

**Western Kentucky University  
Department of Public Health  
Biostatistics for the Health Sciences  
PH 383 A70  
Summer/2019**

*It is important that you not allow any existing 'math phobia' to take a hold of you. While statistics is rooted in mathematics, the truth is that statistics is simply a tool that we use to tell a story. It is important that you remember this. I approach this course from a practical perspective. At this level, the theory associated with the various methods is less important than you understanding WHY you use a particular method and how to interpret it. I will do my best to clearly communicate the material. However, you need to be comfortable with asking questions as they arise. If you need further assistance, I strongly encourage you to attend my office hours or set up an appointment, either in my office or via Skype.*

Instructor: Colin Farrell

Office: 128A, Academic Complex

Class Location: Academic Complex, 409

Class Meeting Time: T/R 11:10 – 12:30

Office Phone: (270) 745-6437

Office Hours: Tuesday and Thursday: 1:00 – 4:00; Wednesday: 11:00 – 3:00; By Appointment

E-mail: Colin.Farrell@wku.edu

**Pre-requisites**

MATH 109 or MATH 115 or MATH 116 or higher

**Required Text/Class Materials:**

Microsoft Excel

SPSS, 25 (Computer software)

**Suggested Additional Text:**

N/A

**Course Description**

Introduction to statistical methods, scientific structure of study design, hypothesis formation and verification and study classification. Includes descriptive statistics, data presentation, data sources, questionnaire construction, interviewing techniques and use of computer technology.

**Course Objectives**

As a result of taking this course, each student should be able to accomplish the following objectives:

- 1) Differentiate between different scales of measurement
- 2) Demonstrate the ability to correctly identify the appropriate method of analysis based on the research question provided, and the scale of measurement of the provided variables.
- 3) Demonstrate the ability to communicate the results of analysis in a manner that is clear to the general population.\*
- 4) Design statistical analysis utilizing computer software programs with the interest of addressing specific research questions.\*
- 5) Perform and report descriptive statistics and inferential statistics.
- 6) Examine the critical importance of evidence in advancing public health knowledge\*

### **ADA Policy:**

In compliance with University policy, students with disabilities who require academic and/or auxiliary accommodations for this course must contact the Student Accessibility Resource Center located in Downing Student Union, 1074. SARC can be reached by phone number at 270-745-5004 [270-745-3030 TTY] or via email at [sarc.connect@wku.edu](mailto:sarc.connect@wku.edu). Please do not request accommodations directly from the professor or instructor without a Faculty Notification Letter (FNL) from The Student Accessibility Resource Center.

### **Title IX Sexual Misconduct/Assault**

Western Kentucky University (WKU) is committed to supporting faculty, staff and students by upholding WKU's Title IX Sexual Misconduct/Assault Policy (#0.2070) at

<https://wku.edu/eoo/documents/titleix/wkutitleixpolicyandgrievanceprocedure.pdf> and

Discrimination and Harassment Policy (#0.2040) at

[https://wku.edu/policies/hr\\_policies/2040\\_discrimination\\_harassment\\_policy.pdf](https://wku.edu/policies/hr_policies/2040_discrimination_harassment_policy.pdf).

Under these policies, discrimination, harassment and/or sexual misconduct based on sex/gender are prohibited. If you experience an incident of sex/gender-based discrimination, harassment and/or sexual misconduct, you are encouraged to report it to the Title IX Coordinator, Andrea Anderson, 270-745-5398 or Title IX Investigators, Michael Crowe, 270-745-5429 or Joshua Hayes, 270-745-5121.

Please note that while you may report an incident of sex/gender based discrimination, harassment and/or sexual misconduct to a faculty member, WKU faculty are "Responsible Employees" of the University and **MUST** report what you share to WKU's Title IX Coordinator or Title IX Investigator. If you would like to speak with someone who may be able to afford you confidentiality, you may contact WKU's Counseling and Testing Center at 270-745-3159.

### **WKU Policy on Plagiarism**

To represent ideas or interpretations taken from another source as one's own is plagiarism. Plagiarism is a serious offense. The academic work of students must be their own. Students must give the author(s) credit for any source material used. To lift directly from a source without giving credit is a flagrant act. To present a borrowed passage after having changed a few words, even if the source is cited, is also plagiarism. **Students work may be checked using plagiarism detection software.**

### **WKU Policy on Cheating**

No student shall receive or give assistance not authorized by the instructor in taking an examination or in the preparation of an essay, laboratory report, problem assignment, or other project that is submitted for purposes of grade determination.

### **Food Insecurity**

Food insecurity is a condition where an individual does not have adequate resources to feed themselves and/or their family, either nutritiously or not at all (USDA, 2013). Food insecurity is a common issue at colleges and universities across the United States, and may impact academic success (Hunger on Campus, 2016). If food insecurity is an issue for you, or someone you know, help is readily available. Please contact the WKU Office of Sustainability at (270) 745-2508, send an email to [sustainability@wku.edu](mailto:sustainability@wku.edu), or visit [www.starvingtolearn.com](http://www.starvingtolearn.com).

