

## Term Information

Effective Term Autumn 2023  
*Previous Value* Summer 2012

## Course Change Information

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

Add generalized linear models (GLM) and inference for proportions to start of course (moved from 6950); remove Fractional Factorials.

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

Resequencing order of Stat 6910, Stat 6950.

**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)?**

6910 is no longer a pre-requisite for 6950. 6950 is now a pre-requisite for 6910.

**Is approval of the request contingent upon the approval of other course or curricular program request? Yes**

**Please identify the pending request and explain its relationship to the proposed changes(s) for this course (e.g. cross listed courses, new or revised program)**

This course change is part of a revision in the Ph.D. and M.S. programs in Statistics. This will also affect the content of courses taught in the interdisciplinary Ph.D. program in Biostatistics.

**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	Graduate
Course Number/Catalog	6910
Course Title	Applied Statistics II
<i>Previous Value</i>	<i>Applied Statistics I</i>
Transcript Abbreviation	Appl Statist 2
<i>Previous Value</i>	<i>Appl Statist 1</i>
Course Description	Categorical data and inference for proportions, binomial and Poisson regression, analysis of variance, analysis of covariance, experimental designs, the mixed model. Intended primarily for students in the PhD program in Statistics or Biostatistics.
<i>Previous Value</i>	<i>One and two-sample problems, randomization-based inference, contingency tables, analysis of variance, the mixed model, experimental designs. Intended primarily for students in the PhD program in Statistics or Biostatistics.</i>
Semester Credit Hours/Units	Fixed: 4

## Offering Information

Length Of Course 14 Week, 12 Week, 8 Week, 7 Week, 6 Week, 4 Week  
*Previous Value* 14 Week, 12 Week, 8 Week, 7 Week, 6 Week

Flexibly Scheduled Course Never

Does any section of this course have a distance education component? No

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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: Stat 6801 or permission of instructor; Stat 6950 or permission of instructor.
<a href="#">Previous Value</a>	<a href="#">Prereq or concur: 6801, or permission of instructor.</a>
Exclusions	Not open to students with credit for Stat 6410.
<a href="#">Previous Value</a>	Not open to students with credit for 6410 (641).
Electronically Enforced	No

## Cross-Listings

Cross-Listings

## Subject/CIP Code

Subject/CIP Code	27.0501
Subsidy Level	Doctoral Course
Intended Rank	Masters, Doctoral

## Requirement/Elective Designation

Required for this unit's degrees, majors, and/or minors  
The course is an elective (for this or other units) or is a service course for other units

[Previous Value](#)

[Required for this unit's degrees, majors, and/or minors](#)

## Course Details

Course goals or learning objectives/outcomes	<ul style="list-style-type: none"><li>• Grasp the basics of descriptive and inferential statistics from an applied perspective</li><li>• Fit, interpret and perform statistical inference for common generalized linear regression models</li><li>• Describe, estimate and interpret variance components</li><li>• Appreciate importance of modeling assumptions</li><li>• Make sound decisions for an analysis and recommendations for study design</li><li>• Understand and use appropriate notation and terminology</li><li>• Implement formal techniques flawlessly</li><li>• Summarize an analysis appropriately</li></ul>
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[Previous Value](#)

**Content Topic List**

- Categorical data, inference for proportions
- Binomial regression
- Principles of experimental design
- One-way analysis of variance
- Two-way analysis of variance
- Higher-order analysis of variance
- Block designs
- Analysis of covariance
- Random and mixed effects models

**Previous Value**

- *One-sample problem*
- *Two-sample problem*
- *Randomization-based inference*
- *Goodness of fit*
- *Two-way contingency tables*
- *One-way analysis of variance*
- *Two-way (and up) analysis of variance*
- *Random effects*
- *Mixed and nested models*
- *Designs with one or more blocking factors*
- *Confounding in factorial experiments*
- *Fractional factorial experiments*
- *Split plot designs*

