

## Elective learning experience in Block I

<b>Name of Block</b>	Block I
<b>Name of Elective</b>	<b>Investigating different types of jaundice Altered LFT values – Diagnostic possibilities ?</b>
<b>Location of hospital lab/research facility</b>	Dept of Biochemistry & Biochemistry section of Central Laboratory
<b>Name of internal preceptor(s)</b>	Dr Angel Abraham
<b>Name of external preceptor(s) if applicable</b>	
<b>Learning objectives of electives</b>	<ol style="list-style-type: none"> <li>1. Classification of Liver Function Tests in blood and Urine</li> <li>2. Utility of LFT in diagnosing different types of Jaundice and other liver disorders</li> <li>3. 4. De Ritis ratio and A/G : Clinical application</li> </ol>
<b>Number of students that can be accommodated in this elective</b>	Two
<b>Prerequisites for elective</b>	Basic knowledge about <ol style="list-style-type: none"> <li>1.Function of Liver</li> <li>2.Bilirubin metabolism</li> <li>3.Different types of liver disorders</li> <li>4.Different types of tests used to assess function of liver in order to diagnose different types of liver disorders</li> </ol>
<b>Learning resources for students</b>	<ol style="list-style-type: none"> <li>1. Tietz text book of laboratory Medicine</li> </ol>
<b>List of activities of student participation</b>	<ol style="list-style-type: none"> <li>1.Work with preceptors</li> <li>2. Collect data (Two case histories each with clinical details and laboratory findings for obstructive ,hemolytic , hepatic jaundice and haemolytic jaundice )</li> <li>3. De Ritis ratio and A/G ratio :Essential details related to these ratio; Clinical utilities of these ratios by quoting report from two cases for each parameter</li> </ol>
<b>Portfolio entries required</b>	Documentation with reflective writing, <ol style="list-style-type: none"> <li>1. Documentation of different types of jaundice cases with laboratory data and their interpretation including A/G ratio and De Ritis ratio</li> </ol>

<b>Log book entry required</b>	<ol style="list-style-type: none"> <li>1. Date wise LFT data collection along with clinical details ( 6 cases)</li> <li>2. Calculating AG ratio and De Ritis ratio of 6 cases and their interpretation</li> <li>3. Reflective writing related to the understanding of LFT in diagnosing different types of liver disorders</li> </ol>
<b>Assessment</b>	<p>Formative:</p> <ol style="list-style-type: none"> <li>1. Attendance</li> <li>2. Daily participation in departmental and laboratory activity</li> <li>3. Performance of assigned tasks per day</li> <li>4. Presentation of worked up cases in department</li> <li>5. 360 degree assessment</li> </ol>
<b>Other comments</b>	<p>The learner is expected to spend at least 3 hours in a day in laboratory and department 75% attendance is mandatory for successful completion of the elective</p>

### Elective learning experience in Block I

<b>Name of Block</b>	Block I
<b>Name of Elective</b>	<b>3. Sickle cell disease and trait reported in the previous 2 years</b>
<b>Location of hospital lab/research facility</b>	Dept of Biochemistry & Biochemistry section of Central Laboratory
<b>Name of internal preceptor(s)</b>	Dr Lavanya Madhavan
<b>Name of external preceptor(s) if applicable</b>	
<b>Learning objectives of electives</b>	<p>To know</p> <ol style="list-style-type: none"> <li>1. Prevalence of Sickle cell disease in Kerala, India</li> <li>2. Classification of Hemoglobinopathies,</li> <li>3. Collect retrospective data of Hb Electrophoresis (Hb EP) for the diagnosis of Sickle cell disorders – enter in excel sheet – export to SPSS – Find out the prevalence of Sickle cell disease</li> <li>4. Role Hb Electrophoresis in diagnosing HbS</li> <li>5. Interpretation of Electrophoretogram (Hb EP)</li> </ol>
<b>Number of students that can be accommodated in this elective</b>	Two
<b>Prerequisites for elective</b>	<p>Basic knowledge about</p> <ol style="list-style-type: none"> <li>1. Sickle cell diseases</li> <li>3. Hb electrophoresis</li> </ol>
<b>Learning resources for students</b>	<ol style="list-style-type: none"> <li>1. Tietz text book of laboratory Medicine</li> <li>2. Harrison's Principles of Internal Medicine</li> <li>3. Pathology Robbins</li> </ol>
<b>List of activities of student participation</b>	<ol style="list-style-type: none"> <li>1. Discussion with preceptor</li> <li>2. Collect retrospective data of Hb Electrophoresis for the diagnosis of Sickle cell disorder – enter in excel sheet – export to SPSS – Find out the prevalence of Sickle cell disorder</li> <li>3. Observe and perform the procedure of Hb Electrophoresis</li> <li>4. Interpretation of electrophoretogram (paste the images of two cases)</li> </ol>

