

# **Student study guide**

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



***Block IDP-338***

**2022-2023**

# Prepared by

Staff members of public health and community medicine department

## Under supervision of

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## *Contents*

<i>Item</i>	<i>Page</i>
<b>Block IDP-338</b>	
<b>Investigation and Discovery/Scholarly Project</b>	
<b>Epidemiology and data management STUDY GUIDE</b>	
<b>year 2022/2023</b>	
<b>A. <u>Basic Information</u></b>	<b>3</b>
<b>Curriculum map</b>	<b>3</b>
<b>B. <u>Professional Information</u></b>	
<b>1. Block aims</b>	<b>4</b>
<b>2. Intended learning outcomes (ILOs)</b>	<b>5</b>
<b>A- Knowledge</b>	<b>5</b>
<b>B-Intellectual Skills</b>	<b>5</b>
<b>C- Psychomotor Skills</b>	<b>5</b>
<b>D- General skills</b>	<b>5</b>
<b>Course contents</b>	<b>6</b>
<b>Lecture topics and their intended learning outcomes</b>	<b>6</b>
<b>Practical topics and their intended learning outcomes</b>	<b>6</b>
<b>Self-directed learning and their intended learning outcomes</b>	<b>6</b>
<b>Assignment/Learning activities</b>	<b>7</b>
<b>Course components</b>	<b>7</b>
<b>Learning methods</b>	<b>7</b>
<b>Student Assessments</b>	<b>8</b>
<b>List of references</b>	<b>8</b>
<b>Facilities required for learning</b>	<b>9</b>
<b>Blueprint</b>	<b>10</b>
<b>Topic outlines</b>	<b>12</b>
<b>Declarations</b>	<b>14</b>

## A. Basic information about the block

- **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 centre) Academic year/level: 3<sup>rd</sup> year, 6<sup>th</sup> semester.
- **Date of specification approval:** 2022/2023
- **Title:** Investigation and Discovery/Scholarly Project Epidemiology and data management
- **Code:** IDP -338
- **Credit points:** 2
- **Lecture:** 14 hours
- **Practical:** 16 hours
- **Student learning activities:** hours {self-directed learning (SDL), group discussion & quiz} 30 hours
- **Total:** 30 hours

### Block Map of: Principles of studying medicine

Block	Points	days/week	Learning Activities		
			Contact hours/points	Formative assessment/feedback	Assignment
Investigation and Discovery/Scholarly Project Epidemiology and data management	2	2 hours/week	30 hours 1 point	0.25 point	0.75 point

## **B. Professional Information**

### **⊕ Overall aim of the block:**

#### **1- Block aims**

The aim of this block is to enable the students 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- Describe graphical presentation of data.
- A2- Describe the types of variables, scales of measurement in epidemiologic studies.
- A3- Identify measures of central tendency, outliers, and dispersion.
- A4- Recognize Hypothesis testing and probability.
- A5- Identify types and uses of the different significance tests.

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

- B1 Classify variable scales.
- B2- Describe the normal curves and data illustration.
- B3- Analyze measures of central tendency and dispersion for a population sample.
- B4- Analyze standard normal scores and resulting probabilities.
- B5- Interpret confidence intervals for population means and proportions
- B6- Select the proper test of significance.
- B7- Interpret the proper test of significance.

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

- C1- 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.

