COURSE PLAN

FIRST: BASIC INFORMATION

College	
College	: Medicine
Department	: Basic Medical Sciences
Course	
Course Title	: Respiratory System
Course Code	: 31500341
Credit Hours	: 5
Prerequisite	: None
Instructor	
Name	: Mohamad Jaffar Course coordinator + other staff members as per subject.
Office No.	: 2
Tel (Ext)	: 3574
E-mail	: mmjaffar@bau.edu.jo
Office Hours	: Sunday , Tuesday, 10-12

Class Times

Buiding	Day	Start Time	End Time	Room No.
Lecture Hall Complex	Sunday, Monday, Tuesday Wednesday & Thursday	8:00	11:00	2

Text Books

B d. Recommended text books and Atlases:

1) Anatomy:

- Clinical Anatomy for Medical Students. By R.S. Snell, any edition (or latest).
- Grants Atlas of Anatomy or any other good colored Atlas of Human Anatomy.
- Basic Histology any edition by Junqueira.
- Any good Atlas of Human Histology.
- Before we are born. By K.L. Moore and T.V.N.

2) Physiology:
Textbook of Medical Physiology, by Guyton and Hall, 13th edition, 2016.
- Review of Medical Physiology, by William F. Ganong, 23th edition, 2016.
3) Biochemistry:
- Biochemistry. By Cample
- Biochemistry with clinical correlation by Devline
4) Pharmacology:
- Lippincott's Illustrated Reviews: Pharmacology,
5) Pathology:
Basic Pathology. By Kumar, Cotran & Robbin latest edition and handouts.
6) Microbiology:
Medical Microbiology. An Introduction to Infectious Diseases. By Sheries, latest edition.
7) Public Health:
Supplementary departmental handouts.
Specific Learning Objectives.

SECOND: PROFESSIONAL INFORMATION

COURSE DESCRIPTION

Integrative respiratory system provides comprehensive and integrated coverage of anatomy, physiology, histology and embryology of the respiratory system. Microbiology, biochemistry, and pharmacology relating to the system are discussed. Pathology of the upper and lower respiratory system is presented along with clinical presentations of diagnostic and treatment modalities. Teaching methods include lectures, labs, small group discussion, and clinically oriented seminars.

COURSE OBJECTIVES

By the end of this course, students are expected:

1. To identify and describe structures of respiratory organs, as well as their development, their histology and their blood supply.
2. To describe the mechanics of pulmonary ventilation and the major mechanisms involved in the regulation of respiration.
3. To explain how the respiratory gases are exchanged and carried around the body.
4. To identify various bacteria, viruses, parasites and fungal infections, which infect the respiratory tract and to understand principles of diagnosis, treatment and prevention.
5. To identify and describe the major causes, pathogenesis, morphological changes and complications of various disease processes which affect the respiratory tract.
6. To understand the major pharmacological principles, which provide the basis for the treatment of tuberculosis, cough and bronchial asthma, as well as the pharmacology of anti-histamine drugs.
7. To identify the major risk factors which contribute to occupational diseases of the respiratory system and to understand their epidemiological pattern in the Jordanian community.

COURSE LEARNING OUTCOMES

1) Knowledge and Understanding
   1. The structures of the respiratory system including, larynx , trachea ,bronchi and lungs
   2. The nature, functions, physiologic roles of the alveoli

3. Lung volumes and pulmonary function test
4. Pulmonary ventilation perfusion ratio
5. Pulmonary circulation
6. Respiratory center and regulation

2) Professional Skills
The student should be able to differentiate the different repiratory disorders.

3) Competences (Transferable skill and attributes)
The student should be able to differentiate the different investigations required for each Respiratory disorder

