Important Preface for the Spring 2022 Semester:

Per communication from the university regarding COVID-19, the course will be online for the first two weeks of instruction. We should be back to in-person instruction in Week 3 of the semester. I have structured the syllabus based on the assumption that we will return to in-person instruction in Week 3. I expect that we will easily be able to make the transition to in-person instruction when that time comes and have contingencies planned in case we do not. It will be my responsibility to communicate ongoing expectations and any updates to you throughout the course (I will do this via Blackboard Announcements and a weekly email sent to your UIC email address). It is your responsibility to read these messages to stay on top of any changes that might occur during the semester.

When we return to campus, we will follow any university protocols for COVID mitigation. Students who do not comply with university rules will not be allowed to participate in any on-campus activities (including exams) unless they comply. I cannot and will not make accommodations for students who fail to comply with university rules.

PSCH 443
Advanced Statistics
Spring 2022
Course Syllabus
CRN 27540 (3 Hours)

Instructor:
Edward Sargis, Ph.D.
Office: 1018C BSB
Drop-in Hours: By appointment. Please **DO NOT HESITATE** to make an appointment with me if you
would like to meet with me.
E-mail: esargis@uic.edu

Teaching Assistant:
Mandi Urbizo-Haukjaer | award32@uic.edu

Lecture: 11:00-11:50 M W
Location: Lecture Center A, Room A3.

Discussion Sections:

Call #	Time			Day	Location
27541	10:00 AM	-	10:50 AM	F	2057 BSB
27542	11:00 AM	-	11:50 AM	F	2057 BSB

Prerequisites: PSCH 343 (or equivalent)

Students who do not have prerequisites will be dropped from the course. Note that this is the only
'official' prerequisite. However, you should also have a strong understanding of research methods and
how we apply scientific method to evaluating psychological hypotheses.

Online Course Information

Course Structure
This is a hybrid course that will incorporate both face-to-face and online asynchronous instruction. There will be
days you are expected to attend on-campus class sessions during our regular class time. There will also be class
sessions that are flexible and you will have class content in the form of narrated PowerPoints to review and/or an
exercise to complete. Dates are outlined in the course schedule at the end of this document. Note that regular
attendance in class is expected. You will not be able to complete this class remotely. (Of course, if the situation
around COVID changes, we will follow university and local guidelines).

Masking: For students attending class, face masks are required. Masks covering both the mouth and nose must be
worn at all times by all students, faculty, and staff while on campus and inside any building regardless of
vaccination status. If you do not wear a mask, you will be asked to leave the classroom and will not be allowed
back in class unless or until you wear a mask. If you have forgotten your mask, you may pick one up from one of
the student information desks on campus during the first two weeks of campus. Students who do not comply with
the mask wearing policy will be reported to the Dean of Students. Eating and drinking is not allowed in
classrooms.

Technology Requirements.
For the most part, the technology needs of the course are basic for any work you may complete outside of class. The vast majority of coursework can be completed on a basic laptop or tablet with an internet connection. We will be using SPSS for a portion of the course work. This may require you to install software on a laptop or other device that will enable you to access a virtual (web-based) version of SPSS (further information provided below).

General Course Overview

Overview

This course is designed to give you experience working with advanced statistical methods including ANOVA (Between-, and within-groups, and mixed designs) and regression (bivariate and multiple). You will learn the basic conceptual foundations and assumptions of these methods. You will learn how to generate these statistics utilizing a mix of hand computations and SPSS (a statistical package in the social sciences). Finally, much of this course will focus on the practical application of theses statistical techniques to real life situations that we encounter in psychological research and the social sciences more generally.

Required Materials

Text:

Field, A (2018). *Discovering Statistics Using IBM SPSS (5th Edition)*. Sage Publications.

Additional readings available online on Blackboard

Programs and Apps:

SPSS access: You will need access to SPSS software for this class. See below for additional information on how to access it.

Zoom: https://accc.uic.edu/services/communication-collaboration/conferencing/zoom/

Google Docs: https://accc.uic.edu/services/communication-collaboration/productivity-software/g-suite/

Note that there will be occasions you will have to access Google Docs while we have our class sessions. Sometimes we will work on Google Docs collaboratively during class sessions as well.

Progress Assessments (In-Class and Online)
Most weeks we will have some kind of short assessment. These can take the form of a quiz posted to blackboard or administered during a class meeting. It might also involve interpreting SPSS output. These activities are meant to enhance your learning through practice and to serve as a self-check on your knowledge as it accumulates over time. We will keep a record of Progress Assessments in Blackboard. I will allow you to miss one Progress Assessment and still receive 100% for your in-class average. If you do not miss any assignments, your lowest assignments will be dropped at the end of the semester.