## 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.

### Course Content

Topics to be Covered			
List of Topics		Weeks	Hours
<b>A. Lectures</b>			
1	Types of Variables and graphical presentation of data A1, A2, B1, B2	1 <sup>st</sup>	2 hours
2	Measures of central tendency and outliers and measures of dispersion., Normal distribution curve A3, B3	2 <sup>nd</sup>	2 hours
3	Introduction to inferential statistics concepts (null hypothesis, alternate hypothesis, probability, types of errors and CI) A4, B4, B5	3 <sup>rd</sup>	2 hours
4	Parametric Vs non parametric tests, tests of significance (, t-test, ANOVA) A5, B5,B6	4 <sup>th</sup>	2 hours
5	Chi square, Correlation and regression A5, B5,B6	5 <sup>th</sup>	2 hours
	Revisions		4 hours
<b>TOTAL</b>			14
<b>B. Practical Sessions (TBL)</b>			
1	Uses SPSS statistics package to analyze a dataset. C1	2 <sup>nd</sup>	2 hours
2	Uses SPSS statistics package to analyze a dataset. C1	3 <sup>rd</sup>	2 hours
3	Uses SPSS statistics package to analyze a dataset. C1	4 <sup>th</sup>	2 hours
4	Uses SPSS statistics package to analyze a dataset. C1	5 <sup>th</sup>	2 hours
	Revisions		8
<b>TOTAL</b>			16 hours
<b>Self-Directed Learning (SDL) {Portfolio-based}</b>			
1	Statistical tests. C1, D1, D2	6 <sup>th</sup>	
2	Statistical tests. C1, D1, D2	7 <sup>th</sup>	



## Assignments/ learning activities:

#	Title of Activities	Week number	% of points
1	SDL 1	6 <sup>th</sup>	
2	SDL 2	7 <sup>th</sup>	

## Formative assessment and Assignments

number	Type	week number
1	Quiz 1	2 <sup>nd</sup>
2	Quiz 2	4 <sup>th</sup>
3	Quiz 3	6 <sup>th</sup>

Course components (total contact hours and credits per semester):							
	Lecture	Practical	*SDL Revision	Tutorial (Discussion)	Formative	Quiz	Total
Contact Hours	10	8	12	0			30
Credit	1				0.25	0.75	2

\*Not included in contact hours.

## 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

## Methods of Student Assessment

1. **Formative:** 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 once weekly and the answers are presented and discussed immediately with you after the assessment.

2. **Summative** It is used to evaluate student’s achievements at the end of an instructional unit. The grades tell whether the student achieved the learning goal or not.

**The student’s performance will be assessed according to the following:**

Assessment task	Type of assessment	Proportion of Total Assessment	
		%	Marks
<b>Mid-term exam</b>	MCQ (only correct one answer)	<b>20%</b>	<b>8</b>
<b>Portfolio</b>	MCQ (only correct one answer)	<b>10</b>	<b>4</b>
<b>Final written exams</b>	MCQ (only correct one answer)	<b>40%</b>	<b>16</b>
<b>Practical exam</b>	MCQ (only correct one answer)	<b>30%</b>	<b>12</b>
<b>Total</b>		<b>100%</b>	<b>40</b>

### Student Assessment Plan:

- 1- End of block: assignments :20% of total.
- 2- Evaluation of portfolio: 10%.
- 3- Final written exam: 40%.
- 4- Practical exam: 30%.

### **List of references (Recommended books)**

1. Power point handout
- 2. Essential books**
  - Amboss knowledge cards /USMLE step1
- 3. Recommended books**
  - Kaplan step 1 2020

## **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.

### Blue print of the block

	List of Topics	ILOS	Hours	Marks	Weight	Mid-term exam	Final exam
1	Types of Variables and graphical presentation of data	A1, A2B1,B2	2 hours	5	<b>20&amp;</b>	<b>4</b>	<b>1</b>
2	Measures of central tendency and outliers and Measures of dispersion., Normal distributioncurve ,	A3,B3	2 hours	5	<b>20%</b>	<b>4</b>	<b>1</b>
3	Introduction to inferential statistics concepts (null hypothesis, alternate hypothesis, probability, types of errors and CI)	A4, B4,B5	2 hours	5	<b>20%</b>	–	<b>5</b>
4	Parametric Vs nonparametric tests, tests of significance (, t- test, ANOVA)	A5, B5,6	2 hours	5	<b>20%</b>	–	<b>5</b>
5	Chi square, Correlation and regression	A5,B5,6	2 hours	4	<b>20%</b>	–	<b>4</b>
	<b>Total</b>		10	24	<b>100%</b>	<b>8</b>	<b>16</b>