	5.Presentation - Results and discussion
<b>Portfolio entries required</b>	1.Documentation with reflective writing, 2.Recording of cases of Sickle cell disorder 3.Details about data collection and analysis
<b>Log book entry required</b>	1.Basic concepts of Sickle cell disorders 2.Data – master sheet – Results
<b>Assessment</b>	Formative: <ol style="list-style-type: none"> <li>1. Attendance</li> <li>2. Daily participation in departmental and laboratory activity</li> <li>3. Performance of assigned tasks per day</li> <li>4. Presentation of worked up cases in department</li> <li>5. 360 degree assessment</li> </ol>
<b>Other comments</b>	The learner is expected to spend at least 3 hours in a day in laboratory and department 75% attendance is mandatory for successful completion of the elective

## Elective learning experience in Block I

<b>Name of Block</b>	Block I
<b>Name of Elective</b>	<b>2. Different types of jaundice in adults reported in the previous one month</b>
<b>Location of hospital lab/research facility</b>	Dept of Biochemistry & Biochemistry section of Central Laboratory
<b>Name of internal preceptor(s)</b>	Dr Sindhu. P S
<b>Name of external preceptor(s) if applicable</b>	Nil
<b>Learning objectives of electives</b>	<ol style="list-style-type: none"> <li>1. .Classification of Liver Function Tests in blood and Urine</li> <li>2. Utility of LFT in diagnosing different types of Jaundice and other liver disorders</li> <li>3.De Ritis ratio and A/G : Clinical application</li> <li>4. Enter data (LFT) <ul style="list-style-type: none"> <li>– classify jaundice based on the interpretation liver function tests into hepatic, obstructive and hemolytic</li> <li>– enter different variables of LFT in excel sheet – interpret the data and classify the jaundice</li> <li>- export to SPSS and find out the prevalence of each type of jaundice</li> </ul> </li> </ol>
<b>Number of students that can be accommodated in this elective</b>	Two
<b>Prerequisites for elective</b>	Basic knowledge about <ol style="list-style-type: none"> <li>1..Functions of Liver</li> <li>2.Different types of tests used to assess function of liver in order to diagnose different types of liver disorders</li> </ol>
<b>Learning resources for students</b>	<ol style="list-style-type: none"> <li>1. Tietz text book of laboratory Medicine</li> <li>2. Harrison’s Principles of Internal Medicine</li> <li>3.. Park’s Text book of preventive and social Medicine 26<sup>th</sup> edn</li> </ol>

