

BIOSTATISTICS

Program	Bachelor of science in Public Health		
Module category	Core		
Module name	Health System Research and Application		
Module Code	PubH-M2091		
Module Credit& ECTS	13cr.hours &21 ECTS		
Course: Biostatistics	Course code: PubH2091	ECTS: 7	Cr.hrs: 4
Mode of delivery	Block		
Instructor's information	Name: email address: Phone: Office No:		
Course Description This course is designed to equip the undergraduate Public Health learner with a basic working knowledge of statistics as it applies to the fields of medicine and public health. The course will introduce the learner to the definition of biostatistics and the importance of statistics in the broad field of health sciences. This course will equip the student with a basic know-how of managing health and health related data in research and in the delivery of health services. Health service of any kind is delivered based on concrete and proven evidences—not based on intuitions, anecdotes and preferences. This course is the tool that furnishes the learner with the capability of generating credible and dependable evidence to guide health sector activities.			
Course objectives After successfully completion of this course the students will be able to: <ol style="list-style-type: none"> 1. Discuss the role of statistics in health sciences and explain the main uses of statistical methods in the broad field of health care. 2. Differentiate the various forms of data and variables. 3. Describe and use methods of data collection, data organization and presentation, and data summarization. 4. Recognize the relative merits and demerits of the different ways of data presentation. 5. Calculate and interpret various measures of central tendency and dispersion. 6. Identify and make use of data from existing health records. 7. Differentiate the different sources of demographic information. 8. Apply different techniques of sampling. 9. Carryout statistical estimation viz. point estimation, interval estimation and sample size estimation. 10. Determine and explain confidence intervals. 11. Carryout hypothesis testing and explain the meaning of statistical significance. 12. Describe the basic concept of statistical software and its application 			
Prerequisites			None

<p>Course Expectations: Students must avail themselves during all lecture and interactive learning sessions. Notwithstanding problems that are beyond the student's control, a student who misses more than 75% of such sessions will not qualify to sit for a final summative exam. Students must read the provided references before coming to lecture and interactive learning sessions. Assignments must be done carefully and with neatness by consulting the references provided above. Copying assignments from each other will result in nullification of the credit of the assignment for all involved. Sufficient time will be allotted for completion and submission of assignments. Assignments being brought after the set deadline will not be accepted.</p> <p>a. Preparedness: You must come to class, and to the community based on the schedule with</p>	
<p>fully prepared and ready with the necessary materials and by reading the given assessment</p> <p>b. Participation: Each student is strongly encouraged to participate in class room discussion, group work activity, group presentation, ward practice and community field nutritional assessment</p> <p>c. Care of materials: different teaching aid materials will be used in this course. so proper handling and returning teaching materials to its proper place is expected from the students (measuring board, weight scale, MUAC tap etc)</p> <p>d. Materials: reference materials are expected to be available in the library.</p> <p>e. Mobile phone: Please turn/off or switch of your mobile phone during class and practical activity. Phone disturbs the flow of the class and practical work.</p>	
<p>Policies: Attendances: It is believed that attendance during all class in lecture, presentation and practical session greatly improves the probability of success in a course. Students are expected to attend all theoretical classes and computer lab practices</p> <p>Assignment: The students are expected to carefully read all assignments before the class in which the material is to be discussed. Written assignments should be submitted on time. Any assignment turned in late shall result in an automatic 10 percent reduction in from the allocated mark.</p> <p>Tests/Quizzes: You will have short quizzes and tests at the end of each unit or topic, if you miss the class or late to class. You will miss the quizzes or tests, no makeup test will be given.</p> <p>Final exam will be given on the date scheduled, unless prior arrangements have been made and it is expected that all students should take the exam</p> <p>Cheating/ plagiarizing: any cheating on an exam, test or quiz, plagiarizing assignment, not actively participating in group work and presentation will result in zero mark in that specific</p>	

assignment or test or exam etc.

