

Republic of Yemen

Ministry of Higher Education & Scientific Research

21 September University for Medicals and Applied Sciences



Faculty of Clinical Pharmacy

Bachelor of Clinical Pharmacy & Pharm. D.

Course Specification of **Pharmacognosy-I**

Course Code. (02.04.249)

2023



T4: This Template is Developed and Approved by CAQA-Yemen, 2023

Prepared by:

Reviewed by:

Head of the Department:

Quality Unit:

Dean

Dr. Salwa M.Raweh

Dr..labeb noman

Dr. Abdulelah Thabet

Dr. Ali Alyahawi

I. General Information:

1.	Course Title:	Pharmacognosy-I			
2.	Course Code:	02.04.249			
3.	Credit Hours:	Credit Hours	Theory Contact Hours		Practical Contact Hours
			Lecture	Tutorial/Seminar	Lab Clinical
		3	2		2 --
4.	Level/ Semester at which this Course is offered:	2 nd Level /1 st Semester			
5.	Pre –Requisite (if any):	General Biology			
6.	Co –Requisite (if any):	-None			
7.	Program (s) in which the Course is Offered:	Bachelor of Clinical Pharmacy& Pharm. D.			
8.	Language of Teaching the Course:	English			
9.	Location of Teaching the Course:	Faculty of Clinical Pharmacy.			
10.	Prepared by:	Dr.Salwa M.Raweh			
11.	Date and Number of Approval by Council:				

II. Course Description:

This course focuses on study of basic information on Pharmacognosy-I in terms of nomenclature, taxonomy, monographs, quality control, methods for Extraction, characterization, detection of active ingredient in medicinal plants. The course will include classification and identification of major active constituents and use of medicinal plants.

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III. Course Intended Learning Outcomes (CILOs) : Upon successful completion of the course, students will be able to:		Referenced PILOs	
A. Knowledge and Understanding:		I, P or M/A	
a1	Explicit the methods used for detection of active constituents and discovering adulteration of medicinal plants.		A2
a2	Discuss the principles and procedures applied for cultivation, collection and processing of plants as crude drugs.		A2
a3	Identify the botanical origin, morphological and microscopical characteristics of common medicinal leaves, barks, roots and rhizomes.		A1, A2
B. Intellectual Skills: Upon successful completion of the course, students will be able to:			
b1	Express with drawings the morphology and key microscopical features of medicinal plants		B1
b2	Differentiate between medicinal leaves, barks, roots and rhizomes based on morphological and microscopical features.		B2
b3	Classify active constituents in medicinal plants.		B3
b4	Select standard operation procedures to identify medicinal plants and crude drugs		B1
C. Professional and Practical Skills:			
c1	Handle efficiently and safely the chemical materials and tools used in the laboratory		C1
c2	Operate the instruments and perform experiments successfully in the laboratory.		
c3	Prepare plant samples and investigate the morphological and microscopical features in medicinal leaves, barks, roots and rhizomes		C2
c4	Present and report his/her works correctly using appropriate writing rules and technologies media.		C2
D. Transferable Skills: Upon successful completion of the course, students will be able to:			
d1			
I= Introduced, P=Practiced or M/A= Mastered/Advanced			

(A) Alignment of Course Intended Learning Outcomes (Knowledge and Understanding) to Teaching Strategies and Assessment Methods:			
Course Intended Learning Outcomes		Teaching Strategies	Assessment Strategies
a1	Explicit the methods used for detection of active constituents and discovering adulteration of	- Active Lecture, - Problems solving	Written exams,

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	medicinal plants.	▪ Small group discussions	▪ Quizzes
a2	Discuss the principles and procedures applied for cultivation, collection and processing of plants as crude drugs.		
a3	Identify the botanical origin, morphological and microscopical characteristics of common medicinal leaves, barks, roots and rhizomes.		