<b>List of activities of student participation</b>	<ol style="list-style-type: none"> <li>1. Work with preceptors</li> <li>2. Collect data (Two case histories each with clinical details and laboratory findings for obstructive ,hemolytic , hepatic jaundice and haemolytic jaundice )</li> <li>3. De Ritis ratio and A/G ratio :Essential details related to these ratio; Clinical utilities of these ratios by quoting report from two cases for each parameter</li> </ol>
<b>Portfolio entries required</b>	<p>Documentation with reflective writing,</p> <ol style="list-style-type: none"> <li>1. Documentation of different types of jaundice cases with laboratory data and their interpretation including A/G ratio and De Ritis ratio</li> </ol>
<b>Log book entry required</b>	<ol style="list-style-type: none"> <li>1. Date wise LFT data collection along with clinical details ( 6 cases)</li> <li>2. Calculating AG ratio and De Ritis ratio of 6 cases and their interpretation</li> <li>3. Reflective writing related to the understanding of LFT in diagnosing different types of liver disorders</li> <li>4. Master sheet of data collection – results (Charts and Graphs)</li> </ol>
<b>Assessment</b>	<p>Formative:</p> <ol style="list-style-type: none"> <li>1. Attendance</li> <li>2. Daily participation in departmental and laboratory activity</li> <li>3. Performance of assigned tasks per day</li> <li>4. Presentation of worked up cases in department</li> <li>5. 360 degree assessment</li> </ol>
<b>Other comments</b>	<p>The learner is expected to spend at least 3 hours in a day in laboratory and department 75% attendance is mandatory for successful completion of the elective</p>

### Elective learning experience in Block I

<b>Name of Block</b>	Block I
<b>Name of Elective</b>	7. Renal disorders: Laboratory perspective with Clinical correlations
<b>Location of hospital lab/research facility</b>	Dept of Biochemistry & Biochemistry section of Central Laboratory
<b>Name of internal preceptor(s)</b>	Dr Nasid. P M
<b>Name of external preceptor(s) if applicable</b>	Nil
<b>Learning objectives of electives</b>	<ol style="list-style-type: none"> <li>1. Classification of Renal Function Tests</li> <li>2. Enlist different renal disorders</li> <li>3. Utility of RFT in diagnosing various kidney dysfunctions</li> </ol>
<b>Number of students that can be accommodated in this elective</b>	Two
<b>Prerequisites for elective</b>	Basic knowledge of : <ol style="list-style-type: none"> <li>1. Renal function tests and their interpretation</li> <li>2. Different types of kidney diseases</li> <li>3. Knowledge of Estimated GFR - using formulas (Cockcroft - Gault , MDRD)</li> <li>4. Protein Creatinine ratio(PCR)</li> </ol>
<b>Learning resources for students</b>	<ol style="list-style-type: none"> <li>1. Tietz text book of laboratory Medicine</li> <li>2. Harrison's Principles of Internal Medicine</li> </ol>
<b>List of activities of student participation</b>	<ol style="list-style-type: none"> <li>1. Work with preceptors</li> <li>2. Collect data(Two case histories each with clinical details and laboratory findings for Chronic Kidney disease, Nephrotic syndrome, Nephritis)</li> <li>3. Calculate Estimated GFR of 10 cases of renal disorders using Cockcroft - Gault , MDRD formula</li> <li>4. Calculate Protein Creatinine ratio(PCR) and mention the significance in the management of Kidney diseases</li> </ol>
<b>Portfolio entries required</b>	Documentation with reflective writing, <ol style="list-style-type: none"> <li>1. Documentation of clinical details and laboratory findings for Chronic Kidney disease, Nephrotic</li> </ol>

	<p>syndrome, Nephritis</p> <ol style="list-style-type: none"> <li>2. Calculation of Estimated GFR and PCR</li> </ol>
<b>Log book entry required</b>	<ol style="list-style-type: none"> <li>1. Date wise RFT data collection along with clinical details( 2 cases) and their interpretation</li> <li>2. Calculating Estimated GFR and PCR</li> <li>3. Reflective writing related to the understanding of RFT in diagnosing different types of renal disorders</li> </ol>
<b>Assessment</b>	<p>Formative:</p> <ol style="list-style-type: none"> <li>1. Attendance</li> <li>2. Daily participation in departmental and laboratory activity</li> <li>3. Performance of assigned tasks per day</li> <li>4. Presentation of worked up cases in department</li> <li>5. 360 degree assessment</li> </ol>
<b>Other comments</b>	<p>The learner is expected to spend at least 3 hours in Department /laboratory 75% attendance is mandatory for successful completion of the elective</p>

