Advanced Research Methods (Summer 2012)
Psychology 120 – Section 10 (activity section 11)
June 3rd through Aug 7th

ADVANCED RESEARCH METHODS AND DESIGN

Descriptive, correlational, quasi-experimental, and experimental approaches: design, methodology, and analysis. Experience designing, conducting, analyzing, and presenting (verbal and written) research findings. Topics will include: hypothesis testing, validity, reliability, scales of measurement, questionnaire development, power, statistical significance, and effect size (Lecture: 3 hrs; Activity: 2 hrs; 4 units).

Instructor:	**Dr. Mark Van Selst**		
Office:	**DMH 314**		
Office Phone:	**(408) 924 5674**		
Office Hours (→ 8/6/14)	**Tuesday & Thursday**	**12:30 – 2:30**	**DMH 314**
Email:	mark.vanselst@sjsu.edu		
Lecture (sec. 10)	**Tuesday & Thursday**	**9:00 – 10:55**	**CL 318**
Activity Lab (sec. 11)	**Tuesday & Thursday**	**11:00– 12:15**	**DMH 339**

Prerequisites**:**
   Required prerequisites to this course include elementary statistics (STAT 95), General/Introductory Psychology (PSYC 1), and the Writing Workshop (PSYC 100W). If you have not yet completed these prerequisites you should disenroll from the course and allow another individual who has the prerequisites to take your place.

Text (#1)**:** required
   Cozby, P.C., & Bates, S. (2011). *Methods in Behavioral Research, 11th edition*, McGraw Hill. ISBN 9780078035159

- The older version (10th edition) of this text is likely to be adequate. The newer version has some differences and will be referenced in materials – one possibility is to consider buying a (cheap) used 10th edition and the electronic version of the 11th to allow you to write in your text and to see where the differences exist. I will follow the definitions and structure of the 11th.

Text (#2)**:** required
   Publication Manual of the American Psychological Association, 6th edition
(2009). APA: Washington, DC.

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Course Description:

   This course is an intensive introduction to the basic experimental tools used in the social and behavioral sciences. Students will be given the opportunity to develop an understanding of the principles and procedures involved in scientific research in psychology. The course includes both a lecture and a laboratory component. Grading will be based on written assignments (take home and in-class) and by formal in-class testing. The basic requirement is for the student to develop a firm grasp on the logic and application of the experimental method.   The material covered includes design, methodology, and interpretation. Quantitative methods are emphasized, but criticisms of both quantitative and qualitative methods will be noted. The lectures will cover a broad range of topics in varying degrees of depth. The laboratory activities

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will cover a smaller range of topics in much greater depth than possible in the lectures. The laboratory activities are a crucial component of the course; many of you will find them indispensable in helping to clarify any questions you have about the lecture and text materials. Participation in the laboratory will be critically important to an understanding and completion of the course assignments.

   Exams and quizzes will not be rescheduled except in the case of a medical or family emergency; in all cases, documentation will be required. If you need course adaptations or accommodations because of a disability, or if you need special arrangements in case the building must be evacuated, please make an appointment with me as soon as possible, or see me during office hours. Presidential Directive 97-03 requires that students with disabilities requesting accommodations must register with AEC to establish a record of their disability. (Academic Senate Policy F06-2).

   In all cases, no student can leave the examination room within 30 minutes of the start of an exam nor start any exam after the first person has left. Starting an exam late will not delay the finish time. You may not go to the bathroom in the middle of an exam and return to continue the exam – when you leave the room you have indicated that you have finished with your test.

   Credit may not be given for late assignments. Late papers that are accepted may be penalized (at least 10% of the possible total). Papers are due at the beginning (within five minutes of the registrar's scheduled start time) of the relevant class or laboratory meeting. Extra copies of handouts and assignments will be made available electronically and/or outside DMH 314 (my office, 3rd floor of the Psychology building).

   All work you turn in should be your own. It is your responsibility to be familiar with the scope, definitions, and recommended sanctions stated in SJSU policy S07-2 on "Academic Integrity and Plagiarism" (this document is available on line – look it up and read it, with special attention to definitions and sanctions). Discussing the assignments with your classmates is perfectly acceptable; copying their work is not. Your own commitment to learning, as evidenced by your enrollment at San José State University, and the University's Academic Integrity Policy requires you to be honest in all your academic course work. Faculty members are required to report all infractions to the Office of Judicial Affairs.