Days	courses contents/topics	contact hours	Reading Materials	Evaluation/summary question
Day I	1.Introduction to biostatistics: definition, importance	2 hours	References 'a' or 'b' or 'f'	- What is biostatistics? What is descriptive statistics? How about inferential statistics? - Is biostatistics of importance to public health professionals? In what aspects?
Day I & II	2. Descriptive statistics ➤ Scales of measurement ➤ Collection and organization of data	4	References 'a' or 'b' or both	- What are statistical data? What are variables? How many types of data are there? - What are the different types of data collection techniques? What are the advantages and limitations of each method?
Day II & III	Methods of data organization and presentation: tabular methods and graphical methods.	6 hours	References 'a' or 'b' or 'd' or 'h' or combination.	- What are tabular methods of data presentation? Why are they important? What are the different types of tables? - What are graphical
Days	courses contents/topics	contact hours	Reading Materials	Evaluation/summary question
methods of data presentation? Why are they important? What are the different types of graphs?				
Day IV	Methods of data summarization: measures of central tendency	6	References 'a' or 'b' or 'd' or 'h' or	- What's data summarization? What are measures of

	and measures of dispersion.		combination.	central tendency? What are the advantages and limitations of the different types of measures of central tendency? - What is meant by dispersion of statistical data? What are the different types of measures of dispersion? What is the advantage and limitation of each measure?
Day V	Introduction to demography and Health statistics	4	References 'a' or 'b' or both.	- What is demography? - What are health statistics - What does it study?
Days	courses contents/topics	contact hours	Reading Materials	Evaluation/summary question
What are the different sources of demographic information?				
assignment on introduction to demography, basic demographic measurement tools, demographic transition, fertility and mortality measures	4hours	- What is demography - List down and explain basic measurement tools - Describe fertility and mortality measures - Describe demographic transition		
Day VI	Probability theory and probability rules?	4	References 'a' or 'b' or 'd' or 'g' or combination.	- What is probability? What are the different probability rules? What does each state? How do the rules of

				probability apply in medical and public health practice?
Day VII	Probability distributions	4	References 'a' or 'b' or 'd' or 'f' or 'g' or combination.	- What is probability distribution? What are the different types of probability distributions? How do they apply in medical and public health p
Days	courses contents/topics	contact hours	Reading Materials	Evaluation/summary question
Day VIII	Sampling and sampling theory: definition, types, and Errors in sampling	4	References 'a' or 'b' or 'e' or 'g' or combination.	- What is sampling? Why is it important? What are the different types sampling? What are the advantages and limitations of the different sampling techniques? - What are errors associated with sampling? How could they be tackled?
Day IX	Statistical estimation: point vs. interval estimation, and sample size determination.	6	References 'a' or 'b' or 'c' or 'd' or 'f' or 'g' combination.	What is parameter? What is statistic? What is inference? How are pint and interval estimations used to make inference? How is confidence interval for a single proportion constructed? How is the confidence interval interpreted? How are sample sizes determined?
Day X&XI	Hypothesis testing: z-test, t-test, 2χ -test	6	References 'a' or 'b' or 'c' or 'd' or 'f' or 'g'	What is hypothesis? How is hypothesis generated? What is hypothesis testing? What
Days	courses contents/topics	contact hours	Reading Materials	Evaluation/summary question
combination.	assumptions must be fulfilled in			

	carrying out different types of test s of hypotheses?			
Introduction to correlation and regression	4	References 'a' or 'b' or 'c' or 'd' or 'f' or 'g' combination.	- What is correlation and what are basic concepts about it? - What is regression and what are basic concepts about it?	
Day XIII & XIV	Introduction to use of computer software	6	➤	Describe introductory concepts of different statistical softwares like EPI_INFO, Epidata and SPSS
Every day	home study	Afternoon	----- ➤	-----
Day XV	home study	-----	-----	-----
Day XVI	Final summative written exam			
Required texts 1. Degu G. and Tessema F. Biostatistics for health science students, Lecture Note series Universty of Gondar. 2005. 2. Astatkie A and Muktar E. A brief lecture note on biostatistics for medicine and health science students. HawassaUniversity. December 2009. 3. Knapp RG & Miller MC III. Clinical Epidemiology and				

Biostatistics. Williams and Wilkins, Baltimore, Maryland. 1992. 4. Wencheke E. Introduction to statistics. Addis AbabaUniversity. April 2000. 5. Training module on Health Research Methods, module II. Ethiopian Science and Technology				
---	--	--	--	--

Day XII

&XIII