



BM ET 1302

Medical Terminology & Anatomy



About Us

The College of Biomedical Equipment Technology (CBET) is a majority Veteran owned and operated private college offering Biomedical Equipment Technician (BMET), Healthcare Technology Management (HTM) and Healthcare Information Systems Management training at the certificate and associates degree levels. Our leadership team is comprised of individuals with decades of experience in the healthcare industry and education. Similarly, our instructional staff is comprised of industry experts and award-winning educators dedicated to providing quality education, training, and career services to our students.

Locations

Main Campus

105 Windy Meadows, Suites 201
Schertz, Texas 78154

www.cbet.edu

Mission

“The College of Biomedical Equipment Technology delivers premier education and training in Healthcare Technology Management and Information Technology to equip students to meet the evolving needs of the industries we serve.”

About the Course

The Medical Terminology and Anatomy course is designed as an Interactive Distance Learning (IDL) course, including asynchronous and synchronous live virtual instruction. The course introduces medical terms and anatomy to develop a foundational awareness for the biomedical technician working in the healthcare and medical industry.

- Medical Terminology Basics
- Directional, Location, and Position Terms
- Functions of Body Systems
- Medical Equipment Correlation with Body Systems

Course Description

The course is designed as an introduction to the human body systems, functions, and medical terminology. No previous experience is required. The course will discuss the components and meaning of medical words and identify common medical word parts. The course covers the body systems and features the interplay of anatomy and medical equipment.

Learning Objectives

LO1. Understand the components of terminology, know the meaning of common medical word parts, and understand the directional, location, and position terms.

LO2. Understand hemodynamics in the cardiovascular system and the purpose of hematology analyzers and additional medical equipment for blood.

LO3. Understand the function of the lymphatic system, the conductivity path of the heart, and the correlation with medical equipment for circulation and cardiac care.

LO4. Identify the lung volumes and capacities and understand the gas exchange process within the respiratory system.

LO5. Understand the functions of the digestive and urinary systems, and identify equipment associated with each system and proper instrumental placement.

LO6. Identify the structure of the nervous system, the muscular system, and the skeletal system. Recognize the correlation of anatomy and physiology with medical equipment output.

Time-on-Task.

Time on task is the total learning time spent by a student in this course, including instructional time and time spent studying and completing course assignments and other activities (e.g., reading, research, writing, individual and group projects.) These activities are:

- Attending the weekly webinars
- Reading course presentations/ "lectures"
- Reviewing course notes
- Reading assignment references, books, or other course materials
- Participation in online discussions
- Conducting research
- Writing papers or other assignments
- Completing other assignments (e.g., projects)

The entire course Time-on-Task is 121 hours.

Instructional Team

BMET 1302 Medical Terminology & Anatomy program is led by a webinar and interactive distance learning formats. In addition to the weekly live sessions, the instructor is accessible via the Learning Management System (LMS) daily and by appointment via Zoom between the hours of Monday through Friday from 0800-1700 (CST).

Instructional Methods and Activities

The student online learning environment is structured to mirror the course syllabus and includes all the information students require to successfully navigate the course. The online learning environment, referred to as CANVAS, provides a means for students to engage, communicate, and learn. CBET instructors will actively engage students in CANVAS via discussion board forums and other activities designed to cultivate student engagement and participation.

Online Classes (Daily). Students are expected to engage in CANVAS. Courses include weekly assignments, quizzes, tests, and other requirements prescribed by the instructor. Students are responsible for completing weekly assignments in a timely manner as prescribed by the instructor(s). It is important to remember that in addition to the resulting grades, completion of weekly assignments is also used to measure student engagement, attendance, and participation.

Weekly Live Webinars. Mandatory instructor-led webinars will be conducted at least once per week (60 Minutes). Additionally, students may request one-on-one counseling or tutoring sessions based on the instructor's availability. Webinars are not optional; however, we understand that from time-to-time students may not be able to attend in person. If you cannot attend a live session, the webinars will be posted in CANVAS for review.

Online Discussion Forum (daily/weekly). CANVAS includes a discussion board with weekly prompts and instructions for completing daily/weekly assignments. Students are required to respond to all weekly discussion board topics and instructor-directed prompts. Responses must be substantive and meet the minimum word count requirement. Additionally, students are required to engage with peers by responding to no fewer than two student responses per week. Student participation and attendance in CANVAS is reported to the Director of Education on a weekly basis and the information is used, in part, to measure attendance and participation in the course.

