Unit 2a: Hematopoiesis
Unit 2b: Hematopoietic Organs
Unit 2c: Bone Marrow
Learning Objectives
At the end of this unit, the student should be able to:

1. Describe the location, morphology and function of subcellular organelles of a cell.
2. Explain the origin of blood cells and list the sequential sites of cellular production and development from the fetus through the adult.
3. Describe the basic concepts of cell differentiation and maturation.
4. Describe the changes in cytoplasm, nucleus and cell size that generally occurs in the maturation of blood cells.
5. Compare and contrast the categories of hematopoietic precursor cells, hematopoietic stem cells, hematopoietic progenitor cells and maturing cells.
6. State the name of the stain commonly used to stain peripheral blood smears for differentiating white blood cells and studying RBC morphology.
7. Define cytokine.
8. List two kinds of cytokines.
9. List 4 recombinant cytokines and state the cell line they stimulate.
10. State the clinical applications for the cytokines listed above.
11. State the purpose of CD nomenclature.
12. List 2 clinical conditions that indicate the need for bone marrow studies and give examples of each.
13. Name the bones that participate in active hematopoiesis in adults.
14. Name the needles used to aspirate liquid marrow and to obtain the bone marrow biopsy.
15. Explain the role of the laboratorian during a bone marrow procedure.
16. Describe the preparation of the marrow aspirate for laboratory examination.
17. State the purpose of each type of smear or specimen obtained.
18. Define M:E ratio and state the normal value.