

THE UNIVERSITY OF OKLAHOMA



Biostatistics, Epidemiology, and Research Design Core

*Hudson College of Public Health  
Department of Biostatistics and Epidemiology*

## R SHORT COURSE PART I (INTRODUCTORY TOPICS)

### AGENDA

#### Workshop Faculty:

**Daniel Zhao, PhD**

Presidential Professor of Biostatistics  
University of Oklahoma Health Sciences Center  
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**Sixia Chen, PhD**

Assistant Professor of Biostatistics  
University of Oklahoma Health Sciences Center  
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The short course was originally designed for five sessions during the spring semester, 2020. This five session short course began with in-person sessions in March 2020. Due to COVID-19 disruptions, the remaining sessions are now scheduled to resume as two Wednesday remote sessions during September 2020:

Dates: Wednesday 9/16, 9/23

Time: 1:00 – 3:00 PM

Location: Virtual through Zoom.

Online registration is required. If you would like to attend the workshops, please complete the following registration form: [Workshop Registration](#)

### **Format:**

The format includes remote didactic lectures and hands-on exercises during a lab session. Exercises and answer keys will be posted on the course website. Sessions will be recorded and videos also will be posted following each session.

Course materials should be downloaded or printed for personal use prior to each session from the following website.

Website: <http://osctr.ouhsc.edu/r-short-course>

## **Topics:**

### **1. 9/16/20. Statistical calculation and testing**

- 1.1. Generate data from different distributions including normal, Chi-squared, t, exponential, binomial, Bernoulli distributions and so on
- 1.2. Calculate some summary statistics such as sum, mean, variance, quantiles and so on
- 1.3. Two sample t test, Wilcoxon rank test, Chi-square test, etc.

### **2. 9/23/20. Regression analysis**

- 2.1. Linear regression
- 2.2. Logistic regression

## **Pre-requisite requirements:**

Session 1: Attendees are expected to have completed at least one introductory undergraduate or graduate course in biostatistics or statistics.

Session 2: Attendees are expected to have completed at least one introductory undergraduate or graduate course in biostatistics or statistics **and** at least one course in regression modeling.

## **Materials for the First Session:**

Please have a laptop with R software installed:

- a. Mac: <https://cran.r-project.org/bin/macosex/>
- b. Windows: <https://cran.r-project.org/bin/windows/base/>

Please have a paper or electronic copy of the course materials that can be found on the course website: <http://osctr.ouhsc.edu/r-short-course>

## **Sponsor Acknowledgement:**

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## Short Course Faculty Biographical Summaries:

**Dr. Sixia Chen** is Assistant Professor of Biostatistics and Epidemiology at The University of Oklahoma Health Sciences Center (OUHSC). He has served as the director of Novel Methodologies Unit of Biostatistics, Epidemiology, and Research Design Core of the Oklahoma Shared Clinical and Translational Resources (OSCTR) since 2018. He graduated with a BA in Mathematics from Fudan University at Shanghai, China in 2007 and PhD (2012) in Statistics from Iowa State University. His dissertation developed efficient methods to handle complex survey data with missing values. He worked as senior sampling statistician in Westat from 2012 to 2015. He has been a full-time faculty member at OUHSC since 2015 and has continued to develop missing data methods as well as survey sampling, nonparametric and semiparametric methods. Dr. Chen has served as Associate Editor for *Journal of Korean Statistical Society* since 2018, Associate Editor for *Scandinavian Journal of Statistics* and Associate Editor for *Journal of Survey Statistics and Methodology* since 2019 and published more than 22 independent statistical methodological papers in leading statistical journals including *Biometrika*, *Annals of Applied Statistics*, *Journal of Multivariate analysis*, *Journal of Survey Statistics and Methodology* and *Statistica Sinica* and coauthored more than 23 collaborative papers in other fields. For more detailed information, please visit Dr. Chen's personal website at <https://sites.google.com/view/schen0713/%E9%A6%96%E9%A1%B5>

**Dr. Daniel Zhao** is Professor of Biostatistics at OUHSC. He is a member of the Biostatistics, Epidemiology, and Research Design Core of the Oklahoma Shared Clinical and Translational Resources (OSCTR). He is also the Associate Director of the Biostatistics Research Design and Shared Resources at the Stephenson Cancer Center. Previously, he worked at University of Texas Southwestern Medical Center and Eli Lilly. He obtained a Bachelor in Mathematics from Peking University and a PhD in Statistics from the Iowa State University. His research areas included longitudinal data analysis, misclassification, and adaptive clinical trial designs.