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## Food Safety: regulations, management and global challenges

VANIA PATRONE / PROF. PAOLA BATTILANI / PIER SANDRO COCCONCELLI / LUIGI LUCINI / PAOLA TESTORI COGGI / LUCA BUSANI

### OVERVIEW

**Area:** Agribusiness & Food Sciences

**Dates:** 11 - 21 July 2017 (2 weeks)

**Campus:** Piacenza

**Course Number:** FD / NU 300

**Term:** Summer School 2017

**Credits:** 6 ECTS

### COURSE DESCRIPTION

Principles of food safety such as the hazard and risk analysis and risk management will be provided. An overview about E.U. Regulations on Food will follow, with a focus on the Alert System. A second view about food safety will be covered by guest speakers from industry. Students will then learn about emerging risk in the food safety area with special attention paid to microbiological risk.

### MAIN TOPICS

- **Food: law principles and innovation**
  - Food and culture: how culture influences food safety perceptions
  - A supranational organization: the power and political bodies of the European Union
  - The European food safety governance at a glance: EFSA, European Commission, European Parliament and the Council
  - Food innovation and regulatory approval of new ingredients in the EU: novel food and food improvement agents
  - The GMO saga in Europe: much more than biotech food

#### References:

- › *B. v.d. Meulen, M. v.d. Veld, European Food Law Handbook, Eur. Inst. for Food Law, 2008, ISSN 1871-3483*
- › *Marsha A. Echols, Food Safety Regulation In The European Union And The United States: Different Cultures, Different Laws, 1998, 4 Colum. J. Eur. L 525*
- › *Luoma SN, Löfstedt RE, Salmon contamination and the public's trust, Environment Science and Technology, 2007, 41 (6): 1811 – 1814.*
- › *Bernadene Magnuson et al, Review of the regulation and safety assessment of food substances in various countries and jurisdictions, Food Addit Contam Part A Chem Anal Control Expo Risk Assess. 2013 July; 30(7): 1147–1220*
- › *D.E. Winickoff, et al, Adjudicating the GM Food Wars: Science, Risk, and Democracy in World Trade Law, 30 Yale J. International Law 81-123 (Winter 2005)*



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- **Food safety: the industrial approach**
  - Starting from the pillars of Food Safety (risk analysis, mean of control, traceability), students will experience the industry approach to this topic
  - Lessons will focus on how to set a robust prerequisite program, what to include in an effective HACCP plan and how to monitor the system and to make it improve
  - Food Safety audits and Hygiene inspection will be shown as a tool and there will be a short review of main Food safety standards (ISO; IFS; ...)
  
- **Food safety: preventing problems and governing food emergency**
  - Defining food safety emergencies and crises: comparing past food safety crises to the core element
  - Understanding the drivers for food safety accidents
    - the increasing complexity of the food chain
    - the emerging risks
    - the burden of zoonoses
  - The global efforts to ensure emergencies and crises governance:
    - the Codex *Alimentarius* Standards
    - the FAO/WHO policy document
    - the terrorism treat and the protection of the food chain
    - the NGOs and industry initiatives at international level
  - The governance of emergencies and crises in the US and the EU
    - The agencies involved with the governance of food safety incidents
    - The Stafford Act disaster declaration and the Presidential powers in the US
    - The framework plan for food safety emergencies and crises in the EU
    - The role of private subjects: what's role for consumers and industry in a crisis?
  - Are we ready? A reflection on the current model of governance and the new challenges

#### References:

- › Moulton, Anthony D., Richard N. Gottfried, Richard A. Goodman, Anne M. Murphy, and Raymond D. Rawson. 2003. "What Is Public Health Legal Preparedness?" *The Journal of Law, Medicine & Ethics* no. 31 (4):672-683. doi: 10.1111/j.1748-720X.2003.tb00134.x.
- › Alemanno, A. 2010. "European Food Import Safety regime under a Stress Test: The Melamine Contamination of the Global Food Supply Chain." *Erasmus L. Rev.* no. 3:203.
- › Ferrari, Matteo. 2008. "Risk Perception, Culture and Legal Change: A Comparative Study on Food Safety in the Aftermath of the Mad Cow Crisis." *Social Sciences Research Network* doi: <http://dx.doi.org/10.2139/ssrn.1159763>.
- › Fagotto, Elena. 2010. "Governing a Global Food Supply: How the 2010 FDA Food Safety Modernization Act Promises to Strengthen Import Safety in the US." *Erasmus L. Review* no. 3 (4):257.



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- **Microbes and food: pathogens, spoiling and beneficial bacteria**

The learning objective is to provide the most up-to-date knowledge in food microbiology, focusing on the role of microorganisms on food safety. The following topics will be addressed:

- Food Safety: food spoilage microorganisms and food-borne pathogens, including emerging microbial pathogens associated with food
- Risk Management in the food chain: the regulation on Microbiological Criteria
- The microbiology of fermented food: biological diversity and technological features
- The key factors affecting food spoilage and preventive approaches

#### Objectives

- Be introduced to safety management in the food chain
- Get informed about E.U regulations on food safety
- Understand the roles of bacteria in the food chain
- Learn how to manage a food safety crisis

#### TEACHING METHODS

- Lectures
- Class discussions
- Guest speakers
- Field trips

#### EVALUATION AND GRADING

Attendance 20 %

Essay 20 %

Final exam 60 %

#### DETAILED DESCRIPTION OF ASSIGNMENTS

The essay (approx 10 pages ) will be based on a specific topic selected by the student in agreement with the referent professor in class. The student must hand in by email within 10 days after the completion of the course.

