Term Information

Effective Term	Summer 2021
Previous Value	*Spring 2017*

Course Change Information

What change is being proposed? (If more than one, what changes are being proposed?)

Adding a 100% DL option. To allow 4202 and 5730 to count instead of 3202. Minor revision to the description and topic list.

What is the rationale for the proposed change(s)?

To give flexibility in how we offer some of our undergraduate major and minor courses.

What are the programmatic implications of the proposed change(s)?

(e.g. program requirements to be added or removed, changes to be made in available resources, effect on other programs that use the course)?

None

Is approval of the requrest contingent upon the approval of other course or curricular program request? No

Is this a request to withdraw the course? No

General Information

Course Bulletin Listing/Subject Area	Statistics
Fiscal Unit/Academic Org	Statistics - D0694
College/Academic Group	Arts and Sciences
Level/Career	Undergraduate
Course Number/Catalog	3301
Course Title	Statistical Modeling for Discovery I
Transcript Abbreviation	Stat Model Disc 1
Course Description	Statistical models for data analysis in the linear regression framework. The challenges of developing meaningful models for data are explored, with emphasis on the model building process, the use of numerical and graphical diagnostics for assessing model fit, and interpretation and communication of results. Statistical foundations are introduced along with basic inferential techniques.
Previous Value	*Statistical models for data analysis and discovery in big-data settings, with primary focus on linear regression models. The challenges of building meaningful models from vast data are explored, and emphasis is placed on model building and the use of numerical and graphical diagnostics for assessing model fit. Interpretation and communication of the results of analyses is emphasized.*
Semester Credit Hours/Units	Fixed: 3

Offering Information

Length Of Course	14 Week, 12 Week
Flexibly Scheduled Course	Never
Does any section of this course have a distance education component?	Yes
Is any section of the course offered	100% at a distance
Previous Value	*No*
Grading Basis	Letter Grade
Repeatable	No
Course Components	Lecture
Grade Roster Component	Lecture
Credit Available by Exam	No
Admission Condition Course	No

Off Campus	Never
Campus of Offering	Columbus

Prerequisites and Exclusions

Prerequisites/Corequisites	Prereq: C- or better in 3202; or (4202 and 5730); or permission of instructor. Prereq or concur: Math 2568; or permission of instructor.
Previous Value	*Prereq: C- or better in 3202; or permission of instructor. Prereq or concur: Math 2568; or permission of instructor.*
Exclusions	
Electronically Enforced	No

Cross-Listings

Cross-Listings

Subject/CIP Code

Subject/CIP Code	27.0501
Subsidy Level	Baccalaureate Course
Intended Rank	Junior, Senior

Requirement/Elective Designation

Required for this unit's degrees, majors, and/or minors

Course Details

Course goals or learning objectives/outcomes

- Use graphical and numerical summaries of data to describe relationships between variables.
- Formulate, fit, evaluate and compare regression models that describe relationships between variables.
- Understand and be able to describe the statistical foundations of standard regression models.
- Perform a complete regression analysis and communicate the results in both statistical and problem-specific terms.
- Identify common violations of the assumptions that underly standard regression models.
- Distinguish between descriptive and causal interpretations of regression.

Previous Value

- *Formulate regression models that describe relationships between variables and understand the models' statistical foundations*
- *Perform a complete regression analysis and communicate the results in both statistical and problem-specific terms*
- *Use linear regression methods to build models for large data sets and use the results of the analysis to recommend actions*
- *Evaluate and compare different regression models using formal statistical methods and graphical techniques*
- *Formulate a regression model for data collected over time and identify whether more advanced time series modeling techniques are required*

Content Topic List

- Graphical approaches for assessing relationships between variables
- Simple and multiple linear regression
- Inferential and predictive methods
- Constructing and choosing useful predictors
- Model diagnostics and case influence analysis

Previous Value

- *Simple and multiple linear regression*
- *Model building*
- *Diagnostic checks*
- *Constructing and choosing useful predictors*
- *Computation for big data sets*
- *Introduction to data collected over time*

Sought Concurrence

No

Attachments

- STAT 3301 DL Syllabus.docx: DL syllabus

  (Syllabus. Owner: Craigmile,Peter F)

- STAT 3301 P Syllabus.docx: In-person syllabus

  (Syllabus. Owner: Craigmile,Peter F)

- DL checklist Stat 3301.docx: ASC Tech DL checklist

  (Syllabus. Owner: Craigmile,Peter F)

Comments

Workflow Information

Status	User(s)	Date/Time	Step
Submitted	Craigmile,Peter F	11/18/2020 01:19 PM	Submitted for Approval
Approved	Craigmile,Peter F	11/18/2020 01:21 PM	Unit Approval
Approved	Haddad,Deborah Moore	11/18/2020 03:34 PM	College Approval
Pending Approval	Jenkins,Mary Ellen Bigler Hanlin,Deborah Kay Oldroyd,Shelby Quinn Vankeerbergen,Bernadette Chantal	11/18/2020 03:34 PM	ASCCAO Approval

THE OHIO STATE UNIVERSITY

COLLEGE OF ARTS AND SCIENCES

SYLLABUS: STAT 3301 (ONLINE)
STATISTICAL MODELING FOR DISCOVERY I
AUTUMN 2021

Course overview

Instructor

Instructor:
Email address:
Office hours: Virtual Office Hours via Carmen Zoom. Days and times TBD.