Late/Make-up work. All assignments must be completed on time and as instructed to receive full credit. Make-up work shall:

1. Be supervised by an instructor approved for the subject being made up.
2. Require the student to demonstrate the same knowledge or competence expected of a student who attended the scheduled class session.
3. No more than 5% of the missed work can be made up. All work must be completed and submitted within seven (7) calendar days of its original due date. All coursework must be submitted no later than six (6) calendar days after the course ends.

Module 1. Intro to AP

Learning Objective 1. Understand the components of terminology, know the meaning of common medical word parts, and understand the directional, location, and position terms.	
TLO 1	Understand the main components of constructed terms.
TLO 2	Identify common medical term prefixes, root words, and suffixes.
TLO 3	Understand terminology for positions, directional, and location.
TLO 4	Identify the organizational level of life and homeostasis

Module 1 Overview. The first course module requires students to evaluate their interaction and role as a BMET to provide indirect patient care. Students are to evaluate the importance of understanding medical terminology, anatomy, and physiology and the correlation with medical equipment to perform a BMET's requirements and maintain patient and staff safety.

Webinar Session (60 Minutes). The Module 1 webinar will include an overview of the course and instructions to improve students' access to materials and resources. Course formalities and assignment expectations will be discussed. The etymology of medical terminology will segue into the word parts of terminology and common medical term components. Body planes, positions, and directional and locational terms will be identified. The organizational levels that lead to the body systems and the general functions will be reviewed. The webinar includes the body's corrective feedback to maintain homeostasis.

Assignments.

Assignment 1. Based on the webinar content, answer the following with a minimum of 200 words:

Webinar Question 1 – (1) *What is the difference between an eponym and an acronym?* (2) *Give an example of an acronym.*

Webinar Question 2 – (1) *What are the three components of terminology?* (2) *For each word part, identify the location and purpose, and (3) provide an example.*

Assignment 2. Answer the Discussion Board Questions by Thursday, 11:59 pm CST, and reply to two posts by Sunday, 11:59 pm CST. Each response must contain substantive information and a minimum of 150 words written in the student's terms and understanding.

Discussion Question 1 – *Introduce yourself to the class by describing your experience in the medical field and where you work currently.*

Discussion Question 2 – *Explain why it is vital for a biomedical technician to have a basic understanding of human anatomy and medical terminology.*

Assignment 3. Complete the quiz

Time-on-Task. The Time-on-Task for this module is 18 hours.

Module 2. Hemodynamics

Learning Objective 2. Understand hemodynamics in the cardiovascular system.	
TLO 1	Know the organs and function of the cardiovascular system.
TLO 2	Understand the path of blood through the pulmonary and systemic circulation loops.
TLO 3	Identify the properties of blood, the blood vessels, and perfusion.
TLO 4	Understand the purpose of a hematology analyzer and other medical equipment for blood.

Module 2 Overview. Week 2 students will identify the purpose and components of blood and how blood is dispersed through perfusion. Hemodynamics of blood through the cardiovascular system and various equipment associated with blood will be reviewed.

Webinar Session (60 Minutes). The week 2 webinar focuses on the flow of blood through the vessels of the pulmonary circulation and the systemic circulation of the cardiovascular system.

Assignments.

Assignment 1. Based on the webinar content, answer the following with a minimum of 200 words:

Webinar Question 1 – *Identify the blood flow path through the heart, including the valves.*

Webinar Question 2 – *(1) Select a piece of medical equipment that requires a vascular access point, (2) identify the purpose of the equipment, and (3) disclose the location of the vascular access point.*

Assignment 2. Answer the Discussion Board Questions by Thursday, 11:59 pm CST, and reply to two posts by Sunday, 11:59 pm CST. Each response must contain substantive information and a minimum of 150 words written in the student's terms and understanding.

Discussion Question 1 – *(1) Discuss the three steps of hemostasis for the coagulation process at an injury site. (2) Identify the correlation between blood test tubes and coagulation.*

Discussion Question 2 – *What is the purpose of a coagulation analyzer?*

Assignment 3. Complete the heart worksheet.

Assignment 4. Complete the quiz.

Time-on-Task. The Time-on-Task for this module is 21 hours.

