

# PPPA 6002: Research Methods & Applied Statistics

## Fall 2020

Wednesday sections:

- 12:45 – 2:15 EST (Section 11)
- 6:10 – 7:40 EST (Section 12)

## Instructors

Bill Adams (adams@gwu.edu)

Online office hours: Mon/Tues/Fri 4-6:00 EST

Chris Carrigan (ccarrigan@gwu.edu)

Online office hours: Mon/Tues/Thurs 4-6:00 EST

Afternoon lab on selected dates 2:45-3:45 EST

Mansi Wadhwa (mansiwadhwa@gwu.edu)

Evening lab on selected dates 8:00-9:00 EST

Zack Ham (zham12@gwu.edu)

## Textbooks & Software

- No required books to purchase.
- Blackboard: annotated PowerPoints, plus weekly videos and readings.
- SPSS software (available through GW).

## Assignments and Grades

Part 1: Research Methods with Bill Adams:

- Participation in Part 1 counts 5%.
- Mini-quiz for Part 1 counts 5%.
- Weekly worksheets in Part 1 count 10%.
- Dataset project in Part 1 counts 10%.
- Exam for Part 1 counts 20%.

Part 2: Applied Statistics with Chris Carrigan:

- Participation in Part 2 counts 5%.
- Weekly worksheets in Part 2 count 5%.
- Research project in Part 2 counts 20%.
- Exam for Part 2 counts 20%.

## Learning Objectives

PPPA 6002 focuses on practical skills for conducting and evaluating empirical and quantitative research, plus provides a brief look at qualitative methods. The course explores the strengths and weaknesses of experimental (RCT), quasi-experimental, and nonexperimental research. It also covers the widely used statistical software, SPSS, and foundational univariate, bivariate, and multivariate statistics.

In particular, the course targets as learning objectives key research skills including how to:

Skill 1: Conduct and evaluate survey research

Skill 2: Conduct and evaluate RCTs

Skill 3: Conduct and assess other methods such as NEC, time series designs, and correlational designs

Skill 4: Conduct and evaluate qualitative studies

Skill 5: Conduct statistical analyses using SPSS

Skill 6: Analyze basic univariate statistics

Skill 7: Implement bivariate statistical techniques such as t-tests, chi square, correlation, and regression

Skill 8: Implement multivariate statistical techniques such as multiple regression and partial tables analysis

Skill 9: Prepare a research study summarizing statistical analyses for a non-technical audience

## Class Participation

Your engagement each week is vital to making this online course work effectively. This entails not only attending class, ideally with your video on, but also participating in discussions, being a supportive and reliable member of your team, and keeping on top of communications, including responding promptly to emails and checking announcements in Blackboard.

## Part 1: Additional Information (Adams)

**Blackboard:** All weekly Part 1 course information including readings, videos, PowerPoints, and assignments will be posted on the course Blackboard site.

**Office hours:** For a reservation during Monday, Tuesday, or Friday afternoon office hours, go to 6002 Blackboard. Under Part 1, click "Zoom Chat" to select your most convenient time. If the topic is urgent and time sensitive, please email me at [adams@gwu.edu](mailto:adams@gwu.edu).

### Weekly Steps:

First, closely review the week's narrated PowerPoint (posted in Blackboard).

Second, for elaboration, reinforcement, and more detail watch the week's videos and go over the readings posted in Blackboard.

Third, refer to the week's key concepts listed in the syllabus. Make it priority to draw on the PowerPoint talk and the supplemental materials to fully understand and be able to apply these concepts. Bring any questions for the Q&A in the synchronous session (or in online chats with the instructor or TA).

Fourth, the day before our class, get together with your assigned team to review the key concepts and discuss the worksheet. Collaboration is very much encouraged.

Fifth, upload your answers to the weekly worksheet the day before our class meeting. Answers should be concise but usually more than a few words.

Sixth, be sure to have a convenient copy of the worksheet questions and your answers for the live class.

**Grading:** Lowest overall Part 1 grade (no rounding) for an A is 94.00; A- 90.00; B+ 87.00; B 83.00; B- 80.00; C+ 77.00; C 73.00; and C- 70.00.

**Part 1 Quiz and examination:** These are closed book. They consist of short objective questions focusing on understanding and applying the key concepts listed in the syllabus.