Graders

Contact information:
Office hours: Online (information available on Carmen).

Course description

Statistical models for data analysis in the linear regression framework. The challenges of developing meaningful models for data are explored, with emphasis on the model building process, the use of numerical and graphical diagnostics for assessing model fit, and interpretation and communication of results. Statistical foundations are introduced along with basic inferential techniques.

Prerequisite: C- or better in 3202; or 4202 and 5730; or permission of the instructor. Prereq or concur: Math 2568; or permission of the instructor.

Course learning outcomes

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

- Use graphical and numerical summaries of data to describe relationships between variables.
- Formulate, fit, evaluate and compare regression models that describe relationships between variables.
- Understand and be able to describe the statistical foundations of standard regression models.
- Identify common violations of the assumptions that underly standard regression models.
- Perform a complete regression analysis and communicate the results in both statistical and problem-specific terms.
- Distinguish between descriptive and causal interpretations of regression.

Course materials

Required

We will use the textbook *Applied Linear Regression, Fourth Edition* (2014) by Sanford Weisberg. An electronic version of the book can be accessed for free through The Ohio State University Libraries at https://library.ohio-state.edu/record=b8665795~S7. You will need to click on "Connect to resource EBSCOhost"; you may also need to supply your OSU credentials. The online resource is best suited for screen reading; each individual is allowed to print/e-mail/save/download a limited number of pages.

Course technology

For help with your password, university e-mail, Carmen, or any other technology issues, questions, or requests, contact the OSU IT Service Desk. Standard support hours are available at https://ocio.osu.edu/help/hours, and support for urgent issues is available 24x7.

- **Self-Service and Chat support:** http://ocio.osu.edu/selfservice
- **Phone:** 614-688-HELP (4357)
- **Email:** 8help@osu.edu
- **TDD:** 614-688-8743

Baseline technical skills necessary for online courses

- Basic computer and web-browsing skills
- Navigating Carmen

Technology skills necessary for this specific course

- CarmenZoom
- Collaborating in CarmenWiki

Necessary equipment

- Computer: current Mac (OS X) or PC (Windows 10+) with high-speed internet connection
- Webcam: built-in or external webcam, fully installed
- Microphone: built-in laptop or tablet mic or external microphone

Necessary software

- This class requires you to use the statistical software package called R (The R Project for Statistical Computing; http://www.r-project.org/). This software package is available as Free Software.
    - You can download R for Windows, Mac, and Linux, from the CRAN archive at https://cran.r-project.org.
- An easy-to-use interface to R is available in the software package RStudio. This package is available for Windows, Mac, and Linux and can be downloaded for free from http://rstudio.org. **Note that RStudio requires R to be installed.**
- This class requires the use of the (free) R Markdown authoring framework to complete assignments. Information about R Markdown will be provided in class; an online guide with overview information can be found at https://rmarkdown.rstudio.com.

Course delivery

The course will use a mix of **synchronous** and **asynchronous** content.

Required **synchronous** content will be delivered live over CarmenZoom on Mondays during the scheduled class time. Students are expected to attend and participate in these live, online class meetings. The synchronous meetings on Mondays will be used to contextualize the previous week's asynchronous content using examples, discussion and questions, with new material introduced as appropriate. The final few minutes of class will be used to provide an overview of what you should expect to learn as you work through the rest of the week's asynchronous content.

Required **asynchronous** content will be made available each Monday on Carmen. This material will include:

- Reading assignments from the textbook.
- A short quiz that can be completed on Carmen.
- Videos representing the equivalent of two 55-minute lectures that provide in-depth discussion of the topics for the week.
- Homework problems to help assess your understanding of the material.

The instructors will hold office hours several times during the week via CarmenZoom. The schedule and Zoom links will be posted on Carmen.

The graders for the course will hold virtual office hours several times during the week. The schedule and information for how to attend these virtual sessions will be made available on Carmen.

