

Course: 07.702

Research Methods and Design

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Office Hours: Tuesday and Thurs., 2:15-3:45, after class, or by appointment.

Required Texts

1. McMillan, J. and Schumacher, S: Research in Education: Evidence Based Inquiry, 6/E ISBN-10: 0205455301.

2. Campbell and Stanley. Experimental and Quasi-Experimental Design. Rand McNally ISBN: HM-0-395-30787-2.

3. Class handouts, articles, and. FREE-ON-LINE Stat books, software and helpful web sites: **You will need to email me at the following email address (James_Carifio702@yahoo.com)**, and I then email you back an **electronic form of the list of on-line books and sites** I will hand out in class, so you will not have to type them all in. Emailing me will start the process of your receiving **electronic handouts** from me and **post-class follow-up memos** as well as **my answering your questions** and your **turning in certain assignments** to me. The Yahoo address is the address for doing "course business" to keep my university email uncluttered.

Optional

1. The student version of SPSS (obtained from www.spss.com) or/and a text **such as** Shannon, D and Davenport, M. Using SPSS to solve statistical problems: a self-instructional guide **WITH DISK: MAKE SURE IT HAS THE DISK**, ISBN-13-9780132675565, which is obtainable from www.alibris.com as it is currently out of print. **There are many similar texts and guides available for SPSS all of which may be obtained second hand and cheaply. there are also many simplified versions of SPSS such as StatView and alternatives to SPSS as well as specialized software such as WordStat which we will discuss. However to use any software you must know and understand the statistics and analyses the software does and be able to interpret the results the software produces which is the prerequisite to learning and using the software. So, do not get the cart before the horse, please.**

2. Kerlinger, F. and Lee, H. Foundations of Behavioral Research. Wadsworth. ISBN: 0-15-507897-6.

Other Helpful Texts

1. Ferguson: Statistical Analysis (etc)
2. Aneshensel, Carol: Theory-Based Data Analysis for the Social Sciences
3. Stevens, J. Intermediate Data Analysis (with SPSS examples).
4. Edwards, Allen: Experimental Design in Psychological Research
5. Cooper: The Integrative Research Review
6. Anderson, T. and Kanuka, H. E-Research: Methods, Strategies, and Issues.

Course Overview

This course is intended to give doctoral students an understanding of research methods and experimental designs sufficient to read the empirical research literature with reasonable

sophistication and to do a basic research design for a ‘theory-driven’ doctoral dissertation. A doctoral dissertation, it should be noted, is typically more than a (small and narrowly defined) research study, which is a common misconception and myth about both doctoral dissertations and studies. The recurring theme in this course will be that research, inquiry, or scholarship is the result of “logic-in-use” and is “theory-driven” either explicitly or implicitly, and theory-driven **two dimensionally** (see attachment for details).

Consequently, this course will focus primarily on experimental research methods and experimental research, and then proceeds as time allows to quasi-experimental, qualitative, and non-experimental research and research methods. There are several good reasons for this initial focus which will be explained during the course. This course, therefore, will cover the fundamentals of experimental research and the experimental research process, as well as the fundamentals of experimental research design. The view that will be present in this course, however, is that good quality research (and scholarship) is good quality research (and scholarship) whether the research is experimental, quasi-experimental, qualitative, or non-experimental in character.

An extension of this view is that science and experimental research are the "standard models" from which all other modes of research are better and more fully understood (e.g., "qualitative" and non-experimental research), and this view is one of the reason why these two **standard models** are the foci of this course as well as several specialized literacies associated with them.

Both analysis of variance and multiple regression will be focused on in this course. Both are STUDY DESIGN and data analysis methodologies and techniques that are equivalent to each other under certain sets of conditions. **The fundamentals of measurement, reliability and validity will be considered in detail, as will the absolute necessity of theory in research and the research process.** Students looking for a different kind of research methods and design course, or emphasis, are advised to take this course with another instructor.