**Lab Sessions:** During Part 1, the lab period will be used as shown on the next page. Other weeks you are urged to use the lab time to do the class readings and review videos, complete your weekly worksheets, and/or meet with your study group.

## Part 2: Additional Information (Carrigan)

**Blackboard:** Part 2 course information including recorded lectures, class notes, and worksheet assignments will be posted on the course Blackboard site.

**Class Structure:** The Part 2 weekly schedule will be similar to Part 1. Please watch a recorded lecture prior to each class meeting. During class meetings, I will review the week's material and answer questions, and we will work through practice problems together.

**Office Hours:** To sign up for office hours, please visit [christophercarrigan.youcanbook.me](http://christophercarrigan.youcanbook.me).

**Textbook:** There is no required textbook for Part 2, but if you would like one to support your learning, use: Healey, Joseph F. *Statistics: A Tool for Social Research*. 10<sup>th</sup> edition. Stamford, CT: Cengage, 2015. The chapters associated with the material we cover each week are listed in the course detail section below.

**SPSS:** SPSS is the statistical software used in the course and is available for free through the CCAS Cloud. So, you do not need to rent or purchase it, but if you do want a copy, it is available through [gwu.onthehub.com](http://gwu.onthehub.com).

**Lab Sessions:** During scheduled labs, the class TAs, Mansi Wadhwa and Zack Ham, will hold regular office hours and provide SPSS assistance to help you with your research project and worksheets. Attendance is encouraged but not mandatory. A lab to introduce SPSS will be held in week 5. Additional SPSS labs will be held during weeks 9 through 13.

**Worksheet Assignments:** Part 2 worksheet assignments will be graded on a check-plus or check-minus system, based on whether the assignment was fully completed. You are encouraged to work with classmates, but please still turn in your own solutions. Responses should be submitted via Blackboard prior to the start of the next class meeting.

**Research Project:** This project offers an opportunity to further develop your skills in analyzing data by generating relevant statistics and interpreting them using a dataset of your choice. Papers should be submitted via Blackboard on or before the December 9 class meeting.

**Part 2 Examination:** The exam will not be cumulative. Rather, it will draw exclusively from material covered in Part 2. Details regarding the exam format will be provided closer to the date.

<b>Session</b>	<b>6002 Session Topics</b>	<b>Lab</b>	<b>Worksheets Due</b>
Week 1: Sept 2	Research ethics; Research questions; Literature reviews	None	✓ #1
Week 2: Sept 9	Measurement validity and reliability; Levels of measurement	✓	✓ #2
Week 3: Sept 16	Question and questionnaire design; Survey sampling systems	✓	✓ #3
Week 4: Sept 23	Causal inference and RCT designs	✓	✓ #4
Week 5: Sept 30	NEC group designs; Time series; Correlational designs	✓ SPSS	✓ #5 Dataset due
Week 6: Oct 7	Qualitative research; Focus groups; Content analysis; Meta-analysis	✓ Quiz	✓ #6
Week 7: Oct 14	Univariate descriptive statistics	✓	✓ #7
Week 8: Oct 21	<i>Examination (Conclusion of Part 1)</i>	Part 2: Sampling distribution (discussion during lab session)	
Week 9: Oct 28	Estimation and confidence intervals	✓	None
Week 10: Nov 4	Hypothesis testing; Difference of means	✓	✓ #8
Week 11: Nov 11	Bivariate regression and correlation	✓	✓ #9
Week 12: Nov 18	Multiple regression	✓	✓ #10
Week 13: Dec 2	Contingency tables; Chi square	✓	✓ #11
Week 14: Dec 9	Partial tables analysis	✓ Exam review	✓ #12 Research paper due
Week 15: Dec 16	<i>Examination (Conclusion of Part 2)</i>		

## 1 Introduction to 6002, plus Research Ethics; Research Questions; and Literature Review

- *Blackboard recorded lecture, readings, and videos*

Belmont Report and key principles of research ethics  
Special attention to informed consent, minimizing  
risk, privacy, and extra care for vulnerable groups

Institutional Review Board (IRB)  
Necessity for citation attribution  
Confirmation bias

Theory-building research steps  
Applied research steps

Theory; Hypothesis  
Independent variable (X); Dependent variable (Y)  
Empirical research

Basic structure of the written research report:  
Intro & problem statement; lit review;  
methodology; findings; discussion  
Writing a problem statement

