

# UM SPH Executive Education Courses

## Clinical Research Design and Statistical Analysis

### BIOSTAT511

#### Computer Packages

Winter term(s)

2 Credit Hour(s)

Instructor(s): Andridge, Rebecca

Prerequisites: Enrollment in OJOC/CRDSA program

An introduction to statistical computer packages in both network and microcomputer environments. Data organization and file management are also discussed.

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### BIOSTAT517

#### Survey Sampling for Clinical Research

Fall term(s)

2 Credit Hour(s)

Instructor(s): Lepkowski, James M

Prerequisites: Enrollment in OJOC/CRDSA program - traditional track

The main sampling methods used for surveys in clinical research are discussed, including probability sampling, simple random sampling, stratified sampling, systematic sampling, multi-stage sampling, sampling with probability proportional to size, cost factors, sampling errors, nonresponse, sampling frame problems, nonsampling errors, and practical designs and procedures. Traditional Track Only.

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### BIOSTAT524

#### Biostatistics for Clinical Researchers

Fall term(s)

4 Credit Hour(s)

Instructor(s): Tsodikov, Alexander

Prerequisites: Enrollment in OJOC/CRDSA Program

Basic probability theory and statistical methods used by biostatisticians. These include design of experiments, point and interval estimation, and hypothesis testing. New topics include simple and multiple regression methods, and analysis of variance and covariance.

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### BIOSTAT557

#### Clinical Research Seminar

Spring, Summer term(s)

1 Credit Hour(s)

Instructor(s): Elliot, Michael

Prerequisites: Enrollment in OJOC/CRDSA program

A series of seminars that illustrate the definitions, functions and utility of clinical research; design of clinical research; and the application of statistics to clinical research, presented by visiting faculty experienced in clinical research.

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## BIOSTAT558

### Clinical Trials and Study Design

Winter term(s)

3 Credit Hour(s)

Instructor(s): Murray, Susan

Prerequisites: Enrollment in OJOC/CRDSA program

A review of the ways clinical trials are used as a research tool: design of clinical trials, randomization, sample size, compliance, masking, analysis of clinical trials data and stopping rules. The course also considers advantages and limitations of alternative types of quasi-experimental designs, nonequivalent control group designs, interrupted time-series designs, case series, cross-over designs, meta-analysis.

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## BIOSTAT560

### Statistical Methods in Epidemiology

Fall term(s)

4 Credit Hour(s)

Instructor(s): Tsodikov, Alexander

Prerequisites: Biostat 523, EPID 503 or EPID 601

Statistical methods commonly used in environmental epidemiology. Emphasis on choosing appropriate statistical methods and subsequent interpretation. Topics include probability, measures of association and risk, sample size calculations, SMR and PMR analysis, logical regression and survival analysis.

[Syllabus for BIOSTAT560](#) (PDF, 44915 bytes, last modified on Thursday, September 04, 2008 )

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## BIOSTAT581

### Longitudinal Models and Repeated Measures

Winter term(s)

3 Credit Hour(s)

Instructor(s): Raghunathan, Trivellore

Prerequisites: Enrollment in OJOC/CRDSA program - traditional track

This is a course in statistical modeling, with an emphasis on models for correlated data that arise when subjects are repeatedly measured or are clustered. These models, called mixed models, are extensions of linear and nonlinear regressions and analysis of variance. Examples will be drawn from clinical studies, such as multi-arm biomarker studies and crossover trials. Analyses of population pharmacokinetics and longitudinal data will also be discussed. Hands-on data analysis and presentation using standard computer software for linear and nonlinear analysis will be emphasized. Course goals include the ability to formulate and evaluate a model, read the scientific literature that employs these models, interact fruitfully with data modeling specialists, and present the results of these models mathematically and graphically. Traditional Track Only.

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## **BIOSTAT590**

### **Statistical analysis and presentation of research projects**

term(s)

2 Credit Hour(s)

Instructor(s): Little, Roderick

Prerequisites: Completion or waiver of previous classes in OJOC CRDSA program

This course is intended to integrate and apply biostatistical and epidemiologic methods presented in other OJ/OC courses to clinical research data. Students will identify the scientific objectives of a clinical research study and develop a statistical analysis strategy appropriate for those objectives; plan strategies for statistical design and analysis and implement these strategies; learn to be aware of problems that arise in data collection; learn to communicate through presentation of oral and written reports and through student and faculty critiques of these reports; learn to communicate results of clinical research projects in clear, accurate, concise language; learn appropriate writing styles and formats for clinical research articles, and apply writing skills to research papers.

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## **BIOSTAT599**

### **Planning and Funding Clinical Research**

Winter term(s)

3 Credit Hour(s)

Instructor(s): Little, Roderick

Prerequisites: Enrollment in OJOC/CRDSA program

This course encompasses four main areas of exploration: 1) the preparation of a written document whose focus is on an integrated research plan, including specific aims, background and significance, design, methods, logistical implementation and statistical analysis, and fiscal requirements; 2) the evaluation of clinical research plans; 3) identification of funding sources and their requirements; and 4) identification of the role of the research administrator in facilitating clinical research.

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## EPID590

### Writing in Medical Sciences

Fall term(s)

2 Credit Hour(s)

Instructor(s): Staff

Prerequisites: Enrollment in OJOC/CRDSA Program - traditional track

This course focuses on the ability to write in clear, accurate, concise language. It provides a familiarity with the genres of medical writing, critical reading skills, familiarity with logical fallacies common to medical writing, and the ability to identify evidence relevant to the issue at hand. An additional focus is critical reasoning: the ability to formulate and test a hypothesis. Also included are proper citation format, ethical use of sources, and the ability to apply writing skills to research papers and grant proposals. Traditional Track Only.

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## HBHE531

### Psychosocial Aspects of Research: Data Collection and Threats to Validity

Spring, Summer term(s)

2 Credit Hour(s)

Instructor(s): Wren, Patty

Prerequisites: Enrollment in OJOC/CRDSA program

Conceptual and operational issues in psychosocial research are discussed. Topics include: quality of life measurement, models of health decision-making, measuring attitudes and beliefs, and behavioral threats to validity, such as patient adherence and patient-provider relationships. Designing a survey instrument, writing items, and selecting a method of data collection are also emphasized.

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## HMP540

### Legal Rules and Ethical Issues for Clinical Research

Winter term(s)

2 Credit Hour(s)

Instructor(s): Goldman, Edward

Prerequisites: Enrollment in OJOC/CRDSA Program

The course is organized in two parts: Part I studies the history of research regulations, requirements for ethical research, informed consent, institutional review boards, protection of special at-risk populations, deception in research, and future directions of regulations on research. Each participant presents a research design and the class analyzes its legal aspects. Part II is a series of lecture discussions on current ethical issues in clinical research.

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## HMP542

# Cost Utility Analysis and Clinical Research

Winter term(s)

3 Credit Hour(s)

Instructor(s):

Prerequisites: Enrollment in OJOC/CRDSA Program

Economic issues and analytical techniques relevant to the performance and evaluation of clinical research are investigated. Special emphasis is placed on the theory, practice, usefulness and limitations of cost-benefit and cost-effectiveness analysis.

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