*I enforce a strict no-discrimination policy within my classroom and within my office. This means that there will be no discriminating or disparaging of individuals based on any characteristic – race, gender, gender identity, religion, disability, age, or sexuality. Anyone who does discriminate will be subject to the policies defined in the code of conduct within the Western Kentucky University handbook.*

## Course Assessments and alignment to the listed objectives.

### Grading Policy

A: 100%-90%

B: 89.99%-80%

C: 79.99%-70%

D: 69.99%-60%

FAIL: <60%

The final grade will be calculated using the following weights:

Homework Assignments: 25%

Quiz 1: 15%

Quiz 2: 15%

Final Exam (comprehensive): 30%

Lecture/Module Reviews: 15%

**Quizzes:** During the duration of the course, you will have two (2) quizzes. Each quiz is intended to assess your ability to perform the analytical methods we have been talking about. Each quiz will be made available at the beginning of the week, and must be completed prior to the provided due date. **Late submissions will be considered on a case-by-case basis.**

**Final Exam:** The Final Exam will cover all content from the semester. There will be two parts to the exam – a handwritten portion and a SPSS portion. The SPSS portion of the exam will account for 25% of the overall exam grade, whereas the written portion will account for 75% of the total score. The SPSS portion of the Final Exam will be made available at the start of the week. The written portion of the Final Exam will be available on Monday, June 17. You will have two hours to complete the exam. **Late submissions will be considered on a case-by-case basis.**

**Homework Assignments:** Throughout the term, you will have multiple homework assignments. These assignments are intended to evaluate your ability to apply the statistical methods we cover in lecture, while also giving you additional practice manipulating data sets, and utilizing SPSS to analyze data.

The SPSS portion of the homework assignments will include the use of existing data sets, which can be found on Blackboard. Homework accounts for 25% of your grade, with that percentage being equally distributed across all assignments. **Late submissions will be considered on a case-by-case basis.**

**Lecture/Module Reviews:** Each week, you will have a series of modules to complete. The modules are assessed on a complete/incomplete basis, where any score over 75% is considered complete. The modules for each week must be completed during that week to earn credit. **Late submissions will be considered on a case-by-case basis.**

**This course contributes to the development of the following BSPH competencies:**

**Foundational Domains**

Overview of Public Health: Address the history and philosophy of public health as well as its core values, concepts, and functions across the globe and in society	Course Obj
1. Public Health History	
2. Public Health Philosophy	
3. Core PH Values	
4. Core PH Concepts	
5. Global Functions of Public Health	
6. Societal Functions of Public Health	
Role and Importance of Data in Public Health: Address the basic concepts, methods, and tools of public health data collection, use, and analysis and why evidence-based approaches are an essential part of public health practice	
7. Basic Concepts of Data Collection	
8. Basic Methods of Data Collection	
9. Basic Tools of Data Collection	
10. Data Usage	6
11. Data Analysis	3, 4
12. Evidence-based Approaches	6
Identifying and Addressing Population Health Challenges: Address the concepts of population health, and the basic processes, approaches, and interventions that identify and address the major health-related needs and concerns of populations	
13. Population Health Concepts	
14. Introduction to Processes and Approaches to Identify Needs and Concerns of Populations	
15. Introduction to Approaches and Interventions to Address Needs and Concerns of Populations	
Human Health: Address the underlying science of human health and disease including opportunities for promoting and protecting health across the life course	
16. Science of Human Health and Disease	
17. Health Promotion	
18. Health Protection	
Determinants of Health: Address the socio-economic, behavioral, biological, environmental, and other factors that impact human health and contribute to health disparities	
19. Socio-economic Impacts on Human Health and Health Disparities	
20. Behavioral Factors Impacts on Human Health and Health Disparities	
21. Biological Factors Impacts on Human Health and Health Disparities	
22. Environmental Factors Impacts on Human Health and Health Disparities	
Project Implementation: Address the fundamental concepts and features of project implementation, including planning, assessment, and evaluation	
23. Introduction to Planning Concepts and Features	
24. Introduction to Assessment Concepts and Features	
25. Introduction to Evaluation Concepts and Features	

Overview of the Health System: Address the fundamental characteristics and organizational structures of the U.S. health system as well as to the differences in systems in other countries	
26. Characteristics and Structures of the U.S. Health System	
27. Comparative Health Systems	
Health Policy, Law, Ethics, and Economics: Address the basic concepts of legal, ethical, economic, and regulatory dimensions of health care and public health policy, and the roles, influences and responsibilities of the different agencies and branches of government	
28. Legal dimensions of health care and public health policy	
29. Ethical dimensions of health care and public health policy	
30. Economical dimensions of health care and public health policy	
31. Regulatory dimensions of health care and public health policy	
32. Governmental Agency Roles in health care and public health policy	
Health Communications: Address the basic concepts of public health-specific communication, including technical and professional writing and the use of mass media and electronic technology	
33. Technical writing	
34. Professional writing	
35. Use of Mass Media	
36. Use of Electronic Technology	4

## Schedule (subject to change)

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*Week 1 (06/03 – 06/08)* General Introduction of Content; Descriptive Statistics;  
probability; normal curve and z-scores

*Week 2 (06/09 – 06/15)* *t*-tests

*Week 3 (06/16 – 06/23)* ANOVA; Chi-Square;  
Correlation

## Important Dates:

June 03, 2019 Class Begins

**June 12, 2019** *Last day to withdraw from course (No refund after June 5)*

June 12, 2019 Quiz 1

June 19, 2019 Quiz 2

June 23, 2019 Final Exam

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*The instructor reserves the right to alter the course outline, topics, assignments and grading scale based on the class performance.*

