

Introduction to Measurement and Statistics
PSYC 600
Online Course Syllabus

Course Description

This course will provide an introduction to measurement and statistical tools used in conducting research. Specific topics include: reliability and validity; research methods and statistical analysis; quantitative and qualitative methods; needs assessment and program evaluation; use of technology; and legal and ethical issues of research.

Learning Goals

How do you know if your program is doing what you think it should? Are your clients achieving the outcomes you expect given your interventions? What evidence do you need to be able to say your program is “successful?” What changes can you make to your program to improve outcomes? How would you know if the changes in your program improved program outcomes? These and other similar questions will form the basis of our semester-long quest to discover and apply the intricacies of scholarly inquiry to your work as practitioners.

This course is designed to inspire you to develop life-long curiosity for how statistics, measurement, and research methods can help you understand how your interventions are working (or not). Through this course, you will:

- ✓ Differentiate and apply research, assessment, evaluation, and measurement;
- ✓ Devise research questions designed to examine program effectiveness;
- ✓ Identify appropriate research methods and statistical analyses needed to answer research questions;
- ✓ Demonstrate literacy in basic statistics, quantitative design, and qualitative inquiry;
- ✓ Develop a program evaluation plan to assess the outcomes of an actual human services program;

To ensure your learning experience is meaningful and robust, we will first engage in the material through readings and online lectures. You will also hear from seasoned researchers with our program, department, and/or field and, each week, practice what you’re learning and share your perspectives virtually with your classmates.

***See Appendix for related CACREP standards and KPI charts (Clinical Mental Health and School Counseling Programs).**

Course Meetings

Meetings for this course will occur asynchronously. Check the Course Calendar or Canvas page for assignment due dates. All assignments should be turned in on Canvas.

We will also have several **voluntary virtual group meetings** throughout the semester. Lasting no longer than one hour, these meetings are intended as “check ins” and opportunities to pose questions or curiosities that may benefit the group. We will have polls throughout the semester to schedule meeting times that work best for the majority of responders and will be brought up in weekly videos.

Office Hours

Office hours will be set by appointment and will take place virtually (Zoom meeting link at top of syllabus).

Readings

Wachter Morris, C.. & Wester, K. (Ed.). (2018). *Making research relevant*. Routledge.

<https://doi.org/10.4324/9781315179353>***This book is available for free through the JMU libraries (e-book).

Center for Disease Control. (2011). *Introduction to program evaluation for public health programs: A self-study guide*. Centers for Disease Control and Prevention. ***Full-text PDF provided in Week 1 module on Canvas.

APA. (2020). *Publication Manual of the American Psychological Association* (7th ed.). APA.

***Note: You will also want to be familiar with this text. While the library has copies and the internet offers resources, owning a copy may also be prudent.

Other required readings for this course will be made available on Canvas.

Supplementary Readings (often referenced in lecture materials):

Heppner, P. P., Kivlighan, D. M., & Wampold, B. E. (2008). *Research design in counseling* (3rd Ed.). Brooks/Cole.

Howell, D. C. (2013). *Statistical methods for psychology* (8th ed.). Cengage.

University Policies

As members of the JMU learning community, we will adhere to common university policies and protocols. The information at www.jmu.edu/syllabus contains the academic policies required for all courses: **academic honesty, adding/dropping classes, disability accommodations, inclement weather, and religious accommodations**. Please take the time to peruse that website. As an addition to the policy on academic honesty, please ensure that Canvas postings and all submitted assignments are originally and uniquely your creation. When critiquing, alluding to, or referencing the work of others, please comply with the sixth edition of the Publication Manual of the American Psychological Association (APA).

Diversity and Inclusion

James Madison University is a community dedicated to diversity and inclusivity. As faculty, we believe that learning environments should support a diversity of thoughts, perspectives, experiences, and identities. We invite you to share anything with us that might help create a more inclusive and welcoming learning environment.

Attendance

Attendance will not be recored. Students are expected to access all course material for any given week at their own pace.

Grading Scale

You can earn 525 points in this course. Specific grade ranges are as follows: A (92.5-100% of points earned), A- (89.5-92.4% of points earned), B+ (85.5-89.4% of points earned), B (82.5-85.4% of points earned), B- (79.5-82.4% of points earned), C (70-79.4% of points earned), F (<70% of points earned).