Assessment and Grading

Representative articles will be given out during the semester for students to read, analyze and evaluate (most often in writing) **to begin the process** of learning how to read research **critically** and with some sophistication. There will be **a midterm and a final exam**, or final project, depending on the progress made during the semester. Each of these components will count for one-fourth of the final grade for this course. The remaining one-fourth of your grade will be the quality of your class participation, your performance on occasional self-quizzes over the course of the semester (see syllabus for details), and the quality of your helping your classmates to learn, understand, and have insights about doing and interpreting research and the research process. High quality research comes from team work (among other things) and peer review (which you will be asked to do) and criticism of your work. **Helping you to learn to "do your homework," "to be prepared," and to be a good "research colleague and peer" are also goals of this course and part of your professional development.** Also, as doing research and a dissertation is to a very high degree a “do-it-yourself” and “self-directed” process, the degree to which you are a proactive, self-directed and adult learner will also be part of the evaluation of your behavior and work in this course and traits and goals I will try to both encourage and facilitate.

Computations and Computers

Most computations will be done with Excel, SPSS, Stat-View or some similar type of software although many will be done by hand or calculator either for convenience or because the software

does not do them and they are important to do to complete analyses. **At a minimum, I will expect you to be able to interpret the output (results) of certain analyses (such as ANOVA) from some software programs (such as SPSS) and know how to read basic tables (such as an ANOVA table) in research articles and to make such tables which will require you knowing certain aspects of APA (reporting) formats. I will also expect you to be able to summarize the results reported in tables in acceptable professional English.** It would be nice if you learned how to develop a data file in Excel or SPSS and to select the appropriate analyses to run from the available menus, but having this operational knowledge and not knowing and understanding the conceptual and theoretical content of the course would be more than self-defeating, particularly in the long run. Once you learn the conceptual and theoretical content of this course, you can learn how to use various software packages as well as use them more intelligently even if this learning happens after this course. So if it is a choice of where to spend your limited time in this course, spend it on the conceptual and theoretical content because (1) I am telling you that is the most important content to know and the knowledge with the longest half-life, and (2) this is what will be weighted most highly in my evaluation of your work. Many resources, however, will be provided for you to learn the rudiments of using the most commonly used software packages.

Course Ground Rules, Expectations and Your Responsibilities

There is a separate handout on these three items that we will go over and discuss during the first class so that each is explicit and clear to you. In general, you need to understand that this content is **highly cumulative** and the concepts, principles, ideas, facts and details are **highly interrelated** and adapted in numerous ways. You **cannot cram this content** and must learn it day by day in a systematic fashion and this approach will need to be your learning style in this course. Next, you **cannot just be ‘acquainted’ with this content** as you will not only misunderstand it and miss key and critical points, but you will not be able to apply the content or think critically using it. You, therefore, need to learn each concept, principle, technique and idea with **some depth and sophistication** (i.e., at the higher levels of Bloom’s taxonomy) and synthesize, extend and **transfer your understandings** to different contexts and situations. You will also need to be meticulous and learn the precise, specialized and nuanced meanings of many words and new terms. Further, you will need pay attention to details, and **what is not there or said in a study** as the “silences” are often more important than the “sounds” in research (just like poetry). If research is observing and reflecting, then you need to be **actively observant at all times** and not tuned out or unengaged. I expect you to be an independent, self-directed, self-managing, adult learner, and I actually expect you **to work at teaching yourself** (and others) this content. I also expect you to do the reading and exercises and **to come to class prepared** (if you come, as I do not require attendance). **All of these things are our ‘covenant’ in this course.** If you do not break covenant with me, I will keep re-explaining things and explaining them in different ways until you understand them sufficiently and **to hold you harmless** for any and all misunderstandings and mistakes. As Einstein once said, **“If we knew what we were doing, they wouldn’t call it research** [or the synthetic-experimental approach or mode of learning].” Given these points, one of the most efficient and effective ways of my assessing whether you are meeting your responsibilities in this course and the goals of this course is to use the **Socratic** teaching method. **I will call you directly in class** and pepper you with questions, so please, do not take it personally or be overly frightened or feel personally put upon by me. The Socratic method is just one of the most efficient and dynamic ways of **measuring and verifying** your knowledge and understanding and the degree that you are keeping covenant with me, as well as your understanding that research is **an adversarial process** and **a French Court** where the hypothesis and you are guilty until you prove yourselves innocent, which means that you must

stand-and-deliver just like your first paper presentation at a conference or your proposal hearing. So just think of our exchanges as needed practice sessions for you for your future (hopefully).