Module 3. Cardiac Conductivity/Lymph Systems

Learning Objective 3. Identify the conductivity path of the heart and the correlation with medical equipment for cardiac care. Understand the structure and function of the lymphatic system.	
TLO 1	Learn the terminology and function of the lymphatic system.
TLO 2	Establish an understanding of the cardiac conductivity and the sinus rhythm.
TLO 3	Explore the correlation of an EKG and a defibrillator with the conductivity of the heart.

Module 3 Overview. Students will review the path of the action potential through the cardiomyocytes. Identify the waves and segments of the sinus rhythm and explore how the EKG reads the heart's electrical activity. Students will identify how the lymphatic system works within the circulatory system.

Webinar Session (60 Minutes). The module 3 webinar will review the conductivity of the heart, how an EKG reads cardio electrical activity, and emphasize the importance and purpose of a defibrillator. The module will briefly review the role and structure of the lymphatic system.

Assignments.

Assignment 1. Based on the webinar content, answer the following with a minimum of 200 words:

Webinar Question 1 – *(1) Describe the cardiac conduction system and the path of the electrical impulse. (2) Identify what is considered the primary pacemaker and what initiates the heartbeat rhythm.*

Webinar Question 2 – *Identify and describe the waves of the sinus rhythm.*

Webinar Question 3 – *What is one aspect that stood out to you during the webinar?*

Assignment 2. Answer the Discussion Board Questions by Thursday, 11:59 pm CST, and reply to two posts by Sunday, 11:59 pm CST. Each response must contain substantive information and a minimum of 150 words written in the student's terms and understanding.

Discussion Question 1 – *Explain how an electrocardiogram (ECG/EKG) measures the electrical activity of the heart.*

Discussion Question 2 – *Identify a medical equipment associated with the heart and explain the purpose and application. (Do not use an EKG)*

Assignment 3. Complete the midterm exam.

Time-on-Task. The Time-on-Task for this module is 22 hours.

Module 4. Respiratory System

Learning Objective 4. Understand diffusion within the respiratory system. Identify the lung volumes and capacities.	
TLO 1	Identify the major organs, structures, and function of the Respiratory System.
TLO 2	Understand gas exchange in the pulmonary capillaries and alveoli.
TLO 3	Understand how to categorize capacities and the volumes of the lung.
TLO 4	Review equipment used for pulmonary tests and ventilation.

Module 4 Overview. During module 4, students will identify the respiratory zones and the anatomical structures. Students will discuss modes of ventilation and respiratory equipment. Module 4 includes a review of lung volumes and capacities.

Webinar Session (60 Minutes). The module 4 webinar will review the process of pulmonary circulation and diffusion between the pulmonary capillaries and the alveoli. Students will identify the upper and lower respiratory divisions, the main organs, and the flow of oxygen and carbon dioxide in the respiratory system.

Assignments.

Assignment 1. Based on the webinar content, answer the following with a minimum of 200 words:

Webinar Question 1 – *(1) List the flow of air from the nasal cavity to the exchange of oxygen and carbon dioxide, and (2) identify how carbon dioxide leaves the body.*

Webinar Question 2 – *(1) Explain why blood in the pulmonary capillaries has a higher concentration of carbon dioxide than the air entering the alveoli and (2) why the gradient pressure of the gasses is vital for gas exchange.*

Assignment 2. Answer the Discussion Board Questions by Thursday, 11:59 pm CST, and reply to two posts by Sunday, 11:59 pm CST. Each response must contain substantive information and a minimum of 150 words written in the student's terms and understanding.

Discussion Question 1 – *Identify a medical device associated with the respiratory system and its purpose.*

Discussion Question 2 – *Based on the chosen medical device, what are specific medical terms and aspects of the respiratory system and equipment you consider vital for a BMET to understand and communicate with staff?*

Assignment 3. Complete the lungs and capacity worksheet.

Time-on-Task. The Time-on-Task for this module is 18 hours.

Module 5. Digestive/Urinary Systems

Learning Objective 6. Understand the functions of the digestive and urinary systems. Identify equipment associated with each system and instrumental placement.	
TLO 1	List the digestive system function, organs, and identify the six steps of the digestive process.
TLO 2	Explore medical equipment associated with the digestive system.
TLO 3	Recognize the features and the process of renal filtration and excretion.
TLO 4	Identify the process of dialysis for the urinary system and various renal equipment.