### Elective learning experience in Block I

<b>Name of Block</b>	Block I
<b>Name of Elective</b>	<b>1. Monoclonal gammopathy reported in the previous two years</b>
<b>Location of hospital lab/research facility</b>	Department of Biochemistry & Biochemistry section of Central Laboratory
<b>Name of internal preceptor(s)</b>	Dr Sajeevan K C
<b>Name of external preceptor(s) if applicable</b>	Nil
<b>Learning objectives of electives</b>	To understand 1. What is monoclonal gammopathy ? 2. Diagnostic criteria for Multiple Myeloma 3. Collect retrospective data of SPE for the diagnosis of MM 4. Role of Serum Protein Electrophoresis (SPE) and Urine Protein Electrophoresis (UPE) in the diagnosis of multiple myeloma 5. Interpretation of Electrophoretogram- SPE & UPE
<b>Number of students that can be accommodated in this elective</b>	Two
<b>Prerequisites for elective</b>	<ol style="list-style-type: none"> <li>1. Basic concepts of monoclonal gammopathy and multiple myeloma</li> <li>2. Basic knowledge about Serum Protein Electrophoresis and Urine Protein Electrophoresis (UPE)</li> <li>3. Clinical features and Management of MM</li> </ol>
<b>Learning resources for students</b>	<ol style="list-style-type: none"> <li>1. Harrison's Principles of Internal Medicine (20<sup>th</sup> or 21<sup>st</sup> edn)</li> <li>2. Tietz text book of laboratory Medicine</li> <li>3. Practical Clinical Biochemistry Harold Varley</li> </ol>
<b>List of activities of student participation</b>	<ol style="list-style-type: none"> <li>1. Discussion with preceptor</li> <li>2. Collect retrospective data of SPE for the diagnosis of MM – enter in excel sheet – export to SPSS – Find out the prevalence of MM</li> <li>3. Observe and perform the procedure of</li> </ol>

	<p>Electrophoresis – SPE</p> <p>4. Interpretation of electrophoretogram (SPE &amp; UPE) (paste the images of two cases)</p> <p>5. Presentation : An overview of Multiple Myeloma with results and discussion</p>
<b>Portfolio entries required</b>	<p>1. Documentation with reflective writing,</p> <p>2. Recording of case/ cases of Multiple Myeloma (clinical features plus lab investigations)</p> <p>3. Details about data collection and analysis</p>
<b>Log book entry required</b>	<p>1. Basic concepts of Multiple myeloma</p> <p>2. Data – master sheet – Results</p>
<b>Assessment</b>	<p>Formative:</p> <p>1. Attendance</p> <p>2. Daily participation in departmental academic activity</p> <p>3. Performance of assigned tasks (DOPS) related to SPE and UPE</p> <p>4. Presentation of worked up case in department (mini CEX) 2 cases</p> <p>5. 360 degree assessment</p>
<b>Other comments</b>	<p>The learner is expected to spend at least 3 hours in Department /laboratory</p> <p>75% attendance is mandatory for successful completion of the elective</p>