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

Course Intended Learning Outcomes		Teaching Strategies	Assessment Strategies
b1	Express with drawings the morphology and key microscopical features of medicinal plants	▪ Active Lecture, ▪ laboratory practice	▪ Written exam, lab. term work, final practical exam
b2	Differentiate between medicinal leaves, barks, roots and rhizomes based on morphological and microscopical features.	▪ laboratory practice	▪ lab. term work, final practical exam
b3	Classify active constituents in medicinal plants.	▪ Active Lecture, ▪ laboratory practice	▪ Written exam, lab. term work, final practical exam
b4	Select standard operation procedures to identify medicinal plants and crude drugs	▪ laboratory practice	▪ Lab. term work, final practical exam

(C) Alignment of Course Intended Learning Outcomes (Professional and Practical Skills) to Teaching Strategies and Assessment Methods:

Course Intended Learning Outcomes		Teaching Strategies	Assessment Strategies
c1	Handle efficiently and safely the chemical materials and tools used in the laboratory	laboratory practice	• Lab. • term work, • final practical exam
c2	Operate the instruments and perform experiments successfully in the laboratory.		
c3	Prepare plant samples and investigate the morphological and microscopical features in medicinal leaves, barks, roots and rhizomes		
c4	Present and report his/her works correctly using appropriate writing rules and technologies media.	▪ Feed-back learning , Group-project	Assignments

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IV. Course Content:

A – Theoretical Aspect:

Order	Units/ Topics List	CILOs	Sub Topics List	No. of Weeks	contact hours
1	Introduction	a1, a2, a3, b1, b2, b3, b4	□ Definition, importance, and function, brief history □ Crude, official and unofficial drugs. □ Nomenclature of crude drugs (botanical, geographical and commercial sources of drugs) □ Classification of crude drugs (alphabetical, taxonomical, morphological, pharmacological and chemical) □ Cultivation (Disadvantages of collecting wild plants and advantages of cultivation, factors affecting cultivation). □ Collection (Time of the year, time of the day, stage of the development of the plant and general rules of collection). □ Post-collection processing of crude drugs: Drying(Natural methods, artificial methods, changes occurring after drying), Preservation and protection of crude drugs(deterioration during storage, physicochemical factors, biological factors, methods to destroy and control of insects) □ Adulteration (sophistication, substitution, admixture and deterioration, determination of adulteration.)	6	12
2	Mid-Term Exam	a1-a4, b1-b4		1	2
3	Medicinal leaves	a1-a4, b1-b4	Study of botanical origin, microscopical features, cultivation, adulteration detection, active constituents and medical uses of the following medicinal leaves: <i>Digitalis</i> , <i>Senna</i> , <i>Stramonium</i> , <i>Belladonna</i> , <i>Hyoscyamus</i> , <i>Bucho</i> , <i>Boldo</i> , <i>Coca</i> , <i>Jaborandi</i> , <i>Henna</i> .	3	6
4	Medicinal barks	a1, a2, a3, a4, a5, b1, b3	Study of botanical origin, microscopical features, cultivation, adulteration detection, active constituents and medical uses of the following medicinal barks: <i>Cinchona</i> , <i>Cinnamon</i> , <i>Frangula</i> , <i>Quillaia</i> , <i>Pomegranate</i> , <i>Hamamelis</i> and <i>Galls</i> .	2	4
5	Medicinal roots and rhizomes	a1-a4, b1-b4	Study of botanical origin, microscopical features, cultivation, adulteration detection, active constituents and medical uses of the following medicinal roots and rhizomes : <i>Liquorice</i> , <i>Ipecacuanha</i> , <i>Rauwolfia</i> , <i>Senega</i> , <i>Gi</i>	2	4

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			nger, Colchicum, Squill, Ginseng, Rhubarb, Curcuma, Podophyllum, Aconite, Veratrum, Sasaparilla, Kava-kava		
6	Review	a1-a4, b1-b4	Review of the course topics by discussion session.	1	2
7	Final Exam	a1-a4, b1-b4		1	2
Number of Weeks /and Units Per Semester				16	32