Module 5 Overview. During module 5, students will review the digestion process of the digestive system and the output of the urinary system. Students will identify the process of blood filtration and urine formation in the renal system. Students will understand the function of the urinary system and the general properties of urine disclosed in a urinalysis.

Webinar Session (60 Minutes). During the Week 5 webinar, students will identify the primary and accessory organs of the digestive system and analyze the six digestion steps. The webinar will cover equipment associated with the urinary and digestive system and their purpose. Different types of endoscopes and various feeding tube placements will be explored.

Assignments.

Assignment 1. Based on the webinar content, answer the following with a minimum of 200 words:

Webinar Question 1 – *(1) Identify the primary and accessory organs of the digestive system and (2) briefly explain the six-step digestion process using the terms from the webinar.*

Webinar Question 2 – *What is one aspect that stood out to you during the webinar?*

Assignment 2. Answer the Discussion Board Questions by Thursday, 11:59 pm CST, and reply to two posts by Sunday, 11:59 pm CST. Each response must contain substantive information and a minimum of 150 words written in the student's terms and understanding.

Discussion Question 1 – *(1) Select a characteristic of urine, (2) identify the normal range level, and (3) discuss some implications of an abnormal range.*

Discussion Question 2 – *What is a urinalysis?*

Assignment 3. Complete the quiz.

Time-on-Task. The Time-on-Task for this module is 20 hours.

Module 6. NS/Musculoskeletal System

Learning Objective 6. Identify the structures of the nervous system, the muscular system, and the skeletal system. Recognize the correlation of anatomy and physiology with medical equipment output.	
TLO 1	Understand the medical terms relevant to the ANS and the musculoskeletal system and how the systems work together for movement.
TLO 2	Identify the network of the nervous system leading to the autonomic system (ANS) and its divisions.
TLO 3	Examine how the skeletal and muscular systems support and protect the body
TLO 4	Differentiate between smooth muscle, skeletal muscle, and cardiac muscle.
TLO 5	Identify the structures in the axial skeleton and the appendicular skeleton.

Module 6 Overview. During module 6, students will review the structures of the musculoskeletal system, the function, and the interrelationship with the NS. Students will identify the different muscle tissues and their muscle properties. Students will explore the organization of the nervous system and focus on the divisions of the autonomic nervous system (ANS).

Webinar Session (60 Minutes). Week 6 webinar covers the ANS and the musculoskeletal system. The webinar will include a review for the final exam and highlight various medical equipment. Students will participate in poll questions as a review and a group activity to brainstorm and gather data for the webinar assignment.

Assignments.

Assignment 1. Based on the webinar content, answer the following with a minimum of 200 words:

Webinar Question 1 – *(1) What is the difference between the sympathetic division and the parasympathetic division of the ANS? (2) Give an example of each division.*

Webinar Question 2 – *How do the NS and the musculoskeletal system correspond to one another to create movement and maintain homeostasis?*

Assignment 2. Answer the Discussion Board Questions by Thursday, 11:59 pm CST, and reply to two posts by Sunday, 11:59 pm CST. Each response must contain substantive information and a minimum of 150 words written in the student's terms and understanding.

Discussion Question 1 – *(1) Select a body system and identify the main organs and functions. (2) What is a piece of equipment used for the selected body system, the purpose, and equipment placement concerning the anatomical structures?*

Assignment 3. Complete the final exam.

Time-on-Task. The Time-on-Task for this module is 22 hours.

Note: Please remember to complete the end of course survey prior to the end of the last day of class.

Course Grade Distribution

Discussion Board Requirements	30%
Weekly Webinars and Assignments	25%
Quizzes and Worksheets	25%
Exams	20%

Discussion Board Grading Criteria (30% of overall grade)

Students are required to respond to all weekly discussion board topics and instructor-directed prompts. Responses must be substantive and meet the minimum word count requirement. Additionally, students must engage with peers by responding to no fewer than two peer-to-peer responses per week. The following rubric is used as a guide by instructors to evaluate and grade student responses to discussion questions and peer-to-peer engagement:

	Beginning 0-25 Points	Developing 25-50 Points	Accomplished 50-75 Points	Exemplary 75 to 100 Points
Weekly Discussion Question Responses (Minimum of two 200-word responses per week).	Contributes fewer than the required 2 Discussion Question (DQ) responses.	Contributes 2 Discussion Question (DQ) responses but one or both fail to meet minimum word-count requirements for the DQ.	Contributes by providing 2 Discussion Question (DQ) responses and meets the minimum word count requirements for the DQ.	Exceeds required DQ word count requirements and/or provides an exemplary response to a DQ.
Weekly Engagement with peers (Minimum of two 200-word responses to peers each week).	Contributes fewer than the required peer-to-peer responses in the discussion forum.	Contributes 2 peer-to-peer responses in the discussion forum but fails to meet minimum word-count requirements and lacks substance.	Contributes by providing 2 peer-to-peer responses and meets the minimum word count requirement for the peer-to-peer response	Exceeds required peer-to-peer response requirements by meeting the minimum word count requirement and providing substantive responses to peers.
Quality and Content of DQ responses and peer-to-peer responses in the Discussion Forum.	Postings in the discussion forum are not relevant to the assigned topic, are inaccurate, or misrepresented.	Postings in the discussion forum address peripheral topics, are generally accurate, but may contain factual omissions and/or errors.	Postings are generally substantive; however, responses rely too heavily on opinion than fact. Postings meet word count requirements but lack scholarly tone or appropriate references.	Discussion Question and Peer-to-Peer postings consistently contribute to the discussion, contain substantive comments backed by relevant references and encourage open dialogue and additional discussion in the class.

Weekly Live Webinars and Webinar Assignments (25% of overall grade)

Mandatory instructor-led webinars will be conducted at least once per week (60 Minutes). Webinars are not optional; however, we understand that due to unforeseen circumstances, students may not attend.

Instructors will assign weekly assignments associated with the live webinars. If you cannot participate in a live session, the recorded webinars are available in CANVAS for review. All students are responsible for reviewing the webinar and completing the webinar assignment.

Quizzes and Worksheets (25%)

Students will be assigned homework on a weekly basis. Homework may consist of a wide variety of deliverables. Homework may include a wide array of requirements, ranging from written assignments, research

projects, PowerPoint presentations, and a host of other activities. In all cases, instructors will endeavor to ensure that students possess a clear understanding of the requirements and expectations.

Exams (20%)

The course includes a midterm exam in week three and a final exam in week six. The exam format includes multiple choice, true or false questions, diagrams, and matching. An exam review is conducted during the live webinar on weeks three and six.

Grading System for the College of Biomedical Equipment Technology

A	90-100	4.0	F	59 & Below	0.0
B	80-89	3.0	W	Withdrawal	N/A
C	70-79	2.0	I	Incomplete	N/A
D	60-69	1.0	T	Transfer	N/A

To receive an incomplete "I", the student must petition the instructor for an extension to complete the required coursework. The student must be able to pass the course with the completed work and garner a grade of 70 or better. Incomplete grades that are not completed within 7 business days after the beginning of the next session will be converted to the existing grade earned in the course and will affect the student's GPA accordingly. CBET reserves the right to extend the time needed to fulfill the incomplete.

An "I" does not count towards the Grade Point Average (GPA) until a grade is assigned. A "W" is given when a student is dropped from the roster during the course and does not replace the previous grade(s). Grades of "W" and "F" are recorded in the academic transcript and reflected in the GPA. When a course is repeated after failure or withdrawal, the later grade will replace the first grade in calculating the CGPA. The clock hours of the course repetition are counted toward the maximum timeframe. CBET shall record a grade of "incomplete" for a student who withdraws but is not entitled to a refund if the student requests the grade at the time the student withdraws, and the student withdraws for an appropriate reason unrelated to the student's academic status.

A student must repeat a course in which a grade of "F" was received. A student can repeat each course once, however, once they reach 1.5 times the length of time required for graduation, they will be dropped from the program. If a student fails any course a second time, he/she will be dropped from the program. A failed course will be rescheduled for the earliest possible module at the discretion of the Director of Education. Students will be charged to retake the course.

Additional Resources and Points of Contact

Students requiring additional administrative support are encouraged to contact the Colleges Student Advocate, Mrs. Terri Gomez, at 210.233.1102 or via e-mail at tgomez@cbet.edu

For a complete list of administrative policies and regulations refer to the CBET Catalog at <https://cbet.edu/course-catalog>

NOTE: THE INSTRUCTOR RESERVES THE RIGHT TO MODIFY THIS SYLLABUS and COURSE OUTLINE