JOHNS HOPKINS
SCHOOL of NURSING

COURSE NUMBER AND TITLE

NR.110.202 Biostatistics

CREDITS

3 credits

PRE- AND COREQUISITES

None

COURSE DESCRIPTION

This course provides an introduction to the basic concepts of statistical ideas and methods that aims to equip students to carry out common statistical procedures and to follow statistical reasoning in their fields of study. Principles of measurement, data summarization, and univariate and bivariate statistics are examined. Emphasis is placed on the application of fundamental concepts to real world situations.

OBJECTIVES

The course objectives are organized in line with the program outcomes. At the end of the course, the student will be able to:

1. Summarize and interpret data visually through appropriate statistical graphs.
2. Describe density curves and the properties of the normal distributions.
3. Examine correlations and linear relationships of explanatory and response variables.
4. Describe sampling distributions and the central limit theorem.
5. Discuss statistical inference using confidence intervals and tests of significance.
6. Explain the differences among various statistical techniques and identify an appropriate technique for a given set of variables and research questions.

REQUIRED TEXTBOOKS AND OTHER COURSE MATERIALS

Baldi, B. and Moore, D. (2018). *Practice of Statistics in the Life Sciences* (4th ed.). New York, NY. W.H. Freeman and Company

Note: Access to Sapling is also a required component of this course. Further information for purchasing access can be found in the Syllabus & Course Info area of the classroom.

SUMMARY OF LEARNING ASSESSMENTS/ASSIGNMENTS

LEARNING ASSESSMENT/ ASSIGNMENT	COURSE OBJECTIVES ADDRESSED	WEIGHT TOWARD FINAL COURSE GRADE
Module Quizzes, 10 quizzes in total (10pts each)	1, 2, 3, 4, 5, 6	40%
Discussion Boards, 3 posts in total (10pts each)	1, 2, 3, 4, 5, 6	30%
Exam 1	1, 2, 3, 4, 5, 6	15%
Exam 2	1, 2, 3, 4, 5, 6	15%

LEARNING ASSESSMENTS/ASSIGNMENTS

Lectures and Readings

Most modules will include recommended reading from the required text and associated lectures. It is recommended that students read the material and listen to the lectures as to best facilitate their successful completion of course assignments.

Blackboard Posts

Students are required to respond to Discussion Board prompts. They will also post a thoughtful and complete response and reply to at least two classmates' posts by the assigned deadline to receive full credit. Suggested length of initial post is 300-500 words; responses to classmates should be 1-2 paragraphs in length. High quality posts will contribute substantive content, illustrate a strong understanding of course material, reflect professionalism, and be free of grammatical errors. Please cite sources using APA guidelines and include links as appropriate.

Quizzes

Regular quizzes in the SaplingPlus resource will test students understanding of course content. Quizzes can be attempted one time and students are encouraged to consult course materials as needed to complete the quiz. These quizzes are not timed tests, but please understand that if you walk away from your quiz while taking it, depending on your computer and the length of time, you may be automatically logged out of the system.

Exams

Comprehensive exams consisting of multiple choice questions will be given to assess student understanding of course content. They are open book, open notes and timed. Only one attempt is allowed for each exam. There are no makeup exams.

ACADEMIC POLICIES

For a full list of academic policies, please see the current academic catalog and handbook.

COURSE POLICIES

All course assignments must be turned in by the specified due date and time. Once the due date and time have passed, 10% of the total points you have earned on the assignment will be deducted per day (per 24 hour period). There are no makeup or extra credit assignments allowed, and assignments submitted more than 7 days late will not receive credit. Please contact the course instructor prior to the due date in the case of extenuating circumstances.

GRADING SCALE

RANGE	LETTER GRADE	GRADE POINT
97 – 100	A+	4.0
93 – 96	A	4.0
90 – 92	A-	3.7
87 – 89	B+	3.3
83 – 86	B	3.0
80 – 82	B-	2.7
77 – 79	C+	2.3
73 – 76	C	2.0
70 – 72	C-	1.7
67 – 69	D+	1.3
63 – 66	D	1.0
60 – 62	D-	0.7
<60	F	0

HONOR CODE

Students enrolled in the Johns Hopkins University School of Nursing are expected to conduct themselves in a manner that upholds the values of this institution of higher education. Each student is obligated to refrain from violating academic ethics and maintaining high standards of conduct. In addition, the School of Nursing upholds the professional code of ethics established in the Code of Ethics for Nurses (ANA, 2015). Each student is held accountable for adhering to the American Nurses Association Code of Ethics. For the full Johns Hopkins School of Nursing Honor code, please see the current academic catalog and handbook.

EXAM INTEGRITY & STUDENT IDENTITY VERIFICATION

This course may require the use of technology and/or software to ensure exam integrity and verify the identity of the student taking the exam. Additional information and directions will be provided in the course website.

COMMUNICATION POLICY

Students may communicate with the instructor by email, which is provided in the

Contact Information area. The instructor will respond to students within 48 hours. Assignment feedback will be provided to students within two weeks of submission.

