

# **Student study guide**

## ***Investigation and Discovery/Scholarly Project Epidemiology and data management***



***Block IDP-337***

**2022-2023**

## **Prepared by**

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<i>Contents</i>	
<i>Item</i>	<i>Page</i>
<b>A. <u>Basic Information</u></b>	<b>4</b>
<b>Curriculum map</b>	
<b>B. <u>Professional Information</u></b>	
<b>1. Block aims</b>	<b>4</b>
<b>2. Intended learning outcomes</b>	<b>5</b>
(ILOs)A- Knowledge	<b>5</b>
B-Intellectual Skills	<b>6</b>
C- Psychomotor Skills	<b>6</b>
D- General skills	<b>6</b>
<b>Course contents</b>	
<b>Lecture topics and their intended learning outcomes</b>	<b>7</b>
<b>Practical topics and their intended learning outcomes</b>	<b>7</b>
<b>Self-directed learning and their intended learning outcomes</b>	<b>8</b>
<b>Assignment/Learning activities</b>	<b>8</b>
<b>Course components</b>	<b>8</b>
<b>Learning methods</b>	<b>9</b>
<b>Student Assessments</b>	<b>8</b>
<b>List of references</b>	<b>8</b>
<b>Facilities required for learning</b>	<b>8</b>
<b>Blueprint</b>	<b>9</b>
<b>Topic outlines</b>	<b>10</b>

## 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:** (Public health and community medicine)

Academic year/level: 3<sup>rd</sup> year, 1<sup>st</sup> semester.

Date of specification approval: 2022/2023

- Title: Investigation and Discovery/Scholarly Project  
Epidemiology and data management
- Code: IDP -337
- Credit points: 1.5
- Lecture: 10 hours
- Practical: 5 hours
- Student learning activities: hours {self-directed learning (SDL), groupdiscussion & quiz} 15hours
- Total: 30 hours

### Block Map of: Principles of studying medicine

Block	Points	days/week	Learning Activities		
			Contact hours/points	Formative assessment/feedback	Assignment
<i>Block IDP-337</i>	1.5	1.5 hours/week	15 hours/ 0.5 point	0.5 point	0.5 point

### B- Professional Information

#### 1- Block aims

#### ⊕ 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 and to acquire the basics of research process.

## **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-Identify Morbidity (incidence, prevalence), Birth (fertility) ,and Mortality.
- A5- Describe different measures of risk.
- A6- Identify Bias, confounding, effect modification and latent period.
- A7- Recognize the evaluation of diagnostic tests

### **B) Intellectual skills:**

- B1-Interpret given data related to common health problems using epidemiological methods.
- B2- Select a suitable epidemiological study.
- B3- Calculate and interpret sensitivity, specificity, and predictive values of a screening test

### **C) Psychomotor Skills:**

- C1-Compose a research question.
- C2- Use different types of study design.
- C3- Identify measures of disease risk , incidence, and prevalence
- C4- Identify Bias in epidemiological study
- C5- Apply sensitivity, specificity, and predictive values of a screening test

**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**

6.7 Demonstrate an understanding of the scientific principles of research including its ethical aspects and scholarly inquiry and Contribute to the work of a research study.

6.9 Analyze and use numerical data including the use of basic statistical methods.

6.10 Summarize and present to professional and lay audiences the findings of relevant research and scholarly inquiry.

**4- Course Content**

<b>Topics to be Covered</b>			
	<b>List of Topics</b>	<b># Weeks</b>	<b>Contact Hours</b>
<b>A. Lectures</b>			
1	Introduction to epidemiology-Scope of Epidemiology – Research process. A1, A2, B1	1 <sup>st</sup>	2 hours
2	Morbidity, incidence, and prevalence Birth, fertility, and mortality. A4, B1	2 <sup>nd</sup>	2 hours
3	Epidemiological studies. Measures of risk A3, A5, B1,B2	3 <sup>rd</sup>	2 hours
4	Bias, confounding, effect modification, and latent period. A6, B1	4 <sup>th</sup>	2 hours
5	Evaluation of diagnostic tests . A7, B3	5 <sup>th</sup>	2 hours
<b>TOTAL</b>			10

<b>B. Practical Sessions (TBL)</b>		<b>week</b>	<b>Hours</b>
1	Introduction to epidemiology-Scope of Epidemiology – Research process. C1	1st	1 hour
2	Morbidity, incidence, and prevalence Birth, fertility, and mortality. C3	2nd	1 hour
3	Epidemiological studies. C2 Measures of risk. C3	3rd	1 hour
4	Bias, confounding, effect modification, and latent period. C4	4th	1 hour
5	Evaluation of diagnostic tests. C5	5th	1 hour
<b>Total</b>			<b>5 hours</b>

<b>Self-Directed Learning (SDL) {Portfolio-based}</b>			
1	Introduction to epidemiology-Scope of Epidemiology – Research process. C1, D1, D2	4 <sup>th</sup>	
2	Evaluation of diagnostic tests. D1, D2	5 <sup>th</sup>	

### Assignments/ learning activities:

	<b>Activities</b>	<b>Week</b>	<b>% of points</b>
1	<b>SDL 1</b>	4 <sup>th</sup>	
2	<b>SDL 2</b>	5 <sup>th</sup>	

### Formative assessment and Assignments

<b>number</b>	<b>Type</b>	<b>week number</b>
1	<b>Quiz 1</b>	3 <sup>rd</sup>
2	<b>Quiz 2</b>	5 <sup>th</sup>
3	<b>Quiz 3</b>	6 <sup>th</sup>

