

REPUBLIC OF YEMEN
21 SEPTEMBER UMAS

**Development Academic Center &
Quality Assurance**



الجامعة السبتمبرية
جامعة 21 سبتمبر
للعلوم التطبيقية والطبية
مركز التطوير الأكاديمي وضمان الجودة

University of 21 September for Applied and Medical Sciences

Faculty of Clinical Pharmacy

Program of Master in Clinical Pharmacy

Course Specification of Biostatistics & Research Methodology

Course No. (CPh101)

2021/2022



This template of course specifications was prepared by CAQA, Yemen, 2017.

Prepared by:

Dr. Munir Alwesabi

Reviewed by:

Dr. Ali Alyahawi

Head of the Department:

Dean:

I. Course Identification and General Information:					
1	Course Title:	Biostatistics & Research Methodology			
2	Course Code & Number:	CPh101			
3	Credit Hours:	Credit Hours	Theory Hours		Lab. Hours
			Lecture	Exercise	
		2	2	--	--
4	Study Level/ Semester at which this Course is offered:	1 st Level / 1 st Semester			
5	Pre –Requisite (if any):	-----			
6	Co –Requisite (if any):	None			
7	Program (s) in which the Course is Offered:	Master Degree in Clinical Pharmacy			
8	Language of Teaching the Course:	English			
9	Study System:	Semester-based system			
10	Mode of Delivery:	Full Time			
11	Location of Teaching the Course:	Faculty of Clinical Pharmacy			
12	Prepared by:	Dr. Munir Alwesabi			
13	Date of Approval:				

II. Course Description:

This course is intended to train students on the design, conduct, and analysis of clinical research. The course will develop skills in being a more critical reader of the medical literature and provide the tools to design your own protocol. The course is designed to provide the student with knowledge and skills of how to perform researches scientifically and how to write and present their work effectively.

III. Course Intended Learning Outcomes (CILOs) :

(مخرجات تعلم المقرر)

Referenced PILOs

(مخرجات تعلم البرنامج)

A. Knowledge and Understanding: Upon successful completion of the course, students will be able to:

a1	Describe the components and the procedures of writing of a thesis or a research including introduction, methods, results, discussion, conclusions, recommendations, and references.	A3
a2	List the basic principles of statistics and statistical analyses.	A3
a3	Describe the roles and responsibilities of Clinical pharmacists in a clinical research.	A1

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

b1	Compare and contrast between different types of scientific research with respect to advantages and disadvantages	B2
b2	Evaluate the quality and applicability of drug information within a source.	B1, B2

C. Professional and Practical Skills: Upon successful completion of the course, students will be able to:

c1	Use a systematic approach for drug information research and retrieval.	C1, C3
c2	Critique a published article, evaluating the strengths and weaknesses, using the fundamentals of research	C1, C3

D. Transferable Skills: Upon successful completion of the course, students will be able to:		
d1	Communicate drug information successfully in team-work.	D1
d2	Search properly for information based on best updated medical references.	D2

(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 Describe the components and the procedures of writing of a thesis or a research including introduction, methods, results, discussion, conclusions, recommendations, and references.	<ul style="list-style-type: none"> - Lectures - Interactive Discussion - Assignments - Seminar - Cases presentation - Self-learning - Office hours 	Exam Assignment Quiz
a2 List the basic principles of statistics and statistical analyses.	<ul style="list-style-type: none"> - Lectures - Interactive Discussion - Assignments - Seminar - Cases presentation - Self-learning - Office hours 	Exam Assignment Quiz
a3 Describe the roles and responsibilities of Clinical pharmacists in a clinical research.	<ul style="list-style-type: none"> - Lectures - Discussion - Assignments - Seminar - Cases presentation - Self-learning - Office hours 	Exam Assignment ▪ Quiz

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

Course Intended Learning Outcomes	Teaching Strategies	Assessment Strategies
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b1	Compare and contrast between different types of scientific research with respect to advantages and disadvantages	<ul style="list-style-type: none"> - Lectures - Interactive Discussion - Assignments - Seminar - Cases presentation - Self-learning - Office hours 	Exam Assignment Quiz
b2	Evaluate the quality and applicability of drug information within a source.	<ul style="list-style-type: none"> - Lectures - Interactive Discussion - Assignments - Seminar - Cases presentation - Self-learning - Office hours 	Exam Assignment Quiz

(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	Use a systematic approach for drug information research and retrieval.	<ul style="list-style-type: none"> - Lectures - Interactive Discussion - Assignments - Seminar - Cases presentation - Self-learning - Office hours 	Exam Assignment Quiz
c2	Critique a published article; evaluating the strengths and weaknesses using the fundamentals of research	<ul style="list-style-type: none"> - Lectures - Discussion - Assignments - Seminar - Cases presentation - Self-learning - Office hours 	Exam Assignment Quiz