All official communication, notices, & announcements will be distributed through student JHU-SON e-mail accounts via blackboard. The student is accountable for checking this account regularly and for all course communication sent to it.

Students are responsible for reading “Netiquette” which is located under Syllabus & Course Info on the Blackboard site. Netiquette provides simple guidelines for civil on-line discourse & behavior, that participants are to follow and expect of one another.

DISABILITY SERVICES

If you have a disability and may require accommodation in this course, please contact the *Office of Student Affairs* at (410) 955-7545 or SON-DSS@jhu.edu to discuss your specific needs.

COURSE SCHEDULE

Module	Module Subtopics	Learning Activities & Resources	Learning Assignments/ Assessments
Welcome – Start Here	• Getting Started	Familiarize yourself with Blackboard	Discussion Board: Introduce Yourself Avoiding Plagiarism Module
Module 1: Introduction to Statistics Picturing Data with Graphs	• Individuals and variables • Pie charts and bar graphs • Histograms and stemplots	Baldi, B. & Moore, D. (2018). *The Practice of Statistics in the Life Sciences*. (4th ed.). • Chapter 1, "Picturing Distributions with Graphs" • Optional sections: Dot plots and Timeplots Review the lecture materials posted in the module for this week.	Module 1 Quiz Module 1 Discussion Board
Module 2: Describing Distributions with Numbers	• Mean and median • Standard deviation	Baldi, B. & Moore, D. (2018). *The Practice of Statistics in the Life Sciences*. (4th ed.). • Chapter 2, "Describing Quantitative Distributions with Numbers" Review the lecture materials posted in the module for this week.	Module 2 Quiz
Module 3: The Normal Distribution	• Density curves • Z-scores	Baldi, B. & Moore, D. (2018). *The Practice of Statistics in the Life Sciences*. (4th ed.). • Chapter 11, "The Normal Distributions" • Optional sections: Normal Quantile Plots	Module 3 Quiz Module 3 Discussion Board

Module	Module Subtopics	Learning Activities & Resources	Learning Assignments/ Assessments
		Review the lecture materials posted in the module for this week.	
Module 4: Correlation and Simple Linear Regression	• Explanatory and response variables • Scatterplots and correlation • Regression lines	Baldi, B. & Moore, D. (2018). *The Practice of Statistics in the Life Sciences*. (4th ed.). • Chapter 3, "Scatterplots and Correlation" • Chapter 4, "Regression" • Optional Section: "Working with Logarithm Transformations" Review the lecture materials posted in the module for this week.	Module 4 Quiz
Module 5: Sampling Distributions	• Parameters and statistics • The law of large numbers • Sample means • Central limit theorem	Baldi, B. & Moore, D. (2018). *The Practice of Statistics in the Life Sciences*. (4th ed.). • Chapter 13, "Sampling Distributions" Review the lecture materials posted in the module for this week.	Module 5 Quiz
Exam 1	None	Review content in Module 1 through Module 5	
Module 6: Confidence Intervals	• Statistical interference and estimation	Baldi, B. & Moore, D. (2018). *The Practice of Statistics in the Life Sciences*. (4th ed.). • Chapter 14, "Introduction to Inference" pg. 347 - 356 • Chapter 15, "Inference in Practice" pg. 375 – 388 Review the lecture materials posted in the module for this week.	Module 6 Quiz

Module	Module Subtopics	Learning Activities & Resources	Learning Assignments/ Assessments
Module 7: **Tests of Significance**	• P-value and statistical significance	Baldi, B. & Moore, D. (2018). *The Practice of Statistics in the Life Sciences*. (4th ed.). • Chapter 14, "Introduction to Inference" pg. 358 - 367 Review the lecture materials posted in the module for this week.	Module 7 Quiz
Module 8: ***t* Tests**	• Two sample problems	Baldi, B. & Moore, D. (2018). *The Practice of Statistics in the Life Sciences*. (4th ed.). • Chapter 17, "Inference about Population Mean" • Chapter 18, "Comparing Two Means" Review the lecture materials posted in the module for this week.	Module 8 Quiz Module 8 Discussion Board
Module 9: **ANOVA**	• F distributions	Baldi, B. & Moore, D. (2018). *The Practice of Statistics in the Life Sciences*. (4th ed.). • Chapter 24, "One-Way Analysis of Variance" • Optional Section: Conditions for ANOVA Review the lecture materials posted in the module for this week.	Module 9 Quiz

Module	Module Subtopics	Learning Activities & Resources	Learning Assignments/ Assessments
Module 10: The Chi-square Test	• Two-way tables	Baldi, B. & Moore, D. (2018). *The Practice of Statistics in the Life Sciences*. (4th ed.). • Chapter 21, "The Chi-Squared Test for Goodness of Fit" • Chapter 22, "The Chi-Squared Test for Two-Way Tables" Review the lecture materials posted in the module for this week.	Module 10 Quiz
Exam 2	None	Review content in Module 6 through Module 10	