

EPY 723 Psychometrics 1

Fall 2021

3 Credit Hours Online (CANVAS)
Prerequisite: EPY721 (or equivalent).
Instructor: XXX
Office Hours: XXX
E-mail: XXX

Note: The vaccination levels in Nevada are still low and this means we are uncertain about the course of the pandemic and policies may change. Since this course has been online from before the pandemic any changes that may occur will likely affect us less than other courses, but the pandemic will continue to affect everyone in some way, and in different ways.

Course Description

Psychometrics is the field involved with measuring psychological constructs, including personality traits and progress in education. This course introduces you to the theory, concepts, and statistical foundations of psychometrics. We examine models for estimating the reliability and validity of sample data from psychological and educational instruments. The course topics include: foundations of measurement and statistical concepts for test theory (e.g., levels of measurement; central tendency, dispersion, association); norms and standardized scores; reliability and the classical test theory; reliability; validity; fairness; power; history of psychometrics including its role in racism, threats to psychometric adequacy; an introduction to factor analysis models for both binary and continuous observed data.

Emphasis is on the theory of measurement, on computing various statistics, and on interpretation of results obtained from measurement analyses (e.g., reliability analyses). You will estimate statistical models for educational and psychological data using statistical software.

A Note on Pre-Requisites and Expectations

At a minimum, it is assumed that you have a strong understanding of statistical distributions, statistics to quantify properties of distributions (e.g., measures of location and dispersion), hypothesis testing, correlation, and simple regression. Without this foundation, you may struggle with terminology and the pace of this course. Even with this foundation, the course is challenging, requiring engagement with both statistical theory of measurement and computational practice. Although not required, strictly speaking, an understanding of the analysis of variance model will be beneficial. Please be prepared to invest considerable time and effort in this course, including reading the required chapters/papers prior to the class in which they are assigned and completing posted discussions and exercises. An understanding of measurement theory is critical to academicians and practitioners alike towards the responsible use and interpretation of psychological instruments and educational assessments.

Course Objectives

By the end of this course, you will understand psychometrics as a scientific field of study concerned with the evaluation of psychological and educational instruments.

Skills

By the end of this course, you will be able to:

- use mathematical models to compute several psychometric measures;
- use computer software to conduct several types of analysis;
- interpret statistical output related to these models; and
- be able to discuss the role of psychometrics in society.

What do Psychometricians do?

Psychometricians are hired by test companies like ACT, NWEA, College Board, Pearson, and lots of smaller ones, and at companies creating personality tests (Pearson again, and lots of others). In addition, organizations that use these data employ psychometricians, like state departments of education and school districts. In addition, psychometricians are seen as educational/social scientists with extra quantitative expertise. As such lots of research organizations like to hire them to work on surveys or other research projects that involves lots of data. In a similar way, human resources departments like psychometricians to help them understand their data.

This course will give you skills that I hope will be valuable for many occupations!

Diversity, Equity, and Inclusion (DEI)

It is important to consider any subject from a DEI lens. Which numbers that we decide to collect, the tests that we design, how we analyze the data, and how we report the findings are all influenced by the perspectives we take. Psychometrics is a powerful tool and it is easy to point to instances where the choice of what to measure, how to measure it, and how the resulting information were used for the benefit of those making these decisions. Examples include psychologists' definitions of normal and abnormal and defining "intelligence" based on information that would be more likely learned in a country club than elsewhere.

Required Materials

The core text for this course is:

Furr, R. M. (2018). *Psychometrics: An introduction (3rd ed)*. Thousand Oaks, CA: Sage

This is a comprehensive review of the area. I like it and we will follow it fairly closely. It does not cover computer software. To supplement this text, several computing materials will be made available during the course (these materials will focus on R). This includes an ongoing project that is a Supplement to Furr's book for using R. Its coverage of fairness and power are also less than what I think will be in its next edition (he has begun discussing this with his publisher, but it will be a couple of years before it is ready).

Earlier editions. The book was originally published in 2008 and has improved since then. Examples have changed and the references have been updated to include new sources. A few topics are discussed in the current edition that were not in the original like confirmatory factor analysis. Most of the chapters are in the same order. If you are using an older edition, email me.

Future editions: The fourth edition is supposed to be coming out during this course (according to amazon, the Sage website suggests it is already out). Given the timing, we will not use this edition.

Next closest for required text: Devillis' (and with Thorpe in the most recent edition) *Scale Development*. Furr stresses the conceptual underpinnings of psychometrics more while Devillis say more on the computations, but both cover both of these. There will be more second hand Furr copies among your fellow grad students, but Devillis is a less expensive book (it is about half the length). Both are fairly comprehensive. The newest *Scale Development* (<https://us.sagepub.com/en-us/nam/scale-development/book269114>) is also not out (they are both by Sage). I don't have the newest edition of these but on CANVAS I will mention some of the relevant readings. I will assume you use Furr, but if you decide to use this instead, tell me.