C. Specific objectives:

No.	Lecture title **1st Week**	Lecture Objectives
1 and 2	Upper respiratory Tract-I andII **(Anatomy 1,2)**	1. Describe the structure of nasal cavity including nasal septum. 2. Describe the structure of lateral wall of nasal cavity including chonchae and meatuses. 3. Locate the openings of the paranasal air sinuses and naso-lacrimal duct in the meatuses. 4. Describe nasal innervations, blood supply, and its relation to epistaxis. 5. Study the structure of nasopharynx and associated openings with their clinical importance. 6. Describe the structure of various cartilages and membranes of the larynx. 7. Describe muscles of the larynx including their action, nerve and blood supply. 8. Describe the structure of vocal cords and the mechanism of voice production and control of air passageway.
3	Upper respiratory tract infections I: Group A beta-hemolytic streptococci & Haemopkillus influenza **(Microbiology 1)**	1. Know the normal flora and the pathogens of the respiratory tract. 2. Know the structure of Group A beta hemolytic strep in relationship to virulent factors, pathogenesis, and laboratory diagnosis. 3. Know the diseases caused by this organism, epidemiology, pathogenesis, treatment and prevention. 4. Explain why there is no vaccine for this organism. 5. Describe the morphology and structure of H influenza. 6. Describe the growth and pathogenesis, transmission,epidemiology 7. Be familiar with different types of Haemophilus influenza infections. 8. Be familiar with the laboratory diagnosis, treatment and prevention
4	Thoracic cage,	1. Describe the shape and outline of the thoracic cage including inlet and outlet.

	Thoracic wall Respiratory muscles including the diaphragm. (Anatomy 3)	2. Describe the anatomical landmarks of the anterior chest wall. 3. List various structures making the thoracic wall. 4. Make a list of muscles of the thoracic wall including their nerve and blood supply and their actions. 5. List various parts of the thoracic vertebrae and name its characteristic features. 6. Describe the sternum with its joints. 7. Classify ribs, name their various parts and compare them with each other. 8. Define intercostal spaces and discuss their various components including intercostal muscles. 9. Describe the diaphragm, its origin, insertion, function, nerve and blood supply. Study openings in the diaphragm and structures that pass through.
5 & 7	Lower respiratory tract, Pleura, Lung and Mediastinum I & II (Anatomy 4 and 5)	1. Describe the trachea including its relations and subdivision. 2. Define pleura and pleural cavity, and name its parts and recesses. 3. Discuss the pleural nerve supply. 4. Describe the lungs with their lobes and fissures and surfaces and compare between right and left lungs. 5. Make a list of bronchopulmonary segments. 6. Describe innervations, blood supply and lymphatic drainage of the lungs. 7. Identify different parts and contents of the mediastinum. 8. Study the origin, location, course and branches of the internal thoracic artery. 9. Define the surface markings of the trachea, lungs and pleura. 10. Describe the typical appearance of chest X-ray and CT scan.
6	Pulmonary ventilation (Physiology1)	1. Describe the mechanics of pulmonary ventilation. 2. Define pleural pressure, alveolar pressure and trans-pulmonary pressure 3. Describe changes in lung volumes, alveolar pressure, pleural pressure, and trans-pulmonary pressure during normal breathing. 4. Define compliance of the lungs. 5. Draw compliance diagram of the lungs in a normal person. 6. Describe the chemical composition and function of the surfactant.

	2nd Week	
8	Development of pharyngeal apparatus (Anatomy 6)	1. Describe the main stages in development of pharyngeal apparatus: Pharyngeal arches, pouches, grooves, and membranes 2. Describe the development of face 3. Describe the development of palate 4. Discuss some of the congenital anomalies associated with palate and pharyngeal apparatus development
9	Pulmonary volumes and capacities (Physiology2)	1. Define different types of pulmonary volumes and capacities. 2. Define alveolar ventilation 3. List the factors that determine alveolar ventilation 4. Understand differences between anatomic and physiologic dead spaces 5. Describe the effect of dead space on alveolar ventilation 6. Define rate of alveolar ventilation 7. Describe the effects of alveolar ventilation on PCO2 and PO2
10	Histology of Respiratory Tract (Anatomy 7)	1. Describe the microscopic structure of the upper respiratory passage including the respiratory mucosa. 2. Correlate the structure and expected function of the different components of the nose and trachea. 3. Study the microscopic structure of the main bronchi and their subdivisions. 4. Study the microscopic structure of the lung parenchyma, and correlate this structure with gas exchange function.
11	Pre- and Post-natal	1. Describe the development of nasal cavity.

