

**Berkshire Medical Center  
School of Medical Technology**

Course Syllabus

Course No. MEDT 401

Course Title: Clinical Chemistry

Credits: 8

**Description:**

Introduces the student to the physiology of the organ systems of the body and the various analytes that interact with them. Discusses abnormal physiology as it relates to various disease states. Describes the controllable and non-controllable pre-analytical, analytical, and post-analytical variables that can affect testing. Discusses the principles of test methodology. The student applies this theory to the clinical lab using current diagnostic techniques and instrumentation to correlate lab results to disease processes.

Primary Didactic Instructor: Kari Murad, Ph.D.  
Chemistry Supervisor  
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Lead Clinical Instructor: Sue Egnaczak  
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**Required text:**

Clinical Laboratory Chemistry, 2018, Robert Sunheimer,

The Stat Chemistry and Special Chemistry Department Procedure Manual.

Reference book: Tietz Fundamentals of Clinical Chemistry and Molecular Diagnostics, 7<sup>th</sup> ed. Carl Burtis, David Bruns, 2015

Lecture: 1.0 – 1.5 hour lecture every week  
Additional lectures scheduled as needed

Laboratory: 4 week clinical rotation in the Stat Chemistry Department.  
4 week clinical rotation in the Special Chemistry/Serology Department.  
\*\*See individual student schedule for dates

## **Course Goals and Objectives**

Based on the didactic material and clinical instruction students will score an average of 75% or better on evaluation tools (i.e. exams, evaluations, exercises, etc) to demonstrate competency of the following objectives.

Upon completion of the Chemistry clinical and didactic course the student will:

1. Develop an entry-level knowledge of chemistry tests used in the clinical laboratory and their importance in the diagnosis and treatment of disease.
2. Explain the importance of the specific analytes in the chemistry department and their relationship to certain clinical disorders/conditions.
3. Discuss physiological mechanisms that lead to specific chemical imbalances/ disorders and describe the clinical manifestations.
4. Discuss the current prevention and treatment for disorders related to disruptions in body chemistry.
5. Explain the principles and methodologies of each test performed in the chemistry laboratory.
6. Explain the importance of quality control and apply it in the chemistry laboratory.
7. Determine appropriate specimen collection, processing, and analysis of patient specimens by following established procedures and resolve issues as they arise.
8. Perform manual and automated testing on patient blood or body fluids that result in valid laboratory results in the Chemistry department.
9. Perform routine maintenance, trouble shooting, quality control, and calibrations on instrumentation in the Chemistry department following established procedures.
10. Evaluate quality control data and determine course of action when quality control falls outside of range.
11. Interpret laboratory data generated from the Chemistry laboratory regarding test accuracy and abnormal values.
12. Evaluate laboratory data and give possible cause or diagnosis for patient results.
13. Organize workflow for efficiency in lab testing turn-around-times.
14. Practice established confidentiality guidelines.
15. Demonstrate professional and ethical conduct with all healthcare professionals, consumers, patients, and other laboratory students.

## **Basis for Student Evaluation**

Lecture evaluation will consist of exams and assigned exercises. The laboratory evaluation will consist of practicals, written exams, and task lists. The final grade will be composed of 60% lecture and 40% laboratory. See Chemistry grade sheet for specific breakdown.

## **Affective behaviors**

### **Didactic**

Following appropriate training, during didactic instruction the student will:

1. Exhibit professional behavior during didactic instruction.
2. Attend lectures in a timely manner.
3. Respect other students and members of the laboratory.
4. Contribute to a positive learning environment.
5. Demonstrate an interest in the subject matter.
6. Comply with hospital and laboratory dress code and personal appearance policies.
7. Comply with institutional policies concerning safety.
8. Cooperate when situations arise and there is a necessary change in lecture schedule.

### **Clinical**

Following appropriate training, during clinical instruction the student will:

1. Comply with all hospital, laboratory, and school policies.
2. Demonstrate phone etiquette using BMC customer service standards.
3. Maintain a neat, clean, and orderly work area in the Chemistry department.
4. Value the advice and opinion of others.
5. Accept responsibility for his/her own actions.
6. Be dependable and punctual for the clinical experience.
7. Organize his/her time to complete assignments and daily training.
8. Accept constructive criticism and use it as a tool for improved performance.
9. Establish a good rapport with co-workers and uphold the concept of teamwork.