BSHND 308: CLINICAL BIOCHEMISTRY

Course Learning Outcomes:

- To understand the role and requirements of clinical laboratory and how chemical and biochemical analysis are applied to the study of disease
- To discuss the function, structure, laboratory investigation and diseases of the different body systems
- To correlate laboratory findings in clinical samples with various pathological processes

Content-Theory:

1. **Clinical laboratory:**
   - Organization and management,
   - Safety, good lab practices,
   - Quality control and assurance,
   - Reference range and normal values,
2. **Laboratory data processing**;
3. **Handling and processing of clinical samples;**
   - Effect of storage on composition of samples;
4. **Commonly used instruments in clinical laboratory**:
   - Microscope, Minilab apparatus,
   - X-ray, ECG, MRI, ELISA reader,
   - CT scan etc.
5. **Symptomlogy and case histories of various diseases**
   - Forensic science, Molecular basis of diagnosis.

Content-Practical:

1. **Blood sampling techniques;**
   - Complete blood picture (CBP) like Hb, PCV, ESR, TLC, DLC,
   - Bleeding time, clotting time, prothrombin time and blood groups;
   - Pregnancy test;
   - Liver function tests;
   - Kidney function test;
2. **Cardiac enzymes;**
   - Lipid profile, total proteins, albumin and serum minerals;
3. **Urine analysis for bile pigments, protein, urea, pH, ketone bodies, sugars, creatinine, pus cells, RBCs and uric acid;**
4. **Sero-diagnosis of infectious diseases**;
5. **Visit to clinical laboratory/concerned organization.**

Teaching-Learning Strategies:

Teaching will be a combination of class lectures, class discussions, and group work. Short videos/films will be shown on occasion.

Assignments:

The sessional work will be a combination of written assignments, class quizzes, presentation, and class participation/attendance.

Assessments and Examination:

Sessional Work: 25 marks

Midterm Exam: 35 marks

Final Exam: 40 marks

Recommended Readings:

1. Ahmed, N. (2011). Clinical Biochemistry. Oxford University Press, Oxford, UK.

2. Bain, B.J., Bates, I., Laffan, M.A. & Lewis, S.M. (2012). Practical Haematology, (11th ed.) Churchill Livingstone, Elsevier Ltd., New York, USA.

3. Burtis, C., Ashwood, E. & Burns, D. (2006). Tietz Text Book of Clinical Chemistry and Molecular Diagnostics, 4th ed. Elsevier Saunders Company, Philadelphia, USA.

4. Chawala, R. (2014). Practical Clinical Biochemistry: Methods and Interpretations, (4th ed.). Jaypee Brothers Medical Publishers (P) Ltd., New Delhi, India.

5. Devlin, T. M. (2005). Textbook of biochemistry with clinical correlations, (6th ed). Wiley-Liss, Inc., U.S.A.