B - Practical Aspect:				
Order	Tasks/ Experiments	Number of Weeks	contact hours	Aligned Course Intended Learning Outcomes CILOs
1.	preparation of hard parts of plant(e.g. roots, seeds), for investigation : drying, grinding, treating with reagents , etc	1	2	b1, b2, b4, c1-c4
2.	preparation of soft parts of plant(e.g. leaves, flowers), for investigation : drying, grinding, treating with reagents , etc.	1	2	b1, b2, b4, c1-c4
3.	microscopical Detection of types of calcium oxalate in plant	1	2	b1, b2, b4, c1-c4
4.	microscopical Detection of types of starch in plant	1	2	b1, b2, b4, c1-c4
5.	morphology and microscopical determination of medicinal leaves : Senna leaves	1	2	b1, b2, b4, c1-c4
6.	morphology and microscopical determination of medicinal leaves : Henna leaves	1	2	b1, b2, b4, c1-c4
7.	morphology and microscopical determination of medicinal barks : cinnamon bark	1	2	b1, b2, b4, c1-c4
8.	morphology and microscopical determination of medicinal barks : pomegranate bark	1	2	b1, b2, b4, c1-c4
9.	morphology and microscopical determination of medicinal roots & rhizomes: Ginger	1	2	b1, b2, b4, c1-c4
10.	morphology and microscopical determination of medicinal roots & rhizomes: licorice	1	2	b1, b2, b4, c1-c4
11.	Review	1	2	b1, b2, b4, c1-c4
12	Final Practical Exam	1	2	b1, b2, b4, c1-c4
Number of Weeks		12	24	

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VI. Assignments:

No.	Assignments	Week Due	Mark	Aligned CILOs (symbols)
1	Assignments 1	Week 2	2.5	All CILOs
2	Assignments 2	Week 11	2.5	All CILOs
Total			5	

VII. Schedule of Assessment Tasks for Students During the Semester:

Assessment of Theoretical Part

No.	Assessment method	Week due	Mark	Proportion of Final Assessment	CILOs
1	Class attendance and participation	weekly	5	16.7%	All CILOs
2	Quizzes (two)	6 th and 12 th	5	8.3%	All (a, b, c)
3	Research	-	-	-	
4	Assignments (two)	8 th and 14 th	5	8.3%	All CILOs
5	Mid-semester exam	7 th	15	16.7%	All (a, b, c)
6	Final exam	16 th	40	50%	All (a, b, c)
	Total		70	100%	

Assessment of Practical Part

No.	Assessment method	Week due	Mark	Proportion of Final Assessment	CILOs
1	Lab. attendance and participation	weekly	5	12.5%	All CILOs
2	Quizzes (two)	6 th and 12 th	5	6.25%	All (a, b, c)
3	Lab. logbook and portfolio	Weekly	5	6.25%	All CILOs
4	Mid-semester exam	7 th	5	25.0%	All (a, b, c)
5	Final exam	12 th	10	50.0%	All (a, b, c)
	Total		30	100%	

IX. Learning Resources:

1- Required Textbook(s):

- 1- Michael Heinrich , Joanne Barnes, et al. Fundamentals of Pharmacognosy-I and Phytotherapy, 2018, Elsevier.

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2- Essential References.

- 1-Biren Shah and Avinash Seth •Textbook of Pharmacognosy-I and Phytochemistry. 2018, Elsevier - Health Sciences Division.
- 2- Evans W.C., Evans D. & Trease E., Saunders "Trease and Evans (2009); 'Pharmacognosy-I' 16th ed. Elsevier, New York.

3- Electronic Materials and Web Sites etc.

