

Republic of Yemen
Ministry of Higher Education & Scientific Research
21 SEPTEMBER UNIVERSITY of MEDICALS &
APPLIEED SCIENCES



Faculty of Laboratory medicine..

Department of Hematology

Course Specification of : Diagnostic Hematology II

Course No. (03,03,343)

2022/2023

8- Course name: Diagnostic Hematology II

| I. Course Identification and General Information: | | | | |
|---|--|---|----------|-----------|
| 1 | Course Title: | Diagnostic Hematology II | | |
| 2 | Course Code & Number: | 03,03,343 | | |
| 3 | Credit Hours: | Theory Hours | | |
| | | Lecture | Exercise | Practical |
| | | 2 | 0 | 2 |
| 3 | Credit Hours: | 3 | | |
| 4 | Study Level/ Semester at which this Course is offered: | Fourth Level / 2 nd Semester | | |
| 5 | Prerequisite (if any): | Diagnostic Hematology I | | |
| 6 | Co –Requisite (if any): | None | | |
| 7 | Program (s) in which the course is offered: | Bachelor in laboratory medicine | | |
| 8 | Language of Teaching the Course: | English | | |
| 9 | Study System: | semester | | |
| 10 | Mode of Delivery: | Regular | | |
| 11 | Location of Teaching the Course: | University Campus | | |
| 12 | Prepared by: | Dr . Rabea Mansor | | |
| 13 | Date of Approval: | 2023/3/11 | | |

| II. Course Objectives and Learning Outcomes (description, course learning outcome) | |
|--|--|
| A. Course Description: | |
| It provides essential information about laboratory diagnosis of blood and bone marrow disease based on | |

the combination of clinical and laboratory data. It is the case study course related to hematological system in health and disease. Also, it focuses on the principles of hematology analyzer.

| III. Course Intended Learning Outcomes (CILOs) | | Referenced PILOs |
|--|---|------------------|
| A. Knowledge and Understanding: Upon successful completion of the course, students will be able to: | | |
| a1 | Understand the importance of the first basic tests in hematology lab, the lab results through studying different cases. | A2 |
| a2 | Recognize normal and abnormal test results and integrate the clinical and lab for ensuring accuracy of the results. | A3 |
| B. Intellectual Skills: Upon successful completion of the course, students will be able to: | | |
| b1 | Perform laboratory techniques used in hematology lab. | B1 |
| b2 | Proper using of hematology analyzer and Recognize errors or discrepancies in lab results. | B3 |
| C. Professional and Practical Skills: Upon successful completion of the course, students will be able to: | | |
| c1 | Demonstrate ethical and professional behavior, interest, enthusiasm, and willingness to learn as seen through active participation. | C1 |
| c2 | Act responsibly and reliably as measured by punctuality, attendance, dependability, and quality of work. | C3 |
| D. Transferable Skills: Upon successful completion of the course, students will be able to: | | |
| d1 | Relate normal and abnormal test results and integrate the clinical and lab for ensuring accuracy of the results. | D1 |

Alignment Course Intended Learning Outcomes with Teaching Strategies and Assessment methods:

(A) Alignment Course Intended Learning Outcomes of Knowledge and Understanding to Teaching Strategies and Assessment Strategies:

| | Course Intended Learning Outcomes | Teaching strategies | Assessment Strategies |
|----|---|---------------------|-----------------------|
| a1 | Understand the importance of the first basic tests in hematology lab, the lab results through studying different cases. | Lectures, | Exams |
| a2 | Recognize normal and abnormal test results and integrate the clinical and lab for ensuring accuracy of the results. | Lectures | Exams |

(B) Alignment Course Intended Learning Outcomes of Intellectual Skills to Teaching Strategies and Assessment

| Strategies: | | | |
|--|---|------------------------------------|-----------------------|
| | Course Intended Learning Outcomes | Teaching strategies | Assessment Strategies |
| b1 | Perform laboratory techniques used in hematology lab. | Lectures, Laboratory practical | Exams |
| b2 | Proper using of hematology analyzer and Recognize errors or discrepancies in lab results. | Lectures, Laboratory practical | Exams |
| (C) Alignment Course Intended Learning Outcomes of Professional and Practical Skills to Teaching Strategies and Assessment Strategies: | | | |
| | Course Intended Learning Outcomes | Teaching strategies | Assessment Strategies |
| c1 | Demonstrate ethical and professional behavior, interest, enthusiasm, and willingness to learn as seen through active participation. | Lectures, Laboratory practical | Practical exam |
| c2 | Act responsibly and reliably as measured by punctuality, attendance, dependability, and quality of work. | Lectures, Laboratory practical | Practical exam |
| (D) Alignment Course Intended Learning Outcomes of Transferable Skills to Teaching Strategies and Assessment Strategies: | | | |
| | Course Intended Learning Outcomes | Teaching strategies | Assessment Strategies |
| d1 | Relate normal and abnormal test results and integrate the clinical and lab for ensuring accuracy of the results. | Lectures, Laboratory practical, | exams |

| IV. Course Content: | | | | | |
|-------------------------|--|-----------------|-----------------|---------------|---------------------------|
| A – Theoretical Aspect: | | | | | |
| NO. | Units/Topics List | Sub-topics List | Number of Weeks | Contact hours | Learning Outcomes (CILOs) |
| 1 | Types of hematological diseases and their tests | | 1 | 2 | a1, b1 |
| 2 | The balance of hematological system and the importance of reticulocyte count | | 1 | 2 | a1, b1 |
| 3 | Case study related to anemia, leukemia and other blood disorders | | 1 | 2 | a2, b1, b2, c1 |
| 4 | Case study related to anemia, | | 1 | 2 | a2, b2 |

