Core Course: Introduction to Biostatistics

PHPM 524 (SOM, OHSU), CPHN 530 (SON, OHSU), H524 (OSU)

Course Description: This course covers a broad range of basic statistical methods used in the health sciences. The course begins by covering methods of summarizing data through graphical displays and numerical measures. Basic probability concepts will be explored to establish the basis for statistical inference. Confidence intervals and hypothesis testing will be studied with emphasis on applying these methods to relevant situations. Both normal theory and nonparametric approaches will be studied including one- and two-sample tests of population means and tests of independence for two-way tables. Students will be introduced to one-way analysis of variance (ANOVA), correlation, and simple linear regression. The course focuses on understanding when to use basic statistical methods, how to compute test statistics and how to interpret and communicate the results. Computer applications are included as part of the course to introduce students to basic data management, reading output from computer packages, interpreting and summarizing results.

Credits: 4

Competencies	Related Components	Learning Activities (not graded)	Competency Demonstrations (graded)
Select and generate graphical and numerical summaries of data	• Use graphical methods to display features of data. • Compute numerical summaries to summarize features of data. • Interpret graphical and numerical summaries to describe data.	• Utilize web sources • Example & case study • Statistical software examples • End-of-unit exercise • Class session • Computer lab session	• Quizzes / Exam(s) • Homework
Use principles of statistical inference to make conclusions about populations from samples.	• Apply principles of probability laws/distributions, interval estimation, and hypothesis testing. • Select and perform statistical procedures based on type of data and assumptions for approaches used. • Construct and interpret	• Written class note or/and present • Class session • Reading • Case study • Using statistical software(s) • Public questions – practice exercises • End-of-unit exercise	• Quizzes / Exam(s) • Homework

Competencies	Related Components	Learning Activities (not graded)	Competency Demonstrations (graded)
	point and interval estimates for population parameters using sample data. • Construct and interpret tests of hypothesis about population parameters using sample data	• Application self-tests • Computer lab session • Guided practice and feedback	
Communicate statistical findings to others.	Provide a written statement or verbally present: • Statistical methods used • Results obtained • Conclusions drawn • Limitations of conclusions related to study design and analysis.	• Case study • Individual or Team project • End of Unit Exercises	• Quizzes/Exam(s) • Homework
Use computer software to conduct simple statistical analysis	• Enter and read data into a statistical software package • Manipulate and transform data elements • Use program to perform statistical analysis. • Interpret the output from statistical software.	• Computer lab session • Utilize web sources • Case study • Guided practice and feedback	Homework