

# Module 01 Outline

## STA 651 — Advanced Statistical Methods 1

### Module 1: Generalized Linear Models

#### Module Logistics

**Class meets** MWF 11:40am–12:35am in Upham 332.

Module 1 begins on Monday, August 28 and ends on Friday, September 29.

**Instructor:** Dr. Thomas Fisher (fishert4@miamioh.edu, [tjfisher19.github.io](https://tjfisher19.github.io/) ↗ (<https://tjfisher19.github.io/>)), UPH 305-B.

**Office Hours:** MW 10:45-11:15am in Office. TuTh [by appointment](#) ↗ (<https://calendar.google.com/calendar/u/0/selfsched?sstoken=UUthSEFSYnNJdm1XfGRIZmF1bHR8MWQxOWY5NGMwMTk5MzUyZDk4ZDdlNGVhOTA5Y2FjNzM>) (via zoom or in person).

#### Module Overview

Introduction to concepts and methods of generalized linear models -- a generalization of the "general linear model" covered in STA 563 and STA 566. Topics include a review of the theoretical underpinnings of linear regression and the importance of distributions in the exponential family. After connecting these important ideas (think bridging 563 and 665), we will work in depth with logistic regression. After covering that topic, we will highlight many other generalized linear modeling approaches (e.g., Beta-Binomial regression, Gamma regression, Poisson regression and Negative Binomial Regression). The module will be a mix of theoretical components and applications.

#### Textbooks

[Generalized Linear Models With Examples in R](#) by Dunn & Smyth ([electronic copy](#) <https://miamioh.instructure.com/courses/198259/files/28602821?wrap=1>) from Miami University Library)

## Foundations of Linear and Generalized Linear Models by Agresti (reference)

### Required Software

R (or SAS if you prefer)

### Coursework

The course is being structured such that there are 100 possible points to earn in this module. 90 of those points will be based on four assignments. The first assignment is a review of 563 material and is already posted! The fourth assignment is more of a mini-project and will take the place of a final exam (worth a bit more). The second and third assignments can be consider more of a traditional *homework*. The remaining 10 points will be based on short (in-class) assignments and quizzes (all low stakes).

### Module Calendar

- Monday, August 28 - Classes Begin
- Friday, September 1 - Homework #1 due
- Monday, September 4 - Labor Day Holiday - No Classes
- Sunday, September 10 - Homework #2 due (subject to change)
- Sunday, September 17 - Homework #3 due (subject to change)
- Friday, September 29 - Homework #4/Final Project due

**[Details Module Calendar \(https://miamioh.instructure.com/courses/198259/pages/module-01-calendar\)](https://miamioh.instructure.com/courses/198259/pages/module-01-calendar)**