**Sought Concurrence**

No

**Attachments**

- STAT6910\_syllabus.pdf: Syllabus  
*(Syllabus. Owner: Craigmile, Peter F)*
- au22-stat-6910-craigmile\_0.pdf: Old syllabus  
*(Syllabus. Owner: Craigmile, Peter F)*

**Comments**

- Ditto *(by Vankeerbergen, Bernadette Chantal on 12/03/2022 09:17 PM)*

**COURSE CHANGE REQUEST**  
6910 - Status: PENDING

Last Updated: Vankeerbergen, Bernadette  
Chantal  
12/04/2022

**Workflow Information**

Status	User(s)	Date/Time	Step
Submitted	Craigmile, Peter F	12/02/2022 08:28 AM	Submitted for Approval
Approved	Craigmile, Peter F	12/02/2022 05:27 PM	Unit Approval
Revision Requested	Vankeerbergen, Bernadette Chantal	12/03/2022 09:17 PM	College Approval
Submitted	Craigmile, Peter F	12/03/2022 09:26 PM	Submitted for Approval
Approved	Craigmile, Peter F	12/03/2022 09:27 PM	Unit Approval
Approved	Vankeerbergen, Bernadette Chantal	12/04/2022 05:42 PM	College Approval
Pending Approval	Cody, Emily Kathryn Jenkins, Mary Ellen Bigler Hanlin, Deborah Kay Hilty, Michael Vankeerbergen, Bernadette Chantal Steele, Rachel Lea	12/04/2022 05:42 PM	ASCCAO Approval

# SYLLABUS: STAT 6910

Applied Statistics II  
Spring 2024 (full semester)  
4 credit hours

## COURSE OVERVIEW

### Instructor

<NAME TO BE ANNOUNCED>

Email address: <TO BE ANNOUNCED>

Lectures: Tuesdays and Thursdays 110 min lectures. <TIMES TBA> <LOCATION TO BE ANNOUNCED>

Office hours: <TO BE ANNOUNCED>

### Graduate teaching assistant

<NAME>

Email address: <TO BE ANNOUNCED>

Office hours: <TO BE ANNOUNCED>

### Prerequisites

Statistics 6801 and Statistics 6950, or permission of instructor. Not open to students who have taken Statistics 6410.

### Course description

Statistics 6910 is a course on applied statistics. It will quickly cover material on categorical data and inference for proportions. The course then covers an introduction to generalized linear models (GLM), including binomial regression and Poisson regression. Following the introductory material, we will move on to experimental design. We will cover the basic principles of design and the techniques used to analyze experiments that follow standard experimental designs. Specific designs to be covered include one-way analysis of variance

(ANOVA), two-and-higher-way ANOVA, analysis of covariance (ANCOVA), block designs, random and mixed effect models.

## Course learning outcomes

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

- Grasp the basics of descriptive and inferential statistics from an applied perspective;
- Fit, interpret, and perform statistical inference based on common generalized linear regression models;
- Describe, estimate and interpret variance components;
- Appreciate the importance of the assumptions that the models are based on;
- Make sound decisions for an analysis and recommendations for study design;
- Understand and use appropriate statistical notation and terminology;
- Implement formal techniques flawlessly;
- Summarize an analysis appropriately.

## COURSE MATERIALS AND TECHNOLOGIES

### Textbooks

#### Required

- **S. Weisberg (2014), Applied Linear Regression (ALR), 4th Edition, John Wiley & Sons, Inc., NJ.**  
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.  
Errata and more information about the textbook can be found at <http://users.stat.umn.edu/~sandy/alr4ed/>.
- M. Dean, D. Voss, and D. Draguljic (DVD) (2017), Design and Analysis of Experiments, 2nd Edition, Springer, NY.

You can download the eBook from

<https://link-springer-com.proxy.lib.ohio-state.edu/book/10.1007%2F978-3-319-52250-0>

Errata and datasets available from  
<http://www.wright.edu/~dan.voss/DeanVossDraguljic.html>

## Recommended/optional

- I will highlight other useful references as the course progresses.