- 1- https://annamalaiuniversity.ac.in/studport/download/engg/pharm/resources/BPHARM_2Y_4S_40_5T_Pharmacognosy-I%20&%20Phytochemistry-I.pdf
- 2- <https://jru.edu.in/studentcorner/lab-manual/dpharm/1st-year/Pharmacognosy-I.pdf>

X. Course Policies: (Based on the Uniform Students' By law (2007))

1	Class Attendance: 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.
2	Tardiness: A student will be considered late if he/she is not in class after 10 minutes of the start time of class.
3	Exam Attendance/Punctuality: 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.
4	Assignments & Projects: Assignments and projects must be submitted on time. Students who delay their assignments or projects shall lose the mark allocated for the same.
5	Cheating: 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.
6	Forgery and Impersonation: 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.
7	Other policies: 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.

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Faculty of Clinical Pharmacy

Bachelor of Clinical Pharmacy & Pharm. D.

Course Plan (Syllabus) of **Pharmacognosy-I**

Course Code. 02.04.249

I. Information about Faculty Member Responsible for the Course:						
Name of Faculty Member:		Office Hours				
Location & Telephone No.:						
E-mail:	salraweh@gmail.com	SAT	SUN	MON	TUE	WED THU

2023- 2024

Prepared by: Dr. Salwa M. Raweh Reviewed by: Dr. Labeb Noman Head of the Department: Dr. Abdullelah Thabet Quality Unit: Dr. Ali Alyahawi Dean

II. Course Identification and General Information:

1.	Course Title:	Pharmacognosy-I			
2.	Course Code:	02.04.249			
3.	Credit Hours:	Credit Hours	Theory Contact Hours		Practical Contact Hours
			Lecture	Tutorial/Seminar	Lab
		3	2		2
4.	Level/ Semester at which this Course is offered:	2 nd Level /1 st Semester			
5.	Pre –Requisite (if any):	General Biology			
6.	Co –Requisite (if any):	-None			
7.	Program (s) in which the Course is Offered:	Bachelor of Clinical Pharmacy& Pharm. D.			
8.	Language of Teaching the Course:	English			
9.	Location of Teaching the Course:	Faculty of Clinical Pharmacy.			
10.	Prepared by:	Dr.Salwa M.Raweh			
11.	Date and Number of Approval by Council:				

III. Course Description:

This course focuses on study of basic information on Pharmacognosy-I in terms of nomenclature, taxonomy, monographs, quality control, methods for Extraction, characterization, detection of active ingredient in medicinal plants. The course will include classification and identification of major active constituents and use of medicinal plants.

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IV. Course Intended Learning Outcomes (CILOs) :

Upon successful completion of the Course, student will be able to:

A. Knowledge and Understanding:

a1	Explicit the methods used for detection of active constituents and discovering adulteration of medicinal plants.
a2	Discuss the principles and procedures applied for cultivation, collection and processing of plants as crude drugs.
a3	Identify the botanical origin, morphological and microscopical characteristics of common medicinal leaves, barks, roots and rhizomes.

B. Intellectual Skills: Upon successful completion of the course, students will be able to:

b1	Express with drawings the morphology and key microscopical features of medicinal plants		
b2	Differentiate between medicinal leaves, barks, roots and rhizomes based on morphological and microscopical features.		
b3	Classify active constituents in medicinal plants.		
b4	Select standard operation procedures to identify medicinal plants and crude drugs		

C. Professional and Practical Skills:

c1	Handle efficiently and safely the chemical materials and tools used in the laboratory		
c2	Operate the instruments and perform experiments successfully in the laboratory.		
c3	Prepare plant samples and investigate the morphological and microscopical features in medicinal leaves, barks, roots and rhizomes		
c4	Present and report his/her works correctly using appropriate writing rules and technologies media.		

