

Syllabus

Dr. Daniel B. Rowe
Professor of Computational Statistics
Department of Mathematical and Statistical Sciences
Marquette University



Department of Mathematical and Statistical Sciences Marquette University

Syllabus Spring 2024

Course: MATH 4740/MSSC 5740 Biostatistical Methods and Models

Time: TuTh 2:00 pm - 3:15 pm

Location: Cudahy 001

Office Hours: TuTh 4:00 pm – 5:00 Office

Instructor: Daniel B. Rowe, Ph.D. daniel.rowe@marquette.edu

Office: Cudahy 313

Syllabus

Course Description From The University Bulletin

MATH 4740/MSSC 5740. Biostatistical Methods and Models 3 cr. hrs.

Introduction to the statistics of life science and the use of mathematical models in biology. Data analysis and presentation, regression, analysis of variance, correlation, parameter estimation and curve fitting. Biological sequence analysis, discrete and continuous mathematical models and simulation. Credit is not given for both MATH 4720 and MATH 4740.

Prereq: MATH 1400, MATH 1410 or MATH 1450.

Drop Date: Last day without a W 1/24/2024 and with a W 4/12/24.

Syllabus

MATH 4740/MSSC 5740. Biostatistical Methods and Models. 3 cr. hrs.

Course Grading

- Midterm 1:** 25%
(Ch. 1-4)
- Midterm 2:** 25%
(Ch. 5-7)
- Homework:** 15%
- Attendance:** 5%
- Final:** 30%
(Ch. 8-12)

MATH 4740 Scale:	MSSC 5740 Scale:
92% - 100% (A)	92% - 100% (A)
88% - 92% (A-)	88% - 92% (A-)
86% - 88% (B+)	86% - 88% (B+)
80% - 86% (B)	80% - 86% (B)
78% - 80% (B-)	78% - 80% (B-)
76% - 78% (C+)	76% - 78% (C+)
70% - 76% (C)	70% - 76% (C)
68% - 70% (C-)	68% - 70% (C-)
66% - 68% (D+)	< 70% (F)
60% - 66% (D)	
56% - 60% (D-)	
< 56% (F)	

MSSC 5740: Students in MSSC 5740 will be expected to demonstrate mastery of additional homework assignments, exam questions, and/or projects.

Syllabus

Topics:

- Chapter 1 Introduction
- Chapter 2 Study Designs
- Chapter 3 Quantifying the Extent of Disease
- Chapter 4 Summarizing Data Collected in the Sample
- Chapter 5 The Role of Probability
- Chapter 6 Confidence Interval Estimates
- Chapter 7 Hypothesis Testing Procedures
- Chapter 8 Power and Sample Size Determination
- Chapter 9 Multivariable Models
- Chapter 10 Nonparametric Tests
- Chapter 11 Survival Analysis
- Chapter 12 Data Visualization

Syllabus

Questions?

Homework 1

Read Chapter 1.

1. What is the #1 killer of men and women in the US.
2. What are the most and second most preventable causes of the #1 killer (causes) in the US.
3. How is Biostatistics defined?
4. How is Epidemiology defined?
5. What is relative risk?