## Necessary Software and Equipment

- This class requires you to use the statistical software packages called R (The R Project for Statistical Computing; <http://www.r-project.org/>) and RStudio (<https://posit.co/>). These software packages are available as Free Software with versions compatible with current macOS and Windows operating systems. More details will be given in lectures.
- Access to a computer capable of running the required software, which includes Mac and PC devices running the current macOS or Windows operating system.

## GRADING AND FACULTY RESPONSE

ASSIGNMENT CATEGORY	PERCENTAGE
Homework	15
Midterm 1	25
Midterm 2	25
Take-home final exam	35
<b>Total</b>	<b>100</b>

Grades will be recorded on the class website.

**Homework** will typically be assigned weekly and usually due on Thursday of the following week at the beginning of class. Check Carmen for exact due dates. Typically, no late homework will be accepted. Contact me as soon as possible if there is an event that prevents you from submitting homework on time. You are encouraged to work together on the homework, but do not copy any part of a homework. Each student must produce his/her own homework to be handed in. All homework must be submitted online as a PDF file through the class website. Feel free to ask me or the GTA for help after you have attempted the questions. I will endeavor to create homework solutions that are detailed enough to allow you to understand how the question could be approached.

**Homework preparation rules:** Put your name on your homework assignment. Submit the problems in order, clearly numbered, making sure that the computer output and discussion is placed together (do not put computer output at the end of homework). Raw computer output is not acceptable. Make it clear what parts of the output are relevant and show how they answer the questions posed in the homework.

**Exams:** There will be two midterms and one final exam:

Midterm 1	Thur Feb 15	in class
Midterm 2	Tue Mar 26	in class
Final	<DATE>	<TIME>

All exams will be **closed book/closed notes**. A basic calculator is allowed – tablets, laptops, cellphones, and communication devices are not. There are no make-up exams. Contact me as soon as possible if there is an event that prevents you from taking an exam on the scheduled day/time. Further details will be given in advance of each exam.

The first midterm covers the material up to and including Thu Feb 8.

The second midterm covers the material up to and including Tues Mar 19.

The final will cover all the material for the course.

## Late assignments

<Policy will be added when the course is offered>

## Instructor feedback and response time

<Policy will be added when the course is offered>



# COURSE SCHEDULE

Refer to the Carmen course for up-to-date assignment due dates.

Week	Dates	Topics	Reading	Homework
1	Jan 9 Jan 11	Introduction to categorical data Simpson/Yule paradox Inference for proportions	Class notes	
2	Jan 16 Jan 18	Binomial regression, residuals, and diagnostics	ALR4, Sections 12.1–12.2	HW 1 due
3	Jan 23 Jan 25	Binomial regression, residuals, and diagnostics Poisson regression and goodness of fit	ALR4, Sections 12.2–12.5	HW 2 due
4	Jan 30 Feb 1	Poisson regression and goodness of fit Principles of designing experiments (causal vs. observational experiments)	ALR4, Sections 12.3–12.5 DVD Chapters 1 and 2	HW 3 due
5	Feb 6 Feb 8	One-way ANOVA	DVD, Sections 3.1-3.6	HW 4 due
6	Feb 13 Feb 15	One-way ANOVA Midterm 1	DVD, Sections 3.1-3.5, 4.1-4.3	
7	Feb 20 Feb 22	One-way ANOVA	DVD, Sections 4.1-4.3, Chapter 5	
8	Feb 27 Feb 29	Two-way ANOVA	DVD, Sections 6.1-6.7, 6.9	HW 5 due
9	Mar 5 Mar 7	Two-way ANOVA	DVD, Sections 6.1-6.7, 6.9	HW 6 due
10	Mar 19 Mar 21	Higher order ANOVA	DVD, Sections 7.1-7.5	HW 7 due

