



CPD #1

NEAR-INFRARED SPECTROSCOPY - PRINCIPLES FOR SUCCESSFUL RESEARCH AND APPLICATIONS DEVELOPMENT

Sunday, July 16 - 8:00am-5:00pm

Location:

Instructor(s): David B. Funk, Ph.D., D.Sc. (hc)

Sponsored by ITSC-348

LEVEL OF DIFFICULTY: Intermediate

TARGET AUDIENCE: Pre-professionals, graduate students, academic researchers, and industry engineers and scientists

LEARNING OBJECTIVES: Overview of molecular spectroscopy, multivariate calibration methods, NIRS instrumentation

BENEFITS: Gain an intuitive understanding of key concepts involved in NIRS research and applications development.

COST: \$150.00

CPD #2

DESIGNING AGRICULTURAL APPLICATIONS FOR HANDHELD MOBILE DEVICES

Sunday, July 16 - 9:00am-12:00pm

Location:

Instructor(s): Bo Liu & Mario Mondaca

Sponsored by ITSC-254

LEVEL OF DIFFICULTY: Entry Level

TARGET AUDIENCE: Engineers and researchers interested in starting to develop App for handheld mobile devices

LEARNING OBJECTIVES: (a) Understand the basic App development process (b) Become familiar with the tools required for App development (c) Develop a simple App

BENEFITS:

COST: \$113.00

CPD #3

BANKFULL NATURAL CHANNEL DESIGN MODEL

Sunday, July 16 – 9:00am-12:00pm

Location:

Instructor(s): Brian Belcher, P.hD., P.E.

LEVEL OF DIFFICULTY: Intermediate

TARGET AUDIENCE: Civil Engineers

LEARNING OBJECTIVES: Fundamentals of stream restoration design

BENEFITS: A mathematical model useful for creating digital terrains that may be used for channel stability analysis, bank erosion estimating, meander migration modeling, computational fluid dynamic models, habit analysis, and civil site plans used for construction projects.

COST: \$73.00

CPD #4

APPLIED BIOSENSORS: OPTICAL AND ELECTROCHEMICAL TRANSDUCTION

Sunday, July 16 - 10:00am-5:00pm

Location:

Instructor(s): Daniel Jenkins & José I Reyes-de-Corcuera

Sponsored by ITSC-230

LEVEL OF DIFFICULTY: Intermediate

LEARNING OBJECTIVES: This workshop is designed to provide participants a hands-on introduction to emerging technologies that can be used for agricultural and biological diagnostics in the field. We will briefly review the fundamental principles of "biosensors" from sample collection/preparation and molecular recognition to signal transduction. We will focus special attention on examples of optical and electrochemical techniques for detecting specific molecular interactions. A significant portion of the workshop experience will be devoted to the preparation and application of diagnostic devices to analyze real field samples, including DNA-based technologies to detect the Citrus Greening organism in captured psyllid tissue, and an immersible sensor to monitor glucose.

BENEFITS: At the completion of the workshop, participants will be expected to: understand different classes of molecules (i.e. nucleic acids/ aptamers, proteins/ enzymes/ antibodies), that can be used for biological detection, and how they are prepared and isolated; understand the variety of physical approaches available to detect specific molecular interactions; have a practical understanding of a variety of electrochemical methods for device synthesis and analysis (i.e. potentiometric and amperometric methods, and electrochemical impedancce spectroscopy); demonstrate the basic laboratory skills for sample and device preparation/ fabrication, and; understand and use a portable instrument to detect specific nucleic acid amplification events.

COST: \$137.00

CPD #5 **CANCELED**

BUDGETING AND TOOLS FOR PROJECT MANAGEMENT

Instructor(s): Paul Davidson PhD

Sponsored by YPC

LEARNING OBJECTIVES: This course will introduce professionals to tools for budgeting and managing projects. A project budget with realistic cost constraints is essential for projects.