   Homework and/or laboratory assignments may be given weekly. A portion of some of these assignments will be graded (see evaluation breakdown below). The assignments will ensure that everyone keeps up with the reading, and should help you to assess whether you have mastered the basic concepts. The final is partially cumulative since later topics build naturally upon those covered earlier in the course.

   Access to a computer word processor is required for the assignments. If more than 5 lines of written text are required for an answer, only easily legible text is acceptable (i.e., hard copy from a computer printer). It is your responsibility to have easy access to a back-up copy of any work that you hand in (keep multiple back-ups of any computer media and save your work often). For resubmissions, include the original hard copy of your original work.

   The best way to learn the material is to try all the problems in each chapter as you encounter them during your reading of the text. It should go without saying that you should read the relevant text chapters before they are covered in lecture.

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Learning Outcomes

Upon successful completion of this course:

- CLO1 – Students will be able to design, implement, and communicate basic research methods in psychology, including research design, data analysis, and interpretations. [1,2]
- CLO2 – Students will be able to use critical and creative thinking, skeptical inquiry, and a scientific approach to address issues related to behavior and mental processes. [3]
- CLO3 – Students will value empirical evidence, tolerate ambiguity, act ethically, and recognize their role and responsibility as a member of society[4,5]

Upon successful completion of the SJSU baccalaureate degree program in Psychology:

- *PLO1 – Knowledge Base of Psychology* – Students will be able to identify, describe, and communicate the major concepts, theoretical perspectives, empirical findings, and historical trends in psychology
- *PLO2 – Research Methods in Psychology* – Students will be able to design, implement, and communicate basic research methods in psychology, including research design, data analysis, and interpretations.
- *PLO3 – Critical Thinking Skills in Psychology* – Students will be able to use critical and creative thinking, skeptical inquiry, and a scientific approach to address issues related to behavior and mental processes.

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[1] *University Learning Outcome 1: Specialized Knowledge*. Mastered the depth of knowledge required for a degree, as identified by its program learning outcomes

[2] *University Learning Outcomes 2 and 3: Broad Integrative Knowledge.* Produced, independently or collaboratively, an investigative, creative, or practical work that draws on theories, tools, technology, or methods from at least two academic disciplines Obtained competency of advanced level analysis in each of three broad areas: Arts and Humanities, Social Sciences, and Sciences

[3] *University Learning Outcome 4: Intellectual Skills.* Obtained skills and abilities necessary for life-long learning: critical and creative thinking, effective communication, literacy in information gathering and processing, mastery of quantitative methodologies, and the ability to engage effectively in collaborative activities

[4]*University Learning Outcome 5: Applied Learning.* Developed the ability to integrate theory, practice, and problem-solving to address real world issues or contexts

[5] *University Learning Outcome 6: Social and Global Responsibilities*. Developed the ability to act intentionally to address a global or local problem in an informed and ethical manner with a historical perspective and a clear understanding of societal and civic responsibilities

- *PLO4 – Application of Psychology* – Students will be able to apply psychological principles to individual, interpersonal, group, and societal issues.
- *PLO5 – Values in Psychology* – Students will value empirical evidence, tolerate ambiguity, act ethically, and recognize their role and responsibility as a member of society.

Add / Drop / Repeats

Students are responsible for understanding and being aware of the dates, policies and procedures that govern adds/drops, payment, withdrawals and so forth. The current semester's Catalog Policies are available at http://info.sjsu.edu/static/catalog/policies.html. Add/drop deadlines can be found on the www.sjsu.edu/registrar/calendar web page.

The Late Drop Policy is available at http://www.sjsu.edu/aars/policies/latedrops/policy/. Students should be aware of the current deadlines and penalties associated with dropping classes.

This information is advisory only, it does not replace the official policy statements. Information about the latest changes and news is available at the Advising Hub at http://www.sjsu.edu/advising/.

Library Liaison

Bernd Becker, Psychology Librarian - Bernd.Becker@sjsu.edu

- Bernd can answer your questions about how best to use the library's resources.