Assignments (points total)

Discussion Posts (10 points each; 100 points total)

Discussion question will be made available for students to respond to throughout the course. The nature of each discussion post will vary based on the topics covered for the week. You will be expected to submit at least one response to the prompt and one response to a peer. (**Some posts will not require a peer response – I will note that in the discussion prompt.*) Posts and responses should be substantive and offer meaningful input. **Responses to the prompt will be due by 11:59 pm on the Friday for the week that it is assigned. Responses to a peer, if applicable, will be due by the 11:59 pm on the Sunday of the week that it is assigned.** Any issues or concerns I have about posting will be relayed to you via email.

Weekly Assignments (25 points each; 125 points total)

*****Note: Assignments will due on the following Tuesday (by 11:59pm) of the week following the introduction of related content. The Assignment pages for each one will contain any updates, clarifications, or helpful details as well as the due dates. Turn in all assignments directly to Canvas.**

Assignment 1: Article Critique

You will find **one empirical article** that fits with a preferred area of interest you have. Using Table 2.2 from *Making Research Relevant*, you will write a 3 page critique of the chosen article around the following sections: introduction, methods, results, and discussion (1-3 paragraphs per sections).

Assignment 2: Program and stakeholder description

Compile a comprehensive program description including need, targets, outcomes, activities, and resources. See Canvas page for helpful approaches to this assignment. (Use the CDC workbook, Worksheets 1A and 1B, to guide your approach.)

Assignment 3: Logic Model

Identify the stage of development and context of the program. Convert inputs, activities, outputs, outcomes (short and long-term), and impacts into a simple global logic model. (Use the CDC workbook, in particular Worksheets 2A and 2B, to guide your approach.). Guidance on Canvas and in videos will help you discover your best approach for creating the model.

Assignment 4: Evaluation Design and Data Collection Plan

Define the purpose(s) and user(s) of your evaluation. Identify the use(s) of the evaluation results. Keeping in mind the stage of development, program intensity, and logistics and resources (all of which are, in some way, expressed through the logic model), articulate the evaluation questions to be examined. Your selected design should be driven by the evaluation questions you wish to explore. Use worksheets 3A-3B to inform your approach.

Assignment 5: Data Analysis Plan

Guided by your evaluation questions, identify the appropriate analysis need to answer each question. Be sure to clearly communicate what variables will be used in each analysis. For example, if you are planning to conduct a t-test, what is your independent variable and what is your dependent variable. **Be sure to write this section as if the stakeholder you are writing for knows nothing about statistics.** See the assignment's Canvas page for important details.

Comprehensive Program Evaluation Plan (300 points) [KPI 8 (Reinforcement)]

The purpose of this capstone assignment, **which maps to each of the learning outcomes in this course**, is to provide you with the opportunity to develop an evaluation plan designed to examine an on- or off-campus program. This will consist of both revising previous completed sections of the plan by integrating feedback from earlier drafts and creating two new sections: Literature Review and Reporting Plan. The purpose of the literature review is to show that you, the evaluator, have at least some background knowledge on aspects and issues related to the program. The purpose of the reporting plan is to consider appropriate stakeholders when disseminating findings.

You will take your materials from Assignments 2-5, as well as the two additional sections, and create a 10-15 minute (max) virtual presentation. **You will not turn in any additional written components.** See Canvas page for specific details (rubric, presentation sections). Ultimately, you should create a presentation as if your audience are relevant stakeholders (i.e., program facilitators, funders, supervisors, participants, etc.).

PSYC 600 Course Schedule

***Note: This schedule is subject to change. All of the materials for a given week can be found on Canvas in the related module (found on the course's home page). Additional readings not included in this schedule may also be added to those modules before they are published.

