Course: 07.702                    Research Methods and Design

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**Required Texts**


guide **WITH DISK: MAKE SURE IT HAS THE DISK,** (12 copies)
PH, ISBN-13  9780132675565.  **If you need it.**

4. 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**


**Other Helpful Texts**

1. Ferguson: Statistical Analysis (etc)
2. Aneshensel, Carol: Theory-Based Data Analysis for the Social Sciences
3. Edwards, Allen: Experimental Design in Psychological Research
4. Cooper: The Integrative Research Review

**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 focus 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, you 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) 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 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).
J28: 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.


F11: Basic Experimental Research: kinds and types, samples and sampling, designs, baselines and controls, threats to internal and externals validity, data collection, analysis, interpretation and reporting. Readings M/S ch6; K ch17&18; S/C -all.

F18: Measurement, reliability and validity. Readings: M/S ch 8; K ch25-27, handouts. **Holiday: “on-line” class (i.e., additional readings and answering questions on reading emailed to you) done at your convenience.**


M3: Reading/Finding Research Studies: Handout articles to read and critique and then read together in class; M/S ch4&5.

M10: 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; Stevens, ch2. Hand out **Take Home Midterm Handed Out**

M17: University Spring Break: Do Midterm, read ANOVA materials
M24: 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. **Turn in Take Home Midterm.**

M31: Three-way ANOVAS. Critique and in-class reading of Study 2 due. Readings F ch17; G/H ch 17,18. **TAKE-HOME MIDTERM DUE.**

A7: ANOVA's for correlated groups (RANOVA) and ANOVA analogs. Readings: F ch19, K ch15,21; G/H ch20.

A14: Simple Multi-Regression Designs and Analyses


M5: Qualitative Strategies and Data Analysis. Readings: M/S ch 13,14; K ch30.

M12: Qualitative Strategies and Data Analysis. Readings: M/S ch13,14 and 15; K ch30. **Take-Home Final given out.**

M19: **Take Home Final or Project Due.**
Handout 1: Logic-In-Use, Reconstructive Logic. Methodological Theory, Substantive Theory and Falsification.

The recurring theme of this course is and will be that "RESEARCH METHODOLOGY (AND DESIGN) BEGINS BEFORE THE FIRST SENTENCE" (in Chapter 1 of the Dissertation, book or introduction to a research article), and then is implemented, carried out, and reported in every single sentence of the work until the last sentence in “Chapter 5” (Conclusions, Discussions and Recommendations). Research, research methodology, and design, is "logic-in-use" (see Kaplan), whereas reporting research is “reconstructive logic” and communicating the logical flow of the study or work so it may be followed and understood by others relative to all key and critical information that is needed about the work or study so it may be followed and understood by others in order to judge the quality and validity of the findings and conclusions (and/or replicate the work). This “reconstructive logic” may not be (and usually is not) the exact “ricochet path” one followed from point to point in conceptualizing, designing and doing the work. Finishing your dissertation (or a research study) is learning, understanding and performing this Kaplan’s maxim and distinction at all times. All research and/or scholarship also requires an understanding of the basic fact that every inquiry, study, or work is “theory-driven” and theory-driven two dimensionally.

First there is the theory underlying and behind the methodology used to conduct the investigation in all phases of the investigation from the collection of information or data and the procedures used to do so to the analysis of the information collected to a certain type and level of the interpretation of the results. This theory is classically called “the theory of the ‘experiment’ or ‘work’ or ‘methodological theory’” (see Suppes)” and is chiefly concerned with the various validities, reliabilities, assumptions, and limitations of the methodologies used in each part of a work or study in the process of going from “research questions” (or hypotheses) to (tentative in most views) “answers” (i.e., “divine revelation,” you should note, is a research methodology). This level and kind of theory is the “theory’ that is typically taught in most research methodology courses wherever the course sits along the “qualitative to quantitative” (false dichotomy) research methodology continuum (most research is ‘mixed methods).”

When only this level and type of methodological theory is operating explicitly in an inquiry, work or study, the approach is called “blind or ‘shot gun’ empiricism”, whether the work is quantitative or qualitative, as qualitative research can be as blind shotgun empiricism. Such work is also often called “functionalist” or ‘functionalism.”

The second kind or level of theory operating in any inquiry, work, study, or experiment is substantive theory. Substantive theory is ‘explanatory theory” about how ‘causes and effects’ work and come about relative to the phenomena and variables being investigated. Substantive theory ranges from belief systems about “how to world work” (called often called folk theories) to partially empirically verified formal models and theories of the relationships and ‘causal’ event chains that exit in a fairly circumscribed domain or segment of reality; for example, cognitive learning theory, achievement motivation, or cultural identity theory, never mind macro economics or quatum theory.

Substantive theory is needed to pose better, more refined and higher quality and targeted research questions as well as to design higher quality methodologies and studies to answer these questions, analyze the data obtained and interpret the results. Substantive
theory add a level of quality and sophistication to inquiry and research that is often or typically not present explicitly or is submerged and hidden in studies that only have explicit methodological theory. It also adds the substantive criterion of “falsification” to the inquiry, work, or study, and thus a higher order kind and type of validity to the work or study (see Lakatos). **Falsification** is a research or inquiry design that can prove the substantive theory and hypotheses posed from/using it **false** (namely, **wrong**), a critical feature typically absent from most non-substantive theory-driven inquiries or studies, and thus both a flaw and severe limitation of such inquiries and studies.

Because substantive theory is often hidden in non-substantive theory-driven inquiries or studies, these inquiries and studies tend to have many (often unrecognized) design flaws and flaws in analysis and interpretation of results from a “substantive” theory point of view. All inquiries or studies have a “covert” substantive theory (or two or three), if the substantive theory is not explicitly stated by the researcher, which is the researcher’s “point of view” (just like an author), and which the informal and critical reader needs to unravel and make explicit in order to evaluate and reach a conclusion about the work.

It is the modern view that these two types of levels of theory in an inquiry, work, or study can only be “loosely” separated and that they are not “orthogonal” (i.e., mutually exclusive and independent). Unfortunately, functionalism and blind-empiricism (of all kinds) is still the norm in educational research and even more so in many area since the strong move to ‘evidence-based’ practice often loses theory altogether in a frenzy of apple-old shoes eclecticism. All educators and researchers in an area should have some mastery of the core substantive theories in that area and it is to your area courses that you should look for schooling in your core substantive theories. However, all educators and educational researchers should have some basic mastery of theories of the person, learning, instruction, change, and schooling and a mastery of these core theories or basic literacies will be assumed in this course.