General information		
Academic subject	***Analyses for food quality (C.I. Food quality and safety)***	
Degree course	*Food Science and Technology (L26)*	
Academic Year	*Third*	
European Credit Transfer and Accumulation System (ECTS)		3 ECTS
Language	*Italian*	
Academic calendar (starting and ending date)	*September 26th, 2022 – January 20th, 2023*	
Attendance	*Not mandatory*	

Professor/ Lecturer	
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Virtual headquarters	*Microsoft Teams*
Tutoring (time and day)	9.00-16.00 by appointment via email or teams

Syllabus	
Learning Objectives	The course aims to provide transversal knowledge about the basic analysis of food products. To this end, the aspects related to sampling and sample management in the laboratory will be considered first. Then the methods of analysis for the determination of the centesimal composition of foods will be addressed; the techniques of extraction of analytes from food matrices; refractometry and polarimetry.
Course prerequisites	The exam does not provide for any prerequisites. Good knowledge of basic chemistry and physics and food product technologies is useful for a clearer and easier understanding of the topics.
Contents	**Sampling and sample processing for food analysis.** **Analytical methods for the evaluation of the centesimal composition of foods:** *- determination of humidity, aw and dry weight* *- determination of fat* *- determination of proteins* *- determination of sugars* *- determination of fibers* *- determination of ashes* **Extraction techniques:** *- liquid-liquid* *- solid-liquid* *- SPE and dSPE* *- SPME* *- purge and trap* *- static and dynamic headspace* **Refractometry** **Polarimetry**
Books and bibliography	Cabras P., Tuberoso C.I.G. – Analisi dei Prodotti Alimentari. Piccin edizioni 2010. Moret S., Purcaro G., Conte L.S. Il campione per l'analisi chimica – tecniche innovative ed applicazioni nei settori agroalimentare e ambientale – Springer edizioni, 2014.
Additional materials	Notes, slides and other bibliographic materials will be furnished during the course.

Work schedule			
Total	Lectures	Hands on (Laboratory, working groups, seminars, field trips)	Out-of-class study hours/Self-study hours
Hours			
75	*16*	*14*	*45*
ECTS			
3	*2*	*1*	

Teaching strategy	The topics of the course will be treated with the help of presentations, videos and other teaching materials useful to complete the learning. The exercise activities will allow to perform practically part of the methods studied during the course.
Expected learning outcomes	The expected learning outcomes, in terms of both knowledge and skills, are provided in Annex A of the Academic Regulations of the Degree in Food Science and Technology (expressed through the European Descriptors of the qualification).
Knowledge and understanding on:	○ Knowledge of the main analytical methods for determining the composition of food. ○ Knowledge of the main processes of extraction of analytes of interest from complex food matrices.
Applying knowledge and understanding on:	○ Ability to apply analytical methods for determining the composition and quality of food. ○ Ability to interpret analytical results.
Soft skills	• *Making informed judgments and choices* ○ Critical spirit in the evaluation and choice of analytical means suitable for monitoring the characteristics and quality of specific foods. • *Communicating knowledge and understanding* ○ Ability to describe the analytical methods underlying the evaluation of the composition and quality of food products. ○ Ability to argue about the characteristics of different analytical methods in relation to specific situations. • *Capacities to continue learning* ○ Ability to deepen and update their knowledge of analytical methods useful for evaluating the composition and quality of food products.
The expected learning outcomes, in terms of both knowledge and skills, are provided in Annex A of the Academic Regulations of the Degree in Food Science and Technology (expressed through the European Descriptors of the qualification).	

Assessment and feedback	
Methods of assessment	The exam consists of an oral test related to the topics developed during the hours of theoretical and theoretical-practical lessons in the classroom and in the laboratory, as reported in the Didactic Regulations of the Degree Course in Food Science and Technology (art. 9) and in the study plan (Annex A). For students enrolled in the year of course in which the teaching is carried out, there is an exemption test, which consists of a written test on topics developed by the date of the exemption or in any case agreed with the teacher. The test will be evaluated in thirtieths and in case of a positive outcome, in the final oral exam the interview will focus on the remaining part of the teaching contents. The result of the exemption test contributes to the evaluation of the exam and is valid for one academic year.

	The exam of foreign students can be carried out in English according to the methods described above.

Evaluation criteria	• *Knowledge and understanding*
	  ○ Level of knowledge of the analytical methods of evaluation of the composition and quality of the foods treated in class.
	• *Applying knowledge and understanding*
	  ○ Demonstrate the ability to apply analytical methods for assessing the composition and quality of processed foods.
	  ○ Ability to interpret analytical results.
	• *Autonomy of judgment*
	  ○ Express reasonable assumptions about the choice of the most suitable methods for a correct analysis of food.
	• *Communicating knowledge and understanding*
	  ○ Appropriate use of the technical-scientific lexicon and ability to argue analytical choices in a critical way.
	• *Communication skills*
	  ○ The student will be evaluated considering the use of appropriate technical language.
	• *Capacities to continue learning*
	  ○ Knowledge of the channels and methodologies to deepen and update independently their knowledge related to analytical methods for the evaluation of the composition and quality of food.

Criteria for assessment and attribution of the final mark	The evaluation of the student's preparation takes place based on pre-established criteria, while the vote also in accordance with what is reported in Annex B of the Didactic Regulations of the Degree Course.
Additional information	