Date	Class Content	Weekly Readings & Assignments
Week 1 5/23	<ul style="list-style-type: none"> • Introduction to class and syllabus • Connecting research to practice • Finding your research interests/passions • Librarian welcome/How to find research articles 	<ol style="list-style-type: none"> 1. <i>Making Research Relevant (MRR)</i> Chapter 1 2. Discussion post #1 3. Video: <ul style="list-style-type: none"> ▪ Lecture ▪ Searching JMU libraries
Week 2 5/30	<ul style="list-style-type: none"> • “Consuming” research • Validity and Reliability (Threats to Each) 	<ol style="list-style-type: none"> 1. <i>MRR</i> Chapter 2 2. Discussion post #2 3. Video: Lecture
Week 3 6/6	<ul style="list-style-type: none"> • Research ethics 	<ol style="list-style-type: none"> 1. <i>MRR</i> Chapter 3 2. Discussion post #3 3. Assignment #1: Article Critique 4. Video: Lecture
Week 4 6/13	<ul style="list-style-type: none"> • Overview of program evaluation • Research and program evaluation: What’s the difference? 	<ol style="list-style-type: none"> 1. <i>MRR</i> Chapter 13 2. CDC pp. 1-25 3. Discussion post #4 4. Video: Lecture
Week 5 6/20	<ul style="list-style-type: none"> • Descriptive designs • Evaluating and designing surveys • Sampling • Relevant statistics: mean, frequency, data types, normal curve, standard deviation, etc. • Logic Models 	<ol style="list-style-type: none"> 1. <i>MRR</i> Chapter 4 2. CDC pp. 26-41 3. Assignment #2: Program and stakeholder description 4. Sampling Chapter (Creswell & Guetterman) 5. Videos: <ul style="list-style-type: none"> • Lecture • Faculty interview #1
Week 6 6/27	<ul style="list-style-type: none"> • Randomized controlled designs (the “gold standard”) • Quasi-experimental designs • Relevant statistics: <i>t</i>-tests, ANOVA, etc. 	<ol style="list-style-type: none"> 1. <i>MRR</i> Chapters 8 and 9 2. Discussion post #5 3. Videos: <ul style="list-style-type: none"> • Lecture • Faculty interview #2
Week 7 7/4	<ul style="list-style-type: none"> • Correlational and causal-comparative designs • Relevant statistics: correlation (<i>r</i>), regression 	<ol style="list-style-type: none"> 1. <i>MRR</i> Chapter 7

	<ul style="list-style-type: none"> • Evaluation frameworks • Developing research/evaluation questions • More Data Analyses • Completing the “decision tree” 	<ol style="list-style-type: none"> 2. Assignment #3: Logic Model (due Wednesday, 7/6 due to holiday) 3. CDC pp. 43-55 4. Discussion post #6 5. Video: Lecture
Week 8 7/11	<ul style="list-style-type: none"> • Case Study • Single-case research 	<ol style="list-style-type: none"> 1. <i>MRR</i> Chapters 5 and 6 2. Discussion post #7 3. Assignment #4: Evaluation Design 4. Videos: <ul style="list-style-type: none"> • Lecture • Faculty interview #3
Week 9 7/18	<ul style="list-style-type: none"> • Qualitative research • Conducting interviews and focus groups 	<ol style="list-style-type: none"> 1. <i>MRR</i> Chapter 10 2. CDC pp. 56-81 3. Discussion post #8 4. Videos: <ul style="list-style-type: none"> • Lecture • Faculty interview #4
Week 10 7/25	<ul style="list-style-type: none"> • Mixed-methods research • Other ways to investigate in program evaluation 	<ol style="list-style-type: none"> 1. <i>MRR</i> Chapter 12 2. Discussion post #9 3. Assignment #5: Data Analysis Plan 4. Videos: <ul style="list-style-type: none"> • Lecture • Faculty interview #5
Week 11 8/1	<ul style="list-style-type: none"> • Advocacy-based research • Photovoice • Reporting Plans 	<ol style="list-style-type: none"> 1. <i>MRR</i> Chapters 11 and 14 2. CDC 82-90 3. Discussion post #10 4. Videos: <ul style="list-style-type: none"> • Lecture • Faculty interview #6
Week 12 8/8	<ul style="list-style-type: none"> • Program evaluation presentations • Providing feedback to presentations 	

APPENDIX

CACREP STANDARDS COVERED IN THIS COURSE

1. Professional Counseling Orientation and Ethical Practice

- j. technology's impact on the profession
- k. strategies for personal and professional self-evaluation and implications for practice