	Development of respiratory system (Anatomy 8)	2. Describe development of the larynx. 3. Describe the development of lungs and bronchi. 4. Describe the development of the diaphragm.
12	Pulmonary circulation (Physiology 3)	1. Compare the pulmonary and systemic circulations listing the main differences between them. 2. Describe bronchial circulation and the concept of physiological shunt 3. Characterize pressures in the pulmonary system 4. Describe blood flow through the lungs and its distribution 5. Understand effect of hydrostatic pressure on regional pulmonary blood flow.
13	Upper respiratory tract infections II: Bordetella pertussis & Corynbacteriym diphtheria (Microbiology 2)	1. Describe the structure, morphology of those organisms and their significance as virulent factors and in laboratory diagnosis. 2. Know the epidemiology, pathogenesis, the mechanism of action of the toxins produced, and the role of lysogenic conversion in virulence. 3. Know the laboratory diagnosis. 4. Treatment , prevention and the use of vaccines, their schedule and their possible side effects, and the use of the cellular component of the vaccine.
14	Pulmonary capillary dynamics. (Physiology 4)	1. Describe the dynamics of capillary exchange of fluid in the lungs and pulmonary interstitial fluid. 2. Characterize the interrelation between interstitial fluid pressure and other pressures in the lung. 3. Define pulmonary edema and the pathophysiological mechanisms. 4. Define pleural effusion and the causing factors
15	Physical principles of gas exchange (Physiology 5)	1. Define the concept of ventilation – perfusion ratio. 2. Describe the effect of ventilation – perfusion ratio on alveolar gas concentration. 3. Gas pressure in a mixture of gases 4. Composition of alveolar air and its relation to atmospheric air 5. Characterize the pathophysiology of abnormal ventilation perfusion ratio. 6. Appreciate the measurement of partial pressure of gases. 7. Define the factors which affect the rate of gas diffusion 8. Identify the respiratory membrane through which gases diffuse

16	Upper respiratory tract infections III: Influenza virus, RSV (Microbiology 3)	1. Identify the viruses associated with upper respiratory tract, and the significance in relationship to antibiotics abuse. 2. Know the structure of the influenza virus, and relate this into its evasiveness and virulence. 3. Explain the epidemiology in birds, animals and humans, why it causes pandemics, methodology used for naming. 4. Explain the clinical presentation, pathogenesis, and the role of the immune response, ryes syndrome and significance. 5. Be familiar with the laboratory diagnosis, treatment and vaccination
17	Transport of Oxygen and Carbon dioxide in blood (physiology 6)	1. Describe the forms oxygen in blood 2. Understand the oxygen dissociation curve and the factors affecting it 3. Describe the physical and chemical forms of carbon dioxide in the blood 4. Understand the Bohr effect and Haldane effect on oxygen and carbon dioxide in the blood
18	Acid base principles and disorders (Biochemistry 1)	1. Understand bicarbonate buffer system using Henderson-Hasselbalch Equation 2. Know which organs are responsible for CO_2 and HCO_3^- maintenance and what determines PH 3. Know normal values of CO_2 and HCO_3^- in arterial blood and the normal arterial blood PH 4. Define acidosis/alkalosis and academia/alkalemia 5. Understand procedure for acid/base interpretation cases 6. Identify and understand compensatory changes
19	Obstructive lung disease (Pathology 1)	1. Define obstructive lung diseases 2. Discuss the pathogenesis, pathologic features and complication of asthma, emphysema, chronic bronchitis and bronchiectasis
20	Regulation of respiration: Neural and chemical control. (Physiology 7)	1. Locate and comment on the function of the dorsal and ventral groups of respiratory neurons, the pneumotaxic center, and the apneustic center in the brain stem. 2. List the effects on respiration that are mediated by the vagus nerves.

		3. List the neural factors that affect the activity of respiratory center 4. Describe abnormal patterns of breathing 5. Describe cough and sneezing reflexes 6. List the specific functions of the respiratory receptors in the carotid body, the aortic body, and in the ventral surface of the medulla oblongata. 7. Describe the effects of arterial PO2, PCO2 and PH on alveolar ventilation
21	Atelectasis, Pulmonary Edema, and Acute Lung Injury (Pathology 2)	1.Define atelectasis and describe the main types of atelectasis 2.Define pulmonary edema in addition to classification and causes 3.Define Acute lung injury, ARDS and diffuse alveolar damage 4.Know the main causes and pathologic features of ALI and ARDS
	3rd week Mid Exam	
	4th Week	
22	Pathophysiology of Respiratory system (Physiology 8)	1. Understand the main complains of the patient with respiratory disease 2. Describe different investigation for diagnosis of respiratory disease 3. Understand the difference between obstructive and restrictive pulmonary diseases 4. Understand the possible preventable methods for protection from respiratory diseases
23	Restrictive lung disease (Pathology 3)	1. Define restrictive lung diseases 2. List the major categories of restrictive lung diseases 3. Describe pathogenesis and pathologic features of idiopathic pulmonary fibrosis, pneumoconioses, and sarcoidosis
24	Alpha 1 antitrypsin deficiency, cystic fibrosis and respiratory distress syndrome (Biochemistry 2)	1. Know the importance of Alpha 1 antitrypsin and recognize different types 2. Understand the effect of defected Alpha 1 antitrypsin on lung 3. Know molecular basis of Cystic fibrosis 4. Know the Structure & Function of pulmonary surfactants; lipids and proteins 5. Know what is RDS (Respiratory Distress Syndrome) and its relation to surfactant

