident/injury by the instructor or laboratory coordinator
3. **Determine** the type of medical intervention needed is made :
4. **Administer** first-aid and
5. **Refer** student to Student Health Services for additional treatment and follow--up as required
6. **Complete** CLS Incident Report form to be filed in student folder.

CREDIT BY EXAMINATION FOR CLLS COURSES

Credit may be awarded by examination for junior level Clinical Laboratory Science (CLLS) courses. In order to qualify, students must have professional MLT (ASCP) certification and an associate degree from a regionally accredited, National Accrediting Agency for Clinical Laboratory Sciences (NAACLS) approved, institution or equivalent.

Challenge examinations are offered only to those students officially enrolled at Howard University in the upper division of the Clinical Laboratory Science (CLS) program. Students must submit a completed **Application for Credit by Examination** form for each course being challenged to the CLS Department no less than 10 days before the beginning of the semester. Students are encouraged to apply as soon as they are accepted to the program. Forms are available from the faculty.
Approval to take an examination is dependent on the following criteria:

a. completion of all prerequisites for the course
b. an official academic record (transcript) documenting completion of the course with a grade of C or higher
c. The course must be transferable to Howard University.

Students must take examinations (at least 5 days) prior to the end of the University's change of program period.

Only one challenge examination attempt will be allowed for each course.

The minimum passing score on challenge examinations is 75% for both didactic and practical exams.

The Department of Clinical Laboratory Science will maintain a record of the examination results in the student's folder. Credit hours only (no letter grade) will be entered on the student's academic record.

Students whose score is 74.9 % or less on a challenge examination must register and successfully complete the course for credit.

CLINICAL PRACTICUMS/ROTATIONS

Students will be scheduled for clinical practicums only when all clinical laboratory science courses are completed, and they are approved by the faculty.

Clinical practicum rotations are from Monday to Fridays each week. The length of the daily rotation hours for clinical rotating students is seven and a half hours (7.5hrs/daily), generally beginning from 7:30am – 3:00pm or 8:00am – 3:30pm. The weekly schedule also includes time allocated for examinations and on–campus class attendance. Students may be required by the laboratory supervisors to arrive earlier than scheduled to observe start-up, weekly instrument maintenance, or other procedures.

Students who do not complete their semester rotations, as determined by uncompleted competencies or examinations, will **NOT** be allowed to progress to the next semester. If practicums are not completed due to extenuating circumstances, the Clinical Coordinator and the faculty will evaluate each case on an individual basis. Make-up practicum rotations will be scheduled by the Clinical Coordinator in collaboration with the hospital laboratory supervisor. The options for practicum completions or remediation include rotations during unscheduled days, campus vacations, or other alternatives scheduled by the clinical coordinator.

Students who do not make-up missed competencies and missed time will earn an incomplete grade (I/). Students are advised that any delay in completing the clinical practicums may affect their projected graduation date.

Absenteeism:
Prompt daily attendance in the scheduled clinical practicum is mandatory. Repeated absences and tardiness will necessitate action by the Clinical Coordinator. If a student is unable to attend, or in the event of anticipated delay, the student must:

a. Inform the Clinical Supervisor
b. Inform the Clinical Coordinator

Scheduled University Holidays
Clinical practicums are not scheduled when the University is closed for holidays. However, students who have incomplete rotations may use those days to complete the prescribed clinical competencies at the clinical site with prior approval from the Department, the Clinical Coordinator Clinical Supervisor.

Inclement Weather
To ensure their safety, students are not expected to attend clinical practicums when there is an unscheduled University closing due to bad weather or unforeseen occurrence. However, all missed practicums must be made up during scheduled make-up periods. In the event of a natural disaster, inclement weather, devastation, or University closure refer to the University website: https://home.howard.edu/ and/or local news channels for notices regarding delayed arrival, early dismissal, or closures.

Practicum Grading

Student grade for each clinical practicum course is based on the following:

- Clinical Practicum Rotation Scores
- Discipline Comprehensive Examination

Students MUST obtain a **minimum grade of 70% in EACH** of the assessed areas above to successfully pass the practicum course.

A final grade of A, B, C, D or F is achieved based on the student weight scores attained in each area.

Discipline Comprehensive Examinations

Students MUST demonstrate their ability to integrate theoretical knowledge and technical proficiency. This is evaluated by the Discipline Comprehensive Examinations scheduled for the end of each practicum rotation . The examination must be taken at the scheduled time and students must achieve a minimum passing score of 70%. Students have four (4) attempts to pass the examination. A penalty is applied for each attempt after the first.