<b>Week</b>	<b>Dates</b>	<b>Topics</b>	<b>Reading</b>	<b>Homework</b>
<b>11</b>	<b>Mar 26 Mar 28</b>	<b>Midterm 2 Block designs</b>	<b>DVD, Chapter 10</b>	
<b>12</b>	<b>Apr 2 Apr 4</b>	<b>ANCOVA</b>	<b>DVD, Section 7.6, Chapter 9</b>	<b>HW 8 due</b>
<b>13</b>	<b>Apr 9 Apr 11</b>	<b>Random and mixed effects</b>	<b>DVD, Sections 17.1-17.5</b>	<b>HW 9 due</b>
<b>14</b>	<b>Apr 16 Apr 18</b>	<b>Random and mixed effects</b>	<b>DVD, Sections 17.6-17.11, 19.1-19.3</b>	<b>HW 10 due</b>
<b>15</b>	<b>Week of Apr 22</b>	<b>Final exams (Last day of classes, Mon Apr 22)</b>		

## OTHER COURSE POLICIES

### 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/>.

**If I suspect that a student has committed academic misconduct in this course, I am obligated by university rules to report my suspicions to the Committee on Academic Misconduct.** If COAM determines that you have violated the university’s *Code of Student Conduct* (i.e., committed academic misconduct), the sanctions for the misconduct could include a failing grade in this course and suspension or dismissal from the university. If you have any questions about the above policy or what constitutes academic misconduct in this course, please contact me.

Other sources of information on academic misconduct (integrity) to which you can refer include:

- Committee on Academic Misconduct web page ([go.osu.edu/coam](http://go.osu.edu/coam))
- Ten Suggestions for Preserving Academic Integrity ([go.osu.edu/ten-suggestions](http://go.osu.edu/ten-suggestions))

### Copyright for instructional materials

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.

### 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 at [titleix@osu.edu](mailto:titleix@osu.edu)

## **Commitment to a diverse and inclusive learning environment**

The Ohio State University affirms the importance and value of diversity in the student body. Our programs and curricula reflect our multicultural society and global economy and seek to provide opportunities for students to learn more about persons who are different from them. We are committed to maintaining a community that recognizes and values the inherent worth and dignity of every person; fosters sensitivity, understanding, and mutual respect among each member of our community; and encourages each individual to strive to reach his or her own potential. Discrimination against any individual based upon protected status, which is defined as age, color, disability, gender identity or expression, national origin, race, religion, sex, sexual orientation, or veteran status, is prohibited.

## **Land Acknowledgement**

We would like to acknowledge the land that The Ohio State University occupies is the ancestral and contemporary territory of the Shawnee, Potawatomi, Delaware, Miami, Peoria, Seneca, Wyandotte, Ojibwe and Cherokee peoples. Specifically, the university resides on land ceded in the 1795 Treaty of Greeneville and the forced removal of tribes through the Indian Removal Act of 1830. I/We want to honor the resiliency of these tribal nations and recognize the historical contexts that has and continues to affect the Indigenous peoples of this land.

More information on OSU's land acknowledgement can be found at <https://mcc.osu.edu/about-us/land-acknowledgement>

## **Your mental health**

As a student you may experience a range of issues that can cause barriers to learn, 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](https://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 24/7 by dialing 988 to reach the Suicide and Crisis Lifeline.

# ACCESSIBILITY ACCOMMODATIONS FOR STUDENTS WITH DISABILITIES

## Requesting accommodations

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](mailto:slds@osu.edu); 614-292-3307; [slds.osu.edu](http://slds.osu.edu); 098 Baker Hall, 113 W. 12<sup>th</sup> Avenue.

## Accessibility of course technology

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

- Canvas accessibility ([go.osu.edu/canvas-accessibility](http://go.osu.edu/canvas-accessibility))



# THE OHIO STATE UNIVERSITY

COLLEGE OF ARTS AND SCIENCES

## **SYLLABUS: STAT 6910 APPLIED STATISTICS I AUTUMN 2022**

### **Course overview**

#### **Instructor**

**Peter F. Craigmile**

Office: 427 Cockins Hall

Email address: [pfc@stat.osu.edu](mailto:pfc@stat.osu.edu)

Class website: <https://osu.instructure.com/courses/129719>

Lectures: Hayes Hall 005, Tuesday and Thursdays, 9.25–11.15 am. Lectures are not recorded.