### Elective learning experience in Block I

<b>Name of Block</b>	Block I
<b>Name of Elective</b>	10.Electrolyte disorders – Serum Sodium : Laboratory Perspective with Clinical Correlations in diagnosis and management
<b>Location of hospital lab/research facility</b>	Dept of Biochemistry & Biochemistry section of Central Laboratory
<b>Name of internal preceptor(s)</b>	Dr Reshma Pushparajan
<b>Name of external preceptor(s) if applicable</b>	Nil
<b>Learning objectives of electives</b>	To know about <ol style="list-style-type: none"> <li>1. Reference range for Serum Sodium</li> <li>2. Most common and reliable methodology used for estimation of S. Sodium</li> <li>3. Causes and Clinical features of Serum Sodium imbalance (Hyponatremia &amp; Hypernatremia)</li> </ol>
<b>Number of students that can be accommodated in this elective</b>	Two
<b>Prerequisites for elective</b>	Basic knowledge of : <ol style="list-style-type: none"> <li>1. Serum electrolytes and their reference range</li> <li>2. Serum Sodium – disorders</li> <li>3. Correction of hyponatremia and hypernatremia – role of laboratory</li> </ol>
<b>Learning resources for students</b>	<ol style="list-style-type: none"> <li>1. Tietz text book of laboratory Medicine</li> <li>2. Harrison’s Principles of Internal Medicine</li> </ol>
<b>List of activities of student participation</b>	<ol style="list-style-type: none"> <li>1. Work with preceptors</li> <li>2. Record five cases each for hyponatremia and hypernatremia with clinical details including management strategies</li> </ol>
<b>Portfolio entries required</b>	Documentation with reflective writing, <ol style="list-style-type: none"> <li>1. Documentation of clinical details and laboratory findings for Hyponatremia and Hypernatremia with details including management strategies</li> </ol>
<b>Log book entry required</b>	<ol style="list-style-type: none"> <li>1. Date wise data collection along with clinical details( 5 cases each for hyponatremia and</li> </ol>

	<p>hypernatremia)</p> <ol style="list-style-type: none"> <li>2. Note on utility of serum sodium estimation in the management of different types of serum sodium imbalances</li> </ol>
<b>Assessment</b>	<p>Formative:</p> <ol style="list-style-type: none"> <li>1. Attendance</li> <li>2. Daily participation in departmental and laboratory activity</li> <li>3. Performance of assigned tasks per day</li> <li>4. Presentation of worked up cases in department</li> <li>5. 360 degree assessment</li> </ol>
<b>Other comments</b>	<p>The learner is expected to spend at least 3 hours in Department /laboratory 75% attendance is mandatory for successful completion of the elective</p>

### Elective learning experience in Block I

<b>Name of Block</b>	Block I
<b>Name of Elective</b>	Unraveling Dyslipidemia – Role of Laboratory
<b>Location of hospital lab/research facility</b>	Dept of Biochemistry & Biochemistry section of Central Laboratory
<b>Name of internal preceptor(s)</b>	Dr Deepa Maria K V
<b>Name of external preceptor(s) if applicable</b>	Nil
<b>Learning objectives of electives</b>	To know about 1. Lipid profile : Different parameters tested in this profile and their desirable levels 2. Utility of lipid profile in diagnosing Dyslipidaemia
<b>Number of students that can be accommodated in this elective</b>	Two
<b>Prerequisites for elective</b>	Basic knowledge of : 1. Serum lipids : Different types of lipoproteins and their role in Lipid transport (in brief) 2. Lipid profile : Different parameters tested under this category , type of specimen used (mention the rationale) 3. Apolipoproteins tested in this context and their significance 4. Dyslipidemia : Definition by quoting desirable levels of each parameter 5. Consequences of dyslipidemia (in brief) 6. Role of Apo lipoproteins and serum lipids in the risk assessment of atherosclerotic vascular diseases ( CAD, CVA and PVD)
<b>Learning resources for students</b>	1. Tietz text book of laboratory Medicine
<b>List of activities of student participation</b>	1. Work with preceptors 2. Collect data - Tabulate lipid profile values of 2 days during elective posting and find out the percentage of dyslipidemia cases /day
<b>Portfolio entries required</b>	Documentation with reflective writing, 1. Tabulate lipid profile values of 2 days during

	<p>elective posting and find out the percentage of dyslipidemia cases/day</p> <ol style="list-style-type: none"> <li>Record 10 cases of dyslipidemia including clinical details</li> </ol>
<b>Log book entry required</b>	<ol style="list-style-type: none"> <li>Lipid profile : Different parameters and their desirable levels</li> <li>Tabulate lipid profile values of 2 days during elective posting and find out the percentage of dyslipidemia /day</li> <li>Record 10 cases of dyslipidemia including clinical details</li> <li>Reflective writing on utility of unraveling dyslipidemia in the risk assessment and early intervention to prevent CAD, CVA and PVD</li> </ol>
<b>Assessment</b>	<p>Formative:</p> <ol style="list-style-type: none"> <li>Attendance</li> <li>Daily participation in departmental and laboratory activity</li> <li>Performance of assigned tasks per day</li> <li>Presentation of worked up cases in department</li> <li>360 degree assessment</li> </ol>
<b>Other comments</b>	<p>The learner is expected to spend at least 3 hours in Department /laboratory 75% attendance is mandatory for successful completion of the elective</p>