NCME ITEMS modules, <https://ncme.elevate.commpartners.com/>, are also a useful resource. A lot of useful information for psychometrics, particularly applied to education, can be found on: <https://www.ncme.org/home>. NCME, the National Council for Measurement in Education, is the main psychometrics organization for educators.

Software

You will be required to use at SPSS (or JASP) and R to complete the assignments in the course. There will be a strong computer application focus in the course.

R - Powerful statistics environment. Free. Has packages for CFA and IRT. Steep learning curve, but does lots. If planning on doing more quantitative work, it will be very useful to learn this environment well.

JASP - Free. Point-and-click. Newer than others. Prides itself on being good for teaching concepts, and Bayesian models.

SPSS - Point-and-click. University license, but costly otherwise, and add-ons cost money. Main advantage is that most social science (non-stats and math folks) will know how to use this.

R is necessary for assessment 3 (and probably assessment 4) so everyone will learn how to use it. The software R can be downloaded from <https://cran.r-project.org/>. Tick the appropriate operating system. The defaults should be fine for your purposes. There are many online sources to learn R. No previous knowledge of this language is assumed for this course. If you do not have access to a computer on which you can install R, email me and we can work on a solution. It is useful to have an editor to write code for when using R. Examples include Notepad++ (like Notepad with more bells and whistles), Tinn-R (an editor designed specifically for R), and RStudio (the most popular, and allows more flexibility). The reason you should not use Word is that it changes the characters you type, like quotation signs, so that they look cute.

Both JASP and SPSS are point-and-click packages. You can use either one for this course. JASP is available from <https://jasp-stats.org/>. It is written with "learning statistics" in mind, both frequentist and Bayesian approaches. I should add there are point-and-click front-end packages for R, like Jamovi (jamovi.org), which allow a few statistical procedures (though this number is likely to grow). At present this does not include item response theory. JASP also builds on R, but is more independent, and has the extra bonus of pushing the Bayesian approach for comparison.

If you choose to do the SPSS route, it is advisable that you obtain a personal copy of SPSS to get the "hand on" experience, via the weekly exercises. These will help you to master the computational procedures. You can purchase the student version of SPSS for a reasonable price at various online vendors, such as Hearne Software and Student Discounts. The IBM SPSS Statistics 25 Standard GradPack is suitable for this purpose. Please note that the suggested vendors are just a few of many options and you may wish to shop around to see if you can find a better price. If you wish not to purchase SPSS, it is available in most open computer labs at UNLV including the Graduate Student lounge in the library and CEB-B 131. Before traveling to UNLV to access SPSS, check the following UNLV website to ensure lab availability: <https://www.it.unlv.edu/computer-labs/labs-directory> and also check the COVID rules that are in place. I will give less instruction on SPSS because based on your prerequisites you should already know how to use it.

Supplementary Material

Supplementary articles and web resource lists, relevant to the individual topics, will be presented with each week's material. Some additional books that may be of use include:

American Educational Research Association, American Psychological Association, & National Council on Measurement in Education (2014). *Standards for Educational and Psychological Testing*. Washington, DC: AERA

This is called The Standards by psychometricians. It tells us what some of the leaders in the three main organizations that use psychometrics think is important.

Crocker, L., & Algina, J. (2008). *Introduction to classical and modern test theory*. Mason, OH: Cengage.

This is one of the primary textbooks that covers some of the older methods of psychometrics.

Embretson, S.E. & Reise, S.P. (2000). *Item response theory for psychologists*. Mahmah, NJ: Lawrence Erlbaum Associates.

I like this book and I am excited that Reise's webpage says a new version is in progress. Amazon says it is expected at the end of 2023. I think this text provides really clear explanations about item response theory. They (and many others) have written shorter review (for one by Reise see: www.onlinelibrary.wiley.com/doi/pdf/10.1002/9781118625392.wbecp357). The trouble with this 2000 version is the software has changed and the field has advanced, so it is a little dated.

Hand D.J. (2004). *Measurement theory and practice: the world through quantification*. Edward Arnold.

This is a measurement book applicable to all science. I like this generality. The issues that we face are similar to those in other fields (but also different in ways). He has more current books (including a tiny one—size-wise—on measurement, that has text too small for me to read).

Mair, P. (2018). *Modern psychometrics with R*. Cham, Switzerland: Springer.

This is a detailed (and more advanced) text for doing a wide range of psychometric methods using R. There are other R books for IRT and other freely available R sources. This book is the recommended text for Psychometrics II.