Office hours: Office hours in 427 Cockins Hall:

Tuesdays 2–3pm, Thursdays noon–1pm, or by appointment

#### **GTA**

**Hyoin An**

Email address: [an.355@buckeyemail.osu.edu](mailto:an.355@buckeyemail.osu.edu)

Office hour: Mondays 2-3pm in 420 Cockins Hall.

### **Course description**

Statistics 6910 is a course on applied statistics. It will quickly cover material on descriptive statistics and on the basic techniques of inference (hypothesis tests and confidence intervals), including techniques appropriate for samples from normal distributions, techniques based on randomization theory, and techniques for simple, tabular data. Following the introductory material, we will move on to experimental design. We will cover the basic principles of design and the techniques used to analyze experiments that follow standard experimental designs. Specific designs to be covered include one-way analysis of variance (ANOVA), two-and-higher-way ANOVA, factorial designs, mixed effect models, and block designs.

Prerequisites: Statistics 6801 (may be taken concurrently), or permission of instructor.

## Course learning outcomes

Upon successful completion of the course, students will be able to:

1. Grasp the basics of descriptive and inferential statistics from an applied perspective;
2. Appreciate the importance of the assumptions that the models are based on;
3. Make sound decisions for an analysis;
4. Understand and use appropriate statistical notation and terminology;
5. Implement formal techniques flawlessly;
6. Summarize an analysis appropriately.

## Course materials

### Required

A. M. Dean, D. Voss, and D. Draguljic (2017), Design and Analysis of Experiments, 2nd Edition, Springer, NY.

You can download the eBook from

<https://link-springer-com.proxy.lib.ohio-state.edu/book/10.1007%2F978-3-319-52250-0>

Errata and datasets available from <http://www.wright.edu/~dan.voss/DeanVossDraguljic.html>

I will highlight other useful references as the course progresses.

## 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](mailto:8help@osu.edu)
- **TDD:** 614-688-8743

### Baseline technical skills necessary

- Basic computer and web-browsing skills
- Navigating Carmen

### Technology skills necessary for this specific course

- CarmenZoom (for some lectures)

## 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 in-depth introduction to R is available at <http://cran.r-project.org/doc/manuals/R-intro.pdf>
  - Hands-on tutorials are available in the Swirl system, which you can learn about at <http://swirlstats.com/>. In particular, “R Programming: The basics of programming in R” is an appropriate first tutorial for students who have never used R.
- An easier 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.**
- More details will be given in lectures.

# Grading and faculty response

## Homework and exams

Assignment or category	Percentage
<b>Homework</b>	<b>15</b>
<b>Midterm 1</b>	<b>25</b>
<b>Midterm 2</b>	<b>25</b>
<b>Take-home final exam</b>	<b>35</b>
<b>Total</b>	<b>100</b>

Grades will be recorded on the class website.

**Homework** will be due at the beginning of class on the day it is due (9.25am). Typically, no late homework will be accepted. You are encouraged to work together on the homework, but do not copy any part of a homework. Each student must produce his/her own homework to be handed in. All homework must be submitted online as a PDF file through the class website. Feel free to ask me or the GTA for help after you have attempted the questions. The GTA for the course does not have the time to provide detailed explanations on each question that is graded. To make up for this, I will endeavor to



create homework solutions that are detailed enough to allow you to understand how the question could be approached.

**Homework preparation rules:** Put your name on your homework assignment. Submit the problems in order, clearly numbered, making sure that the computer output and discussion is placed together (do not put computer output at the end of homework). Raw computer output is not acceptable. Make it clear what parts of the output are relevant and show how they answer the questions posed in the homework.