#### 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 (MCQs only correct one answer)	20%	5
Portfolio	10%	2.5
Final written Exams (MCQs only correct one answer))	45%	10
Practical exam (MCQs only correct one answer))	25%	5
<b>Total</b>	<b>100%</b>	<b>22.5</b>

#### List of references (Recommended books)

1. Power point handout
2. Essential books
  - AMBOSS knowledge cards /USMLE step1

#### Recommended books

Kaplan step 1 2020



Blueprint								
List of Topics		ILOS	Contact Hours	Weight	End of the block	Portofino/assignment s	Final Exam	
Lectures					Assignments		Written	Assignments
1	Introduction to epidemiology-Scope of Epidemiology – Research process.	A1, A2, B1, B2	2 hours	20%	1 mark	X	4 MCQs	2 marks
2	Morbidity, incidence, and prevalence Birth, fertility, and mortality	A4, B1	2 hours	20%	1 mark	X	4 MCQs	2 marks
3	Epidemiological studies. Measures of risk.	A3, A5, B1, B2	2 hours	20%	1 mark	X	4 MCQs	2 marks
4	Bias, confounding, effect modification, and latent period.	A6, B1	2 hours	20%	1 mark	X	4 MCQs	2 marks
5	Evaluation of diagnostic tests.	A7, B3	2 hours	20%	1 mark	X	4 MCQs	2 marks
Total			10	100%	5 marks	X	20 MCQs	10 marks
<b>Practical</b>								
1	Introduction to epidemiology-Scope of Epidemiology – Research process.	C1	1 hour	20%	X	X	2 MCQs	1 mark
2	Morbidity, incidence, and prevalence Birth, fertility, and mortality	C3	1 hour	20%	X	X	2 MCQs	1 mark
3	Epidemiological studies. Measures of risk.	C2, C3	1 hour	20%	X	X	2 MCQs	1 mark
4	Bias, confounding, effect modification, and latent period.	C4	1 hour	20%	X	X	2 MCQs	1 mark
5	Evaluation of diagnostic tests.	C5	1 hour	20%	X	X	2 MCQs	1 mark
Total			5 hours	100%	X	X	10 MCQs	5 marks
<b>SDL</b>								
1	Introduction to epidemiology-Scope of Epidemiology – Research process.	D1, D2		40%	8%	X	18%	10%
2	Epidemiological studies.	D1, D2		60%	12%	X	27%	15%
Total				100%	20%	10%	45%	25%

## Topic outlines

<b>Lecture (1)</b>
<b>Introduction to epidemiology-Scope of Epidemiology – Research process.</b>
<p><b>By the end of the lecture the student will be able to:</b></p> <ul style="list-style-type: none"> <li>• Define the epidemiology and Scope of epidemiological</li> <li>• Recognize population pyramid</li> <li>• Summarize process of research</li> <li>• Formulating research question</li> <li>• Search engines used in a literature review:</li> </ul> <p><b>Content of the lecture</b></p> <ul style="list-style-type: none"> <li>▪ Introduction to epidemiology-</li> <li>▪ Scope of Epidemiology</li> <li>▪ Research process.</li> </ul>
<b>Sources</b>
<p>❖ Power point handout , AMBOSS knowledge cards /USMLE step1, Kaplan step 1 2020</p>

<b>Lecture (2)</b>
<b>Morbidity, incidence, and prevalence</b>
<b>Birth, fertility, and mortality</b>
<p><b>By the end of the lecture the student will be able to:</b></p> <ul style="list-style-type: none"> <li>• Identify morbidity, incidence, and prevalence</li> <li>• Differentiate between incidence and prevalence</li> <li>• Describe Birth, fertility, and mortality</li> </ul> <p><b>Content of the lecture</b></p> <ul style="list-style-type: none"> <li>▪ Morbidity, incidence, and prevalence</li> <li>▪ Birth, fertility, and mortality</li> </ul>
<b>Sources</b>
<p>❖ Power point handout , AMBOSS knowledge cards /USMLE step1and Kaplan step 1 2020</p>

<b>Lecture (3)</b> <b>Epidemiological studies.</b> <b>Measures of risk.</b>
<p><b>By the end of the lecture the student will be able to:</b></p> <ul style="list-style-type: none"> <li>• Identify the principles and types of study design</li> <li>• Select suitable study design in medical field</li> <li>• Describe measures of risk</li> </ul> <p><b>Content of the lecture</b></p> <ul style="list-style-type: none"> <li>▪ Principles of study design</li> <li>▪ Types of study design in medical field</li> <li>▪ Measures of risk</li> </ul>
<b>Sources</b>
❖ Power point handout, AMBOSS knowledge cards /USMLE step1and Kaplan step 1 2020

<b>Lecture (4)</b> <b>Bias, confounding, effect modification, and latent period.</b>
<p><b>By the end of the lecture the student will be able to:</b></p> <ul style="list-style-type: none"> <li>• Identify bias, confounding, effect modification, and latent period</li> </ul> <p><b>Content of the lecture</b></p> <ul style="list-style-type: none"> <li>• Bias</li> <li>• Confounding</li> <li>• Effect modification</li> <li>• Latent period</li> </ul>
<b>Sources</b>
❖ Power point handout, AMBOSS knowledge cards /USMLE step1and Kaplan step 1 2020

**Lecture (5) Evaluation  
of diagnostic tests**

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

- Recognize evaluation of diagnostic tests
- Calculate and interpret sensitivity, specificity, and predictive values of a screening test

**Content of the lecture**

- Sensitivity
- Specificity
- predictive values
- Verifying the presence or absence of a disease
- Receiving operating characteristic curve (ROC curve)
- Two-by-two table
- Random error, precision, and validity

**Sources**

- ❖ Power point handout AMBOSS knowledge cards /USMLE step1and Kaplan step 1 2020