		function 6. Understand the biochemical tests to determine lung maturity
25	Drugs used for treatment of bronchial asthma and COPD (Pharmacology 1)	1. Describe the difference in pathophysiology, etiology and clinical presentations between Asthma and COPD 2. Describe the factors known to provoke the attacks of bronchial asthma and COPD exacerbation. 3. Identify the different pathophysiologic changes targeted in bronchial asthma and COPD treatments 4. Understand the aims of therapy of bronchial asthma and COPD. 5. Be familiar with some examples of drugs that can be used in the treatment of bronchial asthma with their method of administration, mechanisms of action, pharmacokinetics and side effects, such as : Beta agonists, Corticosteroids, Anticholinergic agents, Theophylline, Mast – cell stabilizers, Anti-leukotriens and others. 6. Be familiar with some examples of drugs that can be used in the treatment of COPD with their method of administration, mechanisms of action, pharmacokinetics and side effects.
26	Management of asthma and COPD (Pharmacology 2)	1. Understand treatment strategies for management of Asthma and COPD using GINA and GOLD guidelines. 2. Be familiar with the concepts of step up & step down in bronchial asthma treatment 3. Overlook of possible future therapies.

27	lung diseases of vascular origin (Pathology 4)	1. Know definition, pathogenesis, causes and morphologic features of pulmonary hypertention 2. Know pathogenesis and morphologic features of diffuse pulmonary hemorrhage syndromes 3. Know morphologic features of pulmonary embolism and pulmonary infarction
28	Fungal infections (Microbiology 4)	1. Describe the different fungi involved in the respiratory tract. 2. Describe their structure, clinical classification, and their significance in the disease process. 3. Explain the epidemiology, pathogenesis, clinical presentation, association with the immune status of patients. 4. Know the laboratory diagnosis and treatment 5. Know the preventive measures and the role of the immune system.
29	Mycobacterium tuberculosis (Microbiology 5)	1. Describe morphology, structure, staining and cultural characteristics of the organism. 2. Relate the structure to the virulence and pathogenesis of the disease. 3. Explain the range of pathogenicity, resistance, antigenic structure, virulence mechanisms and antimicrobic susceptibility. 4. Explain the immunity, transmission and epidemiology. 5. Describe relevant laboratory diagnosis. 6. Define the immunoprophylaxis, and the vaccines used and their strategy. . Know the role of the PPD testing and their significance.
30	pulmonary TB (Pathology 5)	Know epidemiology, pathogenesis and clinical features of TB
31	Treatment of tuberculosis (Pharmacology 3)	1. Understand the concepts of TB treatment with special emphasis on two phases of therapy. 2. Understand the concepts of combination therapy particularly the advantages and disadvantages with special emphasis on TB management. 3. Describe the mechanisms of action, pharmacokinetics, uses and side effects of Isoniazid, Rifampin, and Ethambetol. In addition, pyrazinamide as first line therapy

		of tuberculosis.
32	Pulmonary infections (Pathology 6)	1. Define pneumonia and pneumonitis 2. Know classification of pneumonias 3. Know pathogenesis, morphologic features and complications of community-acquired bacterial pneumonias and community-acquired viral pneumonia 4. Discuss causes and morphologic features of lung abscess 5. Know causes, pathogenesis, and morphologic features and of chronic pneumonia 6. List the main causes of pneumonia in in the Immuno-compromised Host
	5th Week	
33	Lower respiratory tract Infections I: Pseudomonas, Moraxella and Bacillus Anthracis (Microbiology 5)	1. Describe morphology and structure of the group and relate this to virulence, antibiotics resistance, pathogenesis, clinical presentation, and laboratory diagnosis. 2. Describe their growth, toxins and extracellular products. 3. Explain their pathogenesis, immunity and clinical manifestations. 4. Explain their mode of transmission and epidemiology. 5. Be familiar with related laboratory diagnosis. .
34	Lower respiratory tract Infections II: Mycoplasma and Legionella (Microbiology 7)	1. Describe the structure, morphology of the group and relate this to virulence, pathogenesis, and clinical presentation. 2. Explain their pathogenesis, immunity and clinical disease. 3. Explain their mode of transmission and epidemiology. 4. Be familiar with the related laboratory diagnosis. 5. Be familiar with their treatment and prevention.
35	Treatment of respiratory bacterial infections I & II. (Pharmacology 4)	1. Understand the pharmacokinetics, mechanism of action and adverse effects of drugs commonly used in the treatment of pulmonary bacterial infections. 2. Understand the pharmacokinetics, mechanism of action and adverse effects of drugs commonly used in the treatment of pulmonary bacterial infections.