Grading and faculty response

Grades

Assignment or category	Percentage
Discussion Boards Participation	**5**
Quizzes	**15**
Homework	**15**
Midterm 1	**15**
Midterm 2	**15**
Comprehensive Data Analysis	**15**
Final Exam	**20**
Total	**100**

Discussion Boards Participation: Throughout the semester, the instructor will initiate online discussion threads. You are required to read each thread and familiarize yourself with the topic. A total of 5% of your grade will consist of your contribution to these discussion threads. You are required to contribute to a minimum of five distinct topics. Your posts will be read and assessed

by the instructor and evaluated based on two factors: (1) relevance to the topic and (2) significance of your contribution

Quizzes will be administered weekly online, through Carmen. These short quizzes are meant to motivate you to complete the assigned reading in the textbook and keep up with the asynchronous video content. There will be a sufficiently large time window during which you can complete the quiz, but once you begin taking the quiz there will be a time limit for you to complete it. The quizzes are open book / open notes but should be completed without any external help or communication. I will drop your lowest quiz score (which can be a quiz that was not completed by the deadline) when computing your quiz grade for the semester.

Homework will be assigned approximately weekly on Mondays and will be due on Carmen the following week on Wednesdays by 11:59pm. Homework problems that require R software should be completed in R Markdown and a knitted html file should be uploaded. Homework problems that do not require R may be handwritten (electronically, or on paper and scanned) and uploaded. **You are encouraged to work together on homework; however, each student must produce their own assignment to be handed in. Do not copy any part of another student's homework.** I will drop your lowest homework score (which could be an assignment that was never turned in) when calculating your final homework grade for the semester.

Exams: There will be two midterms and one final exam administered during the semester to assess your understanding of the course material as the semester progresses. All exams will be taken remotely, via Carmen. The final exam will take place at the time and date established by the University. Information about the exams will be posted well in advance on Carmen. **Exams must be completed without any external help or communication.**

Comprehensive Data Analysis: There will be an individual, comprehensive data analysis assignment that will be completed in parts throughout the semester. All students will work on the same data set and analysis. The data analysis will have three components, with due dates spread throughout the semester:

- Part I: Exploratory data analysis (due mid-October)
- Part II: Preliminary model building and analysis (due mid-November)
- Part III: Model expansion, checking and summarization (due by the end of the semester)

Information about each of the three components will be given during the semester. Each part will count for 5% of the final course grade so that the entire data analysis project counts for 15% of the final course grade. There will be no homework due during the weeks in which a part of the comprehensive data analysis is due.

Late assignments

Generally, late homework assignments are not accepted. Please plan your time so that you can complete assignments far enough in advance to avoid any last-minute problems uploading your completed work. If exceptional circumstances (sudden onset of illness, unexpected family situations, etc.) arise, contact the instructor to discuss the possibility of an extension.

Grading scale

93–100: A
90–92.9: A-
87–89.9: B+
83–86.9: B
80–82.9: B-
77–79.9: C+
73–76.9: C
70 –72.9: C-
67 –69.9: D+
60 –66.9: D
Below 60: E

Faculty feedback and response time

I am providing the following to give you an idea of my intended availability throughout the course. (Remember that you can call **614-688-HELP** if you have a technical problem.)

Grading and feedback

For large weekly assignments, you can generally expect feedback within **7 days**.

E-mail

I will reply to e-mails within **24 hours on school days**. Specific technical questions about the course material that require significant back-and-forth communication are not well suited for e-mail; while I will do my best to answer such questions, I may ask that you attend virtual office hours if your question isn't easily answerable over email.

Discussion board

I will check and reply to messages in the discussion boards every **48 hours on school days**.

Attendance, participation, and discussions

Student participation requirements

Because this is a distance-education course, your attendance is based on your online activity and participation. The following is a summary of everyone's expected participation:

- **Attending online, synchronous class meetings**: **ONCE PER WEEK**

  Students are expected to attend and participate in the online, synchronous Monday class meetings.

- **Logging in**: **AT LEAST ONCE PER WEEK**
  Be sure you are logging in to the course in Carmen each week, including weeks with holidays. You will need to log in to Carmen to complete quizzes, view video content and upload homework assignments. (During most weeks you will probably log in many times.) If you have a situation that might cause you to miss an entire week of class, discuss it with me as soon as possible.
- **Office hours**: **OPTIONAL OR FLEXIBLE**
  All office hours are optional. If you need to speak with me privately about a topic that cannot be easily discussed during office hours, please contact me to schedule a time to meet.
- **Participating in discussion forums**: **AT LEAST FIVE TIMES PER SEMESTER**
  You are required to participate regularly in class discussions related to the topics we will be learning (at least five times per semester) by posting to the discussion forums.

Discussion and communication guidelines

The following are my expectations for how we should communicate as a class. Above all, please remember to be respectful and thoughtful.