There is no way to make up in-class work. This work is due at the time they are collected in class or by a time we specify in Blackboard. If they are collected during a class session, you must be present in class when they are collected. No assignments will be accepted at a later time.

Lab (i.e., Discussion) Sections and Activities
Weekly lab activities are designed to give you "hands on" experience with the concepts discussed in class.

These activities will be made available on Thursdays and need to be completed by midnight on the Friday they are assigned. The exercises will be graded pass/fail based on whether you completed the full activity or not (i.e., no partial credit). You can miss one lab activity without penalty.

You will typically submit a copy of your lab section exercises via Blackboard. The submission link for each week can be found in the corresponding folder for the week in the "Weekly Content" area of Blackboard.

Homework

Several Homework assignments will be offered throughout the semester (tentative due dates are at the end of this document). Please keep two things in mind when doing the homeworks:

1. For all hand work: Be sure to show all your work for each problem that requires written calculations. You will receive credit for showing your steps. Do not simply report your final answer. If your final answer is incorrect it may still be possible to earn partial credit if some parts of the problem were done correctly. This is possible, however, only if you have shown all of your intermediate steps.
2. Neatness counts. If your work is illegible, crammed together, or so disorganized that it cannot be followed step by step in a logical sequence it will be difficult to assign partial credit.

Homework will typically have two components: Data analysis and calculations and interpretation of the results. Some homework assignments may require hand-calculations. Calculations may be handwritten, but results must be written following APA guidelines. Homework is due one week after it is assigned, by the deadline set in Blackboard. Homework turned in late will be graded down 10%; homework turned in one day late will be graded down 20%, two days late, 30% if the student does not provide documentation of an extreme event that prevented turning in work in a timely manner. Evaluation of homework will be based on adequate performance of calculations, drawing appropriate inferences and conclusions based on that analysis, and successful communication of the conclusions to be drawn from that analysis in appropriate APA style.

Although students are encouraged to form study groups to work on homework, work must be completed independently— e.g., no two students should have exactly the same write-up of their results, or even sentences that are exactly the same. Study groups function best if people work in parallel—everyone does their own work, but you can check answers at different stages of analysis, or proofread and critique each other's write up. If I suspect that students are not doing their own work or are dividing up the work to share with other class members, homework will become so individualized that it will become impossible for you to work together. Working together in parallel is fine, doing each other's work is not.

Data analysis & calculations. Calculations will be graded in terms of completeness (show your work!), neatness, and organization, in addition to accuracy. Be sure to clearly indicate your steps, write the formula you are using before you plug in numbers, and underline, box, or highlight answers at different steps of analysis. Even though done by hand this work should be presented professionally.

Interpretation: The interpretation of your data analysis should be written like a results section to an APA style paper (e.g., type-written, double-spaced). Follow guidelines of the APA Publication Manual (https://owl.purdue.edu/owl/research_and_citation/apa_style/apa_style_introduction.html).

"Ambiguity" Homework in this course will involve application of the concepts learned in class. There will be no "hand-holding" in the homework instructions. The goal is to present you with true-to-life research examples to analyze, and provide practice in making informed data analytic decisions. Providing very specific, clean examples, would not train you to handle the very real situations that confront researchers when approaching their data. For example, analysis of variance provides an excellent logical framework to draw inferences from data, but there are still subjective judgment calls to be made in how we approach, describe, and interpret our data (e.g., there are a number possibilities for how a two-way interaction can be examined and broken down). It is quite possible that your analysis and write-up will not mirror that of your neighbors. The homework will ensure that you gain experience not only in the technical aspects of data analysis (e.g., the calculations) but also in the logic of conducting data analysis.

Exams

Each exam will include conceptual and practical components. The conceptual component will be completed on designated dates during the semester. This component will consist of essay-type questions and will generally not require extensive hand calculations. The practical component will include problems that you must compute in SPSS and will require that you write your results up in APA style. I do not give make-up exams except in response to extreme and well documented emergencies. The format of a make-up exam may not be identical to a regular exam. If you are not able to make an exam, email or have someone email me at the earliest opportunity.

There will be two exams offered during the course; a mid-term and a final. The tests will each be worth 30% of your final grade (See below for exam dates). Exams will be non-cumulative with the caveat that each section of the course builds on previous sections. Though I will not explicitly test you on concepts from an earlier unit, you will have to draw on knowledge from previous units on later exams.

Grading
Grades will be based on the following scale.

