Syllabus

Key course info

- **Course website**: This site is the hub for schedules and materials. Assignments and grades will be managed in **Sakai**.
- **Communication**: Email is the best way to reach me. I will try to respond within **24 hours Monday–Friday**.
- **Software**: We will use **R and RStudio** for homework and in-class examples. (Instructions will be posted on the Materials page.)
- **One-day room change**: Class will meet in **MAC 3198 on January** 21 only.

Course description

BMSC 620 introduces fundamental statistical methods commonly used in the biomedical and health sciences, with an emphasis on understanding, interpretation, and clear communication rather than mathematical derivations.

We will begin with descriptive statistics and graphical methods for summarizing data, followed by basic probability concepts that motivate statistical inference. Key probability and sampling distributions, including the binomial, Poisson, and normal distributions, will be introduced as tools for understanding variability and uncertainty in data.

The course will then cover confidence intervals and hypothesis testing for one- and two-sample problems using parametric and nonparametric approaches. Additional topics include inference for proportions, analysis of two-way tables, one-way analysis of variance (ANOVA), correlation, and simple linear regression.

Throughout the course, emphasis will be placed on selecting appropriate methods, interpreting results, and communicating conclusions in a way that is accessible to audiences without formal statistical training. Students will gain hands-on experience using R for basic data management, visualization, and interpretation of statistical output.

Learning objectives

By the end of this course, students should be able to:

1. Describe how data relate to a research question of interest.
2. Select and implement appropriate statistical methods for estimation and inference using statistical software.
3. Interpret and communicate statistical findings to a non-statistical audience in the context of the original research question.

Instructors and office hours

See the Instructors page for contact information and office hours.

Meeting times and location

- **Days**: Mondays and Wednesdays
- **Dates**: January 5 – March 20, 2026
- **Time**: 9:00 AM – 11:30 AM
- **Location**: RJH 4320 (except January 21 in MAC 3198)

Known exceptions

- Monday, January 19, 2026: Martin Luther King Jr. Day
- Monday, February 16, 2026: Presidents Day

Materials and software

See the Materials page for links to software installation instructions, course handouts, datasets, and other resources.

Assessment and grading

Your grade will be based on the components below. (Details, rubrics, and due dates will be posted on the course website and in Sakai.)

- **Homework**: Regular problem sets to practice concepts and R skills.
- **Quizzes**: Periodic checks on core concepts and interpretation.
- **Participation / in-class work (if applicable)**: Any in-class activities or exit tickets will be described on the Assignments or Quizzes pages.

Grading scale: (insert your program's grading scheme or your planned cutoffs here)

Specific weights and grading criteria may be adjusted early in the term and will be finalized on the course website and in Sakai.

Collaboration and academic integrity

You are encouraged to discuss course concepts and work through problems with classmates. However, anything you submit must reflect your own understanding and be written in your own words.

Statement on Generative AI

ChatGPT and other generative AI tools can be great resources for learning how to code and/or troubleshoot code that does not work. However, the work you turn in must be your own. Thus it is inappropriate to rely on AI to directly provide you with solutions to assessment questions (homework and exams) or write text that you are submitting as your own. If you do use AI tools to help you with an assignment, these must be cited along with how they were used.

Please see the Plagiarism & Attribution section (Code Snippets and AI Tools subsection) of Dr. Steve Bedrick's Course Policies site for BMI 525: Principles and Practice of Data Visualization.

Course policies and university resources

Official institutional policies and student resources will be provided in Sakai. Please contact me if you have questions about accommodations, accessibility, or support resources.

Schedule

See the Schedule page for the current schedule. The schedule may be adjusted as needed.

Attribution note: This syllabus structure was adapted from departmental course materials, including a syllabus by Meike Niederhausen, with permission, and modified for BMSC 620.