- **Writing style**: While there is no need to participate in class discussions as if you were writing a research paper, you should remember to write using good grammar, spelling, and punctuation. Informality (including an occasional emoticon) is fine for non-academic topics.
- **Tone and civility**: Let's maintain a supportive learning community where everyone feels safe and where people can disagree amicably. Remember that sarcasm doesn't always come across online.
- **Citing your sources**: When we have academic discussions, please cite your sources to back up what you say. (For the textbook or other course materials, list at least the title and page numbers. For online sources, include a link.)
- **Backing up your work**: Consider composing your academic posts in a word processor, where you can save your work, and then copying into the Carmen discussion.

Other course policies

Health and safety

The Ohio State University Wexner Medical Center's Coronavirus Outbreak site (https://wexnermedical.osu.edu/features/coronavirus) includes the latest information about COVID-19 as well as guidance for students, faculty and staff.

I expect that you will read and follow the guidelines and requirements for campus safety, which are available at https://safeandhealthy.osu.edu.

Student academic services

Student academic services offered on the OSU main campus
http://advising.osu.edu/welcome.shtml.

Student support services

Student support services offered on the OSU main campus http://ssc.osu.edu.

Academic integrity policy

Policies for this online course

- **Quizzes and exams**: You must complete the midterm and final exams yourself, without any external help or communication. Weekly quizzes should be completed yourself, without any external communication, though you may use your own notes and textbook.
- **Written assignments**: Your written assignments, including discussion posts, should be your own original work. In formal assignments, you should cite the ideas and words of your research sources. You are encouraged to ask a trusted person to proofread your assignments before you turn them in, but no one else should revise or rewrite your work.
- **Reusing past work**: In general, you are prohibited in university courses from turning in work from a past class to your current class, even if you modify it. If you want to build on past research or revisit a topic you've explored in previous courses, please discuss the situation with me.
- **Collaboration and informal peer-review**: The course includes many opportunities for formal collaboration with your classmates. While study groups and peer-review of major written projects is encouraged, remember that comparing answers on a quiz or assignment is not permitted. If you're unsure about a particular situation, please feel free to ask the instructor.

Ohio State's academic integrity policy

It is the responsibility of the Committee on Academic Misconduct to investigate or establish procedures for the investigation of all reported cases of student academic misconduct. The term "academic misconduct" includes all forms of student academic misconduct wherever committed; illustrated by, but not limited to, cases of plagiarism and dishonest practices in connection with examinations. Instructors shall report all instances of alleged academic misconduct to the committee (Faculty Rule 3335-5-487). For additional information, see the Code of Student Conduct http://studentlife.osu.edu/csc/.

Copyright disclaimer

The materials used in connection with this course may be subject to copyright protection and are only for the use of students officially enrolled in the course for the educational purposes associated with the course. Copyright law must be considered before copying, retaining, or disseminating materials outside of the course. **No course materials provided by the instructor (notes, videos, recordings, computer code, homework assignments, homework solutions, quizzes, exams, etc.) may be distributed publicly or privately to anyone outside of the class.**

Statement on title IX

Title IX makes it clear that violence and harassment based on sex and gender are Civil Rights offenses subject to the same kinds of accountability and the same kinds of support applied to offenses against other protected categories (e.g., race). If you or someone you know has been sexually harassed or assaulted, you may find the appropriate resources at http://titleix.osu.edu or by contacting the Ohio State Title IX Coordinator, Kellie Brennan, at titleix@osu.edu

Accessibility accommodations for students with disabilities

The university strives to make all learning experiences as accessible as possible. In light of the current pandemic, students seeking to request COVID-related accommodations may do so through the university's request process, managed by Student Life Disability Services. If you anticipate or experience academic barriers based on your disability (including mental health, chronic, or temporary medical conditions), please let me know immediately so that we can privately discuss options. To establish reasonable accommodations, I may request that you register with Student Life Disability Services. After registration, make arrangements with me as soon as possible to discuss your accommodations so that they may be implemented in a timely fashion. SLDS contact information: slds@osu.edu; 614-292-3307; http://slds.osu.edu; 098 Baker Hall, 113 W. 12th Avenue.

Accessibility of course technology

This online course requires use of Carmen (Ohio State's learning management system) and other online communication and multimedia tools. If you need additional services to use these technologies, please request accommodations with your instructor.

- Carmen (Canvas) accessibility

- Streaming audio and video
- Synchronous course tools

Your mental health

As a student you may experience a range of issues that can cause barriers to learning, such as strained relationships, increased anxiety, alcohol/drug problems, feeling down, difficulty concentrating and/or lack of motivation. These mental health concerns or stressful events may lead to diminished academic performance or reduce a student's ability to participate in daily activities. The Ohio State University offers services to assist you with addressing these and other concerns you may be experiencing. If you or someone you know are suffering from any of the aforementioned conditions, you can learn more about the broad range of confidential mental health services available on campus via the Office of Student Life's Counseling and Consultation Service (CCS) by visiting ccs.osu.edu or calling 614- 292-5766. CCS is located on the 4th Floor of the Younkin Success Center and 10th Floor of Lincoln Tower. You can reach an on call counselor when CCS is closed at 614-292-5766 and 24 hour emergency help is also available through the 24/7 National Suicide Prevention Hotline at 1-800-273- TALK or at suicidepreventionlifeline.org

Disclaimer

This syllabus should be taken as a fairly reliable guide for the course content. However, you cannot claim any rights from it and in particular we reserve the right to change due dates or the methods of grading and/or assessment if necessary. Any changes will be communicated to you through official course announcements.