Mulaik, S. A. (2009). *Foundations of factor analysis (2nd Ed)*. Boca Raton: FL: CRC Press.

Mulaik's book is more mathematical than most, but it is surprisingly readable. Sometimes you might just trust the text and skip the equations, but remember that they are there. I tend to read text, and then go back and look at the equations. These days, however, because the computer does a lot of the computation the equations are there more for reference than necessity. It is more comprehensive than most texts for factor analysis.

Class Format and Teaching Approach

Each week corresponds with one module. The week starts Monday around noon, and ends Sunday night. Thus, I will get information on the system by around noon Monday (unless there are technical difficulties or I am in some other way prevented from doing so ... I will try to email if I am running late) and you should finish up the week's work by the Sunday evening. I won't take materials down, but I may close discussion boards and the due-dates are Sunday at mid-night (email me as soon as you can if this is going to be a problem).

Most weeks, the class will use a virtual "lecture-lab" structure. Each week there will be an introduction that I have written, one or more videos of me talking about different topics, readings mostly from Furr but also some additional ones, some "lab" exercises for you to do, and discussion questions. In addition, for my office hours, I will be on the video system, so if you cannot come to my office, you will still be able to contact me. It is likely that these will focus on computing issues.

The lectures will focus on the theoretical and conceptual issues, with some discussion of how to do the computing. The exercises are more focused on the computing. This teaching approach assumes you do the following in this order:

- Read required readings,
- Watch/listen videos,
- Complete lab exercises,
- Discuss solutions.

I think these should be completed in this order, but if you feel you can learn more in a different order, then do what works best for you.

NOTE: I have listed Monday as the start of each week, and Sunday as the end. You can choose when in the week to do the tasks. On some weeks Monday (or another day) is a holiday. Thanksgiving occurs in the fall, and I have adjusted the workload for that week. If a due day is Sunday, and you are for some reason busy that weekend (e.g., a religious holiday, a wedding), turn it in early. If you are away for a full week (e.g., a conference), email me and we will try to make sure that you are not having to do additional work while at a conference.

Discussions

Online course discussions are in an important way for you to chat with others about the course, to ask and to answer questions, and to grapple with some of the more conceptual issues. And to meet others!!! While some of you may discuss psychometric issues outside of the computer system, it is required that you log onto the discussion board. The first couple of weeks I will make sure that everyone does log on and gets through the technical hurdles are not preventing discussions (btw, I assume all of you know that instructors can see how long you spend on the course). They are not marked, but providing you provide thoughtful responses to these you will get 10% credit for the course. Further, there are group activities, so it is important to get to know each other.

Lab Exercises

These should be done but are not assessed. If you think you understand the material so well you can do the assessments without these, email me and I can make some more challenging exercise for you (I am serious). An alternative is for you to look through the exercises and for you to figure out what extra you want to do. An important reason for doing the exercises is that you can ask me questions about how to do them. On assessed assessments, I am more limited in the help I can provide because they are assessed. So if you have not done the exercises, you may be in a difficult position for the assessments.

Exercises should be done in order. You can work with others and share issues on the discussion board, but make sure that by the end of each exercise that you can do the tasks on your own. The Lab Exercise will be made available by the Monday at noon of the week that it is for. The following week I will post my thoughts about the exercise. Read these as they may be helpful for doing the assessed work. If you have a week that you know you are away (e.g., conference, wedding), email me asap and we can discuss solutions (usually doing the exercise a week early).

Tentative Course Schedule

(What shows up in each Module on CANVAS will be official)

Note: No one knows what will happen this term because of the people who have chosen not to be vaccinated. This is a demanding course, but your priorities should be your health. Email me. If it seems that several people are in difficult circumstances due to COVID (or whatever new thing happens this fall), the schedule can be altered.

08/24 (Monday)

1. Introduction to psychometrics and measurement and statistical concepts.

This week will cover a little history of psychometrics, some of the basic concepts of measurement, levels of measurement, and very basic use of R (downloading it, and adding numbers).

Required Reading: Furr Chapters 1 and 2.

Since this is the first week I will add the supplementary reading here. I try to make these short (here both are 4 pages), since the combination of the core reading and the computing tasks will take time.

Chambers, J. M. (2009). Facets of R. *R Journal*, 1, 5-8. Available at: https://journal.r-project.org/archive/2009-1/RJournal_2009-1_Chambers.pdf

Chambers has a couple of books discussing the background and philosophy of R. R is an implementation of the language S, which Chambers developed a few decades ago. R is free and this has led to its popularity increasing a lot. When statisticians write some code to do something they often write this in R and then allow others to use it. This reading is not a how to use R source (there are lots of those on the web). This makes R extremely valuable. You may also hear people talk about Python (<https://www.python.org/>). Computer scientists often use Python and statisticians use R for similar tasks. Some people argue about their favorite packages/ languages, but all have some good aspects, and some not-so-good aspects.

