Catalog Course Description: This course provides a study of the basic principles of hematology, including hemoglobin’s, hematocrit, white and red counts, and identification of blood cells, focusing primarily on the red blood cells. Lecture topics include hematopoiesis, erythropoiesis, hemoglobin structure and function, red cell metabolism, and erythrocyte disorders. Laboratory exercises will focus on routine hematological test procedures, including manual and automated testing.

Prerequisite(s): MLT 102, BIO 210

Credit Hours: 4
Total Credits: 3
Lec Credits: 3
Lab Contact Hours: 3

Departmental Website: http://www.midlandstech.edu/medlab/
D2L Brightspace Login Page: https://elearn.midlandstech.edu

Instructor: Janis Livingston
Office: HSB 219
Telephone: 822-3556
FAX: 803-822-3417
Email: livingstonj@midlandstech.edu

Departmental Assistant: Jennifer Langley
Program Coordinator: Mary Breci, brecim@midlandstech.edu

Class Schedule[s]: M, W Lecture 10:00 am-1:00 pm T, TH Lab 1:00-4:00 pm
Wednesday open lab 1:00-3:00

Office Hours: M & F afternoons

Textbook(s): Clinical Hematology and Fundamentals of Hemostasis, 5th Ed., Harmening
Clinical Hematology Atlas, Carr & Rodak.

Additional Textbooks/Readings:
Taber’s Cyclopedia Medical Dictionary
The Morphology of Human Blood Cells, Diggs.
Hematology, Clinical Principles and Applications, 3rd Ed., Rodak

Equipment: PPE-impervious lab coat, latex or nitrile gloves, closed toed leather shoes.

Course Objectives: Upon completion of this course the student will be able to:

1. Describe red blood cell maturation line
2. Identify white blood cells, red blood cells, and platelets microscopically.
3. Discuss the sources and types of anemias.
4. Perform automated cell counts, Westergren Erythrocyte Sedimentation Rates, Manual Hemoglobin and hematocrits,
5. Prepare, stain, and review blood smears.
Program and course assessment activities are deployed and results collected in accordance with the College’s assessment schedule. Please refer to the information in the syllabus regarding the applicability of the assessment activity for the current semester.

**Course Outcomes and Competencies:**

**Intended Course Outcome # 1:**
Students will be able to apply scientific principle to medical laboratory technique and procedures.

**Course Competency # 1:**
Students will be knowledgeable in theories, principles, and routine procedures of hematology.

**Performance Measurement # 1**
Students will score 75% or above on questions related to MLT 110 on comprehensive exit exam taken in MLT 270 (PSLO 1).

**Intended Course Outcome # 2:**
Students will be able to perform routine tests with skill and accuracy, being able to recognize normal and abnormal results.

**Course Competency #2:**
Students will demonstrate entry level medical laboratory bench skills and procedures.

**Performance Measurement #2**
Students will score 75% or above on comprehensive final practical exam in MLT 110 and assessed in MLT 270 (PSLO 2).

**On Campus Course Attendance:**

**ATTENDANCE POLICIES:**

1. Attendance at every class/lab is expected. Illness or emergencies will be considered on an individual basis. However, no more than TWO absences, class and/or lab, will be permitted. Three (3) tardies constitute an absence. Missing any portion of class time, arriving late or leaving early, may constitute an absence from the class or lab. Sleeping during lecture or lab is strictly prohibited. Any student sleeping during class will be given an absence for that class. Three (3) sleeping offenses will result in dismissal from the class and program.

2. The student with absences in excess of the above may request a meeting with a faculty committee to explain the absences and request permission to continue in the program. Otherwise, the student will not be allowed to continue and will receive a grade of "W" prior to midterm or "WF" after midterm.

3. It is the prerogative of the instructor and the program director to determine the validity of the absence. Any invalid absence from a laboratory session will result in a grade of zero for that laboratory session.

4. The student is responsible for material covered, assignments turned in after the due date will drop one letter grade each day late after scheduled date. If not received within 5 days, grade will be zero.

5. Students who have been suspended or withdrawn are not automatically entitled for readmission. Both withdrawals and suspensions must submit a completed application for readmission. The application is obtained from the director of admissions and is processed as all other applications for admission.
7. A student who withdraws or is suspended must meet the requirements for graduation as set forth in the current catalogue.

8. A student who is absent must complete an Incidence Report and submit to the instructor no later than 24 hours after return from absence.

**MISSING QUIZZES:**

A student must make-up any quizzes/tests or exams on the first day back after an absence unless extenuating circumstances prevent such. These extenuating circumstances must be discussed with the instructor. The instructor will make the final decision as to whether the testing will be delayed. Any student who does not make-up the missed test at the designated time will be given a zero for that test. Students with excessive absences or missed exams may be required to take and pass essay or oral makeup quizzes.

**MISSING FINAL EXAM:**

Notify instructor within forty-eight (48) hours and arrange for makeup. Otherwise, makeup exams can only be arranged upon presentation of a signed doctor’s excuse.