Course schedule (tentative)

The following tentative course schedule is subject to change. The schedule for each week will be posted on Carmen on Mondays.

Week	Dates	Topics, Readings, Assignments, Deadlines
1	Aug 24-27	Introduction, summarizing data in R
2	Aug 30–Sep 3	Relationships between variables
3	Sep 7-10	Intro to simple linear regression (SLR), parameter estimation
4	Sep 13-17	Inference and prediction under SLR models
5	Sep 20-24	Sources of variability, coefficient of determination, residuals
6	Sep 27–Oct 1	Transformations of regressors and response variables
7	Oct 4-8	Multiple linear regression: estimation, inference and prediction
8	Oct 11-13	Interpreting coefficients, correlated predictors
9	Oct 18-22	Regression with categorical and continuous regressors
10	Oct 25-29	Multiple categorical regressors, comparing nested models
11	Nov 1-5	Nonlinear relationships and polynomial regression
12	Nov 8-10, 12	Regression model diagnostics
13	Nov 15-19	Common violations of independence
14	Nov 22-23	Descriptive versus causal interpretations of regression
15	Nov 29–Dec 3	Approaches to model comparison
16	Dec 6-8	Approaches to model selection

THE OHIO STATE UNIVERSITY

COLLEGE OF ARTS AND SCIENCES

SYLLABUS: STAT 3301
STATISTICAL MODELING FOR DISCOVERY I
AUTUMN 2021

Course overview

Instructor

Instructor:
Email address:
Office hours:

Graders

Contact information:
Office hours:

Course description

Statistical models for data analysis in the linear regression framework. The challenges of developing meaningful models for data are explored, with emphasis on the model building process, the use of numerical and graphical diagnostics for assessing model fit, and interpretation and communication of results. Statistical foundations are introduced along with basic inferential techniques.

Prerequisite: C- or better in 3202; or 4202 and 5730; or permission of the instructor. Prereq or concur: Math 2568; or permission of the instructor.

Course learning outcomes

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

- Use graphical and numerical summaries of data to describe relationships between variables.
- Formulate, fit, evaluate and compare regression models that describe relationships between variables.
- Understand and be able to describe the statistical foundations of standard regression models.
- Identify common violations of the assumptions that underly standard regression models.
- Perform a complete regression analysis and communicate the results in both statistical and problem-specific terms.
- Distinguish between descriptive and causal interpretations of regression.

Course materials

Required

We will use the textbook *Applied Linear Regression, Fourth Edition* (2014) by Sanford Weisberg. An electronic version of the book can be accessed for free through The Ohio State University Libraries at https://library.ohio-state.edu/record=b8665795~S7. You will need to click on "Connect to resource EBSCOhost"; you may also need to supply your OSU credentials. The online resource is best suited for screen reading; each individual is allowed to print/e-mail/save/download a limited number of pages.

Course technology

For help with your password, university e-mail, Carmen, or any other technology issues, questions, or requests, contact the OSU IT Service Desk. Standard support hours are available at https://ocio.osu.edu/help/hours, and support for urgent issues is available 24x7.

- **Self-Service and Chat support:** http://ocio.osu.edu/selfservice
- **Phone:** 614-688-HELP (4357)
- **Email:** 8help@osu.edu
- **TDD:** 614-688-8743

Technology skills necessary for this specific course

- Basic computer and web-browsing skills

- Navigating Carmen
- CarmenZoom
- Collaborating in CarmenWiki

Necessary equipment

- Computer: current Mac (OS X) or PC (Windows 10+) with high-speed internet connection
- Webcam: built-in or external webcam, fully installed
- Microphone: built-in laptop or tablet mic or external microphone

Necessary software

- This class requires you to use the statistical software package called R (The R Project for Statistical Computing; http://www.r-project.org/). This software package is available as Free Software.
    - You can download R for Windows, Mac, and Linux, from the CRAN archive at https://cran.r-project.org.
- An easy-to-use interface to R is available in the software package RStudio. This package is available for Windows, Mac, and Linux and can be downloaded for free from http://rstudio.org. **Note that RStudio requires R to be installed.**
- This class requires the use of the (free) R Markdown authoring framework to complete assignments. Information about R Markdown will be provided in class; an online guide with overview information can be found at https://rmarkdown.rstudio.com.