Grade	Percent
A	89.5 – 100
B	79.5 – 89.4
C	69.5- 79.4
D	59.5 – 69.4
E	0 – 59.4

To estimate your grade during the semester, you can use the following formula:

(0.3 * Midterm Exam Grade) + (0.3 * Final Exam Grade) + (0.2 * Homework Average) + (0.1 * Section Activity Percentage) + (0.1 * Progress Assessment Average)

Additional Notes

Accessing SPSS Software via Virtual Computer Lab

More information on Virtual Computer Lab, including how to access, can be found here:

https://help.uillinois.edu/TDClient/37/uic/Requests/ServiceDet?ID=357

This is a web-based application that operates just like a normal Windows environment. Once logged in, you can go to the Windows Menu and find IBM SPSS among the available programs. If you wish to have a local version of SPSS, you will need to purchase it from the UIC Webstore. I highly recommend you give the Virtual Computer Lab version a try. It functions just like an actual version of SPSS on your local machine and it is free for UIC students.

Academic Integrity

I designed this course to be as student-friendly as possible and I believe getting a good grade in the class is very achievable. Several components of the course (e.g., Progress Assessments and Lab Section Activities) include some points that are guaranteed as long as you complete the work. I want you to be successful in the course and I believe that you will be successful if you put in the work. In fairness to those students who are working hard to get the course material, any student found to be cheating in the class, no matter how minor of an offense, will fail the course. This can include anyone providing answers to another student. In all cases I will file a complaint against you with the Dean of Students, who will place a notice about the incident in your student file. There will be no exceptions to this policy.

Cheating includes but is not limited to copying or giving others test answers, or copying another students work on a homework assignment. Note that cheating often involves at least two students. To be clear, any student who is a party to academic dishonesty will be subject to the penalties outlined above. Finally note that posting content of questions and other course materials to Chegg.com is a copyright violation in addition to a likely breach of standards of academic integrity. We will work with the Dean's office to have the material removed and students who post such materials subject to disciplinary action.

Please see the following for additional information about academic dishonesty and student disciplinary procedures.

https://dos.uic.edu/wp-content/uploads/sites/262/2020/01/DOS_Student-Disciplinary-Policy-2020.pdf

Emails
I do my best to respond to student emails in a timely manner. I read every email I receive, but sometimes I am unable to respond to students as quickly as I would like. If I do not respond to an email question within 48 hours, please resend me your email.

It will be your responsibility to keep track of your scores in Blackboard. If you notice that a score has been incorrectly entered into Blackboard, you must show the original paper with the correct grade to your TA by Monday of finals week.

Disability Accommodations
The University of Illinois at Chicago is committed to maintaining a barrier-free environment so that students with disabilities can fully access programs, courses, services, and activities at UIC. Students with disabilities who require accommodations for access to and/or participation in this course are welcome, but must be registered with the Disability Resource Center (DRC). You may contact DRC at 312-413-2183 (v) or 773-649-4535 (VP/Relay) and consult the following:
http://drc.uic.edu/guide-to-accommodations.

Course Communication Guidelines (Netiquette)
Netiquette is a set of rules for behaving properly online. Much of our communication in this course will take place in the forums and through email. Here are some guidelines for online communication in this course:

- Be sensitive to different cultural and linguistic backgrounds, as well as different political and religious beliefs.

- Use good taste when composing your responses. Swearing and profanity should be avoided. Also consider that slang terms can be misunderstood or misinterpreted.

- Don't use all capital letters when composing your responses. This can be considered "shouting" on the Internet and is regarded as impolite or aggressive. It can also be stressful on the eye when trying to read your message.

- Be respectful of others' views and opinions. Avoid "flaming" (publicly attacking or insulting) others.

- Be careful when using acronyms. If you use an acronym it is best to spell out its meaning first, then put the acronym in parentheses afterward, for example: Frequently Asked Questions (FAQs). After that you can use the acronym freely throughout your message.

- Use good grammar and spelling, and avoid using text messaging shortcuts.

- In emails, always identify yourself and what class and section you are in. It is a good practice to put your course and section in the subject line. This helps your instructor identify course related emails.

Religious Holidays: Students who wish to observe their religious holidays must notify me by the tenth day of the semester they will be absent unless their religious holiday is observed on or before the tenth day. In such cases, the student shall notify me at least five days in advance of the date when he or she will be absent.

