**PSCH 343 Statistical Methods in Behavioral Science**

**Spring 2017 CRN: 27528**

**Tuesday/Thursday 2:00-3:15pm**

**Location: Burnham Hall 308**

**Instructor:** Hillary Rowe

**Email:** hrowe2@uic.edu

**Office Hours:**  Thursdays 1-2pm, or by appointment. Room BSB 1073

**Teaching Assistants:**

**Erin Sovansky Winter**  **Mark Brow**

**Email:** esovan2@uic.edu **Email:** mbrow20@uic.edu

**Office:** BSB 1079 **Office:** BSB 1028

**Office Hours:** Tuesday, 12-1pm **Office Hours:** Friday, 10:40-11:40am

**Sections:** **9am** 14682 BSB 2019 **Sections:** **12pm** 14683 BSB 2019

**11am** 31810 BSB 2019 **1pm** 35025 BSB 2019

**Course Overview**

Statistics are fundamental to gaining knowledge about our world. Behavioral and social scientists use statistical methods to help them make sense of the numbers they collect when conducting research. By learning about statistics, people in general can better understand this scientific research and avoid falling prey to misleading reports of or conclusions about data.

**Course Objectives**

This is an introductory statistics course designed for students interested in behavioral sciences. Although the course is geared toward Psychology students, students in other behavioral or physical science courses should be able to apply what they learn in this class to their own fields. Throughout this course students will be expected to think critically about the strengths and limitations of statistical analyses. Students should leave this course with:

* An understanding of basic statistical concepts
* An ability to apply the correct statistical analyses to different research designs
* A critical lens with which they can evaluate scientific research reported in academic publications and popular news and media outlets

**Course Requirements**

***Prerequisites***

PSCH 242 and ENGL 161 with a minimum grade of C; MATH 118 (or equivalent) with a minimum grade of C or MATH 090; or instructor consent. For psychology and neuroscience majors only. Students must register for both the lecture and discussion section. It is your responsibility to make sure you are eligible to enroll in this course.

***Recommended Text and Materials***

Nolan & Heinzen (2014). *Statistics for the Behavioral Sciences* (3rd edition). New York: Worth Publishers. This book is not required, but is available online if you want it as a reference.Throughout the semester, articles or other supplementary materials may be needed; these materials will be provided for you via the Blackboard website.

Please make sure that you also have a **scientific calculator**. Bring it to class every day. You only need one that can do basic math: adding/subtracting/multiplying/dividing, squares/square roots, etc. Fancy graphing calculators, laptops, and cellphone calculators are not necessary **and not allowed**.

**Course Format**

***Lectures***

I will not be using PowerPoint slides for lectures; please come to class ready to take notes on paper. I will provide note outlines on Blackboard, but I recommend either a bound notebook or a binder with loose-leaf paper if you do not want to use them. You will not need a laptop and I will not allow you to use one in this class. Much of what we will cover is much easier to write by hand than on the computer. I will post my weekly lecture notes from class on Thursday after class; you can use these in case you miss lecture.

***Lecture Attendance and Participation***

Because attending and actively participating in class is fundamental to learning difficult material, in-class participation will be worth 10% of your final grade. At unannounced points throughout many of the lectures, we will complete in-class practice activities of the lecture’s material. If you are in attendance **and** complete the in-class activity, you will receive 2 points; if you are not in attendance **or** attend but do not complete the activity, you will receive 0 points. If you come to class and pay attention, this will be the easiest 10% of your grade. You cannot make up attendance points, but I will drop your two lowest attendance grades.

***Section Attendance and Participation***

Attending and participating in Friday discussion sections will be worth 15% of your grade. Your grade for this portion of class is determined both by attendance and participation in group discussion and practice problem review. If you are in attendance **and** complete the in-class activity, you will receive 2 points; if you are not in attendance **or** attend but do not complete the activity, you will receive 0 points. You can be no more than 10 minutes late to section to receive full credit for that day; partial credit is at the TA’s discretion. I will drop your lowest section grade.