Learning Assistance Resource Center

The Learning Assistance Resource Center (LARC) is located in Room 600 in the Student Services Center. It is designed to assist students in the development of their full academic potential and to inspire independent learning. The Center's tutors are trained and nationally certified by the College Reading and Learning Association (CRLA). They provide content-based tutoring in many lower division courses (some upper division) as well as writing and study skills assistance. Small group, individual, and drop-in tutoring are available. Please visit the LARC website for more information at http://www.sjsu.edu/larc/.

SJSU Writing Center

The SJSU Writing Center (room 126 in Clark Hall) is staffed by professional instructors and upper-division or graduate-level writing specialists from each of the seven SJSU colleges. These high-gpa students are trained to assist students to become better writers (note, however, that this course requires APA style). The Writing Center website is located at http://www.sjsu.edu/writingcenter/about/staff/.

Peer Mentor Center

The Peer Mentor Center on the 1st floor of Clark Hall in the Academic Success Center can provide resources to help students manage problems that range from academic challenges to interpersonal struggles. Peer Mentors can offer "roadside assistance" to peers who feel a bit lost or simply need help mapping out the locations or availability of campus resources. Peer Mentor services are free and available on a drop-in basis, no reservations are required. The Peer Mentor Center website is located at http://www.sjsu.edu/muse/peermentor/ also see .

Student Success and Wellness

Attending to your wellness is critical to your success at SJSU. I strongly encourage you to take advantage of the workshops and programs offered through various

Student Affairs Departments on campus such as Counseling Services, the SJSU Student Health Center/ Wellness & Health Promotion Dept., and Career Center. See http://www.sjsu.edu/wellness or http://www.sjsu.edu/counseling/Workshops/ for workshop/events schedule and links to many other services on campus that support you; information and registration is at http://events.sjsu.edu.

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Evaluation Breakdown: (a pass requires 60%; 59% is a fail).

CONTENT	START	DUE	POINTS
LAB 1: Graphing	June 3	June 10	2
LAB 2: Library Reference	June 5	June 12	4
LAB 3: Ethics Training	June 10	June 12	1
LAB 4: External Assignment	June 10	Aug 8	2
LAB 5: Observation lab	June 17	June 24	3
LAB 6: Participate in Experiment	June 19	June 19-25	1 Required (-1)
LAB 7: Data Analysis workshop	June 26	June 26	1
LAB 8: Methods Submission	June 26	July 8	5
Meeting to go over methods	July 1	July 8-10	Required (-2)
LAB 9: Methods (resubmission) & Results (only submission)	July 15	July 15	4 + 3 = 7
LAB 10: Individual project, early topic	July 1	July 10	1
LAB 11: Individual project, design	July 10	July 15	2
LAB 12: Individual Project, data timeliness	July 10	July 31	2
LAB 13: Individual Project, analysis completion timeliness	July 10	Aug 7	2
LAB 14: Individual project, final presentation (materials + oral)	July 10	Aug 7	3 + 3
LAB 15: project, Others' evaluation & Critique of others	July 10	Aug 7	2 + 2
LAB 16: Individual project, final write-up	July 10	Aug 8	7
Midterm #1	June 26		18
Midterm #2	July 22		18
Final Exam	Aug 7	Aug7	14

These points sum to 100. Your summed scores determine your grade.

60-70 D   70-80 C   80-90 B   90-100 A   (77.5-80 is a C+; 80-82.5 is a B-, etc.)

