

# Course Syllabus

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<b>Professor:</b>	Dr. Thomas Fisher
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<b>Office Hours:</b>	MW 11:15-11:45 (for this class) TuTh 9:30-10:30 and by appointment
<b>Personal Website:</b>	<a href="http://www.users.miamioh.edu/fishert4/">http://www.users.miamioh.edu/fishert4/</a> <a href="http://www.users.miamioh.edu/fishert4/">(http://www.users.miamioh.edu/fishert4/)</a>
<b>Class Materials:</b>	Notes and laptops. We will use the computer regularly in this class
<b>Textbook:</b>	<a href="http://www-bcf.usc.edu/~gareth/ISL/">An Introduction to Statistical Learning</a> <a href="http://www-bcf.usc.edu/~gareth/ISL/">(http://www-bcf.usc.edu/~gareth/ISL/)</a> by James, Witten, Hastie and Tibshirani
<b>References:</b>	<a href="https://web.stanford.edu/~hastie/ElemStatLearn/">The Elements of Statistical Learning</a> <a href="https://web.stanford.edu/~hastie/ElemStatLearn/">(https://web.stanford.edu/~hastie/ElemStatLearn/)</a> by Hastie, Tibshirani and Friedman

	<p><a href="https://www.r-bloggers.com/in-depth-introduction-to-machine-learning-in-15-hours-of-expert-videos/">In-depth Introduction to Machine Learning MOOC</a> <a href="https://www.r-bloggers.com/in-depth-introduction-to-machine-learning-in-15-hours-of-expert-videos/">_ (https://www.r-bloggers.com/in-depth-introduction-to-machine-learning-in-15-hours-of-expert-videos/)</a>_by Hastie and Tibshirani</p> <p><a href="https://www.alsharif.info/iom530">Applied Modern Statistical Learning course</a> <a href="https://www.alsharif.info/iom530">_ (https://www.alsharif.info/iom530)</a>_by Sharif</p>
<b>Software:</b>	<p>We will be using R extensively in this class. Everyone should have used R in a previous course. We will not spend much, if any, time reviewing basic R functionality during class time (datacamp modules will be made available). Please get an up-to-date version of R as soon as possible.</p> <p>All assignments and some lecture material will be presented using RMarkdown. You will want to familiarize yourself with the tools as soon as possible.</p>
<b>Bulletin Description:</b>	<p>Introduction to methods of statistical learning, with emphases on both theory and implementation. Topics include supervised and unsupervised learning methods, including linear and nonlinear models for regression and classification, additive models, recursive partitioning methods, neural networks, support vector machines, association rules, and cluster analysis; ensemble methods; and methods of model assessment and selection.</p>
<b>Topic Outline:</b>	<p>An overview of statistical learning, review of regression and its applications to prediction modeling, resampling techniques, nearest neighbors, discriminant analysis, classification methods, tree based methods, support vector machines, principle components analysis, clustering techniques, and others!</p>
<b>Exams:</b>	<p>A midterm and cumulative final exam (more weight on second half of class) will be given. Each exam will consist of an in-class and perhaps a take-home portion. Planned dates:</p> <p>Midterm - <b>Monday, March 18</b> (in-class), may include a take-home portion</p> <p>Final - <b>TDB</b></p>
<b>Homework:</b>	<p>Throughout the semester there will be individually completed assignments that relate to material from recent classes. Homework will be completed using the Rmarkdown framework to integrate code and write-up (this procedure will be discussed in class). Late assignments will not be graded.</p>

	A <a href="http://www.datacamp.com">Datacamp</a> ( <a href="http://www.datacamp.com">http://www.datacamp.com</a> ) module on RMarkdown is available for the class.
<b>In class Assignments:</b>	Occasionally a short in class assignment (think of it as a lab if we met in the old Upham 316) will be given. In-class quizzes may also be given to assess understanding to calibrate the class.
<b>Data Analysis Project:</b>	A project will be assigned later in the semester which will involve building predictive models on a real dataset. There will be several milestones/grades comprising this project and I anticipate both individual and group aspects.
<b>Attendance:</b>	<p>The pace of this class is such that it will not be advisable to miss any sessions. If you know you will be absent, please inform me in advance. When you are absent, it will be your responsibility to contact another student for the notes and announcements.</p> <p>While attendance does not factor into your grade, I may take attendance for my own records. You are expected to be an active participant for the entire 55-minute class. Indications that this is not happening include sleeping, surfing the web or instant messaging on your laptop, text-messaging on your cell-phone, studying for another class, etc. In accordance with the Miami Bulletin, if your attendance is negatively impacting the class, you may be dropped at the discretion of the professor.</p> <p>Please turn your cell phone to silent before class. Students are expected to wait quietly for 15 minutes after class is scheduled to begin. If I have not yet appeared the students are free to leave.</p>
<b>Letters of Accommodation:</b>	If you have a letter stating specific testing accommodations to which you are entitled, please work with Student Disability Services and come by my office to discuss the accommodations that you will need once is all approved. Even if you do not anticipate using any accommodations, it is a good idea to turn in the letter as soon as possible.
<b>Prerequisites:</b>	Modeling Course: <i>STA 463 or 563</i>

<b>Student Code of Conduct:</b>	Any violations of Academic Integrity within the Student Handbook will not be tolerated. This includes cheating, plagiarism, storing information in a calculator, sabotage of another's work and disrupting class. See the <a href="http://www.miamioh.edu/handbook">Handbook (http://www.miamioh.edu/handbook)</a> for a complete listing of the student code of conduct. All violations will be handled in accordance with established procedures and policies concerning student academic responsibility. See the <a href="http://miamioh.edu/academics/bulletin/">Bulletin (http://miamioh.edu/academics/bulletin/)</a> for additional details:
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At the conclusion of the semester, final grades will be compiled using:

<b>Source</b>	<b>Amounts</b>
Homework	30%
Class Assignments/Quizzes	10%
Data Analysis Project	20%
Midterm	20%
Final Exam	20%
<b>Total</b>	<b>100%</b>

Grades will be assigned based on:

[98, 100) A+ [92, 98) A [90, 92) A-

[88, 90) B+ [82, 88) B [80, 82) B-

[78, 80) C+ [72, 78) C [70, 72) C-

[68, 70) D+ [62, 68) D [60, 62) D-

[0, 60) F

#### Important Dates:

Thursday, February 14 - Drop date (no grade on transcript)

Friday, March 1 - Last day to apply for May graduation

Friday, March 22 - Midterm Grades available on Banner

Monday--Friday, March 25-31 - Spring Break

Monday, April 8 - Last day to drop with a "W"

Friday, May 10 - Last day of classes (and final date to withdraw from university)

## Course Summary:

Date	Details	
Fri Feb 1, 2019	 <a href="https://miamioh.instructure.com/courses/94170/assignments/951234">Homework #0 (https://miamioh.instructure.com/courses/94170/assignments/951234)</a>	due by 10:15am

**Date****Details**

Mon Feb 4, 2019

 [Homework #0.5 \(https://miamioh.instructure.com/courses/94170/assignments/951318\)](https://miamioh.instructure.com/courses/94170/assignments/951318)

due by 10:15am