The in-class assessment will be a written exam composed of two parts: part a) 10 multiple choice questions, part b) 2 essay question to be chosen among 3 questions. The weights on the two parts of the final exam are 40% part a and 60% part b.

#### RULES OF CONDUCT

**Exam Date:** The exam date cannot be re-scheduled. Unexcused absences will result in a failing grade. The attendance policy is applicable also to field trips / site visits and all the curricular activities planned. In cases of unforeseeable circumstances such as illness or injury on the day of the exams, the student must submit a medical certificate and communicate his/her absence to the Professor and UCSC International Office via email **prior** to the exam. If the student does not justify his/her absence through sufficient documentation and with adequate notice



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before the final test, the student will receive an automatic Failed.

## BIO OF INSTRUCTOR

**Vania Patrone** is a researcher at the Institute of Microbiology and member of the Proteomics and Nutrigenomics Research Center (PRONUTRIGEN) of the Università Cattolica del Sacro Cuore, Piacenza. Her main research activities focus on the microbiological aspects of food quality and safety including the characterization and use of biocides and natural antimicrobials. She collaborates with local and national food companies in developing new analytical tools and strategies to address key food security and enterprise development needs.

**Prof. Paola Battilani** is Associate Professor of Plant and Food Protection in the Department of Sustainable Crop Production, Faculty of Agriculture of the Università Cattolica del Sacro Cuore of Piacenza (Italy). She has many ongoing collaborations (ISPA, University of Parma, Università di Roma La Sapienza, National Institute of Health (ISS), Rome, Italy, Cranfield University, UK, Federal Research Centre for Nutrition and Food, Karlsruhe, Germany, Consultative Group on International Agricultural Research, Nigeria, University of Arizona, US, IOWA State University, US, Texas University-TAM, US, RIKILT, The Netherlands, ARS-USDA New Orleans, US. Paola Battilani is among the founding members of the "International Society for Mycotoxicology" launched during the MYCOGLOBE meeting held in Accra (Ghana) in September 2005.

**Pier Sandro Cocconcelli**, is Professor of Food Microbiology at the Università Cattolica del Sacro Cuore (UCSC). He is Rector's delegate for internationalization projects of the same university. He is the president of CHEI, the Centre for Higher Education Internationalisation at UCSC.

Since 2003, he is scientific expert of the European Authority of Food Safety (EFSA) working on the risk assessment of microorganism internationally introduced in the food chain.

His researches are focused on food and agricultural microbiology, bacterial molecular biology, bacterial genomics, risk analysis of food pathogenic bacteria, and on the gene exchange of antibiotic resistance and virulence determinants in the food chain. Moreover, he is coordinating research and education activities on food safety in developed and developing countries.

**Luigi Lucini**, after 5 years of R&D experience in a private company of fine chemicals as GLP units manager, is now researcher in agricultural chemistry and assistant professor of biochemistry. In the current position he coordinates the research in the field of metabolomics and proteomics applied to plant, animal and environmental matrices. The main research topics include the effect of abiotic stresses such as salinity and pollutants at biochemical level, together with high-resolution mass spectrometric screening of bioactive/functional compounds rather than pollutants in food and environmental compartments.

**Paola Testori Coggi** is currently working in the area of pharmaceuticals as President of the Committee on Price and Reimbursement of the Italian Medicines Agency. She has been Director General for Health and Consumers of the European Commission from April 2010 to October 2014. Since 2000, as Director for the Safety of the food chain, she has been responsible for the White Paper on food safety and the legislative action programme as well as the management of emergencies. She was previously Advisor for consumer health of Commissioner Emma Bonino and she worked on the definition of the new EU policy on consumer health after the food safety crisis. Paola Testori Coggi joined the European Commission in 1983 and worked in DG Environment on dangerous chemicals and industrial risks. Afterwards, she served as Member responsible for the research programmes on life sciences, environment and energy in the Cabinet of the Vice-President of the European Commission, Filippo Maria Pandolfi. Paola Testori Coggi has been Member of the Management Boards of the European Medicines Agency and the European Food Safety Authority. She is Special Advisor on sanitary and phytosanitary matters of the WTO-UN



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International Trade Centre and Member of the Board of the International cooperation centre on agronomic research for the development (CIRAD).

**Luca Busani** - Senior researcher at the Istituto Superiore di Sanità, Rome.

Main research activities are on epidemiology of foodborne and vectorborne zoonoses.

In the last years started research collaboration with toxicologists on environmental and food contaminants.

Cooperation with national and regional public health institutions for the evaluation of public health priorities in regards to risk assessment and surveillance for zoonoses. Cooperation with public health institutions and universities in developing training programs for public health professionals to provide them of epidemiological knowledge and tools.

2009 to date: Member of the Italian National Focal Point for the European Food Safety Authority (EFSA) and from 2011 coordinator of the National Focal Point EFSA.