# Storage and Packaging Technologies

**2023/2024 a.y.**

## Prof. Giorgia Spigno

***COURSE AIMS AND INTENDED LEARNING OUTCOMES***

 The course aims to teach students about traditional and more innovative packaging materials, as well as the technologies for preserving and packaging agri-food products. The course will also cover current regulations governing the suitability of materials and objects for contact with food, as well as food product labelling.

 At the end of the course, students will have acquired the procedural and methodological knowledge for identifying the analytical operations to perform in order to verify compliance with the technological, qualitative and regulatory requirements of materials intended for contact with food. They will also possess adequate knowledge for evaluating the shelf-life of foods according to the characteristics and needs of the product, as well as the packaging material properties and preservation conditions.

The skills acquired will enable students to make and direct suitable choices for meeting the qualitative and functional requirements of food product packaging, so guaranteeing and improving product shelf-life, consumer safety and environmental sustainability.

***COURSE CONTENT***

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|  | ECTS |
| **Packaging systems** |  |
| Purposes and characteristics. Chemical and physical properties of packaging materials. Systematics of materials and objects for food packaging. Rigid and flexible packaging. Eco-friendly packaging. Preservation and packaging technologies. New-concept packaging materials and technologies. Innovations and problems. | 1.5 |
| **Food shelf life and legislation** |  |
| Definitions, problems, forecasting and simulation approaches, case studies. Italian and EC regulations concerning materials in contact with food and labelling | 2.5 |
| **Tutorials** | 2 |
| Group work, numerical exercises on shelf life forecasting and evaluation, seminars with company testimonials |  |

***READING LIST***

G.L. Robertson, *“Food Packaging,* *Principles and Practices",* 2nd ed., CRC (Publ.), 2005.

D.S. Lee-K.L. Yam-L. Piergiovanni, *Food Packaging Science and Technology,* CRC Press, Inc., 2008.

L. Piergiovanni-S. Limbo, *Food Packaging. Materiali,* *Tecnologie e qualità degli alimenti*, Springer, 2010.

P. Calà-Sciullo, *Materiali destinati al contatto con gli alimenti,* Chiriotti Editori, Pinerolo (To), 2006.

Lecturer's notes.

Aids related to specific topics will be provided during the course.

***TEACHING METHOD***

1. Theoretical frontal and dialogue-based lectures aimed at presenting the key concepts of the subject.

2. Frontal tutorials involving the assisted solving of numerical problems related to calculation and prediction of food products shelf-life.

3. Assignment of working groups for the resolution of specific case-studies related to the course topics.

4. Classroom seminars with company testimonials.

5. A possible educational visit to a food packaging company.

***ASSESSMENT METHOD AND CRITERIA***

During the course intermediate assignments will be given on specific topics of the program, including numerical exercises, open-ended theoretical questions, and teamwork on product / process development case-studies. The assignments will be evaluated and will contribute to the final mark together with a last session dedicated to an oral discussion of the presented reports. The final mark will reflect the acquired competences, the elaboration capacity, and the mastery of the appropriate technical terminology. In the case of working students or students unable to participate in the group works, this must be communicated to the lecturer at the beginning of the course, to define alternative exams modalities.

***NOTES AND PREREQUISITES***

The course requires some basic knowledge of reaction kinetics, and the chemical-physical characteristics of food products.

In case the current Covid-19 health emergency does not allow frontal teaching, remote teaching will be carried out through synchronous or asynchronous procedures that will be promptly notified to students

***OFFICE HOURS FOR STUDENTS***

Prof. Andrea Bassani is available for the students after the lectures. In addition, he is available to receive students following specific appointment or through remote meetings. In any case, it is suggested to write an e-mail (andrea.bassani@unicatt.it) in order to agree on the day and time of reception.