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IV. Course Content:

A – Theoretical Aspect:					
Order	Units/ Topics List	CILOs	Sub Topics List	No. of Weeks	contact hours
1	Introduction	a1, a2, a3, b1, b2, b3, b4	□ Definition, importance, and function, brief history □ Crude, official and unofficial drugs. □ Nomenclature of crude drugs (botanical, geographical and commercial sources of drugs) □ Classification of crude drugs (alphabetical, taxonomical, morphological, pharmacological and chemical) □ Cultivation (Disadvantages of collecting wild plants and advantages of cultivation, factors affecting cultivation). □ Collection (Time of the year, time of the day, stage of the development of the plant and general rules of collection). □ Post-collection processing of crude drugs: Drying(Natural methods, artificial methods, changes occurring after drying), Preservation and protection of crude drugs(deterioration during storage, physicochemical factors, biological factors, methods to destroy and control of insects) □ Adulteration (sophistication, substitution, admixture and deterioration, determination of adulteration.)	6	12
2	Mid-Term Exam	a1-a4, b1-b4		1	2
3	Medicinal leaves	a1-a4, b1-b4	Study of botanical origin, microscopical features, cultivation, adulteration detection, active constituents and medical uses of the following medicinal leaves: <i>Digitalis</i> , <i>Senna</i> , <i>Stramonium</i> , <i>Belladonna</i> , <i>Hyoscyamus</i> , <i>Bucho</i> , <i>Boldo</i> , <i>Coca</i> , <i>Jaborandi</i> , <i>Henna</i> .	3	6
4	Medicinal barks	a1, a2, a3, a4, a5, b1, b3	Study of botanical origin, microscopical features, cultivation, adulteration detection, active constituents and medical uses of the following medicinal barks: <i>Cinchona</i> , <i>Cinnamon</i> , <i>Frangula</i> , <i>Quillaia</i> , <i>Pomegranate</i> , <i>Hamamelis</i> and <i>Galls</i> .	2	4
5	Medicinal roots and rhizomes	a1-a4, b1-b4	Study of botanical origin, microscopical features, cultivation, adulteration detection, active constituents and medical uses of the following medicinal roots and rhizomes	2	4

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			:Liquorice, Ipecacuanha, Rauwolfia, Senega, Ginger, Colchicum, Squill, Ginseng, Rhubarb, Curcuma, Podophyllum, Aconite, Veratrum, Sasaparilla, Kava-kava		
6	Review	a1-a4, b1-b4	Review of the course topics by discussion session.	1	2
7	Final Exam	a1-a4, b1-b4		1	2
Number of Weeks /and Units Per Semester				16	32

B - Practical Aspect:

Order	Tasks/ Experiments	Number of Weeks	contact hours	Aligned Course Intended Learning Outcomes CILOs
1.	preparation of hard parts of plant (e.g. roots, seeds), for investigation : drying, grinding, treating with reagents , etc	1	2	b1, b2, b4, c1-c4
2.	preparation of soft parts of plant (e.g. leaves, flowers), for investigation: drying, grinding, treating with reagents , etc.	1	2	b1, b2, b4, c1-c4
3.	microscopical Detection of types of calcium oxalate in plant	1	2	b1, b2, b4, c1-c4
4.	microscopical Detection of types of starch in plant	1	2	b1, b2, b4, c1-c4
5.	morphology and microscopical determination of medicinal leaves : Senna leaves	1	2	b1, b2, b4, c1-c4
6.	morphology and microscopical determination of medicinal leaves : Henna leaves	1	2	b1, b2, b4, c1-c4
7.	morphology and microscopical determination of medicinal barks : cinnamon bark	1	2	b1, b2, b4, c1-c4
8.	morphology and microscopical determination of medicinal barks : pomegranate bark	1	2	b1, b2, b4, c1-c4
9.	morphology and microscopical determination of medicinal roots & rhizomes: Ginger	1	2	b1, b2, b4, c1-c4
10.	morphology and microscopical determination of medicinal roots & rhizomes: licorice	1	2	b1, b2, b4, c1-c4
11.	Review	1	2	b1, b2, b4, c1-c4
12	Final Practical Exam	1	2	b1, b2, b4, c1-c4
Number of Weeks		12	24	

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C. Tutorial Aspect:

خطأ! لم يتم العثور على مصدر المرجع.

