

# SYLLABUS

REGARDING THE QUALIFICATION CYCLE FROM 2024/2025 TO 2027/2028

ACADEMIC YEAR 2026/2027

## 1. BASIC COURSE/MODULE INFORMATION

Course/Module title	Wine chemistry
Course/Module code *	-
Faculty (name of the unit offering the field of study)	Faculty of Technology and Life Sciences
Name of the unit running the course	Faculty of Technology and Life Sciences Institute of Food Technology and Nutrition Department of General Food Technology and Human Nutrition
Field of study	Food Technology and Human Nutrition
Qualification level	First grade
Profile	Academic
Study mode	Stationary
Year and semester of studies	III <sup>rd</sup> year, V semester
Course type	specialized/ Fermentation processes in food production
Language of instruction	Polish
Coordinator	Dr hab. Ireneusz Kapusta, prof. UR
Course instructor	Lecture: dr hab Ireneusz Kapusta Lab: Dr inż. Agata Pawłowska, dr inż. Paweł Hanus

\* - as agreed at the faculty

### 1.1. Learning format – number of hours and ECTS credits

Semester (no.)	Lectures	Classes	Colloquia	Lab classes	Seminars	Practical classes	Internships	Others	ECTS credits
5	10			15					3

### 1.2. Course delivery methods

X conducted in a traditional way

- involving distance education methods and techniques

### 1.3. Course/Module assessment (exam, pass with a grade, pass without a grade)

PASS WITH A GRADE

## 2. PREREQUISITES

biochemistry, microbiology, food analysis, general food technology
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### 3. OBJECTIVES, LEARNING OUTCOMES, COURSE CONTENT, AND INSTRUCTIONAL METHODS

#### 3.1. Course/Module objectives

O <sub>1</sub>	Presentation of the chemical composition of wine and familiarization with the structure of individual chemical compounds included in wine.
O <sub>2</sub>	Presentation of chemical changes during the vinification process in different types of wine.
O <sub>3</sub>	Presentation of methods for physicochemical, instrumental and sensory analysis of raw materials and wine products.

#### 3.2 COURSE/MODULE LEARNING OUTCOMES

Learning Outcome	The description of the learning outcome defined for the course/module	Relation to the degree programme outcomes
LO_01	Student has knowledge of the techniques used in physicochemical, instrumental and sensory analysis of wine products	K_W11
LO_02	Student is able to independently conduct basic analyses of the chemical composition, quality tests and evaluation of sensory characteristics of wine products	K_Uo8
LO_03	Student is able to select and apply an appropriate research method to solve a problem related to the quality of wine	K_Uo5
LO_04	Student is aware of the importance of knowledge about the chemical composition of wine, the structure of individual chemical compounds included in wine and chemical changes involving them, the proportions of individual components in different types of wines.	K_Ko2
LO_05	Student demonstrates an understanding of the phenomena and processes occurring during food processing and their impact on the safety and health of the consumer	K_Ko4

#### 3.3 Course content

##### A. Lectures

Content outline
The chemical composition of wine - macro and microelements, sugars, acids, proteins and their role in the fermentation process and their importance for the physicochemical properties of wine
Chemical phenomena occurring during wine maturation. Maturation of red wines in barrels and bottles. Chemical nature of irregularities in wine production. Additional substances used in wine production.

Polyphenols – groups of polyphenolic compounds, quantities depending on the type of wine and grape variety, importance for wine, changes in compounds during the production and storage process, including fruit maturation, maceration, fermentation and wine maturation. By-products of alcoholic fermentation. Acids – types, transformations including acetic acid - role and importance for wine.

Wine aromas – compounds responsible for the bouquet of wine (esters, ethers, higher and isomeric alcohols, aldehydes, ketones, terpenes, etc.) on the examples of selected wine varieties.