Course delivery

The course will use a mix of **synchronous** and **asynchronous** content.

Required **synchronous** content will be delivered in person during the scheduled class meeting times. Students are expected to attend and participate in these in-person class meetings. Class meetings will be used to provide in-depth investigation of the topics for the week using a lecture format. Students will participate in these class sessions by engaging in discussions prompted by the instructor and by asking and answering questions. Students should plan to take notes during class.

Required **asynchronous** content will be made available each Monday on Carmen. This material will include:

- Reading assignments from the textbook.
- A short quiz that can be completed on Carmen.
- Homework problems to help assess your understanding of the material.

Grading and faculty response

Grades

Assignment or category	Percentage
Quizzes	**15**
Homework	**20**
Midterm 1	**15**
Midterm 2	**15**
Comprehensive Data Analysis	**15**
Final Exam	**20**
Total	**100**

Quizzes will be administered weekly online, through Carmen. These short quizzes are meant to motivate you to complete the assigned reading in the textbook and keep up with the material introduced during class. There will be a sufficiently large time window during which you can complete the quiz, but once you begin taking the quiz there will be a time limit for you to complete it. The quizzes are open book / open notes but should be completed without any external help or communication. I will drop your lowest quiz score (which can be a quiz that was not completed by the deadline) when computing your quiz grade for the semester.

Homework will be assigned approximately weekly on Mondays and will be due on Carmen the following week on Wednesdays by 11:59pm. Homework problems that require R software should be completed in R Markdown and a knitted html file should be uploaded. Homework problems that do not require R may be handwritten (electronically, or on paper and scanned) and uploaded. **You are encouraged to work together on homework; however, each student must produce their own assignment to be handed in. Do not copy any part of another student's homework.** I will drop your lowest homework score (which could be an assignment that was never turned in) when calculating your final homework grade for the semester.

Exams: There will be two midterms and one final exam administered during the semester to assess your understanding of the course material as the semester progresses. All exams will be taken in class. The final exam will take place at the time and date established by the University. Information about the exams will be posted well in advance on Carmen. **Exams must be completed without any external help or communication.**

Comprehensive Data Analysis: There will be an individual, comprehensive data analysis assignment that will be completed in parts throughout the semester. All students will work on the same data set and analysis. The data analysis will have three components, with due dates spread throughout the semester:

- Part I: Exploratory data analysis (due mid-October)
- Part II: Preliminary model building and analysis (due mid-November)
- Part III: Model expansion, checking and summarization (due by the end of the semester)

Information about each of the three components will be given during the semester. Each part will count for 5% of the final course grade so that the entire data analysis project counts for 15% of the final course grade. There will be no homework due during the weeks in which a part of the comprehensive data analysis is due.

Late assignments

Generally, late homework assignments are not accepted. Please plan your time so that you can complete assignments far enough in advance to avoid any last-minute problems uploading your completed work. If exceptional circumstances (sudden onset of illness, unexpected family situations, etc.) arise, contact the instructor to discuss the possibility of an extension.

Grading scale

93–100: A
90–92.9: A-
87–89.9: B+
83–86.9: B
80–82.9: B-
77–79.9: C+
73–76.9: C
70 –72.9: C-
67 –69.9: D+
60 –66.9: D
Below 60: E

Faculty feedback and response time

I am providing the following to give you an idea of my intended availability throughout the course. (Remember that you can call **614-688-HELP** if you have a technical problem.)

Grading and feedback

For large weekly assignments, you can generally expect feedback within **7 days**.

E-mail

I will reply to e-mails within **24 hours on school days**. Specific technical questions about the course material that require significant back-and-forth communication are not well suited for e-mail; while I will do my best to answer such questions, I may ask that you attend virtual office hours if your question isn't easily answerable over email.

Attendance, participation, and discussions

Student participation requirements

The following is a summary of everyone's expected participation:

- **Attending in-person class meetings**: **THREE TIMES PER WEEK**
  Students are expected to attend and participate in the in-person class meetings.
- **Logging in**: **AT LEAST ONCE PER WEEK**
  Be sure you are logging in to the course in Carmen each week, including weeks with holidays. You will need to log in to Carmen to complete quizzes, view video content and upload homework assignments. (During most weeks you will probably log in many times.) If you have a situation that might cause you to miss an entire week of class, discuss it with me as soon as possible.
- **Office hours**: **OPTIONAL OR FLEXIBLE**
  All office hours are optional. If you need to speak with me privately about a topic that cannot be easily discussed during office hours, please contact me to schedule a time to meet.

Discussion and communication guidelines

The following are my expectations for how we should communicate as a class. Above all, please remember to be respectful and thoughtful.