| | | | | | |
|----|---|--|-----------|-----------|--------------------|
| | leukemia and other blood disorders | | | | |
| 5 | Working principles of hematology analyzers: Electrical Impedance | | 1 | 2 | a1, b1, b2, c1 |
| 6 | Mid-term exam | | 1 | 1 | a2, a1, b1, c1 |
| 7 | Working principles of hematology analyzers: Optical Light Scatter | | 1 | 2 | a2, a1 |
| 8 | Flagging in hematology analyzer and electrical conductivity principle | | 1 | 2 | a2, a1, b1, c1 |
| 9 | Case study of RBC Histogram | | 1 | 2 | a2, a1, b1, b2, c1 |
| 10 | Case study of WBC Histogram | | 1 | 2 | a2, a1, b1, c1 |
| 11 | Case study of PLT Histogram | | 1 | 2 | a2, a1, b1, c1 |
| | Final Theoretical | | 1 | | a2, a1, b1, c1 |
| | Number of Weeks /and Units Per Semester | | 12 | 21 | |

| B - Practical Aspect: (if any) | | | | |
|--|---|------------------------|----------------------|--------------------------|
| NO. | Tasks/ Experiments | Number of Weeks | Contact hours | Learning Outcomes |
| 1 | Hb and PCV tests with interpretation | 1 | 2 | c1, c2,d1 |
| 2 | RBC and PLT count with RBC indices calculation | 1 | 2 | c1, c2,d1 |
| 3 | WBC count and blood film preparation and staining | 1 | 2 | c1, c2,d1 |
| 4 | Differential count with report of blood film morphology | 1 | 2 | c1, c2,d1 |
| 5 | Sickling test and reticulocyte count | 1 | 2 | c1, c2,d1 |
| 6 | Osmotic fragility test | 1 | 2 | c1, c2,d1 |
| 7 | Iron study profile: serum iron and TIBC | 1 | 2 | c1, c2,d1 |
| 8 | Hb electrophoresis with result interpretation | 1 | 2 | c1, c2,d1 |
| 9 | Revision | 1 | 2 | c1, c2,d1 |
| 10 | Final practical exam | 1 | 2 | c2, c1 |
| Number of Weeks /and Units Per Semester | | 10 | 20 | |

V. Teaching Strategies of the Course:

| | |
|----|-------------------|
| 1- | Lectures: |
| 2- | practical session |

VI. Assessment Methods of the Course:

| No | Assignment |
|----|--|
| 1 | Written Exams (Short Essays) and Quizzes |
| 2 | Multiple Choice Questions (MCQ) |
| 3 | Practical Exams (PE) |

VII. Assignments:

| No. | Assessment Method | Week Due | Mark | Proportion of Final Assessment | Aligned Course Learning Outcomes |
|-----|-------------------|----------|------|--------------------------------|----------------------------------|
| 1 | Midterm Exam | 8 | 20 | 20% | a1,a2,b1,b2,c1 |
| 2 | Practical exam | 14 | 30 | 30% | a1,a2,b1,b2,c1,c2,d1 |
| 3 | Final Exam | 16 | 50 | 50% | a1,a2,b1,b2,c1 |
| | Total | 100 | | 100% | |

VIII. Learning Resources:

1- Required Textbook(s).

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| 1- | A. Victor Hoffbrand- 2016- Hoffbrand's Essential Hematology- Seventh edition |
| 2- | Norman Beck- 2009- Diagnostic Hematology |
| | Dacie and Lewis Practical Haematology, Twelfth Edition • 2017. |
| | Barbra j.Bain ,Imel...Elsevier (2017) |

2- Essential References.

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|----|--|
| 1- | McKenzie, Kristin Landis-Piwowar, Linne Williams (2019). Clinical Laboratory Hematology, 4th Edition, Pearson Publishers. ISBN-13: 978-0134709390; ISBN-10: 013470939X |
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3- Electronic Materials and Web Sites etc.

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| 1- | https://www.britannica.com/science/blood-biochemistry |
| 2- | https://en.wikipedia.org/wiki/Blood |
| 3- | https://pubmed.ncbi.nlm.nih.gov/?term=blood |
| 4- | |

IX. Course Policies:

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|---|---|
| | Class Attendance: |
| 1 | Class Attendance is mandatory. A student is considered absent and shall be banned from taking the final exam if his/her absence exceeds 25% of total classes. |
| | Tardiness: |
| 2 | -If the student dose not attend for more than 6 times, the student will be obligated to withdrew from the course |
| | Exam Attendance/Punctuality: |
| 3 | No student shall be allowed to the exam hall after 30 minutes of the start time and shall not leave the hall before half of the exam time has passed. |
| | Assignments & Projects: |
| 4 | Assignments and projects must be submitted on time. Students who delay their assignments or projects shall lose the mark allocated for the same. |
| | Cheating: |
| 5 | Cheating is an act of fraud that results in the cancelation of the student's exam or assignment. If it takes place in a final exam, the penalties stipulated for in the Uniform Students' Bylaw (2007) shall apply. |
| | Forgery and Impersonation: |
| 6 | Forgery/Impersonation is an act of fraud that results in the cancelation of the student's exam, assignment or project. If it takes place in a final exam, the penalties stipulated for in the Uniform Students' Bylaw (2007) shall apply. |
| | Other policies: |
| 7 | The University official regulations in force will be strictly observed and students shall comply with all rules and regulations of the examination set by the Department, Faculty and University Administration |