Lab exercise: Download R and using it for some basic calculations. Creating data, using groups in canvas.

Discussion topic: Group talk. Each others' names and some fun fact. And, whether MPG (miles per gallon) or GPM (gallons per 100 miles) should be used.

Aug 30, 2021

2. Individual differences and correlations, and a few other statistics.

(Reviewing material that you already have learned, but it may have been awhile ago)

Several statistical concepts will be discussed. When there is one variable, univariate analyses include the central tendency, the dispersion, and the histogram (or bar plot for categorical data). When there are two variables bivariate analyses are used. Different association measures and the scatter plot are discussed. Multivariate analyses are covered next week, and

throughout the rest of the course (but the multivariate analyses build upon the uni- and bivariate methods). Different test scores are also discussed.

Required Reading: Furr Chapter 3.

Lab Exercise: Making plots and some basic statistical measures. Any of the three packages can be used for this.

Sept 6, 2021

3. Introduction to Test dimensionality and exploratory factor analysis.

When you have multiple variables (or items or features or whatever you call them), they can often be better understood as being based on a smaller number of dimensions. Here the mathematical concept of eigenvalues are introduced, the scree plot discussed, and some general concepts for exploratory factor analysis discussed. Factor analysis will be discussed more this term and in the Structural Equation Modeling course.

Required Reading: Furr Chapter 4.

Lab Exercise: Making scree plots. And working on making them look okay. When making plots there are usually many ways to make them useful. I will show some things that I like. As long as you make the plot clear and accurate, I will be happy (and don't have any words or numbers in fonts too small to read). This exercise is short to allow you work on the first assessment.

Assessment 1.

ASSESSMENT 1: DUE midnight on Sept 12th (and will be posted Sept 6). It will involve making a scatterplot both in R and in either SPSS or JASP (and making them look good), interpreting them (and any accompanying statistics), and a history of psychometrics question. Worth 10%.

Sept 13, 2021

4. Reliability: Conceptual basis and from α (alpha) to ω (omega)

Reliability is one of the key issues in psychometrics. Here we will talk about what it means and some of the history of trying to estimate it. This week we will cover two popular measures in more detail: α (alpha) and ω (omega). I will also formally introduce JASP (though as a point-and-click software you may have already been using it).

Required Reading: Furr Chapters 5-7 (sorry for lots of reading ... I'll make the exercise go over two weeks and have no discussion this week).

Two Week Lab Exercise: Calculating α and ω and (in R or JASP/SPSS) using multiple packages in R (if using that). Compare results from others in course. Exploratory factor analysis and rotation. Note that omega is available in R and JASP, but for SPSS you either have to use a macro or an R extension. Both of these are more difficult than just using R or JASP.

Sept 20, 2021

5. Validity

There are lots of types of validity. It is a complex issue in psychometrics. We will look at a few methods, like prediction of a "gold standard", multi-trait multi-method procedures (MTMM), and receiver operating characteristics (ROCs) (which is part of what is called signal detection theory or SDT).

Required Reading: Furr Chapters 8-9.

Lab exercises: Continue last week's exercise.

Discussion: On a few meanings of validity.

Sept 27, 2021

6. Fairness (Test Bias) and History of Psychometrics related to Discrimination

Fairness means whether people with similar traits get similar scores. This is important for any high-stakes assessment.

Required reading: Furr's Chapter 11 (Chapter 10 is next week).

See also Code of Fair Testing (2018).

<https://www.apa.org/science/programs/testing/fair-testing.pdf>

No Lab Exercise this week. The main technique used in psychometrics in education, is differential item functioning, and this is covered in Psychometrics II. The main reason having no lab is to have more time on discussion.

Discussion: Psychometrics and racism.

Oct 4, 2021

7. Response Biases

The focus here is on cognitive biases related to how people respond. Less content is presented here to allow time to focus on the second assessment

Required Reading: Furr Chapter 10.

Lab exercise: This time is to allow you work on Assessment 2.

ASSESSMENT 2.

DUE midnight on Oct 17th (and will be posted Oct 4). It will be part computational (related to measures of reliability and exploratory factor analysis) and part essay (related to validity and fairness). Worth 25%.

Oct 11, 2021

8. Introduction to Generalizability Theory

G-Theory is a combination of reliability measures and ANOVA, on steroids. We will go through an example and show its value.

Required reading: Furr Chapter 13.

Lab Exercise: Because the assignment is due this week, there will be only a single task for G-Theory and it is optional. Finish your assignment first!

G-theory will be covered in more detail in psychometrics II. This will just be a brief introduction.