- 1st attempt - maximum score = 100%
- 2nd attempt - maximum score = 95%
- 3rd attempt - maximum score = 80%
- 4th attempt - maximum score = 70 %

Repeat Practicums

Students who fail a clinical practicum rotation by earning less than a grade of C must repeat all or part of that rotation. Repeat practicum courses involves a minimum of two weeks rotation in the laboratory and course remediation with the respective instructor

Laboratory Attire

To ensure personal safety students are expected to adhere to the general guidelines for laboratory attire published by the CDC and regulated by the Occupational Safety and Health Administration (OSHA) Standard 29-CFR. Students are also expected to adhere to all of the safety regulations and guidelines for each clinical rotation site. The Department will provide students with the appropriate PPE for use in the clinical rotations.

- Laboratory coats and gloves and other required personal protective equipment (PPE) must be worn at all times.
- Additional PPE may be requested as needed
- Laboratory coats and gloves MUST NOT be worn outside the laboratory
- Long hair must be tied back
- Open toed shoes, sandals, platform, and spiked heels are prohibited
- Hanging jewelry is not permitted
- Perfume, shaving lotion, and other scented products should be kept to a minimum
- During phlebotomy and other direct patient contact artificial nails, silicone nails, acrylic nails, nail wraps etc. are prohibited.

Further information regarding the Standards for Universal Precautions for Prevention of Transmission of HIV and Other Bloodborne Infections can be found at:
http://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=STANDARDS&p_id=10051

Professional behavior also dictates that students dress appropriately at the clinical sites. Students are therefore expected to adhere to the established dress code for each clinical affiliation site. Students in the upper division are always to maintain a professional appearance and casual wear (leggings, sweat pants) and tattered clothing are specifically prohibited.

Accident /Exposure

Accidents and accidental exposures that occur in the laboratory require immediate attention and the following procedure must be followed;

1. Notification of the laboratory supervisor IMMEDIATELY
2. Administer first-aid and refer student to Student Health Services or Employee Health for additional treatment and follow--up as required
3. Notify Clinical Coordinator or Program Director via email or telephone
4. Complete CLS Incident Report form filed in student folder.

Clinical Affiliates

The Department of Clinical Laboratory Science currently has affiliation agreements for clinical practicums at the area institutions listed below. However, additional sites may be obtained to facilitate student clinical experiences:

1. Howard University Hospital (HUHosp)
2. Sibley Memorial Hospital -Johns Hopkins Medicine (SMH-JHM)
3. UM Prince George's Hospital Center (UM-PGHC)

Student Work in the Clinical Practicums

In compliance with the National Accrediting Agency for Clinical Laboratory Science (NAACLS) Standards, the Department's policy for students in clinical practicums prohibits the use of students to perform laboratory work in lieu of qualified laboratory personnel. After demonstrating proficiency, students may be permitted to perform routine procedures with qualified guidance and supervision. Service work by students in clinical settings outside of regular academic hours is noncompulsory.

Teach-out Plan

In the event of a disruption or change in services due to unforeseen circumstances the program will collaborate with the University and, if required, the Government of the District of Columbia to develop plans to provide the resources and support that will enable students to continue their academic progress toward earning a degree in clinical laboratory science. This process may include modified schedules, remote learning, extended enrollment at the University.

If the program is to be discontinued for any reason a "teach-out" plan will be developed to include graduation of the current class, advising students to select alternate majors, and termination of the admission process for new students.

Procedure if a Clinical Rotation Cannot be Guaranteed

The health science programs at Howard University enjoy a special relationship with the Howard University Hospital. If the program cannot guarantee a clinical rotation at an affiliated site, alternate sites will be selected, or the student will complete their clinical experiences at Howard University Hospital.

CHANGES IN DEPARTMENTAL/PROGRAM /DIVISIONAL POLICIES

When changes in the curriculum, prerequisite courses, or the minimum grade requirements in a course, Program, Division, or the College are implemented, the following will apply:

1. Students who have successfully completed the requirement prior to the change will have satisfactorily completed the requirement.

2. Students who have taken a course prior to the change, and did not meet the grade requirement, must satisfy the new requirement.

3. Students enrolled in a program at the time of change will be permitted to meet the prior requirement within a specific time period.

