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| --- | --- |
| **Course Title:**  | **Hematology and immunology**  |
| **Course Code:** | **371 HEM-5** |
| **Program:** | **Bachelor of Medicine & Bachelor of Surgery (MBBS)** |
| **Department:**  | **N/A** |
| **College:** | **Medicine** |
| **Institution:** | **Najran University** |

# A. Course Identification

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| --- |
| **Credit hours: 5 (3+2)** |
| **2. Course type** |
| **a.** | University |  | College |  | Department |  | Others | **√** |  |
| **b.** | Required | **√** | Elective |  |  **(Program)** |
| **3. Level/year at which this course is offered:** |  (Level 7) Year 3 semester -1  |
| **4. Pre-requisites for this course** (if any)**:** Phase 1 is prerequisite for phase 2 |
| **5. Co-requisites for this course** (if any)**:** |
| None |

## 6. Mode of Instruction (mark all that apply)

| **No** | **Mode of Instruction** | **Contact Hours** | **Percentage**  |
| --- | --- | --- | --- |
| **1** | **Traditional classroom** | 60 | 48.78% |
| **2** | **Blended**  |  |  |
| **3** | **E-learning** |  |  |
| **4** | **Distance learning**  |  |  |
| **5** | **Other**  | 63 | 51.21% |

**7. Contact Hours** (based on academic semester)

|  |  |  |
| --- | --- | --- |
| **No** | **Activity** | **Contact Hours** |
| **1** | **Lecture** | 32 |
| **2** | **Laboratory/ Dissection Room (DR)** | 48 |
| **3** | **Tutorial**  |  |
| **4** | **Others** (specify) |  |
| **5** | **Problem-Based Learning (PBL)** | 20 |
| **6** | **Team-Based Learning (TBL)** | 8 |
| **7** | **Self-Directed Learning (SDL) without topic** | 0 |
| **8** | **Bedside teaching (BST)** | 3 |
| **9** | **Skill Lab (SL)** | 12 |
|  | **Total** | 123 |

# B. Course Objectives

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| 1. Course DescriptionThis course is delivered to the medical students at the level 5/3rd year. It has been designed to achieve horizontal and vertical integration of structure, functions, its common relevant disorders, and their diagnosis and management. The students are expected to develop a problem-solving approach to the relevant hematology and immunology disorders, their diagnoses, and non- pharmacological and pharmacological management |
|  |
| 2. Course Main Objective**By the end of this course, the students are expected to:**1. Relate the basic of the human blood and immune system and their disorders based on an up-to-date knowledge and in a simple stylish way.
2. Interpret result of blood indices in common hematological and immunological disorders and linked them to the pathological feature and major clinical presentation
3. Describe the pathophysiological background of main blood and immunological disorders and their treatments.
4. Discuss the principal and complications of blood transfusion and of transplantation
5. Apply a problem-solving approach to hematological and immunological disorder.
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# C. Course Content

