

General information	
Academic subject	Biochemical Methods for Food Quality Control
Degree course	Master programme: Food Science and Technology
ECTS credits	6 ECTS
Compulsory attendance	No
Teaching language	Italian

Subject teacher	Name Surname	Mail address	SSD
	Carmine Crecchio	carmine.crecchio@uniba.it	CHIM/10

ECTS credits details			
Basic teaching activities	4 ECTS Lectures	2 ECTS Laboratory or field classes	

Class schedule	
Period	I semester
Course year	Second
Type of class	Lectures, laboratory

Time management	
Hours	150
In-class study hours	60
Out-of-class study hours	90

Academic calendar	
Class begins	September 28 th , 2020
Class ends	January 22 nd , 2021

Syllabus	
Prerequisites/requirements	Basic knowledge in general and organic chemistry and cell structure and functioning
Expected learning outcomes	<p><i>Knowledge and understanding</i></p> <ul style="list-style-type: none"> Introduction to applied biochemistry to evaluate food quality. <p><i>Applying knowledge and understanding</i></p> <ul style="list-style-type: none"> Knowledge of the biochemical system in which the main techniques, used for food quality evaluation, operate. <p><i>Making informed judgements and choices</i></p> <ul style="list-style-type: none"> Capacity to use the acquired information to be used for further studies. <p><i>Communicating knowledge and understanding</i></p> <ul style="list-style-type: none"> Capacity to describe the biochemical methods useful to determine and improve food quality. <p><i>Capacities to continue learning</i></p> <ul style="list-style-type: none"> Capacity to upgrade at higher levels the knowledge relative to biochemical methods used in food quality control. <p>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)</p>
Contents	Enzyme catalysis: generalities; equations and parameters of enzyme catalysis; enzyme inhibition. Analytical determinations in enzymology. Extraction and purification of enzymes: sources of extraction, strategies, lysis, centrifugation and filtration of cell extracts, low and high efficiency purifications. Immobilized enzymes. Applications of enzymes in food industry.

	<p>Immunological methods: immunological response; production and purification of antibodies; immunoprecipitation; antibody labelling; immunoistochemistry ; immunoblotting.</p> <p>Food fingerprinting: mass spectroscopy and NMR.</p> <p>Biosensors: introduction and principles. Equipments of first, second and third generation. Applications in food compartment.</p>
Course program	
Reference books	<ul style="list-style-type: none"> • Slides used during the course. • Biochimica industriale – Verga, Pilone – Sprinter. • Principi di Biochimica – Settima edizione, Nelson, Cox – Zanichelli. • Introduzione alla Biochimica di Lehninger – Sesta Edizione Nelson, Cox – Zanichelli. • Wilson, Walker. Biochimica e biologia molecolare – Principi e tecniche. Raffaello Cortina Ed. • Wilson, Walker. Metodologia biochimica: le bioscienze e le biotecnologie. Raffaello Cortina Ed. • Skoog, West, Holler. Fondamenti di Chimica Analitica, Edises.
Notes	
Teaching methods	<p>Course contents will be presented through PC assisted tools (Powerpoint slides) and laboratory practical experiences.</p> <p>Lecture notes and educational supplies will be provided by means of email or online platforms (i.e.: Edmodo, Google Drive etc.)</p>
Evaluation methods	<p>The exam consists of an oral dissertation on the topics developed during the theoretical and theoretical-practical lectures in the classroom and in the laboratory/production plants, as reported in the Academic Regulations for the Master Degree in Food Science and Technology (article 9) and in the study plan (Annex A).</p> <p>Students attending at the lectures may have a middle-term preliminary exam, consisting of a written test, relative to the first part of the program, which will concur to the final evaluation and will be considered valid for a year.</p> <p>The evaluation of the preparation of the student occurs on the basis of established criteria, as detailed in Annex B of the Academic Regulations for the Master Degree in Food Science and Technology.</p> <p>Non-Italian students may be examined in English language, according to the aforesaid procedures.</p>
Evaluation criteria	<p><i>Knowledge and understanding</i></p> <ul style="list-style-type: none"> ○ Describe the main metabolic techniques useful for food quality control. <p><i>Applying knowledge and understanding</i></p> <ul style="list-style-type: none"> ○ Describe the importance of biochemistry to evaluate the proper approaches able to properly investigate food quality. <p><i>Making informed judgements and choices</i></p> <ul style="list-style-type: none"> ○ Capacity to understand the importance of the biochemical processes in living cells. <p><i>Communicating knowledge and understanding</i></p> <ul style="list-style-type: none"> ○ Capacity to describe how to control and improve food quality by biochemical methods. <p><i>Capacities to continue learning:</i></p> <ul style="list-style-type: none"> ○ Capacity to use and apply the biochemical background to control food quality.
Receiving times	Every afternoon following phone or e-mail appointments