Main goals of literature review  
Tips for upgrading the literature review

## 2 Levels of Measurement; Measurement Validity and Reliability

- *Blackboard recorded lecture, readings, and videos*

Cases (observations) in rows  
Variables in columns; values in cells

Aggregate data  
Ecological fallacy

Levels of measurement:  
Nominal, Ordinal, Interval, Scale  
Interval and ratio often called scale (or interval)  
Nominal and ordinal often called categorical  
Suitable stats vary depending on measurement level

Operationalize concepts; operational definition

Measurement reliability = consistency  
Measurement validity = accuracy

Subjective validity: face validity  
Criterion validity: concurrent & predictive validity

Unobtrusive measures  
Multiple measures

Secondary data analysis – pros and cons  
Scrutinize secondary data before using it

## 3 Question and Questionnaire Design; Survey Sampling Systems

- *Blackboard recorded lecture, readings, and videos*

Principles for designing good individual questions  
Ways to filter or minimize "random responses"

Best practices for overall questionnaire flow:  
Short intro; easy start; broader to more detailed;  
sensitive questions later; demographics at end

Closed-ended vs. open-ended questions  
Likert item (strongly agree/agree/disagree/strongly disagree)

Census vs. sample  
Random vs. nonrandom samples  
Nonrandom (nonprobability) sampling such as  
convenience, snowball, and purposive sampling

Simple random sampling  
Systematic random sampling  
Stratified random sampling  
(Proportionate vs. nonproportionate)

Probability-proportional-to-size (PPS) sampling  
Sampling frame (source/list used to draw sample)

Nonresponse bias vs. response bias  
Evaluating response rates; how high is high enough?

Survey participation as a quick cost-benefit decision  
 Best practices for improving survey response rates  
 Weighing the sample to reflect the population  
 Determining the optimum size of a completed sample  
 Benchmark confidence intervals (95% level) for  
 n=100 ( $\pm 10\%$ ); 600 ( $\pm 4\%$ ); 1100 ( $\pm 3\%$ )

#### 4 Causal Inference and RCT Designs

• Blackboard recorded lecture, readings, and video

Three elements of causal inference...

- 1) X & Y covary; association; concomitant variation
- 2) X before Y; direction; time sequence; temporal order
- 3) Rule out Zs; no plausible alternative; nonspuriousness

Correlation does not prove causation!

Post hoc, ergo propter hoc fallacy

Campbell & Stanley's design diagraming system

Single group posttest only

Single group pretest-posttest (aka before-and-after)

Static group design (nonequivalent comparison design)

Antecedent variables

Intervening variables

Major threats to internal validity:

- History
- Maturation
- Practice
- Instrumentation
- Regression to the mean
- Selection
- Intra-group history
- Attrition/Mortality (and how to deal with attrition)

"Intent to treat" analysis includes all those assigned to treatment group regardless of participation

Randomized, controlled trial (RCT) = true experiment

Elements of an RCT:

- (1) random assignment of subjects from pool to groups and (2) random assignment of X to groups

Reason for the power of RCTs:

Comparability of the groups (i.e., only real difference between the groups is X, so X is the best explanation for differences in the groups)

Classic experimental design

(aka pretest-posttest control-group design)

Posttest only experiment

(aka posttest-only control-group design)

RCT variations:

- "Control group" may get something
- May have more than one X (factorial designs)
- Can assign collectivities (instead of individuals)
- Groups not always assigned 1:1 (e.g., may be 2:1)

Factorial designs (simple or complex)

Dosage/sensitivity designs

Complex X

Multiple Ys

External validity (generalizability)

Random selection from the relevant population strengthens *external* validity.

Random assignment from pool of subjects to groups strengthens *internal* validity.

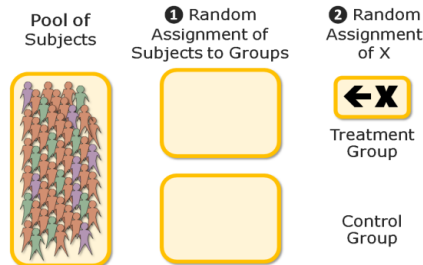
Reactivity

Hawthorne effects

Placebo

Try to avoid between-group reactivity as well as other types of reactivity (e.g., with X and staff)

#### RCT's two essential elements



## 5 NEC, Time Series, Correlational Designs

- *Blackboard recorded lecture, readings, and videos*

Practical reasons why RCTs may not be conducted  
Quasi-experiments (vague term)

Causal comparative (another term for studies that try to infer causality when groups not randomly assigned)

Nonequivalent comparison group (NEC) designs

Pretest-posttest nonequivalent comparison design

Posttest only nonequivalent comparison group design

*Key internal validity threat to NEC designs: selection*

Retrospective matching design

Natural experiments (strict vs. broad usage)

Time series (aka longitudinal) research

Why superior to “single group pretest-posttest”?