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Course Schedule

Lecture: **CL 216**
Laboratory: **DMH 339**

Date	Day	Chapter (Cozby text)	Activity / Description
June 3	Tue	Chapter 1. Scientific Understanding of Behavior	Introduction, Syllabus, Scope Types of Designs Describe, Predict, Explain, & Control Behavior Use of Research Methods The Scientific Approach Goals of Science Basic and Applied Research
		(lab) Presenting (Graphing) data (APA Manual p.141-162)	*Lab #1 = Graphing data, using statistics, (re)introducing SPSS*
June 5	Thu	2. Where to Start	Hypotheses and Predictions Who we Study (and notes on terminology) Sources of Ideas Library Research Structure of a Research Article
		(lab)	*Lab #2 = APA Style and Library Resources* *Library Assignment*
June 10	Tue	3. Ethical Research	**Lab #1 due** What is ethical? What do we have to watch out for? The Belmont Report Assessment of Risks and Benefits Consent Debriefing Justice and Selection of Participants Researcher Commitments APA Code of Ethics Research with Human Participants Ethics and Animal Research Risks and Benefits Revisited Formal Mechanisms: Federal Regulations and the Institutional review board Introductory Psychology pool (Departmental)
		(lab)	*Lab #3 = Ethics* *Lab #4 = External (due end of semester)*
June 12	Thu	4. Studying Behavior	**Lab #2 due** **Lab #3 due** Variables (Quantitative & Qualitative measures); Operational definitions of variables Relationships between variables

			Nonexperimental vs. Experimental Methods Independent and Dependent Variables Causality Choosing a Method (advantage of multiple approaches) Evaluating Research (validity)
		(lab)	MOVIE: *Obedience* – the Milgram experiment Christophe Nick's "Game of Death"
June 17	Tue	4. Studying Behavior	(continued) Out of class experimental participation sign-up
		(lab)	*Lab #5 = Observation Lab*
June 19	Thu	5. Measurement Concepts	Reliability of measures Construct validity of measures Research on personality and individual differences Reactivity of measures Variables and scales of measurement (nominal, ordinal, interval, ratio)
		(lab: may be done out of class)	*LAB #6 = Participate in Data-Collection*
June 24	Tue	5. Measurement Concepts	**Lab #5 due**
		(lab: may be done out of class)	*LAB #6 = Participate in Data-Collection*
June 26	Thu	**MIDTERM #1**	**Lab #6 due** CHAPTERS 1-5 + labs + movie + ethics training
		(lab)	*Lab #7 = Data Analysis workshop* **(→ Lab #7 due)** *Lab #8 = Methods Write-up* *Lab #9 = Methods rewrite + Results section*
July 1	Tue	6. Observational Methods + notes	Speed-Accuracy Trade-offs; Technical Writing (Method Section) Assignment Components of an APA-style manuscript
		(lab)	*Lab #10 = Individual Project (idea)* Help on the writing project (Lab #8): the Method Section
July 3	Thu	7. Asking people about themselves: survey research	Construction of surveys; asking the right questions and selection of response formats Administration Studying change across time Sampling from a population (techniques) Evaluating Samples
July 8	Tue	(Continued)	**Lab #8 due** (Continued)
		(lab)	*(review of Lab #8: may be done out of class)*
July 10	Thu	8. Experimental Designs	**Lab #10 due** Confounding and Internal Validity Basic Experiments Assigning Participants to Experimental Conditions

			Independent groups designs Repeated measures designs Matched pairs designs Within-subject (repeated measure) vs. between-subject designs
		(lab)	Individual Project (overview) Lab #11 = Individual Project Design/Proposal Lab #12 = data collection timeliness Lab #13 = data analysis timeliness Lab #14 = Individual Project Final Presentation Lab #15 = Individual Project Final Write-up review of Lab #8: may be done out of class review of Lab #10 (time permitting)
July 15	Tue	9. Conducting Experiments	**Lab #9 due** Selecting Participants Manipulating the independent variable Measuring the dependent variable Additional controls Double-blind studies Additional considerations Analyzing and interpreting results Communicating research to others
		(lab)	Individual assistance with Lab #11 (design)
July 17	Thu	10. Complex Experimental Designs	**Lab #11 due** Increasing the Number of Levels of a single Independent Variable (single factor design) Increasing the Number of Independent Variables (factorial designs) One-way Analysis of Variance (extending the t-test) Main effects and interactions Within-subject (repeated measure) vs. between-subject designs Counter-balancing (Latin Square) and confounds
		(lab)	Individual in-class (lab) review of Lab#11
July 22	Tue	**MIDTERM #2**	Chapters 6-10 + labs
		(lab)	(NO LAB TODAY)
July 24	Thu	11. Single case, quasi-experimental, and developmental research	Single case experimental designs Program evaluation Quasi-experimental designs Developmental research designs
		(lab)	In-class (lab) project data collection (part I)
July 29	Tue	12. Understanding Research Results: Description and Correlation	Scales of Measurement (review) METHODS & RESULTS DUE Analyzing research results (review) Frequency Distributions (review)