V. Teaching strategies of the course:

Active Lecture It is the most frequently employed teaching method to convey knowledge and explain theories to students in large groups (50-200) or in sessions, which consist of more than one group gathered in one classroom.

The efficiency of lecturing can be enhanced by using techniques such as **Brain-storming**: It depends on stimulation of the student's brain through a group of questions &/or **Concepts map**: which depends on sequencing of thoughts in the form of maps with horizontal or vertical relations & by using **learning aids** such as Data show projector

Laboratory practice: students doing experiments in labs individually or in small groups

Feed-back learning: students are individually asked to do perform quick tests (quiz) or to do certain assignments such lab. Experiments, problems solving, homework, topics summarizing or internet search. The teacher will provide them feed-back correction & evaluation

Group projects: students work on a project in groups of 2 to 3 students. Important for learning by doing ,using the results in practical manner &for promoting team work skills

VI. Assignments:

No.	Assignments	Week Due	Mark	Aligned CILOs (symbols)
1	Assignments 1	Week 2	2.5	All CILOs
2	Assignments 2	Week 11	2.5	All CILOs
Total			5	

VII. Schedule of Assessment Tasks for Students During the Semester

Assessment of Theoretical Part

No.	Assessment method	Week due	Mark	Proportion of Final Assessment	CILOs
1	Class attendance and participation	weekly	5	16.7%	All CILOs

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2	Quizzes (two)	6 th and 12 th	5	8.3%	All (a, b, c)
3	Research	-	-	-	
4	Assignments (two)	8 th and 14 th	5	8.3%	All CILOs
5	Mid-semester exam	7 th	15	16.7%	All (a, b, c)
6	Final exam	16 th	40	50%	All (a, b, c)
	Total		70	100%	
Assessment of Practical Part					
1	Lab. attendance and participation	weekly	5	12.5%	All CILOs
2	Quizzes (two)	6 th and 12 th	5	6.25%	All (a, b, c)
3	Lab. logbook and portfolio	Weekly	5	6.25%	All CILOs
4	Mid-semester exam	7 th	5	25.0%	All (a, b, c)
5	Final exam	12 th	10	50.0%	All (a, b, c)
	Total		30	100%	

X. Learning Resources:

1- Required Textbook(s):

- 1- Michael Heinrich , Joanne Barnes, et al. Fundamentals of Pharmacognosy-I and Phytotherapy, 2018, Elsevier.

2- Essential References.

- 1 - Biren Shah and Avinash Seth ·Textbook of Pharmacognosy-I and Phytochemistry. 2018, Elsevier - Health Sciences Division.
- 2- Evans W.C., Evans D. &Trease E., Saunders “Trease and Evans(2009); ‘Pharmacognosy-I’ 16th ed. Elsevier, New York

3- Electronic Materials and Web Sites etc.

https://annamalaiuniversity.ac.in/studport/download/engg/pharm/resources/BPHARM_2Y_4S_405T_Pharmacognosy-I%20&%20Phytochemistry-I.pdf

- 2- <https://jru.edu.in/studentcorner/lab-manual/dpharm/1st-year/Pharmacognosy-I.pdf>

XI. Course Policies: (Based on the Uniform Students' Bylaw (2007))

1	Class Attendance: 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.
2	Tardiness: A student will be considered late if he/she is not in class after 10 minutes of the start time of class.
3	Exam Attendance/Punctuality:

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	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.
4	Assignments & Projects: Assignments and projects must be submitted on time. Students who delay their assignments or projects shall lose the mark allocated for the same.
5	Cheating: 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.
6	Forgery and Impersonation: 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.
7	Other policies: 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.

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Quality Unit:

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Dr. Salwa M.Raweh

Dr..labe noman

Dr. Abdulelah Thabet

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