*Key internal threat to time series study: history*

Simple interrupted time series

Reiterative time series; Multiple time series

Deceptive time series charts (truncated base)

Panel data vs. cross-sectional data

Retrospective pretests (aka proxy pretests)

Fallacy of time series inferences from a single survey

Process and logic of correlational designs

Crucial role of controlling other factors; not crudely looking at results from a single X

*Key internal threat to correlational studies: selection*

Hard to statistically control for all Zs, especially.

threats from motivation and self-selection (thus

specification error, aka omitted variable bias);

different controls can yield widely varying results

Overall assessment of causal designs:

Lab RCTs: usually strong on internal validity but weak on external validity

Nonexperimental field studies: often strong on external validity but weak internal validity

Field RTCs: strong in both internal and external validity but often not feasible to conduct

The logic of inferring causality by coupling lab experiments with nonexperimental field studies

Big four validity issues:

Measurement validity

Internal validity

Statistical conclusion validity

External validity

## 6 Qualitative and Other Research

- *Blackboard recorded lecture, readings, and videos*

Qualitative Research

More exploratory than hypothesis testing

Small, purposive sample, not large random

Extended, intense observations or interviews

Unstructured or semi-structured data gathering

Essay reports with little or no quantitative data

Often explore the researchers' subjective impact

Focus groups purposes:

Probing attitudes, reaction testing, brainstorming

Focus group steps: recruit relevant people; 10-12;

1½-2 hours; semi-structured format with mostly

open-ended topics; neutral facilitator.

Mixed Methods Research

Using both qualitative & quantitative approaches,

For example, qual, then quant, then qual.

Focus groups purposes:

Probing attitudes, reaction testing, brainstorming

Focus group: participant recruitment; focus group

size; session length and agenda; moderator style;

and ideal focus group facilities

Content analysis steps:

Define scope

Operationalize variables to code

Refine and test coding system

Inter-coder reliability testing

Code content and analyze data

Meta-analysis purpose and strengths

Steps in conducting a meta-analysis

**7 Univariate Descriptive Statistics**

- Blackboard recorded lecture, readings, and videos

Good data analysis requires good data, plus awareness that: all summary statistics are reductionist, context dictates interpretation, minor differences should not be exaggerated, correlation does not prove causation, start with univariate analysis before multivariate.

Nominal univariate statistics – percent and mode  
 Interpretation pitfalls include:

- Misleading pictograms; confusing absolute and relative percent; misinterpreting mode as midpoint; and misleading modal composites

Plurality vs. majority

Major measures of central tendency:

- mean and median, plus trimmed mean

Mode (not necessarily a central tendency)

Major measures of dispersion:

- standard deviation and interquartile range

Positive skew (high values pull mean above median)

Negative skew (low values pull mean below median)

Normal curve

- ± 1 standard deviation = 68.3% of normal curve
- ± 2 standard deviations = 95.4% of normal curve
- ± 3 standard deviations = 99.7% of normal curve

Value of examining frequency distribution charts

Descriptive vs. inferential statistics

	Mean	Standard deviation
Population	$\mu$ "mu"	$\sigma$ "sigma"
Sample	$\bar{x}$ "x-bar"	s

Boxplots, stem-and-leaf plots

Histograms, bar charts, pie charts

**8 During Class: Examination for Part 1  
 During Lab: Introduction to Part 2**

**8 Introduction to Part 2: Sampling Distribution**

- Blackboard recorded lecture

Inferential v. descriptive statistics

Sampling distribution (theoretical distribution of a statistic for all possible sample outcomes of given size, n)

Mean of the sampling distribution =  $\mu_{\bar{x}}$

Standard deviation of the sampling distribution =  $\sigma_{\bar{x}}$

Properties of the sampling distribution:

1.  $\mu_{\bar{x}} = \mu$
2.  $\sigma_{\bar{x}} = \frac{\sigma}{\sqrt{n}}$  (standard error)

Central limit theorem (as sample size grows, the sampling distribution approaches normal regardless of the shape of the population distribution)

**9 Estimation and Confidence Intervals**

- Blackboard recorded lecture

Two types of estimates, point and interval

Estimator is used to estimate the population parameter by approximating it. Good estimators are 1) unbiased and 2) efficient

Formula to construct a confidence interval around a sample mean when do not know  $\sigma$ :

c. i. =  $\bar{X} \pm Z \left( \frac{s}{\sqrt{n}} \right)$  where Z is the critical value

Consider alpha ( $\alpha$ ), which is the probability that the interval does not contain the population parameter, and the confidence level ( $1 - \alpha$ ) to determine the critical value

Adjust the interval through n and the confidence level

Formula to construct a confidence interval around a sample proportion:

c. i. =  $p \pm Z \sqrt{\frac{0.25}{n}}$  where p is the sample proportion

## 10 Hypothesis Testing; Difference of Means

• Blackboard recorded lecture

Hypothesis testing steps:

1. State the assumptions
2. State the null ( $H_0$ ) and alternative/research hypotheses ( $H_A$ )
3. Select the critical value
4. Compute the test statistic
5. Compare the test statistic to the critical value.  
Decide whether to reject or fail to reject  $H_0$

Null hypothesis is a statement of no difference, specified in terms of populations. The null is the assumption, but it is never "proven." Failure to detect a relationship, especially in a small sample, does not mean there is no relationship

Z (critical) =  $\pm 1.96$  if want to be 95% confident, associated with  $\alpha = 0.05$

Formula to compute the test statistic for a two-sample means test when  $n_1 \geq 30$  and  $n_2 \geq 30$ :

$$Z(\text{obtained}) = \frac{\bar{X}_1 - \bar{X}_2}{\sigma_{\bar{X}-\bar{X}}} = (\bar{X}_1 - \bar{X}_2) / \sqrt{\frac{s_1^2}{n_1} + \frac{s_2^2}{n_2}}$$

Formula to compute the test statistic for a two-sample proportions test (where  $\pi = \frac{n_1 p_1 + n_2 p_2}{n_1 + n_2}$ ):

$$Z(\text{obtained}) = (p_1 - p_2) / \left( \sqrt{\pi(1-\pi)} \sqrt{\frac{n_1 + n_2}{n_1 n_2}} \right)$$

Student's t distribution replaces Z distribution where df (degrees of freedom) is  $n - 1$  when  $n < 30$  since  $s$  is no longer a good estimator of  $\sigma$ . As  $n$  increases, t distribution converges to Z distribution

Tradeoffs in testing:

1. Type I v. type II error. Lowering  $\alpha$  reduces type I error (reject true null) but increases type II error (fail to reject false null)
2. Statistical v. substantive significance. Large samples can show statistical significance for trivial relationships
3. One v. two-tailed tests. A one-tailed test increases the likelihood of rejecting the null by lowering Z(critical) but only if theory supports it

## 11 Bivariate Regression and Correlation

• Blackboard recorded lecture

Scatterplot (positive, negative, or no relationship)

Formula for bivariate regression:  $\hat{Y} = a + bX$

where  $\hat{Y}$  = predicted value for dependent variable (Y on the regression line),  $b$  = slope, and  $a$  = intercept

Regression gives the formula for the straight line that comes closest to the conditional means. Conditional mean = average Y for observations with the same X

Slope represents the "magnitude." The amount of change in Y when X increases by 1 unit

Residuals represent the difference between the actual and predicted values ( $Y_i - \hat{Y}_i$ )

Regression assumes the relationship is linear. Not appropriate for curvilinear patterns unless the specification of the variables is altered

Formula to compute the test statistic for the hypothesis test to determine whether there is a relationship between X and Y in the population ( $H_0: \beta = 0$  where  $\beta$  = population slope coefficient) is:

$$t(\text{obtained}) \text{ or } Z(\text{obtained}) = \frac{b - 0}{SE(b)}$$

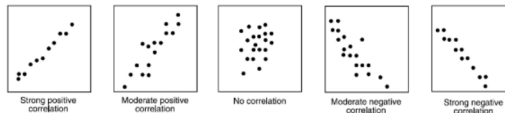
where  $SE(b)$  is the standard error of the slope

p-value = the probability of observing a test statistic equal to or further from the center of the distribution than that obtained if the null is true