Oct 18, 2021

9. Introduction to Confirmatory Factor Analysis (CFA)

Psychometric conferences (e.g., <http://www.developmentalmethods.org/>) are filled with CFA papers. When you construct an instrument you should have some inkling about how the items will relate. CFA is more appropriate in these situations than EFA. More (a lot more) on this topic is covered in Structural Equation Models.

Required reading: Furr's chapter 12

Lab Exercise: To conduct CFA in SPSS requires a costly add-on called AMOS. Fortunately it is done with several packages in R as well as in JASP.

Oct 23, 2021

10. Item Response Theory (IRT) 1

Psychometric conferences in education (e.g., <https://www.ncme.org/meetings/annualmeeting2020>) tend to be lots of talk about IRT. IRT is used when the observed data are binary, like getting an answer right or wrong on a test. The first week will go through the 1-, 2-, and 3-parameter models.

Required reading: Furr's 14

Lab exercise: At present SPSS can only perform very simple IRT models. Similarly, JASP current stance on this is that they acknowledge a lot of people would like it. It is also currently not available with Jamovi (unless you just do the code in R and then submit it from there). SYSTAT and STATA and SAS and others big packages do it, so SPSS should at some point. But, for now this is an exercise that must be done in R. The R package mirt performs most of the models that most people would want to conduct.

Nov 1, 2021

11. Item Response Theory 2

There are lots more things that you can do with IRT. I am saving this week a bit for the assessment, a bit if any catching up if necessary, but if free I may cover DIF with IRT, ordinal observed responses, and multidimensional IRT. I will describe what they are, and show some methods. Much of Psychometrics II will expand on these topics.

Required reading: None. Work on your assessment.

Lab exercise: None. Work on your assessment.

Assessment 3.

DUE midnight on Nov 15th (and will be posted Nov 1th). It will be part conceptual and part computational covering different latent variable models (e.g., CFA and IRT). Worth 25%.

Nov 8, 2021

12. Thinking about Assessment 4 and Additional Topics

(this text makes more sense after reading what assessment 4 is, so go read that, and then come back)

Start thinking about what you want to measure or focus on. Form groups if appropriate. Throughout the next few weeks I will be posting various videos and other materials as examples of latent variable models.

Reading: Whatever you need to help write your assessment 4! Some of these (probably most) will be in the substantive area of your instrument. Some may be further methods papers.

I will provide a lot more information about this. It will work differently than pre-COVID years where most groups collected their own data from humans.

Note: If you did really poorly on one of assessments 1-3, we can discuss how to make sure that you have learned this information. I care, and you should care, your about what you learned than your grades, BUT grades are used in the university for certain things so if you can show that you have learned that material (usually by complete some additional task) I can raise your mark on that assessment up to 2.75 (the point halfway between a B- and a B+ ... note that my scale does not have any B grades). This can be done for only 1 assessment.

The Optionals

Note that the “optionals” in the following mean if you are busy with your final project, these have lower priority. I am also happy if anyone wants to lead discussion on these, suggest alternative topics, etc. These will likely be group zoom calls, maybe split into a few groups depending on the number of participants and people’s availability. I will post readings prior to these discussions. The expectation is that you are working on your final project so these reading will be short. Each week has a non-optional component.

The topics for these may change, so if there is something that you want to have discussed (or want to lead a discussion on) please email me.

Nov 15, 2021 (Thanksgiving week)

13. Philosophical issues with measurement

There are several philosophical issues related to measurement. Because this is Thanksgiving week I will post some readings, but probably have both a written discussion and a zoom chat that fits with what people are doing. None of us know what will be happening as far as people travelling around for this holiday, so I will keep this flexible. My thought at the

moment is to talk about Stevens' levels of measurement framework and if it is of any value. We will have touched upon this is the first topic, so I will see what people are interested in.

Not optional: Tell me the group you are working in (if appropriate), the topic/research question, and arrange a group meeting with me if you wish (video, text chat, or just group emails).

Nov 22, 2021

14. Should we use standardized tests, and if so, what for? (optional)

For those in education this is a big controversial topic, but those outside of education also have interest in it.

Not optional: Post video about the instrument that you have created or are using (no longer than 10 minutes, and include a one-page handout) or short annotated bibliography for your topic. By Midnight, Nov 28th. The one-page handout will be included in your final submission.

Nov 29, 2021

15. Writing functions in R (or something that you recommend)

For those wanting to do a lot more statistics, this is the session for you.

Not optional: Groups:

Match up with one other group and view each other's videos and handouts. Your comments MUST be useful, polite, and professional. They should include at least one thing that you like from it and at least one may they could improve it.

Not optional: Topics:

Present these to class.

Assessment 4.

