Student study guide

Investigation and Discovery/Scholarly Project
Epidemiology and data management

Block IDP-234

2024-2025

Prepared by

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Block specification

A-Basic Information:

Program on which the course is given: Bachelor of Medicine and Surgery (M.B., B.Ch.).

Elements (major or minor) of the program: (undergraduate):

Departments offering the course: (Education development center)

Academic year/level: 2nd year, 1st semester.

Date of specification approval: 2024/2025

- Title: Investigation and Discovery/Scholarly Project Epidemiology and data management
- Code: IDP -234
- Credit points:3
- Vertical block.
- Lecture: 10 hours
- Practical: 5 hours
- Group discussion & quiz: 15 hours.
- Formative assessment: 15 hours.
- Student learning activities: 45 hours.
- Total: 90 hours

Block Map of: Principles of studying medicine

Block	Points	days/week	Learning Activities		
			Contact hours/points	Formative assessment/feedback	Assignment
Block IDP-234	3	3 hours/week	30 hours/ 1 point	0.5 point	1.5 point

B- Professional Information

1- Block aims

Θ Overall aim of the block:

The aim of this block is to enable the students to acquire the basics of epidemiological methods necessary for reasoning and management of common health problems. To acquire the basics of research process. To use statistical principles and to select the appropriate statistical tests for the different statistical analyses. Moreover, to enable the student to develop the concept of data interpretation.

2-Intended Learning Outcomes

At the end of this block, the students will be able to:

A) Knowledge and understanding:

A1- Define the epidemiology and epidemiological methods.

A2- Recognize research process.
A3- Describe principles and types of study design.
A4- Describe different measures of risk

A5- Identify Bias, confounding, effect modification, and latent period

A6- Describe graphical presentation of data.

A7-Describe the types of variables, scales of measurement in epidemiologic studies.

A8- Identify measures of central tendency, outliers, and dispersion.

A9- Recognize Hypothesis testing and probability.

B) Intellectual skills:

B1-Interpret given data related to common health problems using epidemiological methods.
B2- Select a suitable epidemiological study.
B3- Classify variable scales.
B4- Analyze measures of central tendency and dispersion for a population sample.
B5- Describe the normal curves and data illustration
B6- Analyze standard normal scores and resulting probabilities.

C) Psychomotor Skills:

C1-Compose a research question.

C2- Use different types of study design.

C3- Identify Bias in epidemiological study

C-4 Use SPSS statistics package to analyze a dataset

D) General and transferable skills:

D1- Integrate with his colleagues, tutors, and teaching staff to accomplish group work duties effectively and solve issuing problems.
D2- Practice evaluation of their own performance.

3-NARS Competencies covered by the block

NARS areas covered by the block

The competency areas of the NARS- Medicine competency framework are

1- The graduate as a health care provider.

2- The graduate as a health promoter.

3- The graduate as a professional.

4- The graduate as a scholar and scientist.

5- The graduate as a member of the health team and a part of the health care system.

6- The graduate as a lifelong learner and researcher.

Competency Area 1: The graduate as a health care provider:

1.1 Take and record a stnictured. patient centered Instoiy.

1.2 Adopt an empathic and holistic approach to the patients and their problems.

1.3 Assess the mental state of the patient.

1.4 Perform appropnately-timed full physical examination of patients, appropriate to the age, gender, and clinical presentation of the patient ١vhile being culturally sensitive.

1.5 Prioritize issues to be addressed in a patient encounter.

1.6 Select the appropriate investigations and inteipret their results taking into consideration cost/ effectiveness factors.

1.7 Recognize and respond to the complexity, uncertainty, and ambiguity inlierent in medical practice.

1.8 Apply kno١vledge of the clinical and biomedical sciences relevant to the clinical problem at hand.

1.9 Retrieve, analyze, and evaluate relevant and current data from literature, using information teclmologies and libraiy resources, in order to help solve a clinical problem based on evidence (EBM).

1.10 Integrate the results of history, physical examination and laboratory test findings into a meaningfill diagnostic formulation.

2 **Competency Area II: The graduate as a health promoter**:

2.1 Identify the basic determinants of health and principles of health improvement.

2.2 Recognize the economic, psychological, social, and cultural factors that interfere with wellbeing.

2.3 Discuss the role of nutrition and physical activity in health.

2.4 Identify the major health risks in his/her community, including demographic,

occupational and enviromnental risks; endemic diseases, and prevalent chronic diseases.

2.5 Describe the principles of disease prevention, and empo\ver communities, specific groups or individuals by raising their 2170/2101055 and building their capacity.

2.6 Recognize the epidemiology of common diseases within his/her community, and apply the systematic approaches useful in reducing the incidence and prevalence of those diseases.

