Fruit processing (Matteo Scampicchio)

**Learning outcomes** - By the end of the course, students should acquire knowledge that enables them to:
- identify the main key processing steps used during fruit transformation; understand the main effects of the processing on the quality characteristics of the processed fruits;
- have a detailed overview of main chemical and biological events occurring during fruit juice production, jam preparation, fruit drying and storage;
- understand the possible preventive measure to control or even enhance the stability and shelf life of the processed fruits.

**Course contents** - The course is designed to provide graduate students with an overview of the main processing steps used during the transformation of fruits, emphasizing the chemical, physical and biological changes occurring during processing. Specific attention will be given to the production of fresh cut fruits, fruit juices, jams, jellies and marmalades and dried fruits. Accordingly, the course will cover the following topics: (1) Fresh cut fruits; (2) Fruit juice processing, (3) Enzyme use in fruit processing, (4) Fruit preserves and jams making, (5) Use of pectins in fruit processing, (6) Drying of fruits, (7) Thermal processing of fruits, (8) Hurdles technologies and (9) Fruit by-products.

**Teaching methods** – This course involves consists of 20 hr of frontal lectures and 10 hr of practical part. The frontal lectures and topics are presented by the Professor. Practical parts, lab activities, and excursions are explained by the Professor and the Teaching Assistants. The frontal lectures will be offered with digital slides, videos and the lecture of selected scientific literatures. The practical part includes exercises with spreadsheet at the PC, laboratory activity for the measurement of the main quality fruit attributes and some practical laboratory activity on the use of enzymes and pectins in fruit processing.

**Readings/Bibliography** - The content of the course is based on the following bibliography:
- Slides presented during the lectures.
- Furthermore, for a deeper understanding of the topic presented during the course, it is recommended the reading of the following book:

**Assessment methods** - Coursework will be weighted as follows: final written exam (100%). It will not be possible to pass the course if the final written exam has a mark lower than 18.

**Teaching tools** - Generally, Power Point presentations are available in the course reserve collection database of the Faculty 1 day after each single lecture. Additional material are provided by the Professor.