***Homework Assignments***

Throughout the course there will be approximately 12 assignments. These are meant to check your knowledge about a particular topic and to give me the chance to give you feedback before you take the exams. You will be allowed to drop one homework assignment. There will be no make-up assignments. Homework Assignments will account for 25% of your final grade.

I will accept late homework assignments if you miss the class in which the homework was due. You must email your TA a scanned copy or picture of your completed homework assignment (all of it, not just the first page) by 6pm the day it is due (usually a Tuesday), and the original paper copy needs to be placed in your TA’s mailbox in the Psychology Department by 5pm on the next lecture day (usually a Thursday). You will not get credit if you do not email and give your TA the original copy by the specified times.

***Exams***

There will be four exams (including the final) offered during the course of the semester. You are required to take two of the first three exams, each worth 15% of your final grade. The first three exams are non-cumulative. However, they will build on previous sections and you will need to draw from concepts learned in earlier units. I will take the best two of your first three exams to calculate your final grade. The final exam is cumulative, and will occur during finals week. The cumulative final is worth 20% of your final grade—all together your exams are worth 50% of your final grade. **Note:** The final exam is not included in the possible exams to be dropped. You must take the cumulative final.

Make-up exams will only be allowed under extreme circumstances. If you miss one of the first three exams for any reason, the missed exam will count as your “dropped” exam. Make-up final exams will only be allowed under extreme circumstances.

**Grade Breakdown**

Class Attendance and Participation: 10%

Section Attendance and Participation: 15%

Homework Assignments: 25%

Exams: 50%

Grading will be according to a 100-percentage scale: 90 – 100% = A; 80 – 89% = B; 70 – 79% = C; 60 – 69% = D; below 60% = Failure. (Normal mathematical rounding rules apply: e.g., 89.4 = 89; 89.5 = 90.) You will always know exactly where you stand because there is no “curve.”

**General Course Information**

***Classroom Etiquette***

Laptops, cellphones, graphing calculators, and other electronic devices are neither necessary nor allowed in class. A scientific calculator is the only electronic device you will need; please let me know if you need help locating one.

I highly encourage you to ask questions and participate in class discussions and work in groups on in-class activities. Although you will not be assigned into small groups, we will spend a significant amount of class time working through problems and I recommend that you work in small groups. Please be respectful of your group members and others in class.

***Academic Integrity***

No form of cheating will be tolerated. If you cheat on any assignment in this class, you will fail the entire class and I will file official judicial charges against you immediately with the Dean of Students, who will place a notice about the incident in your permanent record. There will be no exceptions.

Cheating includes, but is not limited to, looking on others' tests or letting them look on yours during a test, copying or giving others homework or test answers, and plagiarism. You are allowed to check your answers on in-class group work or homework assignments with other students, but you must complete your work independently and check answers only after you have fully tried on your own. Plagiarism includes copying the words of a fellow student or any other author in your papers, copying even short phrases from written work that you are using as a reference (even if you cite it properly), handing in work that you have handed in for another class, handing in papers you've gotten from the internet or from other students, etc. If you are ever unsure about what constitutes plagiarism, ask me.

For more information about violating academic integrity and its consequences, consult the website of the UIC Office of the Dean of Students at <http://www.uic.edu/depts/dos/studentconduct.html>.

***Students with Disabilities***

UIC strives to ensure the accessibility of programs, classes, and services to students with disabilities. Reasonable accommodations can be arranged for students with various types of documented disabilities. If you have questions or need help in obtaining access and accommodations, the *Office of Disability Services (ODS)* is available to assist students and work with me as instructor. Please contact at 312-413-2103 (voice) or 312-413-0123 (TTY).