Competency Area III: The graduate as a professional:

3.1 Exhibit appropriate professional behaviors and relationships in all aspects of practice, demonstrating honesty, integrity, coimnitment, compassion, and respect.

3.2 Adhere to the professional standards and laws governing the practice, and abide by the national code of ethics issued by the Egyptian Medical Syndicate.

3.3 Respect the different cultural beliefs and values in the coimnunity they serve.

3.4 Treat all patients equally, and avoid stigmatizing any 62168017/ regardless of their social, cultural or ethnic backgrounds, or their disabilities.

3.5 Ensure confidentiality and privacy of patients' information.

Competency Area IV :The graduate as a scholar and scientist:

4.5 Identify various causes (genetic, developmental, metabolic, toxic, microbiologic, autoimmune, neoplastic, degenerative, and traumatic) of illness/disease and explain the 707275 in which they operate on the body (pathogenesis).

4.6 Describe altered structure and function of the body and its major organ systems that are seen in various diseases and conditions.

Competency Area V: The graduate as a member of the health team and part of the health care system:

5.2 Respect colleagues and other health care professionals and work cooperatively with them, negotiating overlapping and shared responsibilities and engaging in shared decision-making for effective patient management.

5.6 Evaluate his / her work and that of others using constiuctive feedback.

4- Course Content

	Topics to be Covered			
	List of Topics		**# Weeks**	**Contact Hours**
	A. Lectures			
1	➢ Introduction to epidemiology : • Scope of epidemiology • Sampling	A1,A2, B1	1st	2 hours
2	➢ Epidemiological study design : • Observational studies: -Descriptive studies - Analytical studies	A3,A4, B2	2nd	2 hours
3	➢ Epidemiological study design : • Experimental studies ➢ Threats to internal validity: • Bias • Confounding	A3, A4, A5, B2	3rd	2 hours
4	➢ Types of variables ➢ Presentation of data: ➢ Graphical presentation ➢ Mathematical presentation (measures of central tendency and measures of dispersion)	A6, A7, A8, B3, B4	4th	2 hours
5	➢ Normal distribution curve ➢ Inferential statistics • Hypothesis testing • P-value	A9, B5, B6	5th	2 hours
	TOTAL			10
	B. Practical Sessions (TBL)			
1	➢ Introduction to epidemiology and Sampling	C1	1st	2hours
2	➢ Epidemiological study design : • Observational studies: -Descriptive studies - Analytical studies (relative risk, attributable risk and odds ratio)	C2	2nd	2hours
3	➢ Epidemiological study design : • Experimental studies (RCT) ➢ Threats to internal validity: • Bias • Confounding	C2, C3	3rd	2hours

4	➢ Types of variables ➢ Presentation of data: • Tabular and Graphical presentation • Mathematical presentation (measures of central tendency and measures of dispersion) ➢ Introduction to SPSS	C4	4th	2hours
5	➢ Normal distribution curve ➢ Inferential statistics • Hypothesis testing • P-value	C4	5th	2hours
TOTAL				10 hours
	Self-Directed Learning (SDL) {Portfolio-based}			
1	Introduction to epidemiology-Scope of Epidemiology – Research process. C1, D1, D2		4th	
2	Epidemiological study design. D1, D2		5h	

Assignments/ learning activities:

#	Title of Activities	Week number	% of points
1	**SDL** 1	4th	
2	**SDL** 2	5th	

Formative assessment and Assignments

This is used to monitor student's learning to provide ongoing feedback that can be used by instructors to improve their teaching and by students to improve their learning.

It's given at least once in the form of quizzes that is made available for the students at the E-learning site at the end of the block.

Answers are presented instantly after the attempts and discussed on the students groups or in person with the teaching staff

Questions should be consistent with the level of the final exam. The student's attendance is a condition for entering the summative exams. The electronic or paper achievement file must be used to follow up on the students' evaluation, and its completion is a condition for entering the final exams

	Course components (total contact hours and credits per semester):							
	Lecture	**Practical**	**SDL**	**Tutorial (Discussion)**	**Formative**	**Seminars**	**Quiz**	**Total**
Contact Hours	**10**	**5**	**45**	**5**	**15**	**5**	**5**	**90**
Credit	0.33	0.16	1.5	0.16	0.5	0.16	0.16	3

4- Teaching and learning Methods

1- Lectures for knowledge and intellectual skill outcomes.

2- Practical sessions to gain practical skills.

3-Self-directed learning (SDL) for the topics studied in lectures or related topics, including E learning (questions of different topics available online for student's assessments) and consulting professors for gathering of information.