Syllabus

Abbreviations: M/S= McMillan and Schumacher

K= Kerlinger

F= Ferguson

S/G= Stanley and Glass

G/S= Glass and Hopkins

J26: Overview and basic concepts: What is inquiry, scholarship, research? “Theory-driven” inquiry and research. Methodological theory versus substantive theory and the differences, relationships and “loose-couplings” between the two. The core cognitive literacies needed by all educational professionals. The simple (but not so simple) “true experiment.” Correlation, regression, baselines, design, falsification, and controls. Internal and external validity. Theory, constructs, operational definitions and measurement (the heart, soul, mind and meaning of the process). The “research question” and the “research literature.” Exploratory (Formative) versus Confirmatory (Summative) Research. Anomalies, analogies, metaphors, surrogates, ideologies, data wars, and the lunatic fringes. **Conceptualizing and managing complexity--is methodology.** Readings: M/S ch1&2; K ch1-3; handouts.

F2: Modes of Inquiry: Quantitative (experimental and non-experimental) and Qualitative (interactive and non-interactive). Measurement and data collection techniques, modes of analysis and reporting, the structure and anatomy of research reports. Readings M/S ch3&6; K 22&23.

F9: Basic Experimental Research: kinds and types, samples and sampling, designs, baselines and controls, threats to internal and external validity, data collection, analysis, interpretation and reporting. Readings M/S ch6; K ch17&18; S/C -all.

F16: Measurement, reliability and validity and the production (and analysis) of reliable and valid data. Readings: M/S ch8; K ch25-27, handouts. **Jim at EERA conference; in-class group assignment: *Ghost-Busters analysis and Research Vignette-1.***

F23: Measurement methods, tests and instrument construction (Part 1). Readings: M/S ch4,5,8; K ch27&29, handouts (this is a two meeting unit).

M1: Measurement methods, tests and instrument construction (Part 2): Observing, capturing, coding, “scoring” data/information. Readings: M/S ch4,5,8; K ch27&29, handouts. *Research Vignette-2*

M8: Reading/Finding Research Studies: handout articles to read and critique and then read together in class; M/S ch4&5. Hand outs. **Take Home Midterm Handed Out.**

M15: Spring break, do midterm

M22: Analysis of Variance (Learning the BOSS-ANOVA): a method of thinking, analyzing, conceptualizing, designing and clarifying studies, questions and results used by those Who Dance with Data. Readings: K 13; M/S ch10 OR F ch14,15; G/H ch15; **TAKE-HOME MIDTERM DUE**

M29: Two-way ANOVA (walking and chewing gum at the same time), Post Hoc Tests, and Interactions: Readings: K ch14; or/and F ch16,18,19; G/H ch 17,18, Stevens, ch-2 handouts. A5: Three-way ANOVAS. Readings F ch17; G/H ch 17, 18.

A5: Three-way ANOVAS. Effect sizes, explained variances and graphing, interpreting, and writing-up ANOVAS. Readings F ch17; G/H ch 17,18.

A12: ANOVA's for correlated groups (RANOVA) and ANOVA analogs and the assessment of change and trends. Readings: F ch19, K ch15, 21; G/H ch20, handouts. *Research Vignette-3*.

A19: Simple Multi-Regressions designs and analyses and other multivariate analytical techniques. Handouts, and M/S ch12; K ch28.

26: Non/quasi-experimental, Survey, and Correlational Studies. Readings: M/S ch9; K ch22, 24.

M3: **Jim at Conference: in-class group assignment: Research Vignette 4.**

M10: Program/Policy Evaluation/Research. Handouts. *Take-Home final distributed.*

M17: **Take Home Final or Project Due.**

