

Ψ 205A-B
Psychological Statistics and Data Analysis
Professor Thomas D. Wickens
CCN: 74984

Instructor Contact Information: (510) 642-0785; twickens@berkeley.edu

Office Hours (tentative): Tuesday, 10 a.m. and Wednesday 2 p.m., 3121 Tolman Hall

Meeting times: Lectures twice a week, probably for 1 1/2 hours, will present new material. There will be separate meetings at which the material and calculations will be reviewed and computer programs described and applied.

Psychology 205A-B is a two-semester series covering the principal statistical procedures necessary to understand and conduct psychological research. The two semesters are not usually divisible. Anyone who enrolls in 205A will be expected to enroll in 205B. Entry into 205B without 205A will be possible only by prior arrangement.

The topics to be covered include the following:

1. Core statistical procedures. The methods of statistical inference and their application to simple data structures, including means, correlations, and categorical data. This material will often be somewhat familiar from earlier courses.
2. Experimental design: the analysis of variance and covariance. Simple and factorial designs; repeated measures; analytical analysis of compound results.
3. Multiple regression and the general linear model. Traditional linear regression; anomalous observations and regression diagnostics; correlation and partial correlation; integration of regression and the analysis of variance.
4. The analysis of categorical variables. The analysis of contingency tables and log-linear models; association measures; multidimensional contingency tables.
5. Logistic regression and the generalized linear model.
6. Analysis of data with multiple sources of variability. Topics that may be covered (depending on time and interest) include
 - a. The traditional repeated-measures analysis of variance.
 - b. Models for change; time series.
 - c. Random effects and hierarchical models.
 - d. Path analysis and structural models.

This list does not express the sequence in which the material will be covered, which will be adjusted to present a coherent picture.

The computerized procedures needed to apply these analyses will be covered, more briefly in lectures, and in more detail in the sections, with opportunities to practice and learn how to use them. However, the course will emphasize the understanding and correct application of the statistical procedures, not the technical aspects of program use.

Examinations and grades: There will be two midterm examinations and one final each semester. The midterm examinations will cover material treated since the previous examination; the final examinations are cumulative. Books and notes may be used freely at all examinations. Grades will be based primarily on the examination results.

Ψ 210D

Proseminar: Learning and Memory

Professor John F. Kihlstrom

CCN: 74986

This course covers a broad array of topics, including molecular bases of memory, animal learning, neuroethology, neural plasticity, neurological syndromes, brain imaging, and cognitive aspects of human memory. The course is geared toward graduate students in the Cognition, Brain, and Behavior program. Other graduate students interested in the course should be able to demonstrate significant knowledge of learning and memory processes. Students are responsible for weekly readings and participation in class discussions. A final exam will be administered at the end of the course.

Ψ 214

Functional MRI Methods

Professor Mark D'Esposito

CCN: 74987

This course will provide an overview of functional MRI methodology. Topics to be covered include the basic physics of fMRI, the physiological basis of BOLD fMRI signal, the spatial and temporal resolution of fMRI, issues in experimental design, and statistical techniques used for analyzing fMRI data. The class will review published studies as well as ongoing research projects at Berkeley that address questions regarding these topics.

Ψ 230

Proseminar: Clinical Psychology

Professor Ann Kring

CCN: 74990

Psychology 230 is required for first-year students in the Clinical Science program at Berkeley; a limited number of other graduate students may take the course with permission of the instructor. The nature of clinical science is undergoing intensive scrutiny at this point in history; change is certain for the field. It is therefore an exciting and important time to be entering this fascinating, multidisciplinary field of study. The purpose of Psychology 230 is to give an introduction to core issues in adult and developmental psychopathology. Each week, there are several readings, both primary source articles and review articles or chapter.

Ψ 290B:2

Vision Research

Professor Jack Gallant

CCN: 75125

Advanced topics in vision research. Enrollment by permission of instructor only.

Ψ 290B:3

The Science of Sleep

Professor Matthew Walker

CCN: 75128

We spend one-third of our lives sleeping and we have absolutely no idea why. We will not come up with the answer in this course. However, what we will explore are a fascinating array of neuroscience studies and brain theories for why we sleep. We shall spend most of our time reviewing what is known about sleep and dreaming from the perspectives of physiology, psychology, and neuroscience. We will investigate various approaches to understanding the function of sleep and debate several theories as to its function. We will review arguments for the critical role of sleep (and perhaps dreaming) in memory processing, brain plasticity, emotional regulation and even creativity. It is likely that the more you learn, the worse your sleep will be this is an unintended benefit of the course.