5- Student Assessment

Assessment task	Proportion of Total Assessment	Marks
End of the block examination (assignments)	**30%**	**13.5**
Portfolio	**10%**	**4.5**
Final written Exams (50%MCQs, 50% short answer questions, modified essay questions)	**60%**	**27**
Total	**100%**	**45**

Student Assessment Plan:

1- End of block: Assignments: 30% of total.

2- Evaluation of portfolio: 10%.

3- Final written exam: 60%.

5- List of references (Recommended books)

1. Power point handout

2. Essential books

- AMBOSS knowledge cards /USMLE step1

3. Recommended books

- Kaplan step 1 2020

6- Facilities required for teaching and learning

1- Data show for power point presentations.
2- Computer club in the Faculty with net access.
3- Libraries with available textbooks for gathering of information.

Blueprint								
List of Topics		ILOS	Contact Hours	Total mid & Final Marks	Weight	Mid-block Exam MCQ	Final Exam	
Lectures							Written	MCQ
1	➢ Introduction to epidemiology : • Scope of epidemiology •Sampling	A1, A2, B1.	2 hours	8	20%	2	3	3
2	➢ Epidemiological study design : • Observational studies: -Descriptive studies - Analytical studies	A3, A4, B2	2 hours	8	20%	2.5	3-	2.5
3	➢ Epidemiological study design : • Experimental studies ➢ Threats to internal validity: • Bias • Confounding.	A3, A4, A5, B2	2 hours	8.5	20%	3-	3	2.5
4	➢ Types of variables ➢ Presentation of data: • Graphical presentation • Mathematical presentation (measures of central tendency and measures of dispersion)	A6, A7, A8, B3, B4	2 hours	8	20%	3-	2	3
5	➢ Normal distribution curve ➢ Inferential statistics • Hypothesis testing • P-value	A9, B5. B6	2 hours	8	20%	-3	2.5	2.5
	Total		10	40.5 90%	100%	13.5	13.5	13.5
Practical								
1	➢ Introduction to epidemiology and Sampling	C1	1 hour	2	14.8%	X		
2	➢ Epidemiological study design : • Observational studies: -Descriptive studies - Analytical studies (relative risk, attributable risk and odds ratio.	C2	1 hour	3	22.2%	X		

3	➢ Epidemiological study design : • Experimental studies (RCT) ➢ Threats to internal validity: • Bias • Confounding.	C2, C3	1 hour	2.5	18.5%	X		
	➢ Types of variables ➢ Presentation of data: • Tabular and Graphical presentation • Mathematical presentation (measures of central tendency and measures of dispersion) ➢ Introduction to SPSS	C4	1 hour	3	22.2%	X		
	➢ Normal distribution curve ➢ Inferential statistics • Hypothesis testing • P-value	C4	1 hour	3	22.2%	X		
	Total		5hours	13.5	100%	X		
SDL								
1	Introduction to epidemiology-Scope of Epidemiology – Research process.	D1, D2				X		
2	Epidemiological studies.	D1, D2				X		

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Final Exam (50%=22.5 marks MCQ, 50%=22.5marks **short answer questions, modified essay questions)** 100% =45 M

7- Topic outlines

Lecture (1) **Introduction to epidemiology-Scope of Epidemiology – Research process.**
By the end of the lecture the student will be able to: • Define the epidemiology and Scope of epidemiological • Recognize population pyramid • Summarize process of research • Formulating research question • Search engines used in a literature review: **Content of the lecture** ▪ Introduction to epidemiology- ▪ Scope of Epidemiology ▪ Research process.

Lecture (2) **Epidemiological studies.** **Measures of risk**.
By the end of the lecture the student will be able to: • Identify the principles and types of study design • Select suitable study design in medical field • Describe measures of risk **Content of the lecture** ▪ Principles of study design ▪ Types of study design in medical field ▪ Measures of risk

Lecture (3)

Experimental studies, Bias and confounding

By the end of the lecture the student will be able to:

- Identify Experimental studies, bias and confounding.

Content of the lecture

- Bias
- Confounding

Lecture (4)

Types of Variables and graphical presentation of data
Measures of central tendency and outliers and Measures of dispersion.

By the end of the lecture the student will be able to:

▪ Identify measures of central tendency and outliers

▪ Identify measures of dispersion.

▪ Calculate measures of central tendency and dispersion for a population sample.

▪ Describe the normal distribution curve

Content of the lecture

▪ Definition

▪ Measures of central tendency

▪ Outliers Measures of dispersion

Normal distribution curve

Lecture (5)

Normal distribution curve

Introduction to inferential statistics concepts (null hypothesis, alternate hypothesis, probability)

By the end of the lecture the student will be able to:

- Describe the normal distribution curve
- Recognize Hypothesis testing and probability.

Content of the lecture

- Normal distribution curve
- Hypothesis testing
- Probability