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

Course Intended Learning Outcomes		Teaching Strategies	Assessment Strategies
d1	Communicate drug information successfully in team-work.	<ul style="list-style-type: none"> - Lectures - Discussion - Assignments - Seminar - Cases presentation 	Exam Assignment
d2	Search properly for	<ul style="list-style-type: none"> - Discussion - Seminar 	Presentation

information based on best medical references.	- Cases presentation	
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IV. Course Contents:

A. Theoretical Aspect:

Order	Units/Topics List	Learning Outcomes	Sub Topics List	Number of Weeks	contact hours
1	Overview	a1, a2, a3	- Introduction to the course - Consent Form, ethical approval - Declaration of Helsinki	1	2
			- Key Concepts in Qualitative and Quantitative Research	1	2
2	Research Designs	- a1, a2, a3	- Understanding the Research Process in Qualitative and Quantitative Studies - Research Problems, Research Questions, and Hypotheses	1	2
			- Research Design I: Designs for Description	1	2
			- Research Design II: Designs for Explanation	1	2
			- Reviewing the Literature - Writing a Research Proposal	1	2
			- Samples and populations - Sampling methods - Sample size	1	2
3	Midterm Exam	a 1, a2, a3		1	2
4	Data Analysis	a 1, a2, a3 b1, b2, c1, c2, d1, d2	- Organizing and Presenting Data in Tables & Graphs - Summarizing Data: frequency distributions; measures of dispersion and central tendency - Probability	1	2
			- The normal distribution - Hypothesis testing	1	2
			- Research Questions About One Group	1	2



			- Research Questions About Two - Separate or Independent Groups	1	2
			- Research Questions About Means in Three or More Groups	1	2
			- Analyzing data when the observations are not normally distributed	1	2
			- Research Questions About Relationships among Variables	1	2
5	Final Exam	a 1, a2, a3 b1, b2, c1, c2, d1		1	1
Number of Weeks /and Units Per Semester				16	32

B. Practical Aspect:

No.	Tasks/ Experiments	Number of Weeks	Contact Hours	Learning Outcomes (CILOs)
1				
2				
3	-			
4	-			
5	-			
6	-			
7	-			
8	-			
9				
10	-			



11	-			
12	-			
13	-			
14	-			
15	-			
16				
Number of Weeks /and Units Per Semester		15	30	

C. Tutorial Aspect:				
No.	Tutorial	Number of Weeks	Contact Hours	Learning Outcomes (CILOs)
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
Number of Weeks /and Units Per Semester		15	30	



V. Teaching Strategies of the Course:

- Lectures
- Discussion
- Assignments
- Seminar
- Cases presentation
- Self-learning
- Office hours

VI. Assessment Methods of the Course:

- Assignments
- Quiz
- Exam
- Oral Presentation

VII. Assignments:

No.	Assignments	Week Due	Mark	Aligned CILOs (symbols)
1	Assignment 1: Describe the components of a research (Individual)	Week 6	5	a 1, a2
2	Assignment 1: Critique results of literature review; article as an example (Group: seminar)	Week 12	5	a 1, a2, a3, b1, b2, c1, c2, d1, d2
Total			10	

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

No.	Assessment Method	Week Due	Mark	Proportion of Final Assessment	Aligned Course Learning Outcomes
1	Assignments	Week 3-12	10	10%	a 1, a2, a3, b1, b2, c1, c2, d1
2	Quiz 1	Week 6	5	5%	a 1, a2, a3
3	Midterm Exam	Week 8	20	20%	a 1, a2
4	Quiz 2	Week 12	5	5%	a 1, a2, a3, b1, b2, c1, c2, d1
5	Final Exam	Week 16	60	60%	a 1, a2, a3, b1, b2, c1, c2, d1
Total			100	100%	

IX. Learning Resources:

1- Required Textbook(s)	
1.	Basic Statistics for the Health Sciences: (5th edition) Jan W Kuzma, McGraw-Hill, 2004
2- Essential References.	
1.	Rajender R. Aparasu and John P. Bentley, 2014. Principles of Research Design And Literature Evaluation, 1 st . 978-1284038798
2.	Robert Ed Dicenzo, 2011. Clinical Pharmacist's Guide to Biostatistics and Literature Evaluation 978-1932658781
3- Electronic Materials and Web Sites etc.	
-	Up-to-date
-	https://druginfo.nlm.nih.gov/drugportal/drugportal.jsp

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

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

Master in Clinical Pharmacy

Course Specification of Biostatistics & Research Methodology

Course No. (CPh101)

2021/2022

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

I. Course Identification and General Information:					
	Course Title:	Biostatistics & Research Methodology			
2	Course Code & Number:	CPh101			
3	Credit Hours:	Credit Hours	Theory Hours		Lab. Hours
			Lecture	Exercise	
		2	2	--	--
4	Study Level/ Semester at which this Course is offered:	-			
5	Pre –Requisite (if any):	-----			
6	Co –Requisite (if any):	None			
7	Program (s) in which the Course is Offered:	Master Degree in Clinical Pharmacy			
8	Language of Teaching the Course:	English			
9	Study System:	Semester-based system			
10	Mode of Delivery:	Full Time			
11	Location of Teaching the Course:	Faculty of Graduate Medicines			
12	Prepared by:	Dr. Munir Alwesabi			
13	Date of Approval:				

II. Course Description:	
This course is intended to train students on the design, conduct, and analysis of clinical research.	