4. Students who are not enrolled in the upper division prior to the change must meet the new requirement.

The Division of Allied Health Sciences

STUDENT GRIEVANCE PROCEDURE

The Informal Process

1. A Student who believes that he/she has been aggrieved must first attempt to seek an informal resolution with the other party involved in the dispute, e.g., grade dispute with instructor.

2. If the student is unable to resolve the dispute with the primary party of the dispute, then the student is advised to seek the intervention of his or her department chairperson.

3. If the resolution is not satisfactory, the student may request a meeting with a combined faculty committee.

4. All disputes which are not resolved at the Department level are then brought to the Office of the Associate Dean where the Associate Dean or his designee will attempt to mediate an informal resolution with the involved parties.

5. If mediation at the Associate or Dean's level fails, then the student's grievance is consigned to the Student Grievance Committee designated by the School/ College to address student grievances.

6. The student may then request the intervention of the Dean of the College of Pharmacy, Nursing & Allied Health Sciences.

The Formal Process

1) Student grievances, which are consigned to the Student Grievance Committee, must be specified in writing, and given to the Dean or his designee.

2) A student's written statement, along with supportive evidence, constitutes a case document, which will be submitted to each member of the committee.

3) The second party to the dispute is also requested to provide the Office of the Dean with his or her account of the matter in dispute, which becomes a part of the case document that is forwarded to the committee.

4) The Student Grievance Committee is then required to set a date for convening a meeting to hear the case(s) as expeditiously as possible.

5) After the date has been set, each party to the dispute is sent a certified letter which informs him or her of the charges and date of the meeting as well as a statement requesting his or her presence.

6) During the hearing, the student presents his/her case; the accused party is then allowed to present the other side. Each side is permitted to have witnesses.

7) Following the hearing, members of the committee after deliberation on their assessment of the case reach a decision as to how the case should be resolved.

8) The committee's decision is sent to the Dean of the School/College in the form of a recommendation.

9) The Dean then informs the student in writing of the decision, which may be based upon the committee's recommendation or upon a modification of it.

Procedure for Student Grievances in the CLS Practicums

1. Problems in the clinical laboratory during rotations will be discussed with the **Clinical Supervisor** in charge.

2. If the Supervisor is unable to resolve the problem, the student will then refer the problem to the attention of the **Clinical Coordinator.**

3. In an effort to reach a resolution, the **Clinical Coordinator** may discuss the problem with the **Clinical Supervisor**.

4. If no consensus is reached between the Clinical Supervisor and the Clinical Coordinator, the problem will be referred to the **Chairperson.**

5. The Chairperson may then discuss the problem with the Clinical Supervisor or **the Laboratory Manager** and attempt to resolve the problem.

6. If necessary, the chairman may discuss the problem with the **Chairman of the Department of Pathology.**

7. If the problem cannot be resolved, the Chairperson of the Department of Clinical Laboratory Science may refer the issue to the **Associate Dean of the Division of Allied Health Sciences**, who may discuss it with the **Dean of the College** and then the **Vice President for Health Affairs.**

Procedures for Student Non-Academic Grievances in the Department of Clinical Laboratory Science

1. Non-academic grievances may be discussed with the students' advisor or the chairman of the Department.

2. The advisor and the chairman may meet to help resolve the grievance

HOWARD UNIVERSITY LIBRARIES SYSTEM (HULS)

The Howard University Libraries System (HULS) is comprised of the central library (Founders Library), the contiguous Undergraduate Library and the Louis Stokes Health Sciences Library (LSHSL). The digital component of the library system provides students with ready access, from on campus locations or remote sites, to full-text journals, reference materials, multimedia, on-line information retrieval services, catalogs (STERLING) and databases through the Howard University Library web site at http://www.howard.edu/library/

Howard University is the only Historically Black College/University (HBCU) whose library holds membership in the Association of Research Libraries (ARL), an organization representing the 112 major research libraries in North America. The Library System also holds memberships in professional associations include the following:

a. The Consortium of area Health Science Libraries
b. The Mid-Atlantic Region of the Medical Library Association
c. The Association of American Health Science Libraries
d. The Medical Library Association
e. The American Library Association Black Caucus

The Howard University Libraries System (HULS) has a large and diverse collection of resources.

a. The system houses a collection of 2,194,804 volumes; 10,122 journal subscriptions and 3,484, 891 microforms.
b. It provides library users with access to more than 3,000 full-text journals and advanced searching capabilities of tables of contents, bibliographic workstations, several laser printers, and a digital learning center with over 20 workstations.