Basic analysis and quality control of wine in the light of applicable regulations and good laboratory practices

## B. Laboratories

Content outline
Acidity measurement in wines
Qualitative and quantitative determination of sugars, including reducing sugars
Colour and polyphenol content – application of UV-VIS technique
Determination of free and bound SO <sub>2</sub>
Chromatographic methods in wine analysis
Exercising sensory memory, recognising wine aromas

### 3.4 Methods of Instruction

Lecture supported by a multimedia presentation.

Laboratories: group work - accounting tasks, discussion, work in a laboratory, carrying out experiments, designing methods.

## 4. Assessment techniques and criteria

### 4.1 Methods of evaluating learning outcomes

Learning outcome	Methods of assessment of learning outcomes ( e.g. test, oral exam, written exam, project, report, observation during classes)	Learning format (lectures, classes, ...)
LO-01	test	lectures, laboratories
LO-02	test	laboratories
LO-03	test	lectures, laboratories
LO-04	project, report	laboratories
LO-05	project, report	laboratories

### 4.2 Course assessment criteria

Lecture: test

The number of points obtained is decisive for the positive evaluation (> 50% of the maximum number of points): dst 51-59%, dst plus 60-69%, db 70-79%, db plus 80-89%, very good > 90%.

Laboratories: passing with a grade

Assessment determined on the basis of partial grades from the colloquium (knowledge check), presentation / report on the elaboration of the selected issue (skills), participation in the discussion, observation of activity during classes (social competences).

The number of points obtained is decisive for the positive evaluation (> 50% of the maximum number of points): dst 51-59%, dst plus 60-69%, db 70-79%, db plus 80-89%, very good > 90%.

The condition for completing the course is achieving all the assumed learning outcomes.

## 5. Total student workload needed to achieve the intended learning outcomes – number of hours and ECTS credits

Activity	Number of hours
Scheduled course contact hours	10+15/1
Other contact hours involving the teacher (consultation hours, examinations)	participation in consultations – 1/0,03 participation in the test – 2/0,06
Non-contact hours - student's own work (preparation for classes or examinations, projects, etc.)	preparation for the test – 30/1 preparation of a project/presentation – 20/0,66
Total number of hours	78
Total number of ECTS credits	3

\* One ECTS point corresponds to 25-30 hours of total student workload

## 6. Internships related to the course/module

Number of hours	-
Internship regulations and procedures	-

## 7. Instructional materials

Compulsory literature:

1. M. Montignac, Magia Wina, Artvitae, 2005
2. R. Zienkiewicz, Sztuka Wina, Almapress, 1996
3. Wino, Tandem Verlag GmbH, 2008
4. Y. Margalit, Technologia produkcji wina, PWRiL
5. Steidl R., Renner W., Problemy fermentacji wina, ProLibris, Zielona Góra, 2008
6. Praca zbiorowa pod red. T. Tuszyńskiego i T. Tarko Procesy fermentacyjne – przewodnik do ćwiczeń. Wydawnictwo Uniwersytetu Rolniczego, Kraków 2010

7.	Wzorek W., Pogorzelski E.: Technologia winiarstwa owocowego i gronowego. Wyd. Sigma-NOT, Warszawa, 1998
Complementary literature:	
1.	THE WINE APPRECIATION GUILD, WINE APPRECIATION GUILD, 2010, 3RD EDITION
2.	LINSKENS, H. F. AND JACKSON, J. F, WINE ANALYSIS, SPRINGER-VERLAG, 1988
3.	M. BALDY, THE UNIVERSITY WINE COURSE, 2011, 3 EDYCJA
4.	RONALD S. JACKSON, WINE SCIENCE: PRINCIPLES AND APPLICATIONS, ELSEVIER, 2014
5.	IRENEUSZ KAPUSTA WŁAŚCIWOŚCI FIZYKOCHEMICZNE WINOGRON ORAZ WIN PRODUKOWANYCH W POŁUDNIOWO-WSCHODNIEJ POLSCE, WYD. I ISBN 978-83-7996-297-6 UR 2016

Approved by the Head of the Department or an authorised person