United States Conference On Teaching Statistics 2013

Pre-Conference Workshops

All free registration with lunches included and located at the SAS campus in Cary, NC or at the Embassy Suites Hotel. If you want to be included on a waitlist for a workshop listed as full, please e-mail Jean Scott at scott.961@osu.edu

Multiple-day Workshops

1. ### Implementing Discovery Projects in Elementary Statistics

   A 1-day workshop preceding USCOTS taught by Dianna Spence & Gregg Velatini (University of North Georgia)

   Supported by NSF DUE # 1021584

   Abstract: This 1-day workshop will give participants tools to help them facilitate high-impact student projects in their statistics courses. Participants will assume the role of their students to carry out key project tasks on an accelerated project timeline. These tasks include identifying research questions; defining appropriate variables and constructs; locating authentic data; collecting, organizing, and analyzing data; and interpreting and presenting the results. Participants will also review instructional strategies for organizing and implementing these kinds of projects. Presenters will share curriculum materials developed to guide students and instructors through each phase of project implementation. Participants will also practice using assessment rubrics to evaluate student projects consistently.

2. ### Interactive Probability Instruction

   A 1-day workshop preceding USCOTS taught by Dennis Pearl (The Ohio State University), Kyle Siegrist (University of Alabama), & Ivo Dinov (UCLA)

   Supported by NSF DUE # 1023115, 1022560, 1022636, & 0716055

   Workshop Website

   Abstract: This one-day workshop, held in conjunction with USCOTS 2013, will introduce participants to novel web-based technologies for blended teaching of computational statistics and applied probability theory. Specifically, 50% of the time

will be dedicated to training using the Probability Distributome webapps **(www.Distributome.org)**, 25% for demonstrating the classroom use of the Virtual Laboratories in Probability and Statistics **(www.math.uah.edu/stat)**, and 25% for exploratory data analysis using the Statistics Online Computational Resource **(www.SOCR.ucla.edu)**. Examples of hands-on demonstrations include data modeling, exploring of properties of probability distributions and interdistributional relationships, resampling and simulation, dynamic data plots, and model fitting. These topics and techniques are suitable for introductory and cross-listed applied probability and statistical methods courses. The workshop is designed to be accessible to those with little or no computational background, and will provide you with skills, examples, and resources that you can use in your own teaching.

3. ## Playing Games with a Purpose: A New Approach to Teaching and Learning Statistics

A 1-day workshop preceding USCOTS taught by Shonda Kuiper (Grinnell College) & Rod Sturdivant (West Point Military Academy)

Supported by NSF DUE # 0510392 & 1043814

Abstract: This one-day workshop is designed to help instructors and students bridge the gap between short, traditional homework questions towards the open-ended nature of a real-world problem. Web-based games and other materials will be demonstrated that introduce undergraduates to statistical methods from a variety of disciplines. The materials demonstrated in this workshop encourage students early in their undergraduate studies to experience the role of a research scientist and to understand how statistics help advance scientific knowledge. By making students grapple with intriguing real-world problems that demonstrate the intellectual content and broad applicability of statistics as a discipline, these materials encourage students to incorporate statistical thinking into any career. This workshop will provide materials that can be used as projects in an introductory statistics course; combined to form a second statistics course; form the basis of an individual research project; or used to help students and researchers in other disciplines better understand how statisticians approach the scientific process.

4. ## Teaching Statistics with R

A 2-day workshop preceding USCOTS taught by Danny Kaplan (Macalester College), Nick Horton (Smith College), and Randy Pruim (Calvin College)

Supported by NSF DUE # 0920350

Workshop Website

Abstract: This two-day workshop, held in conjunction with USCOTS, will introduce participants to teaching a course in applied statistics that uses computing in an integrated way. Some of the topics and techniques we introduce are suitable for introductory students, some make sense for students in a "second" or even higher-level statistics course. At all levels, the emphasis will be on statistical modeling with data, applications, and on computation with R using RStudio. The workshop is designed to be accessible to those with little or no experience teaching with R, and will provide you with skills, examples, and resources that you can use in your own teaching.

5. ## Identifying and Addressing Difficult Concepts for Students in the Introductory Statistics Course

A 2-day workshop preceding USCOTS taught by Deborah Rumsey (The Ohio State University) and Marjorie Bond (Monmouth College).

Supported by NSF DUE # 0942924 & 0942456

Abstract: We know that students have difficulty with certain topics in statistics, and it can be difficult to determine the best approach to take to help our students work through these topics. In this workshop, we take a selection of difficult concepts, zoom in on exactly what the problems are from the student's point of view, and examine where, when, and how to address them in our course. Along the way, we will examine these difficult statistical concepts in detail, and look for common threads that may even lead us back to issues from Chapter 1. The workshop will also discuss the Guidelines for Assessment and Instruction in Statistics Education (GAISE) objectives for a statistically educated citizen. The workshop is particularly geared toward instructors at two-year colleges. Instructors new to teaching statistics as well those who have been teaching for a while will find the workshop beneficial.