### Elective learning experience in Block I

<b>Name of Block</b>	Block I
<b>Name of Elective</b>	9. Investigating Thyroid disorders : Laboratory perspective with clinical correlations
<b>Location of hospital lab/research facility</b>	Dept of Biochemistry & Biochemistry section of Central Laboratory
<b>Name of internal preceptor(s)</b>	Dr Arun Babu N B
<b>Name of external preceptor(s) if applicable</b>	Nil
<b>Learning objectives of electives</b>	1. To know about different types of Thyroid disorders 2. To study about different types of Thyroid Function Tests (TFT) and their utility in clinical practice
<b>Number of students that can be accommodated in this elective</b>	Two
<b>Prerequisites for elective</b>	Basic knowledge of : 1. Thyroid function tests and their interpretation 2. Different types of thyroid disorders- 3. Flow chart for diagnosis of Hypothyroidism and Hyperthyroidism
<b>Learning resources for students</b>	1. Tietz text book of laboratory Medicine 2. Harrison's Principles of Internal Medicine
<b>List of activities of student participation</b>	1. Work with preceptors 2. Collect data (10 cases of Thyroid disorders: clinical details along with TFTs) 3. Prepare flow chart for diagnosing Hypothyroidism and Hyperthyroidism
<b>Portfolio entries required</b>	Documentation with reflective writing, 1. Documentation of clinical details and laboratory findings for Hypothyroidism and Hyperthyroidism
<b>Log book entry required</b>	1. Date wise TFT data collection along with clinical details( 10 cases) and their interpretation

	2. Differentiate the thyroid disorders as Hypothyroidism and Hyperthyroidism
<b>Assessment</b>	Formative: <ol style="list-style-type: none"> <li>1. Attendance</li> <li>2. Daily participation in departmental and laboratory activity</li> <li>3. Performance of assigned tasks per day</li> <li>4. Presentation of worked up cases in department</li> <li>5. 360 degree assessment</li> </ol>
<b>Other comments</b>	The learner is expected to spend at least 3 hours in Department /laboratory 75% attendance is mandatory for successful completion of the elective

### Elective learning experience in Block I

<b>Name of Block</b>	Block I
<b>Name of Elective</b>	11.Electrolyte disorders – Serum Potassium : Laboratory Perspective with Clinical Correlations in diagnosis and management
<b>Location of hospital lab/research facility</b>	Dept of Biochemistry & Biochemistry section of Central Laboratory
<b>Name of internal preceptor(s)</b>	Dr Nimmy Maria James
<b>Name of external preceptor(s) if applicable</b>	Nil
<b>Learning objectives of electives</b>	To know about <ol style="list-style-type: none"> <li>1. Reference range for Serum Potassium</li> <li>2. Most common and reliable methodology used for estimation of S. Potassium</li> <li>3. Preanalytical factors affecting Serum K level</li> <li>4. Causes and Clinical features of Serum Potassium imbalance (Hypokalemia &amp; Hyperkalemia)</li> </ol>
<b>Number of students that can be accommodated in this elective</b>	Two
<b>Prerequisites for elective</b>	Basic knowledge of : <ol style="list-style-type: none"> <li>1. Serum Potassium and its reference range and preanalytical errors</li> <li>2. S.Potassium imbalances</li> <li>3. Role of laboratory in the management of hyperkalemia and hypokalemia</li> </ol>
<b>Learning resources for students</b>	<ol style="list-style-type: none"> <li>1. Tietz text book of laboratory Medicine</li> <li>2. Harrison's Principles of Internal Medicine (20<sup>th</sup> or 21<sup>st</sup> edn)</li> </ol>
<b>List of activities of student participation</b>	<ol style="list-style-type: none"> <li>1. Work with preceptors</li> <li>2. Record five cases each for Hypokalemia &amp; Hyperkalemia with clinical details including management strategies</li> </ol>
<b>Portfolio entries required</b>	Documentation with reflective writing, <ol style="list-style-type: none"> <li>1. Documentation of clinical details and laboratory findings for Hypokalemia &amp; Hyperkalemia with</li> </ol>