DUE midnight on Dec 5th (and will be posted Nov 9th), with parts due earlier as noted above. There are two options. One, a group project that is more applied. Two, either computational or presentation.

Group: It involves a) creating an instrument (and the one-page submission from the video, though you can update it if you wish), b) getting data *as if* people filled it out (for 2021), c) analyzing the data, and d) writing a report in APA format (with a few exceptions that you will be told) for this. Parts a) and b) can be done in groups. Parts c) and d) must be done individually (the introduction and methods can be by the group, and references too, but please submit this as your report ... choose your own individual title since that is a tricky thing that you don't get much practice doing). Worth 30%.

Individual: Chose a psychometric topic we did not cover in this course. Either focus on the conceptual aspects or computational aspects. Prepare a tutorial to be presented in the previous week. You can update your slides and handout (you will have a handout!) and these will be what you submit. Your brief annotated bibliography you will send to your colleagues a few days

before your presentation so that they can read (if they choose). The presentations will likely be between 10-20 minutes, but we can discuss whether more or less time is appropriate.

Note: There is no final exam for this course.

Assessments

Note: I put length limits on the assessments because I want people concentrating on the exercises and discussions also. These are important for learning. I do not want people spending a lot of time on Assessments 1-3, and these should not take long if you have done the exercises. The ability to describe your thoughts succinctly is a critical skill! Assessment 4 will take longer, but you have more time for this.

Note: I do not read drafts. I do answer questions (but often by asking you questions), but not about the actual text you write. See below about receiving assistance from the Student Writing Center.

The four assessments are worth 10%, 25%, 25%, and 30%, which sums to 90%. If you take part in the required discussions, you get full marks for the remaining 10% (so it is either full marks, or zero for that).

The assignments will be marked on a 0-4 F-A scale. The final scores will be the weighted mean. The final score will be rounded to the nearest tenth. If a score is exactly halfway between two grades it will be rounded up. For example, a mean of 1.250 will be rounded to 1.3 and therefore D+, but 1.249 will be rounded down to 1.2 and therefore a D.

0.0-0.5	F	2.3-2.5	C+
0.6-0.7	D-	2.6-2.7	B-
0.8-1.2	D	2.8-3.2	B+
1.3-1.5	D+	3.3-3.5	A-
1.6-1.7	C-	3.5-4.0	A
1.8-2.2	C		

The grades on my graduate quantitative courses tend to be mostly As, A-s, and B+s, and a small number of Ds and Fs. You should notice by the drop date if you might be in the later category. Also, I get asked every year if I give A+s. I don't.

Late Policy

If you think that you will be up to 24 hours, you must email me before the due date and tell me why. If you email in time, you will get a 24 hour extension, but you can only do this twice. In exceptional circumstances you may be granted a longer extension, but this is unlikely. The lateness penalty for the first three assignments is 10% during the first week, and 10% for the second week, and not accepted after that. The fourth assignment is due Dec. 7. If it is turned in late you lose 10%. It must be turned in by midnight December 9th or it will not be counted (see guidelines for incomplete course marks below).

University Policies

(These are official. They are not written by me.)

Public Health Directives

Face coverings are mandatory for all faculty and students in the classroom. Students must follow all active UNLV public health directives while enrolled in this class. UNLV public health directives are found at [Health Requirements for Returning to Campus](https://www.unlv.edu/coronavirus/health-requirements), <https://www.unlv.edu/coronavirus/health-requirements>. Students who do not comply with these directives may be asked to leave the classroom. Refusal to follow the guidelines may result in further disciplinary action according to the [UNLV Student Conduct Code](https://www.unlv.edu/sites/default/files/page_files/27/StudentConduct-Code.pdf), https://www.unlv.edu/sites/default/files/page_files/27/StudentConduct-Code.pdf, including being administratively withdrawn from the course.

Academic Misconduct

Academic integrity is a legitimate concern for every member of the University community. We all share in upholding the fundamental values of honesty, trust, respect, fairness, responsibility, and professionalism. By choosing to join the UNLV community, students accept the expectations of the Student Academic Misconduct Policy, and are encouraged to always take the ethical path whenever faced with choices. Students enrolling at UNLV assume the obligation to conduct themselves in a manner compatible with UNLV's educational mission. An example of academic misconduct is plagiarism. Plagiarism is using the words or ideas of another person, from the Internet or any other source without proper citation of the source(s). See the [Student Conduct Code](https://www.unlv.edu/studentconduct/student-conduct), <https://www.unlv.edu/studentconduct/student-conduct>.

Auditing a Course

Auditing a course allows a student to continue attending the lectures and/or laboratories and discussion sessions associated with the course, but the student will not earn a grade for any component of the course. Students who audit a course receive the same educational experience as students taking the course for a grade, but will be excused from exams, assessments, and other evaluative measures that serve the primary purpose of assigning a grade.