Louis Stokes Health Sciences Library (LSHSL)

Resources:

LSHSL and Learning Resource Center is an 80,000 square foot world class information repository with state-of-the-art telecommunication and audiovisual capabilities. It is an information gateway, employing cutting edge digital technology that crosses geographical, social, economic and cultural barriers. The LSHSL offers collections that are focused toward health-related issues. The Library holdings consist of 266,009 volumes, 1,556 current serial titles, 14, 474 microform units and 681 films and videos. Its holdings include current printed and electronic text, reference, and reserve books, journals, and periodicals in all health science disciplines.

The library is a health information resource for the University's medical, dental, pharmacy, nursing, and allied health sciences faculty, staff and students and also a resource for consumer health, health care providers, members of the local Washington, D.C. community, and professionals and researchers around the world. In addition to the basic collection and reading spaces, the Library is fully outfitted for multimedia presentations, including conference areas designed for advanced computer graphic presentations.

Acquisitions, Services, and Access:

The Louis Stokes Health Sciences Learning and Resource Center advances the University's standing in the emerging field of biomedical informatics. Information is packaged in new forms and the development of multimedia resources is supplanting traditional paper texts. The library has the following features and capabilities.

a. 80,000 square feet programmed for 20- year -growth
b. Storage capacity for 400,000 volumes, periodicals, and audiovisual materials
c. Seating for 600 throughout the building in traditional and non-traditional groupings
d. Laptop computer access at all seats, with dad ports to facilitate easy use and data retrieval
e. Wireless internet connection throughout the facility
f. One large and two small computer labs available within the facility
g. Video Conference Room
h. Telemedicine Center which features interactive consulting and diagnosis
i. Problem Based Learning Rooms
j. Special Collections Room which provides a secure and controlled environment for the display and use of special collections, rare books and artifacts devoted to health issues and the contributions of African American health practitioners to the history of medicine
k. Community Resource Center with flexible conference table seating, data ports and modern media equipment for large and small groups
l. Access to additional resources for faculty, staff, and students through its membership in the National Network of Libraries of Medicine, the Institute for Scientific Information, and the Online Computer Library Center.

The Student Health Center

The Howard University Student Health Center is staffed with healthcare professionals and administrative support staff who provide all students with access to care for acute sickness, injuries, contraception management, chronic disease management, referrals to specialists, health promotion, and disease prevention education additional information is available at **studenthealth@howard.edu** . Except in extreme emergency, students report to the Student Health Services and are referred for specialized care or hospitalization if required.

Specific vaccination and health screening protocols are mandated for health science students to ensure their protection in clinical sites. Students accepted into the Clinical Laboratory Science program are informed of the health requirements including recent physical examination and immunization in the letter of admission to the program. Information regarding the student health policies and the required immunization procedures is mailed to all new Howard University students and are available at: https://studentaffairs.howard.edu/wellness/submit-your-mandatory-health-requirements Non-compliance with the regulations as described by the Student Health Center will result in a **medical hold** and delays in registration.

The annual medical clearance required of all junior and senior Clinical Laboratory Science students is facilitated by the Howard University Student Health Center. Students who have not completed medical clearance requirements are not allowed in the student laboratory or clinical rotations. This information is also published in the Division of Allied Health Sciences Admission, Retention, and Graduation Policies.

Campus Security

A. The Department of Public Safety (HUDPS) at Howard University is a full-service public safety provider, that functions year-round to promote campus safety, provide campus crime awareness and prevent campus crime, and to ensure compliance with Howard University regulations and policies as well as the enforcement of District of Columbia Codes and Municipal Regulations within its jurisdiction. Information can be found at: https://www2.howard.edu/search-results?as_q=Campus%20security

B. Emergency "**Blue Light Phones"** are installed by the University and are strategically placed in public areas. These phones are located outside of residence hall complexes and administration buildings. They are used when immediate police assistance is needed.

C. For police service call **HU-DPS (HU-SOCC) on (202) 806-1100** to report a crime or incident and to have an officer dispatched to the location. The Metropolitan Police Department can be reached for **emergencies by calling 911 and 311 for non-emergencies.**

D. The **'BisonSafe' App**, allows students, faculty, and staff to find pertinent information related to physical and COVID-related safety concerns

HOWARD UNIVERSITY POLICIES

The Howard University website at www2.howard.edu is a repository of the essential policies and procedures of the University. Information regarding the program, academic calendars, scheduled University events and other relevant items are published and updated continuously on the site. Students are encouraged to review the policies and procedures that pertain to them and to browse the website periodically for campus updates.