Incomplete Grades: University policy on incomplete grades is very strict and I follow that policy. I will grant an incomplete grade only under the most extreme circumstances. Do not request an incomplete unless the following conditions apply (taken from the undergraduate catalogue):

> Course work is incomplete when a student fails to submit all required assignments or is absent from the final examination; incomplete course work will <u>normally result in a failing grade</u>. The IN (incomplete) grade may be assigned in lieu of a grade only when <u>all</u> the following conditions are met: (a) the student has been making satisfactory progress in the course; (b) the student is unable to complete all course work due to unusual circumstances that are beyond personal control and are acceptable to the instructor; (c) the student presents these reasons prior to the time that the final grade roster is due. The instructor must submit an Incomplete report with the final grade roster for the IN to be recorded. This report is a contract for the student to complete the course work <u>with that instructor</u> or one designated by the department executive officer in the way described and by the time indicated on the report. In resolving the IN, the student may not register for the course a second time, but must follow the procedures detailed on the report. An IN must be removed by the end of the student's first semester or summer session in residence subsequent to the occurrence, or, if not in residence, no later than one calendar year after the occurrence. When the student submits the work, the instructor will grade it and change the IN to the appropriate grade. <u>If an undergraduate fails to meet the stated conditions, the instructor will assign an E for the final grade.</u>

Note that you will be graded according to the grading criteria listed above. **Please do not ask to be bumped up to the next highest grade at the end of the semester** (e.g., ask me for a C in the course when you have a 67.7% in the course). I will not do this. The number one factor that puts students in this situation is missed assignments and quizzes. I am unable to make exceptions for one student that I am not able to make for others in the class.

With this said, **if you have any problems or concerns throughout the class, please come see us during our office hours, before it is too late at the end of the semester.** I and the TAs are happy to work with you during the semester to help facilitate your understanding of the course material. Please use office hours whenever possible, but we are willing to make appointments if your schedule makes it impossible to make our office hours.

(Extremely) Tentative Topic and Attendance Schedule

I have done my best to provide a schedule that is firm. However, changes can happen. I will communicate any changes in the weekly email to the class. However, it is your responsibility to keep track of these changes and be as flexible as you can.

Week	Date	Activity or Topic	Field Chapter(s)	Attendance Required?
1	1/10	Course Orientation (Read Syllabus, See if we can get SPSS running)	CH1, CH2	No
1	1/12	Welcome [Basic Statistics Review]	CH3	**Yes**
2	1/17	No Class – MLK Holiday		No
2	1/19	Correlation and Covariance,	CH8	**No**
3	1/24	Bivariate Regression – Overview, Parameter Estimation	CH9 up to 9.10	No
3	1/26			**Yes**
4	1/31	Bivariate Regression – Model Evaluation		No
4	2/2	Bivariate Regression – Partitioning Sources of Variability		**Yes**
5	2/7	Multiple Regression 1 – Partial and Semi-Partial Correlation	CH9 Continued 9.11 on	No
5	2/9			**Yes**
6	2/14	Multiple Regression 2 – A Multiple Regression Analysis	CH6	No
6	2/16			**Yes**
7	2/21	Multiple Regression 3 – Evaluating Assumptions		No
7	2/23			**Yes**
8	2/28	Multiple Regression 4 – Hierarchical Regression and Dummy Coding		No
8	3/2			**Yes**
9	3/7	Exam Review		**Yes**
9	3/9	**Midterm Exam**		**Yes**
10	3/14	Introduction to ANOVA: A conceptual approach.	CH12	No
10	3/16	Introduction to ANOVA: ANOVA as Regression		No
SB	3/21	No Classes – Spring Break		No
11	3/28		CH12	**Yes**
11	3/30	Assumptions, Effect Size, and Power; Post Hoc Comparisons		No
12	4/4	Planned Comparisons	CH12	No
12	4/6			**Yes**
13	4/11	Between Subjects Factorial ANOVA	CH14	No
13	4/13			**Yes**
14	4/18	Planned comparisons; Repeated Measures ANOVA	CH15	No
14	4/20			**Yes**

15	4/25	Wrap-up/ Review		**Yes**
15	4/27			**Yes**
Finals	TBA	**Final Exam**		**Yes**

(Extremely) Tentative Homework Schedule

I have done my best to provide a homework schedule so that you can plan. However, changes can happen and probably will. I will communicate any changes in the weekly email to the class. Note that I will also include more details about what each assignment will entail as we move forward.

Week	Date	Homework
5	2/11	Simple Regression
6	2/18	Partialing Out Variance
7	2/25	Standard Multiple Regression
11	4/1	Calculating a One-Way ANOVA
13	4/12	One-way with Planned Comps
14	4/22	Two-Way ANOVA