6. ### Teaching the Statistical Investigation Process with Randomization-Based Inference

A 1.5-day workshop preceding USCOTS taught by Nathan Tintle (Dordt College), Beth Chance, Allan Rossman, & Soma Roy (Cal Poly - San Luis Obispo) Todd Swanson & Jill VanderStoep (Hope College), George Cobb (Mount Holyoke College) .

Supported by NSF DUE # 1140629

Abstract: This workshop is intended for faculty members who have experience with teaching introductory statistics. The goals of this workshop are to help participants to revise their introductory statistics course in two ways:

1. Using randomization-based methods, as opposed to methods based on the normal distribution, to introduce concepts of statistical inference, and
2. Emphasizing the overarching process of conducting statistical investigations, from formulating a question and collecting data through exploring data and drawing inferences to communicating results, throughout the course.

The workshop will provide direct experience with hands-on activities designed to introduce students to fundamental concepts of inference using randomization-based methods. The learning activities involve using freely available applets to explore concepts and analyze real data from genuine research studies. Presenters will also offer implementation and assessment suggestions during these activity-based sessions and discussion sessions. More information about the project on which this workshop is based can be found at: **www.math.hope.edu/isi**.

Thursday Afternoon Mini-Workshops

1. ### Technology Innovations in Statistical Education: Revisiting Recommendations and a Roadmap to the Future with JMP

A 4-hour mini-workshop preceding USCOTS led by Roxy Peck (Cal Poly), Chris Malone (Winona State), Tisha Hooks (Winona State), and Mia Stephens (SAS Institute, JMP Division)

Abstract: The GAISE Report, endorsed by the ASA in 2005, provides recommendations for the use of technology in developing an understanding of statistical concepts and data analysis. In this mini-workshop, we reassess the role of

technology in statistics education in light of recent advances. We'll see examples of uses of technology in the classroom, where students visualize and interact with one variable, two variables, and many variables at a time while developing an understanding of core statistical concepts. Finally, we'll explore the future of statistics education, with one-click bootstrapping, dynamic exploration of what-if scenarios, interactive simulations, geographic mapping and more.

2. **How to Implement a Randomization-based Introductory Statistics Course: The CATALST Curriculum**

A 4-hour mini-workshop preceding USCOTS taught by Bob delMas (University of Minnesota)

Supported by NSF DUE # 0814433

Download presentation slides

Abstract: This mini-workshop introduces and provides hands-on experience with curriculum materials, lesson plans, and student assessments developed as part of the CATALST (Change Agents for Teaching and Learning Statistics) project. Focused on the introductory, non-calculus based statistics course, project goals were to radically change the content and pedagogy in such a course. The CATALST course makes exclusive use of simulation to carry out inferential analyses. The course also builds on best practices and materials developed in statistics education, research and theory from cognitive science, as well as materials and methods that are successfully achieving parallel goals in other disciplines (e.g., mathematics and engineering education). Participants will learn how to use the TinkerPlots software to introduce students to randomization and bootstrap methods through empirical simulation. Participants will leave the workshop with lesson plans, in-class student activities, and data to help them teach a one-semester introductory statistics course using randomization and bootstrap methods.

3. **Innovation in Online Instruction in Statistics: Engaging and Challenging e-Learners (NOW FULL)**

A 4-hour mini-workshop preceding USCOTS taught by Michelle Everson (University of Minnesota)

Abstract: The focus of this workshop will be on how to design and teach an interactive, engaging online statistics course based on current theory and research in education and statistics. Workshop participants will learn about ways to create courses that incorporate active learning and engage and motivate students to participate and work collaboratively. They will be guided to explore and create an online learning environment that will teach the most current statistical content using state-of-the-art software tools. Participants will also experience first-hand the role of an online student, through carefully designed activities before, during, and after the workshop. This will allow workshop participants to practice using technologies that enable instructors to help manage the online learning experience and involve students in activity and discussion.

Sunday Morning Mini-Workshop on Grant Writing

Lee Zia, Program Director for the NSDL, STEP, and TUES programs at NSF will present a 3-hour grant writing workshop on Sunday morning geared specifically towards the Statistics Education Community on May 19 immediately after USCOTS. NSF may be able to pay for the extra night's lodging needed to attend this workshop. Also, for a subset of the folks attending who are actively writing a grant at that time - NSF may be able to support food and lodging expenses to stay an additional day to work together on fine-tuning their proposals to make them more competitive. This targeted workshop is

limited to approximately 55 people for the Sunday morning component including about 10 people interested in the longer program.

Download presentation slides

- **Writing More Effective NSF Proposals**
- **Helpful Hints & Fatal Flaws**

Download example files used in the workshop

- **1043814-TUES_Type1_Kuiper.pdf**
- **1140629-TUES_Type1_Tintle.pdf**

Return to USCOTS