Correlation coefficient ( $r$ ) ranges from -1 to 1 and measures the strength of the relationship. No linear relationship when  $r = 0$

Rough (and somewhat arbitrary) cutoffs for the strength:  $-0.3 \leq r \leq 0.3$  (weak);  $-0.6 \leq r < -0.3$  or  $0.3 < r \leq 0.6$  (moderate);  $r < -0.6$  or  $r > 0.6$  (strong)

Null hypothesis in test of statistical significance of  $r$  is  $\rho = 0$  where  $\rho$  = population correlation coefficient





## 12 Multiple Regression

- *Blackboard recorded lecture*

Formula for multiple regression:

$$\hat{Y} = a + b_1X_1 + b_2X_2 + \dots + b_nX_n$$

where, e.g.,  $b_1$  = slope of the linear relationship between  $X_1$  and  $Y$

Each slope shows the amount of change in  $Y$  when that independent variable increases by 1 unit:

- holding the other independent variables constant
- controlling for the effects of other independent variables

Coefficient of determination ( $R^2$ ) measures the proportion of the variation in  $Y$  that can be explained by the regression

Some limitations of  $R^2$  even when its value is high:

1. Always increases when add variables (except in the rare case where the additional variable has absolutely no effect)
2. Does not indicate which variables are significant
3. Does not mean that important variables have not been omitted

Adjusted  $R^2$  does not necessarily increase when a variable is added to the regression

Dummy (indicator) variables take the values 0 and 1. Used when nominal or ordinal independent variables are included in the regression

To avoid perfect multicollinearity, include one less dummy than the number of categories in the nominal/ordinal variable

Intercept is the predicted value for the omitted category and slope coefficients are interpreted relative to the omitted category

## 13 Contingency Tables; Chi Square

- *Blackboard recorded lecture*

When both variables are nominal or ordinal, can create a "contingency" table (aka crosstab) with the independent variable in the columns and compute the "conditional" percentages

Maximum percentage-point difference in the conditional percentages represents the relationship magnitude

Rough (and somewhat arbitrary) cutoffs for the relationship strength: 0-10% points (weak); >10-30% points (moderate); >30-100% points (strong)

Chi square ( $\chi^2$ ) distribution with  $\nu$  degrees of freedom (df) is the sum of  $\nu$  squared independent standard normal random variables ( $Z_1^2 + Z_2^2 + \dots$ )

Degrees of freedom for  $\chi^2$  (critical) =  $(r-1)(c-1)$  where  $r$  is the number of rows and  $c$  is the number of columns in the contingency table

Formula to compute the chi square test of independence:

$$\chi^2(\text{obtained}) = \sum \frac{(f_o - f_e)^2}{f_e}$$

where  $f_o$  = observed cell frequencies and  $f_e$  = cell frequencies that would be expected if the variables are independent

Formula to determine the expected frequencies:

$$f_e = \frac{\text{row marginal} \times \text{column marginal}}{n}$$

## 14 Partial Tables Analysis

- *Blackboard recorded lecture*

Partial tables analysis (aka crosstabs with controls) examines the relationship between  $X$  and  $Y$  for each category of  $Z$

Introducing  $Z(s)$  can change the understanding of the relationship between  $X$  and  $Y$  in various ways.

Relationship can be:

1. Direct ( $Z$  does not alter the  $X$ - $Y$  relationship)
2. Spurious ( $Z$  is the cause of the  $X$ - $Y$  relationship)
3. Intervening ( $Z$  is the link between  $X$  and  $Y$ )
4. Suppressor (absence of  $Z$  is masking the  $X$ - $Y$  relationship)
5. Interacting ( $X$ - $Y$  relationship changes across categories of  $Z$ )

## ● Examination for Part 2

## Standard Policies

**1. The Syllabus:** This syllabus is a guide to the course. Sound educational practice requires flexibility and the instructor may therefore, at her/his discretion, change content and requirements during the semester.

**2. Incompletes:** A student must consult with the instructor to obtain a grade of "I" (incomplete) no later than the last day of classes in a semester. At that time, the student and instructor will both sign the CCAS contract for incompletes and submit a copy to the School Director. Please consult the TSPPPA Student Handbook or visit the website for the complete CCAS policy on incompletes.