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| --- | --- | --- |
| **No** | **List of Topics** | **Contact Hours** |
|  | Introduction to Block (Coordinator) |  |
|  | **PBL -1 objective**  | 2 |
|  | Compositions and functions of blood and Hematopoiesis. Lecture Physio | 1 |
|  | Blood cells morphology (Histo) Lecture  | 1 |
|  | RBCs Functions and degradation. Lecture Physio  | 1 |
|  | Heme synthesis Lecture Bio | 1 |
|  | Anaerobic glycolysis Lecture Bio  | 1 |
|  | Pentose phosphate pathway Lecture Bio  | 1 |
|  | Classification of anemia Hem | 1 |
|  | Blood products, its uses and complications- Hem- Lecture- 1  | 1 |
|  | Underproduction anemia | 1 |
|  | Blood cells morphology (His LAB) lab Anatomy  | 2 |
|  | Peripheral blood morphology practical  | 2 |
|  | Hemoglobinopathies investigation-hem-lab-2 practical Hem  | 2 |
|  | Common red cells abnormalities- hem- lab- 2 Hem  | 2 |
|  | Blood grouping and Coombs test practical Immune  | 2 |
|  | Blood donation Skill lab Immune | 3 |
|  | PCV and ESR practical hem | 2 |
|  | **PBL-1 discussion**  | 2 |
|  | **TBL- 1 (Hemolytic Anemia (Hem)** | 2 |
|  | **PBL-2 OBJECTIVE** | 2 |
|  | Lymphatic System, Structure and development (Ana) Lecture | 1 |
|  | Immune response and immunity to infection Lecture Immune  | 1 |
|  | Immune tolerance Lecture Immune  | 1 |
|  | Lymphoid Tissues Lecture (His)Anatomy | 1 |
|  | Autoimmune disorders Lecture Immune  | 1 |
|  | Immunodeficiency - Lecture Immune | 1 |
|  | Transplantation immunology Lecture Immune  | 1 |
|  | Immunization Lecture immune | 1 |
|  | Lymphatic System (DR) Anatomy | 2 |
|  | Lymphoid Tissues (His LAB) practical Anatomy | 2 |
|  | Immunofluorescence and Antinuclear antibodies test Practical Immune | 2 |
|  | HLA typing Practical Immune | 2 |
|  | Immunochromatography test ICT , Pregnancy test Practical | 2 |
|  | **PBL2 DISCUSION**  | 2 |
|  | **TBL-2 Hypersensitivity reaction** | 2 |
|  | **PBL-3 OBJECTIVE**  | 2 |
|  | Myeloproliferative neoplasms-hem-lecture-1 Lecture Hem | 1 |
|  | Aplastic anemia-hem-lecture-1 Lecture Hem | 1 |
|  | Neutrophils disorder -hem-lecture-1  | 1 |
|  | Diagnosis of brucellosis  | 2 |
|  | CBC interpretation-hem-lab-2 Practical Hem | **2** |
|  | Peripheral blood film preparation and cells recognition-hem-skill lab-3 Skill lab Hem | 3 |
|  | Common white cells abnormalities morphology-hem-lab-2 Practical Hem | 2 |
|  | Practical session Tropical diseases in hematology Mic | 2 |
|  | **PBL-3 DISCUSION**  | 2 |
|  | **TBL-3 Myelodysplastic syndrome** | 2 |
|  | **PBL-4 OBJECTIVE** | 2 |
|  | Introduction to hemostasis and fibrinolysis. Lecture, Physio  | 1 |
|  | Platelet’s ultrastructure and functions. Lecture Physio  | 1 |
|  | Coagulation process and natural inhibitors of coagulation Lecture Physio | 1 |
|  | Physio Vitamin k lecture Bio | 1 |
|  | VWD- and Hemophilia hem-lecture -  | 1 |
|  | Thrombocytopenia and platelet’s function disorders -hem-lecture-1 Lecture Hem | 1 |
|  | Thrombophilia assay-hem-lab-2 Practical Hem | 2 |
|  | Bleeding time and clotting time Practical Physio | 2 |
|  | Platelet’s function assay- 2 Practical (Hem) | 2 |
|  | PFA, VWF antigen and activity-hem-lab-2 practical Hem | 2 |
|  | Clotting profiles PT, PTT, INR Hem | 2 |
|  | Approach to bleeding disorders-hem-lab-2 Practical Hem | 2 |
|  | Monitoring of anticoagulants Skill lab | 3 |
|  | **PBL-4 DISCUSSION**  | 2 |
|  | **BPL-5 OBJECTIVE** | 2 |
|  | **TBL-4. Thrombophilia and VTE** | 2 |
|  | Tumor immunology Lecture Immune  | 1 |
|  | Haemato-oncogenic viruses Lecture Mic  | 1 |
|  | Leukemia and Plasma cell dyscrasia hem-lecture | 1 |
|  | Lymphoma Lecture pathology | 1 |
|  | Immunosuppressive& immunotherapeutic pharma lecture | 1 |
|  | **PBL-5 DISCUSION** | **1** |
|  | Lymphoma practical Pathology | 2 |
|  | common BM abnormal morphology in hematological malignancies-hem-lab-Practical Hem | 2 |
|  | Flow cytometer immune | 2 |
|  | BM aspiration and biopsy-hem-skill lab-3 Skill lab Hem 3 | 3 |
|  | Molecular diagnosis of leukemia | 2 |
|  | Bedside teaching  | 3 |
| **Total** |  | 123 |

# D. Assessment Tasks for Students

| **#** | **Assessment task\***  | **Week Due** | **Percentage of Total Assessment Score** |
| --- | --- | --- | --- |
| **1** | Mid-block exam  | Week 4 | 20 % |
| **2** | TBL assessment | Weeks 2-5 | 10% |
| **3** | PBL assessment | Weeks 1-5 | 10 % |
| **4** | End of course exams:- Written: MCQs (40%) - Practical: OSPE (20%) | Week 6 | 60% |

**\*Assessment task** (i.e., written test, oral test, oral presentation, group project, essay, etc.)

# F. Learning Resources and Facilities

## 1.Learning Resources

|  |  |
| --- | --- |
| **Required Textbooks** | 1. 1. Hoffbrand essential hematology 7th ed
2. 2. Bailey & Scott's diagnostic microbiology; Tille, Patricia M.13th ED. Greenwood
3. Ganong’s review of medical physiology 25th edition. 2016.
4. Harper’s illustrated Biochemistry 31st  edition, 2018.
5. Snell’s clinical Anatomy, 10th edition, 2018.
6. Basic and clinical pharmacology, Katzung. 15th edition, 2020.
7. Lippincott’s Illustratrated Reviews Immunology; by Carl Waltenbaugh & others
 |
| **Essential References Materials** |  Hematology: 1. ASH-SAP 7TH ed 2019 2. Dacie and Lewis Practical HematologyImmunology:  Medical Immunology; by Stites & others Microbiology: Markell and Voge’s Medical parasitology. 9th Ed. |
| **Electronic Materials** | 1. Web path from Uta University. Images and exams.

 <https://webpath.med.utah.edu/>1. Immunology electronic resources

<https://www.immunology.org/public-information/immunology-related-activities-and->resources/immunology-resources-linksASH publications .orgUptodate.comMedscapeehaweb.org  |
| **Other Learning Materials** | Multimedia associated with the text books and the relevant websites |

## 2. Facilities Required

| **Item** | **Resources** |
| --- | --- |
| **Accommodation**(Classrooms, laboratories, demonstration rooms/labs, etc.) | * Lecture room suitable for 35 students.
* Small group rooms for PBL
* Suitable light and air conditioning.
 |
| **Technology Resources** (AV, data show, Smart Board, software, etc.) | At least one computer, projector smart board in lecture room. Audiovisual support including microphone ,speakers ,pointer and standby technician. |
| **Other Resources** (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list) | Library references and services. |

# F. Specification Approval Data

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| --- | --- |
| **Council / Committee** |  |
| **Reference No.** |  |
| **Date** |  |