

Name of the block	Block 1
Name of the Elective	Routine Biochemical Investigations Techniques and Correlations.
Location of Hospital lab or research facility	Clinical Biochemistry, DMCH
Name of internal preceptor(s)	Dr Ekta Bansal
Name of external preceptor (if applicable)	None
Learning objectives	At the end of two weeks, the student should be able to:- • Describe commonly used laboratory apparatus and equipment. • Elaborate precautions to be taken in Biochemistry Lab and principles of Good Lab Practices (GLP). • Describe the pre analytical, analytical and post analytical processes involved in biochemistry lab. • Explain the basis and rationale of biochemical tests done in common clinical conditions like Myocardial infarction, hepatic diseases, renal diseases, diabetes mellitus, dyslipidaemia etc. • Correlate altered biochemical values with health and disease. • Explain the quality control process of the tests done in clinical biochemistry. • Describe the errors (pre analytical, analytical and post analytical) which can occur in lab. • Describe the steps of spill management and different types of code used. • Describe biohazardous and non-biohazardous waste and their management in biochemistry lab.
Number of students that can be accommodated	4
Prerequisites for elective	Understanding and knowledge of: • Principles of photometry as taught in 1st Prof MBBS • Practical on Estimation of different biochemical parameters as performed in 1st Prof MBBS • Clinical utility of different biochemical parameters in health and diseases
Learning resources for students	• Practical Handbook of Biochemistry • Textbook of Medical Laboratory Technology by Godkar • Harrison's Principles of Internal Medicine
List of activities of student participants	• Work daily with a supervisor to observe commonly used laboratory apparatus and equipment. • Learn about importance of safe lab practices and

	precautions to be taken in lab. • Learn about the pre analytical, analytical and post analytical processes involved in biochemistry lab. • Learn about the working principles of the autoanalyzer. • Work daily with a supervisor to observe the basis and rationale of biochemical tests done in different clinical conditions. • Work daily with a supervisor for Correlation of altered biochemical values with health and disease. • Observe the supervisor putting internal and external quality control. • Learn the importance of quality control and westgard rules. • Learn about different types of errors occur in clinical biochemistry lab and their corrective measure. • Learn about Waste management in biochemistry lab • Present case work up – a) Diabetes mellitus b) Myocardial infarction c) Hepatic diseases d) Renal diseases
Portfolio entries required	• Documentation of worked up cases • Documentation of presentation done
Log book entry required	Completion of posting signed by preceptor with a “meets expectation (M) grade”
Assessment	• Attendance • Performance of assigned tasks. • Pre and post-test on the assigned elective • Performance in mock up drill in spill management, waste management and different activities on good lab practices. • Presentation of worked up cases in department.

Photometric techniques for routine investigations

In a clinical Biochemistry laboratory, accurate measurement of substances in blood, urine and other body fluids is essential for diagnosis, treatment and monitoring of diseases. Photometric techniques are among the most commonly used methods for routine biochemical investigations. These techniques involve the measurement of the intensity of light absorbed or transmitted by a sample at a specific wavelength, which can be used to determine the concentration of the analyte of interest. The most commonly used photometric techniques in clinical biochemistry labs include spectrophotometry, fluorometry and luminometry.

Photometric techniques provide accurate and reliable results with a high degree of precision. They are easy to perform and require only small amounts of sample, making them ideal for routine testing. They are also cost-effective and can be used to analyze a large number of samples in a short period of time. Various instruments like colorimeters, spectrometers, semi and fully automated analysers are based on principles of photometry. This elective will be helpful to the students in learning the basic process involved in the analysis of the samples received in the clinical biochemistry lab for routine investigations. The student would be familiarised with preanalytical process like receiving of samples, labelling, sorting and centrifugation of the samples along with analytical processes based on photometric techniques used for measurement of routine biochemical parameters, with quality assurance, scope of errors and their management and reporting of results.