7. Assessment and Testing

- a. historical perspectives concerning the nature and meaning of assessment and testing in counseling
- b. methods of effectively preparing for and conducting initial assessment meetings
- f. basic concepts of standardized and non-standardized testing, norm-referenced and criterion-referenced assessments, and group and individual assessments
- g. statistical concepts, including scales of measurement, measures of central tendency, indices of variability, shapes and types of distributions, and correlations
- h. reliability and validity in the use of assessments
- i. use of assessments relevant to academic/educational, career, personal, and social development

8. Research and Program Evaluation

- a. the importance of research in advancing the counseling profession, including how to critique research to inform counseling practice
- b. identification of evidence-based counseling practices
- c. needs assessments
- d. development of outcome measures for counseling programs
- e. evaluation of counseling interventions and programs
- f. qualitative, quantitative, and mixed research methods
- g. designs used in research and program evaluation
- h. statistical methods used in conducting research and program evaluation
- i. analysis and use of data in counseling
- j. ethical and culturally relevant strategies for conducting, interpreting, and reporting the results of research and/or program evaluation

CMHC 9. JMU Counseling Program Key CMCH Standards: Demonstrate the knowledge and skills necessary to address a wide variety of circumstances within the context of clinical mental health

counseling. Applying evidence-based interventions for prevention and treatment of a broad range of mental health issues, graduates also demonstrate skills for social justice and advocacy.

CLINICAL MENTAL HEALTH COUNSELING PROGRAM KPIs AND CACREP STANDARDS

CACREP STANDARDS INCLUDED IN KPIs AND IDENTIFICATION OF STANDARDS COVERED IN ASSIGNMENTS	7f	7g	7h	8a	8b	8c	8d	8e	8f	8g	8h	8i	8j	9
7. Assessment and Testing	X	X	X											
8. Research and Program Evaluation	X	X	X	X	X	X	X	X	X	X	X	X	X	
KPI 8: Research and Program Evaluation (Reinforcement) Program Evaluation Project: provides you with the opportunity to develop an evaluation plan designed to examine an on- or off-campus program. (See Appendix for Rubric)	X	X	X		X									X
9. Counseling Program Key CMHC Standards														X
Assignment 1: Program and Stakeholder Description				X		X	X	X	X	X	X	X		X
Assignment 2: Logic Model	X	X	X											X
Assignment 3: Evaluation Design & Data Collection													X	X
Assignment 4: Data Analysis Plan	X	X	X				X		X		X	X		

SCHOOL COUNSELING PROGRAM KPIs AND CACREP STANDARDS

CACREP STANDARDS INCLUDED IN COURSE, KPI's AND IDENTIFICATION OF STANDARDS COVERED IN ASSIGNMENTS	7f	7g	7h	8a	8b	8c	8d	8e	8f	8g	8h	8i	8j
7. Assessment and Testing	X	X	X										
8. Research and Program Evaluation	X	X	X	X	X	X	X	X	X	X	X	X	X

KPI 8: Research and Program Evaluation (Reinforcement) Program Evaluation Project	X	X	X	X	X	X	X	X	X	X	X	X	X
Assignment 1: Program and Stakeholder Description				X		X	X	X	X	X	X	X	
Assignment 2: Logic Mode	X	X	X										
Assignment 3: Evaluation Design & Data Collection													X
Assignment 4: Data Analysis Plan	X	X	X				X		X		X	X	

KPI RUBRIC	Below Standard 1	Approaching Standard 2	Meets Standard 3	Exceeds Standard 4
KPI 8: Research and Program Evaluation Critically evaluates research related to core areas of counseling practice. Uses data-informed decision-making practices for program evaluation and management.	Does not meet expectations for level of training and experience in critically evaluating research related to client problems or programs relevant to work setting. Does not use this information to inform decision-making.	Does not consistently meet expectations for level of training and experience in critically evaluating research related to client problems or programs relevant to work setting. Inconsistently uses this information to inform decision-making.	Meets expectations for level of training and experience in critically evaluating research related to client problems or programs relevant to work setting. Able to use this information to inform decision-making.	Surpasses expectations for level of training and experience in critically evaluating research related to client problems or programs relevant to work setting. Able to use this information effectively and thoughtfully to inform decision-making.