### Blue print practical

No.	Class Work Titles	ILOs	Hours	Weight	Final practical exam
1	Uses SPSS statistics package to analyze adataset.	C1	2 hours		2
2	Uses SPSS statistics package to analyze adataset.	C1	2 hours		2
3	Uses SPSS statisticspackage to analyze a dataset.	C1	2 hours		3
4	Uses SPSS statisticspackage to analyze a dataset.	C1	2 hours		3
5	Uses SPSS statisticspackage to analyze a dataset.	C1	2 hours		2
	Total		8 hours		<b>12</b>

SDL					
1	Statistical tests.	C1, D1, D2			
2	Statistical tests.	C1, D1, D2			
	Total				20%

## Topic outlines

<b>Lecture (1)</b> <b>Types of Variables and graphical presentation of data</b>	
<b>By the end of the lecture the student will be able to:</b> <ul style="list-style-type: none"><li>• Describe the type of different variables</li><li>• Identify the appropriate graphic presentation of different variables</li></ul>	
<b>Content of the lecture</b> <ul style="list-style-type: none"><li>▪ Definition of variable</li><li>▪ Types of variables</li><li>▪ Data illustration</li></ul>	
<b>Sources</b>	
❖	Power point handout
<b>Lecture (2)</b> <b>Measures of central tendency and outliers and Measures of dispersion.</b>	
<b>By the end of the lecture the student will be able to:</b> <ul style="list-style-type: none"><li>▪ Identify measures of central tendency and outliers</li><li>▪ Identify measures of dispersion.</li><li>▪ Calculate measures of central tendency and dispersion for a population sample.</li><li>▪ Describe the normal distribution curve</li></ul>	
<b>Content of the lecture</b> <ul style="list-style-type: none"><li>▪ Definition</li><li>▪ Measures of central tendency</li><li>▪ Outliers</li></ul> Measures of dispersion Normal distribution curve	
<b>Sources</b>	
❖	Power point handout
<b>Lecture (3)</b> <b>Introduction to inferential statistics concepts (null hypothesis, alternate hypothesis, probability, types of errors and CI)</b>	
<b>By the end of the lecture the student will be able to:</b>	
<b>Content of the lecture</b> <ul style="list-style-type: none"><li>▪ Recognize Hypothesis testing and probability.</li><li>▪ Identify type I and type II errors</li><li>▪ Interpret confidence intervals for population means and proportions</li></ul>	
<b>Content of the lecture</b>	

<ul style="list-style-type: none"> <li>▪ Hypothesis testing</li> <li>▪ Probability</li> <li>▪ Type I and type II errors</li> <li>▪ Confidence interval</li> </ul>
<b>Sources</b>
Power point handout

<b>Lecture (4)</b> <b>Tests of significance</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 types and uses of the different significance tests.</li> <li>• Select the proper test of significance.</li> <li>• Interpret the proper test of significance.</li> </ul> <p><b>Content of the lecture</b></p> <ul style="list-style-type: none"> <li>▪ <u>Statistical significance</u> vs. clinical significance</li> <li>▪ Parametric tests</li> <li>▪ Non-parametric tests</li> <li>▪ t test, ANOVA, Chi square test</li> </ul>
<b>Sources</b>
❖ Power point handout

<b>Lecture (5)</b> <b>Statistical tests (cont.)</b>
<p><b>By the end of the lecture the student will be able to:</b></p> <ul style="list-style-type: none"> <li>▪ Describe the Correlation concept</li> <li>▪ Identify the Regression concept</li> </ul> <p><b>Content of the lecture</b></p> <ul style="list-style-type: none"> <li>▪ Correlation</li> <li>▪ Linear regression</li> <li>▪ Logistic regression</li> </ul>
<b>Sources</b>
Power point handout