- **Writing style**: While there is no need to participate in class discussions as if you were writing a research paper, you should remember to write using good grammar, spelling, and punctuation. Informality (including an occasional emoticon) is fine for non-academic topics.
- **Tone and civility**: Let's maintain a supportive learning community where everyone feels safe and where people can disagree amicably. Remember that sarcasm doesn't always come across online.
- **Citing your sources**: When we have academic discussions, please cite your sources to back up what you say. (For the textbook or other course materials, list at least the title and page numbers. For online sources, include a link.)

- **Backing up your work**: Consider composing your academic posts in a word processor, where you can save your work, and then copying into the Carmen discussion.

Other course policies

Health and safety

The Ohio State University Wexner Medical Center's Coronavirus Outbreak site (https://wexnermedical.osu.edu/features/coronavirus) includes the latest information about COVID-19 as well as guidance for students, faculty and staff.

I expect that you will read and follow the guidelines and requirements for campus safety, which are available at https://safeandhealthy.osu.edu.

Student academic services

Student academic services offered on the OSU main campus
http://advising.osu.edu/welcome.shtml.

Student support services

Student support services offered on the OSU main campus http://ssc.osu.edu.

Academic integrity policy

Policies for this course

- **Quizzes and exams**: You must complete the midterm and final exams yourself, without any external help or communication. Weekly quizzes should be completed yourself, without any external communication, though you may use your own notes and textbook.
- **Written assignments**: Your written assignments, including discussion posts, should be your own original work. In formal assignments, you should cite the ideas and words of your research sources. You are encouraged to ask a trusted person to proofread your assignments before you turn them in, but no one else should revise or rewrite your work.
- **Reusing past work**: In general, you are prohibited in university courses from turning in work from a past class to your current class, even if you modify it. If you want to build on past research or revisit a topic you've explored in previous courses, please discuss the situation with me.

- **Collaboration and informal peer-review**: The course includes many opportunities for formal collaboration with your classmates. While study groups and peer-review of major written projects is encouraged, remember that comparing answers on a quiz or assignment is not permitted. If you're unsure about a particular situation, please feel free to ask the instructor.

Ohio State's academic integrity policy

It is the responsibility of the Committee on Academic Misconduct to investigate or establish procedures for the investigation of all reported cases of student academic misconduct. The term "academic misconduct" includes all forms of student academic misconduct wherever committed; illustrated by, but not limited to, cases of plagiarism and dishonest practices in connection with examinations. Instructors shall report all instances of alleged academic misconduct to the committee (Faculty Rule 3335-5-487). For additional information, see the Code of Student Conduct http://studentlife.osu.edu/csc/.

Copyright disclaimer

The materials used in connection with this course may be subject to copyright protection and are only for the use of students officially enrolled in the course for the educational purposes associated with the course. Copyright law must be considered before copying, retaining, or disseminating materials outside of the course. **No course materials provided by the instructor (notes, videos, recordings, computer code, homework assignments, homework solutions, quizzes, exams, etc.) may be distributed publicly or privately to anyone outside of the class.**

Statement on title IX

Title IX makes it clear that violence and harassment based on sex and gender are Civil Rights offenses subject to the same kinds of accountability and the same kinds of support applied to offenses against other protected categories (e.g., race). If you or someone you know has been sexually harassed or assaulted, you may find the appropriate resources at http://titleix.osu.edu or by contacting the Ohio State Title IX Coordinator, Kellie Brennan, at titleix@osu.edu

Accessibility accommodations for students with disabilities

The university strives to make all learning experiences as accessible as possible. In light of the current pandemic, students seeking to request COVID-related accommodations may do so through the university's request process, managed by Student Life Disability Services. If you anticipate or experience academic barriers based on your disability (including mental health, chronic, or temporary medical conditions), please let me know immediately so that we can privately discuss options. To establish reasonable accommodations, I may request that you register with Student Life Disability Services. After registration, make arrangements with me as soon as possible to discuss your accommodations so that they may be implemented in a timely fashion. SLDS contact information: slds@osu.edu; 614-292-3307; http://slds.osu.edu; 098 Baker Hall, 113 W. 12th Avenue.

Accessibility of course technology

This course requires use of Carmen (Ohio State's learning management system) and other online communication and multimedia tools. If you need additional services to use these technologies, please request accommodations with your instructor.