Please note the following: You are responsible for all material and announcements presented, whether you are present or absent.

**Withdrawal:** Should the maximum allowable absences be exceeded prior to midterm, a "W" will be submitted to the registrar to be recorded on the student’s transcript. Should the maximum allowable absences be exceeded after midterm, a "W" will be submitted to the registrar if the student was passing the course at the time of withdrawal OR a "WF" will be submitted if the student was failing the course at the time of withdrawal.

**No Shows:** If you register for a course and decide not to attend for any reason, you must complete a drop form and process it through the student Records Office. You will not be automatically purged for non-attendance. If you do not submit a drop form, you will be responsible for course tuition and fees. By not officially dropping the course, you will incur a bill with the college that can only be addressed through the College’s Finance Office. The college’s refund policy and dates are posted each semester.

Effective Spring 2015, the Student Ombudsman’s office will no longer be the initial point of contact for requesting No Shows to be processed. Students who incur a bill must contact the Finance Office.

**Administrative Drop Requests:** A student requesting an Administrative Drop resulting from medical event, death of family member, and other extenuating circumstances experienced while enrolled at Midlands Technical College should be directed to the Student Ombudsman’s office. Our policy dictates a request must be made no later than 30 days after the affected term. Supporting documentation is required and must be received before the request can be processed. Once the request form is received along with supporting documentation, it takes approximately three weeks for processing. As a result of an approved Administrative Drop Request, the student may be granted a refund of tuition and fees.

**Military Withdrawal:** According to College Procedure 3.10.1, students having to withdraw from college because of Military Deployment (active duty personnel) while enrolled must complete a withdrawal form and submit to the Records Office along with a copy of military orders.
Disabilities Statement: The staff of Counseling and Career Services works to ensure that all educational programming and services are accessible to otherwise qualified students with disabilities. If you have a concern regarding the accessibility of websites, instructional materials, online courses and other electronic or information technology please contact Counseling and Career Services. It is the student's responsibility to self-disclose as a student with a disability and to request accommodations prior to beginning a program or course. Please contact the staff of Counseling and Career Services at 803-822-3505 (AC) or 803-738-7636 (BC) or via email at disability@midlandstech.edu if you have any questions or concerns.

D2L Brightspace Help:

Online Learning Support Help Desk: Technical questions related to the operation and use of D2L Brightspace can be answered from our Support Help Desk. A response will be provided within one business day. To login: use your MTC e-mail account username and password. (Student Username Example: georgeasmith) (Faculty Username Example: smithg)

D2L Brightspace Assistance: Technical questions related to the operation and use of D2L Brightspace can also be answered by leaving a voicemail at (803) 822-3561, or emailing D2LHelp@midlandstech.edu. A response will be provided within one business day.

MyMTC Help: For MyMTC log-in issues please call 803-738-7888.

Academic Dishonesty:
For more information about academic dishonesty, see the Academic Affairs Student Guidelines and Expectations attached.

If you are suspected of cheating, your instructor will inform you. You may explain or refute the allegation. If your instructor still thinks the charges are founded, you will be referred to the Office of the AVP, SDS. Documentation is submitted to the Office of the AVP, SDS, by the instructor. You will then meet with either Dr. Holloway or Mr. Hayden. After the meeting, you will receive a letter with the sanction grade of zero (0) and any other sanctions deemed appropriate. You have the right to file an appeal. Once the hearing and the notice of the right to appeal have been completed, the instructor will be notified to apply the sanction grade of zero (0).

Course Requirements:
The course grade will be based on your performance on the following:

In order to pass this course you must complete the following requirements:

1. Attend and complete all laboratory sessions.
2. Practice universal safety precautions during laboratory sessions.
3. Comply with program attendance code.
4. Complete assignments in a professional manner.
5. Complete all tests and exams given during the course in the allotted time and designated dates.
Students are encouraged to seek help outside of class lecture and laboratory for material they may have difficulty understanding. Students are also encouraged to practice lab skills during open lab times to become competent with technical detail.

**Course Grading:**

<table>
<thead>
<tr>
<th>Course Component</th>
<th>Percentage</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lecture/Exams</td>
<td>40%</td>
<td>0-40 points</td>
</tr>
<tr>
<td>Lab Session Reports/Skills Checks/Case Studies</td>
<td>25%</td>
<td>0-25 points</td>
</tr>
<tr>
<td>Final Written Exam</td>
<td>15%</td>
<td>0-15 points</td>
</tr>
<tr>
<td>Final Practical Exam</td>
<td>10%</td>
<td>0-10 points</td>
</tr>
<tr>
<td>Affective-Affective objectives</td>
<td>10%</td>
<td>0-10 points</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td><strong>75 points or above to pass course</strong></td>
</tr>
</tbody>
</table>

A grade of "C" or better must be earned in this course in order for a student to progress in Medical Laboratory Technology.

