# .- Vegetable Production and Technology

## Prof. Matteo Busconi

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

The course is carried out in the 2nd term and consists of 4 CFU (32 hours) of lectures and 2 CFU (24 hours) of practical works. The course aims to provide a general grounding in the principal features of Italian horticulture focusing mainly on: the main methods for improving cultivated varieties; the growing methods employed; harvest, post-harvest and processing; the major vegetable crops cultivated for fruits, seeds, leaves or underground parts. Practical work will be organised as seminars in class by experts and visits at agri-food establishments to introduce students to the most basic relationships between the quality of the raw material and the needs of the food industry

Learning outcomes:

After successful completion of this course, students are expected to be able:

- to have the most important information on and to describe the main aspects of Italian horticulture;

- to know the Economic significance and distribution of the main horticultural species;

- to know how horticultural crops are improved and to explain the cultivation methods used in open field, protected and soilless cultivation; integrated and organic crop protection systems;

- to describe the most important nutritional and quality aspects of productions intended for the fresh and processed foods markets;

- to understand post-harvest physiology, methods of conditioning, storage, and industrial processing;

- to know the main horticultural species for Italian horticulture with emphasis on species belonging to the subsequent families: *Apiaceae*, *Asteraceae*, *Brassicaceae*, *Cucurbitaceae*, *Fabaceae*, *Liliaceae* and *Solanaceae*.

***COURSE CONTENT***

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|  | CFU |
| **Genetic improvement and seed production** | **1.0** |
| **Cultivation**  Open field, protected and soilless cultivation. Integrated and organic agriculture. | **1.0** |
| **Quality aspects and industrial use**  Quality standard, nutritional aspects, composition, harvest, post-harvest and processing | **1.0** |
| **Major Italian vegetable crops**  The subsequent families were considered, focusing, in particular, on some species:  *Apiaceae* – Fennel and Carrot  *Asteraceae* - Artichoke, Chicory and Lettuce  *Brassicaceae* – Broccoli, Cauliflower, Cabbage  *Fabaceae* – Common bean and Pea  *Liliaceae* – Onion, Garlic, Leek, Asparagus  *Cucurbitaceae* – Courgette, Watermelon  *Solanaceae* – Tomato, Potato, Eggplant and Pepper | **1.0** |
| **Practical work** educational visits at agri-food establishments  seminars | **2.0** |

***READING LIST***

Papers from the scientific literature that will be provided by the teacher.

Documents retrievable online that will be provided by the teacher.

Power point presentations will be made available during the course before the beginning of each new topic.

***TEACHING METHOD***

The teaching method will embrace the following activities:

1) Indoor class where main course topics will be covered along with several applied examples. Each new lesson, starting from the second oine, will begin with a 10 – 15 minutes refresher of the previous one to recall the main subjects previously addressed. Questions will be posed to stimulate discussion.

2) Practical work will be in the form of seminars and educational visits at local realities involved: in the improvement of horticultural crop cultivars, in the protected and soilles cultivation of horticultural crops and in the industrial uses and processing. At least two visits lasting half a day will be organised.

***ASSESSMENT METHOD AND CRITERIA***

The assessment consists in a written exam, for the first 3 CFUs, and an oral presentation, for the last 2 CFUs. The written test will cover the following topics, Genetic improvement and seed production, Cultivation, Quality aspects and industrial use. The test will take place at the official exam dates and it will take the form of a written test consisting of 32 multiple-choice questions (1 point for each correct answer, 0 point for each wrong answer) with students choosing from four possible answers, lasting 90 minutes. Pass mark is 18/30. A bonus mark (lode) will be awarded to those students who will correctly answer more than 30 questions.

For the second part (Major Italian vegetable crops), the evaluation will be carried out at the end of the course and it will take the form of an oral presentation, lasting 30 minutes, prepared by students on one specific horticultural crop selected with the teacher. For the selected crop, the presentation should cover: Origin and history; Botany; Cultivation; Varieties and genotypes of interest for agriculture; Aims of breeding; Quality standard and nutrition aspects; Harvest and Use; Main abiotic and biotic stresses. The score assigned, out of 30, will be determined, besides students' knowledge, by clarity in the presentation of the topics (up to 10 points), mastery of specialised terminology (up to 5 points) and capacity of the candidate to search, process autonomously and report the information retrievable from scientific literature (up to 15 points). Pass mark is 18/30.

The final score will be the average of the two evaluations. Pass mark is 18/30 out of 30/30.

***NOTES AND PREREQUISITES***

Basic knowledge on genetics, agronomy and chemistry are required for a better understanding of the course. It is highly recommended that students attend educational visits, as topics covered during these sessions have to be considered part of the teaching program.

Prof. Matteo Busconi is available to meet with students every day at the Department of Sustainable Crop Production - Agronomy and Plant Biotechnology Area or online using the platform Microsoft teams.