Classroom Conduct

Students have a responsibility to conduct themselves in class and in the libraries in ways that do not interfere with the rights of other students to learn, or of instructors to teach. Use of devices such as cellular phones and pagers, or other potentially disruptive activities are only permitted with the prior explicit consent of the instructor. Students are specifically prohibited to record classes without instructor authorization, including online/remote classes (either audio only, or video and audio). The instructor may rescind permission at any time during the class. If a student does not comply with established requirements or obstructs the functioning of the class, the instructor may initiate an administrative withdrawal of the student from the course.

Since the COVID-19 pandemic forced some instruction to be delivered remotely starting in Spring 2020, numerous students have asked instructors to record their synchronous classes, so that they can access them at their convenience. Instructors who agree to record their classes (audio only, or video and audio) should inform students in advance. Recorded lectures may not be broadly released to anyone, but made available exclusively to those students enrolled in the class during the particular academic term. Recorded lectures must be stored securely, and are subject to the Nevada System of Higher Education's Records Retention Policy, meaning that the recordings can only be deleted 120 days after the end of class (i.e., after grades are posted). Once this requirement is met, the recordings should be deleted. Class recordings are protected from disclosure, as they are deemed part of an educational record under the Family Educational Rights and Privacy Act (FERPA).

Copyright

The University requires all members of the University Community to familiarize themselves with, and to follow copyright and fair use requirements. You are individually and solely responsible for violations of copyright and fair use laws. The University will neither protect nor defend you, nor assume any responsibility for student or employee violations of fair use laws. Violations of copyright laws could subject you to federal and state civil penalties and criminal liability, as well as disciplinary action under University policies. Additional [copyright policy information](https://www.unlv.edu/provost/copyright) is available at <https://www.unlv.edu/provost/copyright>.

Disability Resource Center (DRC)

The [UNLV Disability Resource Center](https://www.unlv.edu/drc) (Student Services Complex, SSC-A, Room 143, <https://www.unlv.edu/drc>, telephone 702-895-0866) provides resources for students with disabilities. Students who believe that they may need academic accommodations due to a permanent disability, temporary or permanent medical need, or academic support due to pregnancy are encouraged to contact the DRC as early as possible in the academic term. A Disabilities Specialist will discuss what options may be available to you. Students who are already registered with the DRC should request their accommodations online each semester, and make an appointment to discuss their accommodations with their instructors.

Final Examinations

The University requires that final exams given at the end of a course occur on the date and at the time specified in the Final Exam schedule. The Final Exam schedule is typically available at the start of the semester, and the classroom locations are available approximately one month before the end of the semester. See the [Final Exam Schedule](https://www.unlv.edu/registrars/calendars), <https://www.unlv.edu/registrars/calendars>.

Identity Verification in Online Courses

All UNLV students must use their Campus-issued ACE ID and password to log in to WebCampus-Canvas.

UNLV students enrolled in online or hybrid courses are expected to read and adhere to the [Student Academic Misconduct Policy](#),

<https://www.unlv.edu/studentconduct/misconduct/policy>, which states that “acting or attempting to act as a substitute for another, or using or attempting to use a substitute, in any academic evaluation or assignment” is a form of academic misconduct. Intentionally sharing ACE login credentials with another person may be considered an attempt to use a substitute, and could result in investigation and sanctions, as outlined in the Student Academic Misconduct Policy.

UNLV students enrolled in online courses are also expected to read and adhere to the [Acceptable Use of Computing and Information Technology Resources Policy](https://www.it.unlv.edu/policies/acceptable-use-computing-and-information-technology-resources-policy), <https://www.it.unlv.edu/policies/acceptable-use-computing-and-information-technology-resources-policy>, which prohibits sharing university accounts with other persons without authorization.

To the greatest extent possible, all graded assignments and assessments in UNLV online courses should be hosted in WebCampus-Canvas or another UNLV-managed platform that requires ACE login credentials for access.

Incomplete Grades

The grade of “I” (Incomplete) may be granted when a student has satisfactorily completed three-fourths of course work for that semester/session, but cannot complete the last part of the course for reason(s) beyond the student’s control and acceptable to the instructor, and the instructor believes that the student can finish the course without repeating it. For undergraduate courses, the incomplete work must be made up before the end of the following regular semester. Graduate students receiving “I” grades in 500-, 600-, or 700-level courses have up to one calendar year to complete the work, at the discretion of the instructor. If course requirements are not completed within the period indicated, a grade of “F” will be recorded, and the student’s GPA will be adjusted accordingly. Students who are fulfilling an Incomplete grade do not register for the course, but make individual arrangements with the instructor who assigned the “I” grade.