COST: CANCELED

CPD #6

INTRODUCTION TO SPECTROSCOPIC DATA ANALYSIS USING R PROGRAMMING

Sunday, July 16 - 1:00pm-4:00pm

Location:

Instructor(s): Colm Everard

LEVEL OF DIFFICULTY: Entry Level

TARGET AUDIENCE: Engineers, scientists and students who collect spectroscopic data for applied research. This course was developed to introduce attendees to the open source R programming software for carrying out data analytics on spectroscopic data.

LEARNING OBJECTIVES: The attendees will be shown how to carry out important spectroscopic data analysis functions using R programming. Examples will be worked through, and attendees will be encouraged to run the course's code on their own laptops. The course overview is as follows: Introduce R programming: Overview and installation of packages for spectroscopic data analysis; Introduce useful functions to allow attendees develop an understanding of the software; Importing spectral data: Inspecting the imported data; Performing commonly used pre-processing techniques on spectral data; Principal component analysis; Partial least squares regression; Formatting and exporting graphics.

BENEFITS: The attendees will gain an understanding on how to carry out data analysis of spectroscopic data using R programming. The attendees will be presented with R code that will allow them carry out spectroscopic data analysis.

COST: \$90.00

CPD #7

EXCEL-INTRO TO VBA AND AUTOMATION

Sunday, July 16 - 2:00pm-4:00pm

Location:

Instructor(s): Amy Kaleita PhD

Sponsored by YPC

LEARNING OBJECTIVES: This course will introduce professionals to tools in Excel for automating task and using VBA within Excel

COST: \$30.00

CPD #8

DIELECTRIC SENSING APPLICATIONS IN FOOD AND AGRICULTURE

Sunday, July 16 – 2:00pm-5:00pm

Location:

Instructor(s): Samir Trabelsi & Micah A. Lewis

Sponsored by ITSC-348

LEVEL OF DIFFICULTY: Entry Level

TARGET AUDIENCE: Food Scientists and Biological and Agricultural Engineers

LEARNING OBJECTIVES: The workshop will cover the basics of radio-frequency dielectric properties and measurement techniques and their applications in food and agriculture. The attendees will learn how to select the most suitable measurement technique for a given application and how to identify correlations between measured dielectric properties and target physical properties. Examples of nondestructive sensing of bulk density and moisture content in grain, seed, and nuts from measurements of their dielectric properties at microwave frequencies will be given in static and dynamic situations. Also, use of microwave sensing technology for real-time monitoring of a given process will be presented for in-wagon or in-trailer peanut drying.

BENEFITS: The attendees will acquire a better understanding of the interaction between electromagnetic waves and water-containing materials and will gain expertise in measurement of the dielectric properties of food and agricultural products over a broad radio-frequency range. Also, the attendees will be familiarized with the automation of measurements and the integration of several sensors to monitor simultaneously a number of variables. The knowledge gained will be critical in the experimental design of microwave heating and sensing applications.

COST: \$170.00

CPD #9

ONLINE TEACHING AND ACTIVE LEARNING: FLIPPING THE CLASSROOM

Sunday, July 16 – 9:00am-12:00pm

Location:

Instructor(s): Prof. Patrizia Busato, Prof. Remigio Berruto, Prof. Fedro Zazueta

Sponsored by Education Community

LEVEL OF DIFFICULTY: Entry Level

TARGET AUDIENCE: Individuals with teaching and extension education responsibilities including, faculty, lecturers and teaching assistants interested in acquiring knowledge and skills on active learning and flipped classroom instruction.

LEARNING OBJECTIVES: Describe flipped classroom principles and pedagogy; Identify required resources for successful delivery of a course in a flipped classroom format; Develop foundational skills to develop online and face-to-face materials for flipped classroom delivery.

BENEFITS: Implementing active learning pedagogies in engineering education has been shown to improve learning outcomes and higher levels of student satisfaction.

COST: \$80.00