The **Howard University Course Catalog and Undergraduate Bulletin** provides updated information on programs, course descriptions, withdrawal policies etc. at : https://ous.howard.edu/sites/ous.howard.edu/files/2019_20_rev_HU_UG_Bulletin.pdf

STATEMENT OF ADA PROCEDURES

Howard University is committed to providing access and reasonable accommodations to persons with documented disabilities in accordance with Disabilities Act (ADA) of 1990, Section 504 of the Rehabilitation Act of 1973, and other pertinent federal, state, and local disability and anti- discrimination Laws. Students must self-identify to the Dean of the Office of Student Service, located at 1851 9th Street NW, Second Floor (Odd Fellows Building). Students must register with the office within the first week of class and at the beginning of each subsequent semester for which accommodations are requested. Students will receive reasonable accommodations based on the recommendations of a licensed physician. A letter of accommodations will be given to students for delivery to the faculty, who will provide the accommodations. See the University's ADA website: http://www.howard.edu/specialstudentservices

TITLE IX POLICY

Howard University is committed to providing students with educational opportunities free from sexual harassment and discrimination based upon gender, gender expression, gender identity, sexual orientation, or marital status. The University strives to maintain an environment in which all members of the University Community are: (a) judged and rewarded solely on the basis of ability, experience, effort, and performance; and (b) provided conditions for educational and employment pursuits that are free from sexual and gender-based harassment and violence, other forms of interpersonal violence, stalking, and retaliation. The Title IX Office exists to ensure the University adheres to that commitment. This includes educating the University Community on the rights and protections that are provided by the law and ensuring that those rights and protections are provided to all members of the University community who participate in the Title IX process. This also includes directing individuals who are impacted to the support and resources available.

ACADEMIC CODE OF STUDENT CONDUCT

Howard University is a community of scholars composed of faculty and students both of whom must hold the pursuit of learning and search for truth in the highest regard. Such regard requires adherence to the goal of unquestionable integrity and honesty in the discharge of teaching and learning responsibilities. Such regard allows no place for academic dishonesty. To better assure the realization of this goal any student enrolled for study at the University may be disciplined for the academic infractions defined below." **Definitions of Academic Infractions include: Academic Cheating**—any intentional act(s) of dishonesty in the fulfillment of academic course or program requirements. **Plagiarism**—to take and pass off intentionally as one's own the ideas, writings, etc. of another without attribution (without acknowledging the author). *Note: Also, included is* ***self-plagiarism****—the reuse of one's own writing taken from another written document (published or unpublished) without acknowledgement.* **Copy Infringement**—Copy infringement occurs when a copyrighted work is reproduced, distributed, performed, publicly displayed, or made into a derivative work without the permission of the copyright owner.

STUDENT STATEMENT OF UNDERSTANDING

I _____, having read the Retention Standards and Regulations and the Graduation Requirements of the Department of Clinical Laboratory Science, understand and agree to abide by the stated rules and regulations.

1. I understand that I must complete all lower division and upper division requirements of the curriculum before I will be allowed to graduate from the program.

2. I also understand that I will be scheduled for clinical practicums only when all clinical laboratory science courses are completed and approved by the faculty.

3. I will not be eligible to take the **Departmental Comprehensive Examination** if **any courses** from the prescribed curriculum are incomplete or pending.

4. I understand that I must take the **Departmental Comprehensive Examination** at the scheduled time during the senior year. I must pass the examination with a minimum grade of 70%. There will be one opportunity for a make-up test prior to the graduation date.

5. If I do not pass the comprehensive examination by 70% after both attempts, I will not be eligible for graduation that semester. I understand that I must then review materials and pass the examination after a period of two months to one year in order to be recommended for graduation (third attempt).

6. I will then have only one (1) more attempt (fourth attempt) to be successful in the examination and to graduate from the program.

7. I understand that passing the National Board of Registry Examinations is **NOT a requirement for graduation** from the Department of Clinical Laboratory Science, Division of Allied Health Sciences at Howard University

8. I understand that I cannot attempt the National Board of Registry (BOR) Examination until I have completed all requirements and received a degree from Howard University.

