Notícias

Curso – Making Sense of Data - a Course on Predictive Microbiology

Entre os dias 01 a 04 de outubro será realizado o curso "Making Sense of Data - a Course on Predictive Microbiology – From data to predictions; from quantitative assessment to decisions" no Departamento de Ciências de Consumo da Universidade Federal Rural de Pernambuco (UFRPE) organizado pela Sociedade Brasileira de Ciência e Tecnologia de Alimentos (**sbCTA**) e com o apoio dos Programas de Pós-Graduação em Ciência e Tecnologia de Alimentos da UFRPE (**PGCTA**) e Universidade Federal da Paraíba (**PPGCTA**). O curso será ministrado pelo **prof. József Baranyi**, da **University of Debrecen**, Hungria.

Essa é a primeira visita do prof. Baranyi na UFRPE, como resultado de uma cooperação na área de microbiologia preditiva com a sbCTA. Além do curso, o prof. Baranyi participará de reuniões acadêmicas com estudantes e pesquisadores visando a ampliação da cooperação acadêmica entre a UFRPE e a University of Debrecen, na Hungria.

Confira abaixo a programação completa do curso "**Making Sense of Data - a Course on Predictive Microbiology – From data to predictions; from quantitative assessment to decisions**". As inscrições serão limitadas (18 vagas) e deverão ser realizadas até o dia 27 de setembro de 2019 pela secretaria do PGCTA (Fone: 81 3320-6542, e e-mail: coordenacao.pgcta@ufrpe.br). O curso será ministrado em inglês e registrado como uma disciplina em Tópicos Avançados em Ciência e Tecnologia de Alimentos II do PGCTA, para aproveitamento de 2 créditos.

Making Sense of Data - a Course on Predictive Microbiology

From data to predictions; from quantitative assessment to decisions

Introduction

This course is intended primarily for food scientists to demonstrate the proper use of mathematical modelling, computational and statistical techniques to analyze their data, to generate predictions and to make decisions based on the data and the predictions.

Have you ever contemplated if it is always beneficial to bet on the most probable outcome of a random event? Or what, say, the expression "significant term ($p < 0.05$)" really means? Sooner or later you inevitably write such expressions in your reports, papers, but are you confident that you interpret it correctly?

This course is an opportunity to boost your confidence, from a mathematician who has been working with microbiologists for 30 years.

Pre-requisites

Participants will see practical demonstrations in ordinary Microsoft Excel. For mathematical tools, the built-in functions / procedures and the Data Analysis and Solver Add-ins of Excel will be used.

PROGRAMME

Day 1. Introduction

Basic concepts of mathematical modelling

– Variables and parameters

– Scaling and reparameterizaton

– Linearization and approximation

1.2. Primary and secondary models in predictive microbiology

–Exponential growth. Logistic model ande its variations

– Deterministic models for cell population, stochastic models for single cell kinetics.

- Temperature-dependence of kinetic parameters

- Multivariate models

Day 2 Data analysis

Data following a given probability distribution. Simulation

- Mean, Media and Mode

- Measure of spread

- Quantifying dissimilarities

Random variables. Sampling.

– Expectation and real outcome

- Model and fitting models to data

– The Least Squares Method

Day 3. Application to predictive microbiology problems, using data from ComBase (hands-on exercises)

Combining models and data

3.1. Decisions, decisions

– Analysing food microbiology data using ComBase.

– Sampling

– Cost functions based on dissimilarities

– Expectation and real outcome; the concept of risk

3.2. Risk minimization

– Decision making

– Cost-benefit analysis.

– Objective functions. Optimization.

Day 4. Study and doubts

Common mistakes and misconcepts. Consultation