- Carmen (Canvas) accessibility
- Streaming audio and video
- Synchronous course tools

Your mental health

As a student you may experience a range of issues that can cause barriers to learning, such as strained relationships, increased anxiety, alcohol/drug problems, feeling down, difficulty concentrating and/or lack of motivation. These mental health concerns or stressful events may lead to diminished academic performance or reduce a student's ability to participate in daily activities. The Ohio State University offers services to assist you with addressing these and other concerns you may be experiencing. If you or someone you know are suffering from any of the aforementioned conditions, you can learn more about the broad range of confidential mental health services available on campus via the Office of Student Life's Counseling and Consultation Service (CCS) by visiting ccs.osu.edu or calling 614- 292-5766. CCS is located on the 4th Floor of the Younkin Success Center and 10th Floor of Lincoln Tower. You can reach an on call counselor when CCS is closed at 614-292-5766 and 24 hour emergency help is also available through the 24/7 National Suicide Prevention Hotline at 1-800-273- TALK or at suicidepreventionlifeline.org

Disclaimer

This syllabus should be taken as a fairly reliable guide for the course content. However, you cannot claim any rights from it and in particular we reserve the right to change due dates or the methods of grading and/or assessment if necessary. Any changes will be communicated to you through official course announcements.

Course schedule (tentative)

The following tentative course schedule is subject to change. The schedule for each week will be posted on Carmen on Mondays.

Week	Dates	Topics, Readings, Assignments, Deadlines
1	Aug 24-27	Introduction, summarizing data in R
2	Aug 30–Sep 3	Relationships between variables
3	Sep 7-10	Intro to simple linear regression (SLR), parameter estimation
4	Sep 13-17	Inference and prediction under SLR models
5	Sep 20-24	Sources of variability, coefficient of determination, residuals
6	Sep 27–Oct 1	Transformations of regressors and response variables
7	Oct 4-8	Multiple linear regression: estimation, inference and prediction
8	Oct 11-13	Interpreting coefficients, correlated predictors
9	Oct 18-22	Regression with categorical and continuous regressors
10	Oct 25-29	Multiple categorical regressors, comparing nested models
11	Nov 1-5	Nonlinear relationships and polynomial regression
12	Nov 8-10, 12	Regression model diagnostics
13	Nov 15-19	Common violations of independence
14	Nov 22-23	Descriptive versus causal interpretations of regression
15	Nov 29–Dec 3	Approaches to model comparison
16	Dec 6-8	Approaches to model selection

Arts and Sciences Distance Learning Course Component Technical Review Checklist

Course: STAT 3301
Instructor: TBD
Summary: Statistical Modeling for Discovery I

Standard - Course Technology	Yes	Yes with Revisions	No	Feedback/ Recomm.
6.1 The tools used in the course support the learning objectives and competencies.	X			• Carmen • Office 365 • R Software
6.2 Course tools promote learner engagement and active learning.	X			• Zoom lectures • Carmen Discussion boards
6.3 Technologies required in the course are readily obtainable.	X			All are available within Carmen which is free to use.
6.4 The course technologies are current.	X			All items are updated regularly.
6.5 Links are provided to privacy policies for all external tools required in the course.	X			All available privacy policies are included.
Standard - Learner Support				
7.1 The course instructions articulate or link to a clear description of the technical support offered and how to access it.	X			Links to 8HELP are provided, as is a link to R software support.
7.2 Course instructions articulate or link to the institution's accessibility policies and services.	X			a
7.3 Course instructions articulate or link to an explanation of how the institution's academic support services and resources can help learners succeed in the course and how learners can obtain them.	X			b
7.4 Course instructions articulate or link to an explanation of how the institution's student services and resources can help learners succeed and how learners can obtain them.	X			c
Standard – Accessibility and Usability				
8.1 Course navigation facilitates ease of use.	X			Recommend using the Carmen Distance Learning "Master Course" template developed by ODEE and available in the Canvas Commons to provide student-users with a consistent user experience in terms of navigation and access to course content.
8.2 Information is provided about the accessibility of all technologies required in the course.	X			All available accessibility policies are included.
8.3 The course provides alternative means of access to course materials in formats that meet the needs of diverse learners.	X			
8.4 The course design facilitates readability	X			
8.5 Course multimedia facilitate ease of use.	X			All assignments and activities that use the Carmen LMS with embedded multimedia facilitates ease of use. All other multimedia resources facilitate ease of use by being available through a standard web browser

Reviewer Information

- Date reviewed: 11/17/20
- Reviewed by: Ian Anderson

Notes: Good to go!

[a]The following statement about disability services (recommended 16 point font):
Students with disabilities (including mental health, chronic or temporary medical conditions) that have been certified by the Office of Student Life Disability Services will be appropriately accommodated and should inform the instructor as soon as possible of their needs. The Office of Student Life Disability Services is located in 098 Baker Hall, 113 W. 12th Avenue; telephone 614- 292-3307, slds@osu.edu; slds.osu.edu.

[b]Add to the syllabus this link with an overview and contact information for the student academic services offered on the OSU main campus.
http://advising.osu.edu/welcome.shtml

[c]Add to the syllabus this link with an overview and contact information for student services offered on the OSU main campus. http://ssc.osu.edu. Also, consider including this link in the “Other Course Policies” section of the syllabus.