

# PHM 830: Experimental Design and Data Analysis

## Michigan State University

[www.phmtox.msu.edu](http://www.phmtox.msu.edu)

***PHM 830 replaces PHM 980 (Biostatistics), previously offered fall semester.***

### Course Overview

PHM 830 – Experimental Design and Data Analysis covers practical application of statistical principles to the design of experiments and analysis of experimental data in pharmacology, toxicology, and related biomedical sciences.

### **This course is offered in two formats:**

**Section 740 – Hybrid:** Online content plus a one-hour weekly live discussion session on Mondays at 3 p.m. in B448-9 Life Sciences. Offered fall semesters only.

**Section 730 – Online only:** Same content as Hybrid section with weekly required online chat session in place of live discussion session. Online chat time to be determined. Offered fall and summer semesters.

### **Course grade will be based on:**

- participation in discussions
- online quizzes
- exams
- problem sets

### Course Topics

- Variables and Measurement Scale
- Distributions and Descriptive Statistics
- Statistical Inference and Introduction to Hypothesis Testing
- Hypothesis Testing: Comparison of Two Groups
- Introduction to Analysis of Variance
- Simple ANOVA Designs and Their Non-parametric Alternatives
- Factorial ANOVA
- A Posteriori or Post Hoc Multiple Comparison Methods
- Transformations, Outliers and Missing Data
- Correlation and Regression Analysis
- Analysis of Categorical data
- Survival Analysis