Name: _____ ID#_____

Student's signature: _____Date:_____

Witness' signature: _____Date:_____

**A signed copy of this agreement must be submitted to the department at the end of the New Student Orientation. You should retain one for your records.*

DEPARTMENT OF CLINICAL LABORATORY SCIENCE

STUDENT AWARDS

Students are eligible for the annual Departmental awards listed below. The awards, given in recognition of outstanding performance, are presented during the College's Annual Awards Day Ceremony. Recipients of the awards receive a plaque or certificate.

OUTSTANDING JUNIOR AWARD

This award is presented to the junior student in the upper division course of study who possesses most of the following characteristics: Cooperativeness, helpfulness toward other students, leadership capabilities, and a positive attitude toward studies.

L.L. BERRY AWARD

The L.L. Berry Award for the highest scholastic achievement is presented to the student with the highest cumulative grade point average through the four years of study at Howard University. The student must have been a full-time student for four years, never incurred probationary status, and must have achieved a minimum GPA of 3.0. The award is in honor of Mr. L.L. Berry, a Chief Technologist at Freedmen's Hospital.

WALKER – WEAVER AWARD

The Walker–Weaver Award for outstanding clinical and didactic performance is given to the student with superior clinical skills concurrent with high academic achievement during the upper division of the program. The student must have been full-time each semester and not have incurred probationary status. The late Johnay Walker-Weaver was acting chairperson for the Department of Clinical Laboratory Science at Howard University.

CALVIN C. SAMPSON AWARD

The Calvin C. Sampson Award for outstanding clinical performance is presented to the student who has demonstrated outstanding proficiency in the clinical laboratory rotations. Dr. Calvin Sampson served for many years as the Medical Director of the Clinical Laboratory Science program at Howard University.

CATHERINE C. DEANE AWARD

The Catherine C. Deane Award is presented to the student with outstanding clinical and didactic performance in Clinical Microbiology. Mrs. Catherine C. Deane was the former supervisor of the Bacteriology Laboratory at Howard University Hospital. The award is sponsored by the Clinical Laboratory Science Class of 1977.

RECOGNITION FOR PERSEVERANCE

This award is presented to the upper division student who has demonstrated persistence and perseverance despite numerous obstacles. Students may be nominated by their peers and faculty make the selection.

TIMOTHY LEON FAGGETT AWARD

This is presented to the upper division student who reflects the qualities of the late Timothy Leon Faggett. These qualities include a strong sense of professional integrity, high responsibility to the ideals of the profession, motivation to attain the highest potential, an unrelenting perseverance to accomplish goals and humanitarian service to the community. Mr. Timothy Leon Faggett was an Assistant Professor in the Department of Clinical Laboratory Science at Howard University.

JAMES K. HILL AWARD

This award honors Dr. James K. Hill, the first chairman of the Department of Clinical Laboratory Science in the College of Allied Health Sciences. The award goes to the Upper Division student with prior clinical laboratory experience whose demeanor, leadership and commitment to the profession inspires other students and enriches the department.

CLINICAL LABORATORY SCIENCE COURSES

CLLS-101. Introduction to Clinical Laboratory Science. 2 CH.
History, professional organizations, educational and occupational opportunities, and ethics of clinical Laboratory science. PREREQUISITE: NONE

NAHS 300. Clinical and Research Techniques. 3 CH
Introduces students to laboratory techniques used in the various areas of the clinical laboratory. The course will expose students to the basic techniques, principles and practices used in clinical and research laboratories. Students will develop an appreciation of the impact of laboratory skills in achieving accurate and precision on the outcome of laboratory results. PREREQUISITE: NONE

CLLS-415. Clinical Urinalysis and Body Fluids. 3 CH
Lectures and laboratory course designed to give theoretical knowledge, and technical skills needed for the analysis of non-blood body fluids such as urine, spinal fluid, etc. and laboratory detection methods used in evaluating renal function and other diseases. PREREQUISITE: PHYSIOLOGY - MINIMUM GRADE OF 'C'.

CLLS-307. Clinical Immunology I. 4 CH
Lectures and laboratory course on theory, principles, and procedures of immunology. The course will provide students with the knowledge and principles of immunology, the application of these principles to diagnostic immunology, and exposure to current developments in the field (Formerly CLLS-709). PREREQUISITE: PHYSIOLOGY – MINIMUM GRADE OF 'C'.