**Exams:** There will be two midterms and one final exam:

Midterm 1	Tue Oct 4	in class
Midterm 2	Tue Nov 8	in class
Final	Fri Dec 9	8.00 am–9.45 am

All exams will be **closed book/closed notes**. A basic calculator is allowed – tablets, laptops, cellphones, and communication devices are not. There are no make-up exams. Further details will be given in advance of each exam.

The first midterm covers the material up to and including Thu Sep 29.

The second midterm covers the material up to and including Thu Nov 3.

The final will cover all the material for the course.

## Faculty feedback and response time

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

### Grading and feedback

For large weekly assignments, you can generally expect feedback within **10 days**.

### E-mail

I will reply to e-mails within **24 hours on school days**.

## Attendance, participation, and discussions

Students may miss class, for a variety of reasons related to COVID-19. Please stay in contact with the instructor so that we can discuss accommodations should they be needed.

## Student participation requirements

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

- **In lectures:**  
Students will be expected to participate, discuss, and answer questions in lectures.
- **Logging in: AT LEAST THREE TIMES PER WEEK**  
Be sure you are logging in to the course in Carmen each week, including weeks with holidays.

- **Office hours: OPTIONAL OR FLEXIBLE**  
All office hours, are optional. If you are required to discuss an assignment with me, please contact me at the beginning of the week if you need a time outside my scheduled office hours.

## 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 correct grammar, spelling, and punctuation. Informality (including an occasional emoticon) is fine for non-academic topics.
- **Tone and civility:** Let us maintain a supportive learning community where everyone feels safe and where people can disagree amicably.
- **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 text editor or 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. Guidelines and requirements for campus safety from the University's COVID-19 Transition Task Force were published on the Safe and Healthy website (<https://safeandhealthy.osu.edu>).

### Student support services

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

### Academic integrity policy

#### Policies for this course

- **Exams:** You must complete the midterm and final exams yourself, without any external help or communication.
- **Written assignments:** Your written assignments, including discussion posts, should be your own original 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 have explored in previous courses, please discuss the situation with me.

- **Falsifying research or results:** All research you will conduct in this course is intended to be a learning experience; you should never feel tempted to make your results or your library research look more successful than it was.
- **Collaboration and informal peer-review:** The course will include opportunities for formal collaboration with your classmates. While study groups are encouraged, remember that comparing answers on a quiz or assignment is not permitted. If you're unsure about a particular situation, please feel free just to ask ahead of time.

## 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/>.

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## 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 at [titleix@osu.edu](mailto: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](mailto: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](http://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](http://suicidepreventionlifeline.org)

## Disclaimer

This syllabus should be taken as a reliable guide for the course content. However, you cannot claim any rights from it and I 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)

Week	Dates	Topics
1	Aug 23 Aug 25	One and two-sample problems
2	Aug 30 Sep 1	One and two-sample problems Contingency tables and goodness of fit
3	Sep 6 Sep 8	Contingency tables and goodness of fit Principles of designing experiments
4	Sep 13 Sep 15	One-way analysis of variance (ANOVA)
5	Sep 20 Sep 22	One-way ANOVA
6	Sep 27 Sep 29	One-way ANOVA
7	Oct 4 Oct 6	<b>Midterm 1 (Tue Oct 4)</b> Two-way ANOVA
8	Oct 11 <del>Oct 13</del>	Two-way ANOVA <b>October break – no classes (Oct 13–14)</b>
9	Oct 18 Oct 20	Two-way ANOVA
10	Oct 25 Oct 27	Higher order ANOVA Block designs
11	Nov 1 Nov 3	Block designs
12	Nov 8 Nov 10	<b>Midterm 2 (Tue Nov 8)</b> Block designs
13	Nov 15 Nov 17	Confounded and fractional factorial experiments
14	Nov 22 <del>Nov 24</del>	Confounded and fractional factorial experiments <b>Thanksgiving – no classes (Nov 23–25)</b>
15	Nov 29 Dec 1	Random and mixed effects
16	Dec 6 Dec 10	Random and mixed effects (Last day of classes) <b>Final Exam (Fri Dec 9, 8.00–10.00 am)</b>