The structure of the course will involve the evaluation of selected empirical and review papers (2 or 3 per class). These will be presented in a rotation by you [the students] in a PowerPoint format lasting approximately 10 min. You will likely give 5 or more of these presentations in the course of the semester. You will be required to post this PowerPoint file on the bSpace course web site ahead of time. The purpose of the presentations is to give a short overview of the paper, and to form the basis of a class-lead discussion of the articles - again by you the students. Students are expected to keep up on all the reading, so they can participate in the weekly discussions. The discussions are the core of the course, and the success of the course is determined by your participation across all weeks. To facilitate this, each student will be required to generate 2-3 questions about the articles for each week, and, at random, students will be asked to read out their questions prior to the start of the formal presentation to also help with class discussion after.

Ψ 290B:5**Neural Bases of Circadian Rhythms of Vertebrates****Professor Irving Zucker****CCN: 75134**

In this seminar we will consider neural bases of circadian rhythms of vertebrates with an emphasis on mammals. We will review early studies from the 1920's through the 1960's and highlights in subsequent decades, culminating in current work. In the process we will try to identify new questions capable of being answered with existing tool boxes.

The student in charge of the seminar on a given week will be asked to select a paper that all of us will read (chosen in consultation with me), and mail a copy of the paper to the rest of us. We will discuss this paper in class and then the person in charge will present a more recent paper that the rest of us will not have read. In the organizational meeting I'll present a list of potential topics and we'll select a meeting time. Depending on student interests we may deviate to consider ultradian and seasonal rhythms in relation to circadian rhythms and what we can learn from studies of invertebrates and plants.

One 2 hour meeting per week, no term papers or exams. Class limited to graduate students.

Ψ 290E**Readings in Aesthetic Science****Professor Stephen Palmer****CCN: 75135**

In this course we will read some of the relevant literature on interdisciplinary aesthetic science, including philosophy of aesthetics, empirical aesthetics, and aesthetics from the artist's and viewer's perspectives. Requirements: each participant will be responsible for an in-class

presentation and leading discussion on one topic. A final paper of approximately 10 double-spaced pages will be required for a letter-grade.

Ψ 290H:2

Contemporary Controversies in Infancy Research

Professor Joseph J. Campos

CCN: 75137

The study of the human infant has occupied a central place in the recent history of behavioral science because of its role in identifying the origins of human perception, cognition, emotion, social interactions, and personality. The field has been characterized by great theoretical incisiveness and methodologically innovative approaches. However, as in most areas of behavioral science, the inferences made in the field of infant development often far outstrip the base of data we have.

This seminar will be a readings seminar in which we will discuss primary research and/or theoretical articles central to the field of infant development. These articles will be at the center of controversy in the field—controversy that should be resolved prior to our accepting often-widespread views about the nature of infant competencies.

Each student will be asked to identify one area of controversy and lead a discussion on the bases for the controversy, meaning (a) the theoretical importance of the initial findings, (b) the nature of the data base resulting in the widespread conviction that the initial claim re competency is valid, (c) the contrary empirical evidence or methodological challenge to the claim for infant precocity, and (d) a resolution of the controversy in the form of suggested empirical research, or caution re inference based on the picture emanating from the literature review.

Class will be two hours per week, but there may be a period where class time is devoted not to meeting, but to preparation of the report(s) to be given by the student/participant in the seminar.

Grading will be A or non-A, based on class participation and the quality of the paper presented on the issue selected by the student.

For further information, please contact Professor Campos at jcampos@berkeley.edu.

Ψ 290H:3

Language Throughout the Lifespan

Professor Carla L. Hudson Kam

CCN: 75139

Most courses on language acquisition are concerned primarily with developments that occur from ages 0-4. This course differs by focusing on language beyond 4, examining a set of topics that, although diverse, are united by being aspects of language development that primarily take place after the preschool years. We will examine developments and changes in the forms and functions controlled by speakers, as well as the contexts in which those changes occur. Topics will include the acquisition of discourse/conversational skills, second language acquisition in children and adults, learning to read, acquisition of dialect features, use of language as a marker of social group and status in adolescence, language play, and language in the elderly.

The class will be conducted as a seminar. Students will be responsible for presenting the readings for the week, and will be expected to do so in a way that stimulates discussion. Grades will be based on class attendance and participation (60%) and a final project (40%). The final project

will be a 10-15 page paper covering a topic related to later language. It is not intended to be just a literature review. Rather, it should be a research paper, or a proposal for a research project.