CLLS-303. Clinical Hematology I. 4 CH
Lectures and simulated laboratory course designed to provide information on the basic hematology concepts, and current hematology laboratory techniques and procedures. PREREQUISITE: PHYSIOLOGY – MINIMUM GRADE OF 'C'.

CLLS-308. Clinical Diagnostic Microbiology I. 5 CH.
Lectures and simulated laboratory with emphasis on the general characteristics and procedures for identification of the various groups of bacteria of medical significance. PREREQUISITE: PHYSIOLOGY- MINIMUM GRADE OF 'C'

CLLS-309. Clinical Biochemistry & Instrumentation. 4 CH.
Lecture and laboratory course focused on human biochemistry, basic physics concepts and operation of laboratory instrumentation. Students will learn to diagnose simple instrument malfunctions and the rationale for troubleshooting. PREREQ.: A GRADE OF C OR ABOVE IN PHYSIOLOGY and ORGANIC CHEMISTRY

CLLS-403. Clinical Hematology II. 4 CH
Lectures and laboratory in hematological blood diseases, hemostasis and leukemia cytochemistry. PREREQ.: A GRADE OF C OR ABOVE IN CLLS-303.

CLLS-409. Immunohematology. 4 CH.

Lectures and student laboratory sessions on advanced immunological studies and transfusion medicine including blood grouping, blood transfusion, leukocyte antigen typing, hepatitis associated antigens, and blood components. PREREQ.: A GRADE OF C OR ABOVE IN CLLS 307 (Formerly CLLS-709).

CLLS-310. Clinical Chemistry II. 4 CH.

Lectures and student laboratory course focused on biochemistry profile of disease and the laboratory analytical findings in blood and other body fluids. PREREQ.: A GRADE OF C OR ABOVE IN CLLS 305.

CLLS-416. Clinical Diagnostic Microbiology II. 4 CH.

Lectures and simulated laboratory course with emphasis on the examination of clinical specimens; the isolation and the identification of organisms commonly encountered in humans. PREREQ.: A GRADE OF C OR ABOVE IN CLLS-308.

CLLS-404. Hematology/Urinalysis Practicum. 4 CH.

Clinical laboratory experience in hematology and urinalysis to increase proficiency in performance of procedures; learn routine, special and automated procedures and for exposure to patient/technologist relationships. Prereq.: A grade of C or above in CLLS-303 and 403.

CLLS-406. Microbiology Practicum. 5 CH.

Clinical laboratory experience in microbiology laboratory to increase proficiency in performance of procedure; learn routine, special and automated procedures and for exposure to patient/technologist relationships. Laboratory. PREREQ.: A GRADE OF C OR ABOVE IN CLLS-308 AND 416.

CLLS-408. Chemistry Practicum. 4 CH.

Clinical laboratory experience in the chemistry laboratory to increase proficiency in the performance of procedures; learn routine, special and automated procedures and for exposure to patient/technologist relationships. PREREQ.: A GRADE OF C OR BETTER IN CLLS-305 AND CLLS-310.

CLLS-411. Immunohematology Practicum. 4 CH.

Clinical laboratory experiences in Blood Banking and Transfusion laboratory to increase proficiency in performance of procedures, to learn routine, special and automated procedures and for exposure to patient/technologist relationships. PREREQ.: A GRADE OF C OR ABOVE IN CLLS 307 (Formerly CLLS-709) and CLLS 409.

CLLS-418. Clinical Laboratory Mgmt. Decision Making. 2 CH.

Lectures and simulated practices are designed to provide principles, theory and procedures of clinical management with emphasis on evaluation of equipment, procedures and personnel relationships. This course uses the case study approach, interaction with industry personnel, medical information and the use of laboratory data to aid in understanding patient diagnosis and disease. PREREQ: Students must be senior students enrolled in clinical practicums

CLLS-720. Research - WRTG. 3 CH.

This Writing Across the Curriculum (WAC) -approved course is designed to teach clinical laboratory science students the principles of research, research methodologies, design and statistical methods. This course will equip students with the principles of scientific research and the conventions of scientific writing and meets the third writing requirement for the Division of Allied Health Sciences. PREREQ.: A GRADE OF C OR ABOVE IN ENGL 003 & MATH 009

CLLS 400. Molecular Diagnostics. 2 CH

Course incorporates the theoretical principles of molecular technology and the use of nucleic acids (DNA & RNA) to provide clinical diagnostic information. PREREQUISITE: A MINIMUM GRADE OF C in GENETICS and ORGANIC CHEMISTRY.