**NOTE:** Students are assessed throughout the semester for successful consistent progress of practical skill development and techniques. Failure to demonstrate improvement and skill retention will prevent progression in the MLT program. Poor performance on lab and skill checks with a failing score on the final practical will constitute removal of student from MLT program. Students must possess a 75 average or above on the Unit Exams prior to the Final to continue in the program.

***For any test scores below 70%, the student will schedule an appointment with instructor within 5 days of receiving the score. If no appointment is scheduled within 5 days, additional points up to a maximum of 10 will be deducted from the test score.

**Grading Scale:**

- 93-100 A Superior Work
- 84-92 B Good Work
- 75-83 C Average Work
- Below 75 F Unsatisfactory Work

**Special Procedures:** PPE required for all laboratory sessions

**Field Trips:** TBA

**Classroom Rules/Other:**

**Standard Operating Procedure for Handling Laboratory Specimens and Materials**

All specimens will be handled using the "Universal precautions for blood and body fluids" recommended by OSHA and CDC. Practice will include:

1. Specimen brought into the MLT Laboratory will be carefully screened, in proper containers and labeled.
2. Proper protection will be used when processing specimen (lab coats, gloves and protective eye wear as appropriate).
3. Mechanical pipetting only.
4. Decontamination of laboratory work surfaces at end of each exercise. Use 10% bleach solutions.
5. Proper disposal of all contaminated material:
   a. non-sharps in biohazard bags
   b. sharps in puncture resistant containers
   c. biohazard trash is autoclaved before final disposal
6. Decontamination of scientific equipment, i.e., electrodes, glassware, etc.
7. Hand washing after all laboratory procedures.
8. Accurate and proper recording and reporting of results.
9. No eating, drinking, smoking, chewing gum or applying cosmetics in laboratory.


Course Topic Outline/Course Calendar with Assignments:

MLT 110 COURSE OUTLINE

INTRODUCTION TO HEMATOLOGY
HEMATOPOIESIS/ERYTHROPOIESIS
RBC: MEMBRANE, HEMOGLOBIN - STRUCTURE AND FUNCTION
RBC: METABOLISM AND CATABOLISM
INTRODUCTION TO ANEMIA
IRON METABOLISM AND HYPOCHROMIC ANEMIA
MEGALOBLASTIC ANEMIA
APLASTIC ANEMIA
HEMOLYTIC ANEMIA
HEMOGLOBINOPATHIES
THALASSEMIA

COURSE TOPIC OBJECTIVES:

Upon completion of this course the student will be able to:

1. Follow universal precautions in all laboratory sessions.
2. Properly collect, label, and prepare specimens for use in hematology testing.
3. Discuss and perform essentials of quality assurance in the hematology laboratory.
4. Describe the principles of blood formation, composition and function; outlining the origin, maturation and morphology of erythrocytes.
5. Describe hemoglobin structure and function.
6. Perform routine hematological procedures and correlate the test results to clinical significance, normal parameters, validity of results.
7. Recognize abnormal test results in relation to erythrocyte disorders.
8. Categorize erythrocyte disorders according to hematopathology as well as morphology.

OBJECTIVES: AFFECTIVE

During the course of each semester, students will be given the opportunity to demonstrate the development of behaviors and attitudes consistent with those of the profession. In order to give the students the opportunity to develop these attributes, labs are typically set up in such a manner that
students are placed in different work groups or assigned different partners for certain exercises or case studies, as well as given opportunities to work independently to achieve appropriate results. Students are also given the opportunity to demonstrate that they can work independently and follow instructions and safety protocols during laboratory practicals when they must perform procedures or resolve problems with a procedure they have performed.

Students are evaluated on the development of these behaviors as part of their laboratory grade, preparation/contribution and attendance grade and when appropriate as part of their practical exam grade.

**Students will demonstrate:**

1. The ability to work cooperatively with fellow students and instructors.
2. The ability to work with individuals of different cultural and ethnic backgrounds to achieve a common goal.
3. The ability to work independently and to make decisions based on information provided and/or discovered during the performance of a procedure.
4. The ability to organize a work assignment in an efficient manner.
5. The ability to follow established safety protocols.
6. The ability to care for equipment and to perform necessary maintenance or report malfunctions to the appropriate individual.
7. Punctuality as demonstrated by arriving for lectures and lab sessions at the designated times and turning in assigned work on time.
8. Preparedness.
9. Consideration of others working within the laboratory by making sure that reagents and equipment are replaced to their designated areas, keeping the work area clean and uncluttered.
10. Ability to follow established protocols for reporting of work, taking care to accurately report actual results obtained in the prescribed manner.
11. Recognition of limitations, seeking help from the appropriate persons.
12. Integrity and honesty.
13. Responsibility in functioning as lab assistants to prepare labs.

Maintaining a positive and receptive attitude.

MLT 110-Tentative Schedule Fall TBA

PLEASE NOTE: Should change become necessary, the instructor reserves the right to adjust the requirements, pace, or scheduling of this course. Any change will be announced in class before it becomes effective.