	details including management strategies
<b>Log book entry required</b>	<ol style="list-style-type: none"> <li>1. Date wise data collection along with clinical details( 5 cases each for Hypokalemia &amp; Hyperkalemia)</li> <li>2. Note on utility of serum Potassium estimation in the management of different types of serum Potassium imbalances</li> </ol>
<b>Assessment</b>	<p>Formative:</p> <ol style="list-style-type: none"> <li>1. Attendance</li> <li>2. Daily participation in departmental and laboratory activity</li> <li>3. Performance of assigned tasks per day</li> <li>4. Presentation of worked up cases in department</li> <li>5. 360 degree assessment</li> </ol>
<b>Other comments</b>	<p>The learner is expected to spend at least 3 hours in Department /laboratory 75% attendance is mandatory for successful completion of the elective</p>

### Elective learning experience in Block I

<b>Name of Block</b>	Block I
<b>Name of Elective</b>	Utility of tumor markers in the management of different types of malignancies
<b>Location of hospital lab/research facility</b>	Dept of Biochemistry & Biochemistry section of Central Laboratory
<b>Name of internal preceptor(s)</b>	Dr Anju. V
<b>Name of external preceptor(s) if applicable</b>	Nil
<b>Learning objectives of electives</b>	<ol style="list-style-type: none"> <li>1. Tumor markers : Different types and the reliable methodology for their estimation</li> <li>2. Utility of tumor markers including cut off values (in the diagnosis and monitoring of malignancies (PSA, beta HCG,CEA,AFP,CA 125,CA 19.9)</li> </ol>
<b>Number of students that can be accommodated in this elective</b>	Two
<b>Prerequisites for elective</b>	Basic knowledge of : <ol style="list-style-type: none"> <li>1. Different types of Tumor markers</li> <li>2. Role of tumor markers in diagnosis and management of malignancies</li> </ol>
<b>Learning resources for students</b>	<ol style="list-style-type: none"> <li>1. Tietz text book of laboratory Medicine</li> </ol>
<b>List of activities of student participation</b>	<ol style="list-style-type: none"> <li>1. Work with preceptors</li> <li>2. Collect data and Record values of tumor markers tested for 5 days with clinical details (indicate the type of malignancy )</li> </ol>
<b>Portfolio entries required</b>	Documentation with reflective writing, <ol style="list-style-type: none"> <li>1. Documentation of values of tumor markers tested for 5 days with clinical details of positive cases</li> <li>2. In positive cases indicate the type of malignancy</li> </ol>
<b>Log book entry required</b>	<ol style="list-style-type: none"> <li>1. Enlist the tumor markers including cut off values in the diagnosis and monitoring of malignancies (PSA, beta HCG,CEA,AFP,CA 125,CA 19.9)</li> <li>2. Find out the positive cases</li> <li>3. Mention the type of malignancy in positive cases</li> </ol>

<b>Assessment</b>	Formative: <ol style="list-style-type: none"><li>1. Attendance</li><li>2. Daily participation in departmental and laboratory activity</li><li>3. Performance of assigned tasks per day</li><li>4. Presentation of worked up cases in department</li><li>5. 360 degree assessment</li></ol>
<b>Other comments</b>	The learner is expected to spend at least 3 hours in Department /laboratory 75% attendance is mandatory for successful completion of the elective