36	Lower respiratory tract infections III: Streptococcus pneumonia and other Spp. (Microbiology 8)	1. Name of microorganisms involved in this group. 2. Describe the classification of pneumonias, and the organisms in each group. 3. Understand the structure of S. pneumonia, and relate this to virulence, pathogenesis, clinical presentation and vaccine development. 4. Describe the laboratory diagnosis and treatment of this organism.
37& 38	Lung Tumors 1&2 (Pathology 7&8)	1. Describe the etiology of lung cancer. 2. Distinguish between Small Cell Carcinoma & Non-Small Cell Carcinoma, and know the clinical & pathologic findings of the various types, together with their prognosis. 3. Be familiar with bronchial carcinoid. 4. Describe paraneoplastic syndromes associated with lung cancer. 5. List other tumors in the lung & know the commonest metastatic tumor. 6. List the diagnostic techniques used for respiratory disease. 7. Be familiar with pleural effusions pneumothorax & pleural tumors. 8. Identify nasal polyp, nasal papilloma & carcinoma. 9. Understand the etiology & pathology of nasopharyngeal carcinoma. 10. Describe laryngeal polyp, papilloma & carcinoma.
39	anti-histamines (Pharmacology 5)	1. Review histamine synthesis, storage, release, actions and the clinical manifestations of histamine shock. 2. Understand the mechanisms of actions of anti-histamine drugs. 3. Be able to classify, understand the pharmacokinetics, uses and adverse effects of anti-histamine drugs. 4. Understand the pathophysiology of cough. 5. Understand the sites of actions of anti-tussives given example 6. Understand the mechanism of action of mucolytic agents and give examples
40	Occupational health of the respiratory system (Community Medicine 1)	1. Enumerate types of occupational hazards that affect the respiratory system. 2. Understand different types of pneumoconiosis. 3. To familiarize the students with different diagnostic techniques used in occupational medicine. 4. Understand the process of investigating –screening of work related respiratory

		illness.
41	Pulmonary System Infections Tuberculosis(TB) (Community Medicine 2)	1- Understand causative agent, transmission and risk factors of TB. 2- Explain Epidemiology of TB globally, regionally and Locally. 3- Understand the main approach of TB treatment, prevention and control.
	Final Exam	

D. Weekly Teaching activities:

a. Summary of the teaching activities in the Respiratory System

Department	# of Lectures	# of Practical	# of Seminars 2 (4) groups
Anatomy	**8**	**2 Anatomy** **1 Histology**	**0**
Physiology	**8**	**1 Physiology**	**0**
Biochemistry	**2**	**0**	**0**
Pathology	**8**	**1 Pathology**	**0**
Microbiology	**8**	**1 Microbiology**	**0**
Pharmacology	**5**	**0**	**0**
Public Health	**2**	**0**	**0**
Multidisciplinary	**1**	**0**	**0**
Total	**41**	**6**	**8**

B. Practical laboratory session:

Lab No.	PRACTICAL TITLE	OBJECTIVES
1	**Histology of Respiratory Tract (Anatomy)**	1. Identify the microscopic structure of upper respiratory tract including nasal mucosa, larynx, nasopharynx and trachea. 2. Identify the microscopic structure of lung tissues and parenchyma. 3. Identify the microscopic structure of different parts of bronchial tree. Try to relate structure of each part to its function.