			Descriptive Statistics Graphing Relationships (review) Correlations Coefficients: strength of relationships Effect size Statistical significance p-levels vs. strength-of-effect Regression equations Multiple regression Linear relationships: Pearson's' r, regression line, the 3rd variable problem Partial correlation Structural equation modeling
		(lab)	In-class (lab) project data collection (part II) Individual help with lab #13 (time permitting): In-class (lab) individual project data analysis and presentation assistance.
July 31	Thu	Chapter 13. Understanding Research Results: Statistical Inference	**Lab #12 due** Samples and Populations Inferential Statistics Null and Research Hypotheses Probability and the Sampling Distribution t-tests & ANOVA [what, when & why] Type I and Type II errors Choosing a significance level (α) Interpreting non-significant results Chi-square Power and choosing a sample size Importance of replication Pearsons' r Selecting Appropriate Statistical Tests
		(lab)	Individual help with lab #13 (time permitting): In-class (lab) project data analysis and presentation assistance.
Aug 5	Tue	14. Generalizing Results	Generalizing to other populations Cultural considerations Generalizing to other experiments Pretests and generalization Generalization from laboratory settings The importance of replications Evaluating generalizations Literature reviews Meta-analyses Using research to improve the human condition
		INDIVIDUAL PROJECT PRESENTATIONS	**Lab 13 due** **Lab 14 due (PowerPoint submitted)** **Lab 15 (part 1) due**

Aug 7	Thu	**FINAL EXAM**	Chapters 10-14 (+ some cumulative content)
		INDIVIDUAL PROJECT PRESENTATIONS	**Lab 15 (part II) due**
Aug 8	Fri	LAST DAY FOR ALL WORK (noon deadline)	**Lab #4 due** **Lab #16 due (Final Paper)**

Lab #4 (External Assignment): Do EITHER (1) or (2)

2 points
(1) Colloquium or Community-Based Talk

Go to a psychologically-relevant colloquia given at San Jose State University (or within the community [with my prior approval]). Use the Attached form to evaluate the colloquium you attend. Present your colloquium evaluation form to me within two weeks of attending the colloquium.

(2) Current Events relevant to Psychology

For an EMERGING (i.e., newly reported) news item, find a newspaper article (or transcript of a news broadcast [e.g., from NPR], or other web-based news source) relevant to psychology. Find a peer-reviewed scientific journal article on the same topic. Write a short (1-2 page) description of what the relevant issue is in the newspaper and the (related) journal article. Include both the news item and the journal article (or at least the relevant pages of the article) with your report. Submit your write-up within two weeks of the original news item publication date. For web news sources include the link.

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Title: _____   Your Name: _____

Author
Name(s):_____

Domain	Score (1-5)	example of a "1"	example of a "3"	example of a "5"
Title		title poorly describes project	title somewhat describes project, or is overly long.	title clearly describes project
Physical Organization		Unorganized or poorly organized	format is adequate	format is good Demonstrates a high level of appropriate organization.
Rationale / purpose		ill-defined	some minimal rationale	Clearly defined rationale
Background		under-specified	Some minimal background	clear background provided
Variables		Unclear definition	variables defined	variables all properly differentiated and defined
Theoretical Organization		Haphazard	some organization of the ideas is evident	ideas clearly organized. Organization appropriate for topic.
Presentation of Methodology		none or minimal transmission of design / procedures	excessive or overly sparse methodological information	clear and concise presentation of methodology
Experimental design (I)		Evidence of potential failure to understand experimental procedures	"cookbook" approach: Experimental procedures applied without recognition of the underlying logic	Clear understanding of procedures and underlying rationale
Empirical Results		ill-defined	adequate	Clear
Analysis		Inappropriate or ill-defined	appropriate techniques used but presentation missing information	technique and procedure clearly appropriate
Conclusions		unrelated to data presented	data and conclusions consistent	data support conclusions clearly and persuasively
Project difficulty		low (addressed non-issue)	medium ("average")	elegant design; hard question

Citation (APA Style):

Hypothesis:

Independent (or predictor) Variable (one of them…):

Dependent Measure (one of them…):