The course will develop skills in being a more critical reader of the medical literature and provide the tools to design your own protocol. The course is designed to provide the student with knowledge and skills of how to perform researches scientifically and how to write and present their work effectively.

III. Course Intended Learning Outcomes (CILOs): (مخرجات تعلم المقرر)

A. Knowledge and Understanding: Upon successful completion of the course, students will be able to:

- | | |
|----|---|
| a1 | Describe the components and the procedures of writing of a thesis or a research including introduction, methods, results, discussion, conclusions, recommendations, and references. |
| a2 | List the basic principles of statistics and statistical analyses. |
| a3 | Describe the roles and responsibilities of Clinical pharmacists in a clinical research. |

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

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| b1 | Compare and contrast between different types of scientific research with respect to advantages and disadvantages |
| b2 | Evaluate the quality and applicability of drug information within a source. |

C. Professional and Practical Skills: Upon successful completion of the course, students will be able to:

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| c1 | Use a systematic approach for drug information research and retrieval. |
| c2 | Critique a published article, evaluating the strengths and weaknesses, using the fundamentals of research |

D. Transferable Skills: Upon successful completion of the course, students will be able to:

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|----|---|
| d1 | Communicate drug information successfully in team-work. |
| d2 | Search properly for information based on best medical references. |

IV. Course Contents:

A. Theoretical Aspect:

Order	Units/Topics List	Sub Topics List	Number of Weeks	contact hours
1	Overview	- Introduction to the course - Consent Form, ethical approval - Declaration of Helsinki	1	1
		- Key Concepts in Qualitative and Quantitative Research	2	2
		- Understanding the Research Process in Qualitative and	1	2

2	Research Designs	Quantitative Studies		
		- Research Problems, Research Questions, and Hypotheses		
		- Research Design I: Designs for Description	1	2
		- Research Design II: Designs for Explanation	1	2
		- Reviewing the Literature - Writing a Research Proposal	1	2
		- Samples and populations	1	2
		- Sampling methods		
		- Sample size		
3	Midterm Exam		1	2
4	Data Analysis	- Organizing and Presenting Data in Tables & Graphs	1	2
		- Summarizing Data: frequency distributions; measures of dispersion and central tendency		
		- Probability		
		- The normal distribution		
		- Hypothesis testing		
		- Research Questions About One Group		
		- Research Questions About Two Separate or Independent Groups		
- Research Questions About Means in Three or More Groups	1	2		
- Analyzing data when the observations are not normally distributed	1	2		
- Research Questions About Relationships among Variables	1	2		
5	Final Exam		1	2
Number of Weeks /and Units Per Semester			16	32

B. Case Studies and Practical Aspect:

No.	Tasks/ Experiments	Number of Weeks	Contact Hours
1			

V. Teaching Strategies of the Course:

- Lectures
- Discussion
- Assignments
- Seminar
- Cases presentation
- Self-learning
- Office hours

VI. Assessment Methods of the Course:

- Assignments
- Quiz
- Exam
- Oral Presentation

VII. Assignments:

No.	Assignments	Week Due	Mark
1	Assignment 1: Describe the components of a research (Individual)	Week 6	5
2	Assignment 1: Critique results of literature review; article as an example (Group: seminar)	Week 12	5
Total			10

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

No.	Assessment Method	Week Due	Mark	Proportion of Final Assessment
1	Assignments	Week 3-12	10	10%
2	Quiz 1	Week 6	5	5%
3	Midterm Exam	Week 8	20	20%
4	Quiz 2	Week 12	5	5%
5	Final Exam	Week 16	60	60%
Total			100	100%

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1. Basic Statistics for the Health Sciences: (5th edition) Jan W Kuzma, McGraw-Hill, 2004

2- Essential References.

- 1- Rajender R. Aparasu and John P. Bentley, 2014. Principles of Research Design And Literature Evaluation, 1st. 978-1284038798
- 2- Robert Ed Dicenzo, 2011. Clinical Pharmacist's Guide to Biostatistics and Literature Evaluation 978-1932658781

3- Electronic Materials and Web Sites etc.

- Up-to-date
- <https://druginfo.nlm.nih.gov/drugportal/drugportal.jsp>

XI. Course Policies: (Based on the Uniform Students' By law (2007) تترك كما هي)

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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.

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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.