2	**Anatomy of Upper Respiratory Tract, thoracic cage, thoracic wall and respiratory muscles. (Anatomy)**	1. Identify different anatomical structures of the nose and nasal cavity. 2. Identify different parts of the laryngeal skeleton and membranes including vocal folds and cords. 3. Identify different anatomical structure of the larynx (cartilages, cavity, and muscles). 4. Revise surface markings of larynx and site for emergency tracheotomy. 5. Identify different anatomical structures of pharynx. 6. Revise the gross, surface and radiological anatomy of the trachea. 7. Identify different components and joints of the thoracic cage. 8. Identify different respiratory muscles.

3	**Pleura, Lungs & Mediastinum (Anatomy**)	1. Identify different parts of pleura and recesses. Revise its innervations. 2. Identify different parts, impressions, and relations of lungs 3. Revise blood supply, innervations and lymphatic drainage of lungs and pleurae. 4. Revise surface markings of lungs and pleurae. 5. Revise different contents and relations of the mediastinum. 6. Identify different parts of the branching bronchial tree from the trachea to alveoli. 7. Examine the radiological appearance of lungs, trachea, hilum, bronchial tree and skeletal structures.
4	**Spirometry (Physiology)**	1. Define the different lung volumes and capacities and determine the amounts of these measurements in a spirogram. 2. Describe and perform the forced expiratory volume and maximum breathing capacity test and determine these measurements in a spirogram. 3. Understand the abbreviations and sympoles used in pulmonary function studies.

5	**Throat swab** **Sputum culture** **(Microbiology)**	1. Be familiar with the selection, collection and transport of specimen for microbiological examination. 2. Be familiar with the cultivation and isolation of viable pathogens. 3. List types of media used for throat swab culture. 4. Identify and describe the type of hemolysis. 5. Explain the value of using of some biochemical reactions. 6. Be familiar with the selection, collection, and transportation of sputum sample. 7. Be familiar with the cultivation of acid-fast and none acid-fast bacteria. 8. Be familiar with the procedure of Zeil-Neelsen stain. 9. Be able to visualize and observe mycobacterium under the microscope. 10. Be familiar with the LJ medium. 11. Prepare slides from the sputum for staining.
6	**Web Path 1** **(Pathology)**	1. Be familiar with the use of "Webpath" program in computerized pathology teaching and look up lung edema, congestion, thromboembolism, infarction, atelectasis and obstructive lung disease. 2. Examine glass slides of pulmonary edema, congestion, atelectasis and emphysema. 1. Use Wabpath to look up restrictive lung disease, pneumonias granulomatous diseases and tumors. 2. Examine glass slides showing pneumonias, tuberculosis, Hydatid cyst in the lungs, and carcinoma.

COURSE LEARNING RESOURCES

Lectures, Labs, clinical case discussion, video sessions and seminars.

ONLINE RESOURCES

{Write some useful websites related to the course and other material that help students to complete the course successfully.}
This system is taught by more than one staff. Each staff is free to give online links to the students as learning resources.

ASSESSMANT TOOLS

(Write assessment tools that will be used to test students ability to understand the course material and gain the skills and competencies stated in learning outcomes

ASSESSMENT TOOLS	**%**
Mid Exam (Theory)	30
Final Exam (Theory + Practicals + Clinical Cases)	70
TOTAL MARKS	100

THIRD: COURSE RULES

ATTENDANCE RULES

Attendance and participation are extremely important, and the usual University rules will apply. Attendance will be recorded for each class. Absence of 10% will result in a first written warning. Absence of 15% of the course will result in a second warning. Absence of 15% or more will result in forfeiting the course and the student will not be permitted to attend the final examination. Should a student encounter any special circumstances (i.e. medical or personal), he/she is encouraged to discuss this with the instructor and written proof will be required to delete any absences from his/her attendance records.

Use of Mobile Devices, Laptops, etc. During Class, unexpected noises and movement automatically divert and capture people's attention, which means you are affecting everyone's learning experience if your cell phone, laptop, etc. makes noise or is visually distracting during class. For this reason, students are required to turn off their mobile devices and close their laptops during class.

GRADING SYSTEM

Example:

A + = 3 %
A- = 7 %
B+ = 10 %
B = 13 %
B- = 17 %
C+ = 17 %
C = 13 %
C- = 10 %
D+ = 6 %
D = 2 %
D-(45-49) = 2 %
Less than 45 F

*Percentages are according to the number of students who passed the exam.

REMARKS

{The instructor can add any comments and directives such as the attendance policy and topics related to ethics} .

COURSE COORDINATOR

Course Coordinator: Prof Mohamad Jaffar - Department of Basic Sciences	
Signature:	**Signature:**
Date: Date:	