**3. Submission of Assignments:** It is the responsibility of the student to ensure that the instructor receives each assignment by verifying uploads to Blackboard using the My Grades tab.

**4. Policy on Late Work:** All work must be turned in by the assigned due date in order to receive full credit for that assignment, unless an exception is expressly made by the instructor.

**5. Academic Honesty:** The GW Code of Academic Integrity is at [studentconduct.gwu.edu/code-academic-integrity](http://studentconduct.gwu.edu/code-academic-integrity). All exams and other graded work products are to conform to the Code. It defines "academic dishonesty" as "cheating of any kind" and "misrepresenting one's own work, taking credit for the work of others without crediting them and without appropriate authorization, and the fabrication of information."

**6. Changing Grades after Completion of the Course:** No changes can be made to grades after the conclusion of the semester, other than in cases of clerical error.

**7. Religious Holidays:** Religiously observant students should notify the instructor the first week of classes regarding any session that will be missed; the courtesy of an absence without penalty will be extended.

**8. Accommodation for Students with Disabilities:** To receive accommodations on the basis of disability, please provide documentation from the GW's Disability Support Services, Rome Hall 102 (202-994-8250). See also: [disabilitysupport.gwu.edu](http://disabilitysupport.gwu.edu).

**9. Mental Health Services:** The Colonial Health Center offers assistance to address students' personal, social, career, and study skills problems, along with emergency mental health consultations and counseling services as well as referrals. See: [counselingcenter.gwu.edu](http://counselingcenter.gwu.edu).

**10. Community Values:** Higher education works best when it becomes a vigorous and lively marketplace of ideas in which all points of view are heard. Free expression in the classroom is an integral part of this process. Higher education also works best when we approach the enterprise with empathy and civility toward others, irrespective of identity or viewpoints. We value civility because that is the kind of community we want, and civility enables more effective intellectual exploration and growth.

### Grade Descriptions and Expectations:

**A (Excellent):** Exceptional work for a graduate student. Shows a consistently strong command of the material.

**A- (Very Good):** Very strong work for a graduate student. Shows a strong understanding of analytical approaches and meets professional standards.

**B+ (Good):** Sound work for a graduate student. This grade indicates the student has at least accomplished the basic course objectives.

**B (Adequate):** Minimal competent work for a graduate student with some evident weaknesses. Shows competence in most course objectives, but the understanding or application of some important issues is incomplete.

**B- (Inadequate):** Weak work for a graduate student. Understanding of key issues is incomplete. A cumulative GPA of B- will lead to academic probation.

### PPPA 6002. Research Methods and Applied Statistics ([bulletin.gwu.edu/courses/pppa](http://bulletin.gwu.edu/courses/pppa))

Development of skills and knowledge for conducting original research and critically evaluating empirical studies. Various research designs and data collection techniques are examined. Focus on computerizing data sets for quantitative analysis, analyzing strength of relationships, selecting appropriate statistical techniques, and testing statistical hypotheses.

### Average Minimum Independent Weekly Work:

In addition to an average of two and a half to three hours weekly of direct class and lab instruction, this course requires a minimum weekly average of six hours of independent reading, research, and learning.

## **SPECIAL 2020 NOTIFICATIONS**

### **Recording synchronous class sessions**

The Family Educational Rights and Privacy Act (FERPA) (20 U.S.C. § 1232g; 34 CFR Part 99) is a Federal law that protects the privacy of student education records. Consistent with FERPA, please note:

Our synchronous class lectures/discussions will be video recorded. Thus, as part of this course, you may be recorded. The recording will only be made available to students enrolled in this class for the duration of this semester. If you do not wish to be recorded, please contact both the instructor and the GW Privacy Office ([privacy@gwu.edu](mailto:privacy@gwu.edu)) the first week of class (or as soon as you enroll in the course, whichever is latest) with your privacy concern.

### **Limits on Use of Electronic Course Materials and Class Recordings**

Students are encouraged to use electronic course materials, including recorded class sessions, for private personal use in connection with their academic program of study.

Electronic course materials and recorded class sessions should not be shared or used for any non-course related purposes.

Students who impermissibly share any electronic course materials are subject to discipline under the Student Code of Conduct.

Please contact the instructor if you have questions regarding what constitutes permissible or impermissible use of electronic course materials and/or recorded class sessions.