Ψ 290Q:1

New Directions in the Study of Concepts

Professors Tania Lombrozo and Eleanor Rosch

CCN: 75154

This seminar will begin with a survey of extant approaches to concepts and categorization, including the classical view, prototype theories, the theory-theory, and nonrepresentational ecological theories. We will consider each approach's philosophical underpinnings and implications, with special attention to the roles of language and of background knowledge. In the second part of the seminar, we will consider the limitations and manifestations of these approaches. How does each accommodate conceptual flexibility and context-specificity? How do these approaches influence other fields of psychology, such as the study of social categories (race, gender) and mental illness (the DSM categories)? In the final third of the seminar, students will select presentation topics and lead discussion. Students will be encouraged to explore new directions in the study of concepts, and in particular the relationship between approaches to concepts and their own areas of research.

Ψ 290Z:2

Hierarchical and Structural Linear Models

Professor Thomas D. Wickens

CCN: 75155

Instructor Contact Information: (510) 642-0785; twickens@berkeley.edu

Office Hours (tentative): Tuesday, 10 a.m. and Wednesday 2 p.m., 3121 Tolman Hall

This course covers two methods of statistical analysis that have become popular in recent decades.

Hierarchical linear modeling is a procedure for treating data in which the observations are clustered in a regular way. Examples include responses within individuals, and individuals within sets (the most common example is students within schools). Usually a single response variable is measured. The influence of variables at both the individual and the cluster levels on this response are assessed. The first segment of the course will cover these methods.

Structural equation modeling (or covariance-structure modeling) is a set of techniques for analyzing data in which several distinct measures are bound together by some sort of structure.

It subsumes the older techniques of factor analysis and path analysis, although without some of the embellishments of these methods. The second segment of the course will cover these methods.

These approaches share relative simplicity in their mathematical models with difficulties of application and considerable potential for misuse. Much of skill needed to apply the procedures appropriately comes from working with them and discussing their interpretation.

The course will meet for one three-hour session per week, probably Wednesday 5-8, subject to availability of the computer lab. In the first half I will present new material. After a break, the class will continue with presentation of examples by class members or working with programs. I intend to draw on the participants to provide examples and data.

Texts: I have selected three books.

- Hox, Joop. Multilevel analysis: Techniques and applications. Erlbaum, 2002.

Among the alternatives I reviewed, this book has a good mixture of theory and examples and is not unduly burdened with mathematics. It also makes the transition into the second part of the course easiest.

- Klein, Rex B. Principles and practice of structural equation modeling. 2nd Edition. Guilford, 2005.

This is a nonmathematical, but quite intelligent treatment of the methods of structural equation modeling.

- Kaplan, David: Structural equation modeling: Foundations and extensions. 2nd Edition. Sage, 2008. [Note new edition.]

Optional. Some of you who wish formal detail that is not covered in the Klein book can find it here.

Programs: Both the hierarchical and the structural models are implemented in a number of proprietary programs. These tend to be expensive. I have not decided yet what programs to use.

Ψ 292

Introduction to the Profession of Psychology

Professor Stephen Hinshaw

CCN: 75158

This course provides both a broad review of the field of psychology and an Introduction to the faculty of this department. Faculty from various program areas will present biographical information and discuss their particular research programs, as well as summarizing current developments in their areas. The course will also cover topics in professional development (e.g., scientific writing, convention presentations, journal review processes, professional and scientific ethics, and special issues facing women and minority psychologists). Required of all first-year students in the graduate program.

Ψ 300

Teaching Psychology

Professor Stephen Hinshaw

CCN: 75401

Course Format: Two hours of seminar per week.

Credit option: Course may be repeated for credit.

Grading option: Must be taken on a *satisfactory/unsatisfactory* basis.

Description: This course will provide training in a variety of teaching techniques, will review relevant pedagogical issues, and will assist graduate students in mastering their initial teaching experiences.

Ψ 301

Supervision for Teaching Psychology 2

Professor Stephen Hinshaw

CCN: Please contact the instructor for enrollment information.

Course Format: Two hours of seminar per week.

Prerequisites: 300, advancement to candidacy, and consent of instructor.

Credit option: Course may be repeated for credit.

Grading option: Must be taken on a satisfactory/unsatisfactory basis.

Description: Supervised teaching experience for graduate student instructors of Psychology 2.