Library Resources

Librarians are available to consult with students on research needs, including developing research topics, finding information, and evaluating sources. To make an appointment with a subject expert for this class, please visit the [Libraries’ Research Consultation](https://guides.library.unlv.edu/appointments/librarian) website, <https://guides.library.unlv.edu/appointments/librarian>. You can also [ask the library staff](https://ask.library.unlv.edu/) questions via chat and text message at <https://ask.library.unlv.edu/>.

Missed Classwork

Any student missing class, quizzes, examinations, or any other class or laboratory work because of observance of religious holidays will be given an opportunity during that semester to make up the missed work. The make-up opportunity will apply to the religious holiday absence only. It is the responsibility of the student to notify the instructor within the first 14 calendar days of the course for Fall and Spring courses (except for modular courses), or within the first 7

calendar days of the course for Summer and modular courses, of their intention to participate in religious holidays which do not fall on state holidays or periods of class recess. For additional information, please visit the Missed Classwork policy, under Registration Policies, on the [Academic Policies](#) webpage, <https://catalog.unlv.edu/content.php?catoid=32&navoid=8271&hl=>.

In accordance with the policy approved by the Faculty Senate regarding missed class time and assignments, students who represent UNLV in any official extracurricular activity will also have the opportunity to make up assignments, provided that the student submits official written notification to the instructor no less than one week prior to the missed class(es).

The spirit and intent of the policy for missed classwork is to offer fair and equitable assessment opportunities to all students, including those representing the University in extracurricular activities. Instructors should consider, for example, that in courses which offer a “Drop one” option for the lowest assignment, quiz, or exam, assigning the student a grade of zero for an excused absence for extracurricular activity is both contrary to the intent of the Faculty Senate’s policy, and an infringement on the student’s right to complete all work for the course.

This policy will not apply in the event that completing the assignment or administering the examination at an alternate time would impose an undue hardship on the instructor or the University that could be reasonably avoided. There should be a good faith effort by both the instructor and the student to agree to a reasonable resolution. When disagreements regarding this policy arise, decisions can be appealed to the Department Chair/School Director, College/School Dean, and/or the Faculty Senate Academic Standards Committee.

For purposes of definition, extracurricular activities may include, but are not limited to academic recruitment activities, competitive intercollegiate athletics, fine arts activities, liberal arts competitions, science and engineering competitions, and any other event or activity sanctioned by a College/School Dean, and/or by the Executive Vice President and Provost.

Rebelmail

Rebelmail is UNLV’s official email system for students and by University policy, instructors and staff should only send emails to students’ Rebelmail accounts. Rebelmail is one of the primary ways in which students receive official University communications, information about deadlines, major Campus events, and announcements. All UNLV students receive a Rebelmail account after they have been admitted to the University. Sending emails within WebCampus-Canvas is also acceptable.

Tutoring and Coaching

The Academic Success Center (ASC), at the Claude I. Howard Building, provides tutoring, academic success coaching, and other academic assistance for all UNLV undergraduate students. For information regarding tutoring subjects, tutoring times, and other ASC programs and services, please visit the [ASC website](#), <https://www.unlv.edu/asc>, or call 702-895-3177.

The ASC is located across from the Student Services Complex (SSC). Academic success coaching is located on the second floor of SSC A, Room 254. Drop-in tutoring is located on the second floor of the Lied Library, and on the second floor of the College of Engineering building (TBE A 207).

UNLV Writing Center

One-on-one or small group assistance with writing is available free of charge to UNLV students at the [Writing Center](https://writingcenter.unlv.edu/), <https://writingcenter.unlv.edu/>, located in the Central Desert Complex, Building 3, Room 301 (CDC 3–301). Walk-in consultations are sometimes available, but students with appointments receive priority assistance. Students may make appointments in person or by calling the Center, telephone 702-895-3908. Students are requested to bring to their appointments their Rebel ID Card, a copy of the instructions for their assignment, and two copies of any writing they have completed on their assignment.

Diversity Statement

As an institution of higher learning, UNLV represents a rich diversity of human beings among its faculty, staff, and students, and is committed to aspiring to maintain a Campus environment that values that diversity. Accordingly, the University supports understanding and appreciation of all members of its community, regardless of race, sex, age, color, national origin, ethnicity, creed, religion, disability, sexual orientation, gender, gender identity, marital status, pregnancy, genetic information, veteran status, or political affiliation. Please see [University Statements and Compliance](https://www.unlv.edu/about/statements-compliance), <https://www.unlv.edu/about/statements-compliance>.

A successful learning experience requires mutual respect and trust between the students and the instructor. Accordingly, the instructor asks that students be willing to listen to one another's points of view, acknowledging that there may be disagreements, keep discussion and comments on topic, and use first person, positive language when expressing their perspectives.