**Tentative Course Schedule**

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Topic** | **Book Chapter** | **Assignments** |
| **Week 1** |  |  |  |
| Jan 10th | Course Intro, Syllabus Overview |  |  |
| Jan 12th | Research Methods Refresher | Chpt 1 |  |
| Jan 13th | Weekly Review |  |  |
| **Week 2** |  |  |  |
| Jan 17th | Central Tendency, Frequency Dist & Dist Shapes | Chpt 2, 4 | HW 1 Due |
| Jan 19th | Data Displays | Chpt 3 |  |
| Jan 20th | Weekly Review, HW 1 Returned |  |  |
| **Week 3** |  |  |  |
| Jan 24th | Variability | Chpt 4 | HW 2 Due |
| Jan 26th | Sampling and Probability, Type I and Type II Error | Cpht 5 |  |
| Jan 27th | Weekly Review, HW 2 Returned |  |  |
| **Week 4** |  |  |  |
| Jan 31st | The Normal Curve, Standardization, & *z* scores | Chpt 6 | HW 3 Due |
| Feb 2nd | Central Limit Theorem | Chpt 6 |  |
| Feb 3rd | HW 4 due at the end of section, HW 3 Returned |  |  |
| **Week 5** |  |  |  |
| Feb 7th | Exam 1 Review - HW 4 Returned |  |  |
| Feb 9th | **Exam 1** |  |  |
| Feb 10th | No section |  |  |
| **Week 6** |  |  |  |
| Feb 14th | Intro to Hypothesis Testing, z-test | Chpt 7 |  |
| Feb 16th | Confidence Intervals, Effect Size, Statiscal Power | Chpt 8 |  |
| Feb 17th | Weekly Review, Exam 1 Returned |  |  |
| **Week 7** |  |  |  |
| Feb 21st | Correlations | Chpt 15 | HW 5 Due |
| Feb 23rd | Regression | Chpt 16 |  |
| Feb 24th | Weekly Review, HW 5 Returned |  |  |
| **Week 8** |  |  |  |
| Feb 28th | The *t* Distribution | Chpt 9 | HW 6 Due |
| Mar 2nd | Single Sample *t* Test | Chpt 9 |  |
| Mar 3rd | Weekly Review, HW 6 Returned |  |  |

**Tentative Course Schedule, cont.**

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Topic** | **Book Chapter** | **Assignments** |
| **Week 9** |  |  |  |
| Mar 7th | Paired Sample *t* Test | Chpt 10 | HW 7 Due |
| Mar 9th | Independent Sample *t* Test | Chpt 11 |  |
| Mar 10th | HW 8 due at the end of section, HW 7 Returned |  |  |
| **Week 10** |  |  |  |
| Mar 14th | Exam 2 Review - HW 8 Returned |  |  |
| Mar 16th | **Exam 2** |  |  |
| Mar 17th | No section |  |  |
| **Week 11** |  |  |  |
| Mar 21st |  |  |  |
| Mar 23rd |  |  |  |
| Mar 24th |  |  |  |
| **Week 12** |  |  |  |
| Mar 28th | Using the *F* Distribution | Chpt 12 |  |
| Mar 30th | One-Way Between Groups ANOVA |  |  |
| March 31st | Weekly Review, Exam 2 Returned |  |  |
| **Week 13** |  |  |  |
| Apr 4th | One-Way Btw Groups ANOVA Follow-Up Analyses | Chpt 13 | HW 9 Due |
| Apr 6th | One-Way Within Groups ANOVA |  |  |
| Apr 7th | Weekly Review, HW 9 Returned |  |  |
| **Week 14** |  |  |  |
| Apr 11th | Two-Way Btw Groups ANOVA | Chpt 14 | HW 10 Due |
| Apr 13th | Two-Way Within Groups ANOVA |  |  |
| Apr 14th | Weekly Review, HW 10 Returned |  |  |
| **Week 15** |  |  |  |
| Apr 18th | Chi-Squared Test | Chpt 17 | HW 11 Due |
| Apr 20th | TBD |  |  |
| Apr 21st | HW 12 due at the end of section, HW 11 Returned |  |  |
| **Week 16** |  |  |  |
| Apr 25th | Exam 3 Review - HW 12 Returned |  |  |
| Apr 27th | **Exam 3** |  |  |
| Apr 28th |  |  |  |
| **Finals Week** | **Exam 3 pick-up TBD** |  |  |
| **Final Wednesday, May 3rd 3:30-5:30pm** |  |  |