

Syllabus

Course description

Course title	Chemometric approaches to study the chemical and sensory markers of food processing
Course code	46027
Scientific sector	AGR/15-Food Science and Technology
Degree	PhD in Food Engineering and Biotechnology and Master Degree in Food Sciences for Innovation and Authenticity
Semester	2
Year	1
Academic year	2019/2020
Credits	3
Modular	NO

Total lecturing hours	30
Total lab hours	0
Total exercise hours	-
Attendance	-
Prerequisites	Basic knowledge of food chemistry and statistical analysis
Course page	OLE for AA 2018/2019, II semester: https://ole.unibz.it/course/view.php?id=4810 The same content will be kept updated and extended for the in 2019/2020, II semester. Material used in the course will be provided to the students on this support.

Specific educational objectives	A) provide an adequate knowledge and a critical approach to the identification of chemical and sensory markers of food processing, packaging and authenticity. B) provide adequate knowledge of the most common multivariate statistical approaches used to study the influence of processing conditions on the composition of food products, with practical examples
--	---

Lecturer	Edoardo Longo, BZ L5.00, edoardo.longo@unibz.it, +39 0471 017691, https://www.unibz.it/it/faculties/sciencetechnology/academic-staff/person/35783-edoardo-longo
Scientific sector of the lecturer	AGR/15 Food Science and Technology
Teaching language	English
Office hours	Scheduled as indicated the course timetable (usually one hour before the lecture). The lecturer will be available outside these hours upon arranging an appointment.

Teaching assistant (if any)	None
Office hours	9
List of topics covered	<p><i>Theoretical part</i> Part A) Exploratory multivariate analysis (eg. PCA, HCA); Part B) Supervised multivariate classification (eg. SIMCA; DA); Part C) Multivariate regression (MLR, PCR, PLS) and derived classification methods (PLS-DA).</p> <p><i>Practical activities</i> Use of software for multivariate statistical analysis for applications in food chemistry and technology.</p>
Teaching format	Frontal lectures, exercises, projects

Learning outcomes	<p><i>Knowledge and understanding.</i> (a) adequate knowledge and understanding the development of projects related to the chemometric and sensory analysis applied to the quality evaluation and authenticity of food products;</p> <p><i>Applying knowledge and understanding.</i> (a) developing the capability of integration of information, both in horizontal way (technological, chemical, biological, and regulatory aspects related to the chemometric and sensory analysis of food products) and in vertical way (reasonable sequence of processes affecting the composition of food products for the evaluation of their quality and authenticity);</p> <p><i>Making judgements.</i> Capability of identify the information be needed to improve the efficiency of the chemometric and sensory analysis of food products;</p> <p><i>Communication skills.</i> Capability of clearly and exhaustively communicate notions, ideas, problems and technical solutions for the chemometric and sensory analysis of food products to interlocutors, either professional or not, representative of the various and specific competencies in the food supply chain (agronomist, engineers, biologists, chemists, nutritionists, administrators)</p> <p><i>Learning skills.</i> To get the learning skills that are necessary to continue to undertake further study in the sector of the chemometric and sensory analysis of food products with an appropriate level of autonomy.</p>
Assessment	A project work developed by the student will be assessed: presentation and discussion of a topic related to the contents of the course agreed between lecturer and students; the final mark is attributed in thirties.
Assessment language	English

Evaluation criteria and criteria for awarding marks	<p>Successful completion of the examination will lead to grades ranging from 18 to 30 with honors.</p> <p>Relevant for the final exam: clarity of the presentation, mastery of language, ability to summarize, evaluate, and establish relationships between topics; relevant for project work: ability to work in a team, creativity, skills in critical thinking, ability to summarize in own words</p>
Required readings	<p>Keynotes and scientific publications provided by the lecturer. Some material is available on OLE (https://ole.unibz.it/course/view.php?id=4810) upon enrollment</p>
Suggested readings	<p>"Chemometrics in Food Chemistry" (ed. Federico Marini); "Chemometrics with R" (ed. Springer); "Introduction to Multivariate Statistical Analysis in Chemometrics" (ed. CRC Press); other reviews and applications reports are proposed during the course.</p>