

SYLLABUS

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

1. BASIC COURSE/MODULE INFORMATION

Course/Module title	Cheese making
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 Dairy Technology
Field of study	Food Technology and Human Nutrition
Qualification level	1st
Profile	General academic
Study mode	Full-time
Year and semester of studies	IV year, 7 semester
Course type	Specialized/Fermentation processes in food production
Language of instruction	English/Polish
Coordinator	dr hab. inż. Agata Znamirska-Piotrowska, prof. UR
Course instructor	dr hab. inż. Agata Znamirska-Piotrowska, prof. UR, dr inż. Katarzyna Szajnar, dr inż. Małgorzata Pawlos, dr inż. Magdalena Buniowska-Olejek

* - as agreed at the faculty

1.1. Learning format – number of hours and ECTS credits

Semester (no.)	Lectures	Classes	Laboratories	Seminars	Practical classes	Internships	others	ECTS credits
7	10		20					2

1.2. Course delivery methods

☒ 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 grade

2. PREREQUISITES

Animal raw material production, chemistry, food biochemistry, food microbiology, general food technology and preservation

3. OBJECTIVES, LEARNING OUTCOMES, COURSE CONTENT, AND INSTRUCTIONAL METHODS

3.1. Course/Module objectives

O1	To familiarize students with the production technologies of acid-coagulated, acid-rennet, and rennet cheeses.
O2	To develop appropriate attitudes regarding hygiene in cheese production.

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	Has advanced knowledge of cheese production technologies, including the selection of appropriate machinery and equipment	K_W11
LO_02	Is able to critically analyse and identify ethical aspects of the impact of cheese-making technologies on the natural environment and the health of humans and animals	K_U07
LO_03	Is able to solve practical engineering problems and select appropriate methods for milk processing, cheese packaging and storage in accordance with applicable regulations	K_U09
LO_04	Is prepared to preserve and respect the heritage and traditions of the profession of food technologist and nutrition specialist, with particular emphasis on the legacy and craftsmanship of cheese-making	K_K05

3.3. Course content

A. Lectures

Content outline
Classification and categorization of cheese.
Quality requirements for milk used in cheese production.
Enzymes and additives used in cheese-making technology.
Cheese starter cultures; syneresis of acid and rennet curd.
Factors affecting cheese yield.
Cheese defects.

B. Laboratories

Content outline
Production technology of acid-curd cheese (twarog, twarog-based cheese).
Production technology of acid-rennet cheeses (homogenized cheese spreads, feta cheese).
Production technology of rennet cheeses (salami-type cheese, łancucki cheese).
Production technology of pasta filata cheeses (mozzarella).
Production technology of soft mould-ripened cheeses.
Production technology of bundz and bryndza.

3.4. Methods of Instruction

Lecture: a lecture supported by a multimedia presentation

Laboratories: experimental work, practical classes

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
LO_02	OBSERVATION DURING CLASSES	LABORATORIES
LO_03	OBSERVATION DURING CLASSES, REPORT, TEST	LABORATORIES
LO_04	CONTINUOUS OBSERVATION	LABORATORIES

4.2 Course assessment criteria

Achieving all intended learning outcomes is a prerequisite for passing the course. Lectures: test. Laboratories: Graded credit based on the following components: preparation of reports, execution of laboratory experiments, presentation of results, and passing the test. The final grade is determined based on the average of partial assessments. Grading scale: grade 5.0: 90-100 % correct answers, grade 4.5: 80-89 %, grade 4: 70-79 %, grade 3.5: 61 – 69 %, grade 3: 51 – 60 %.
--

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

Activity	Number of hours
Course hours	30/1,0
Other contact hours involving the teacher (consultation hours, examinations)	10/0,33
Non-contact hours - student's own work (preparation for classes or examinations, projects, etc.)	20/0,67

Total number of hours	60
Total number of ECTS credits	2

* 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. Ziajka S. (red). Mleczarstwo, Wyd. UMW, Olsztyn 2008.
2. Pijanowski E. Zarys chemii i technologii mleczarstwa. T1,2,3. PWRiL, Warszawa.
3. Pieczonka W., Znamiorska A. Przetwórstwo mleka. Rzeszów 2001.
4. Holanowski A. Twarogi i serki twarogowe. Biblioteczka Majstra Mleczarskiego. Wyd. Spółdzielcze, Warszawa 1986.
5. Deregniewicz W. Technologia serów miękkich. Wyd. Oficyna Wydawnicza „Hoża”, Warszawa 2009.
6. Żuraw J., Chojnowski W., Jęsiak Z. Technologia serów twardych i półtwardych. Wyd. Oficyna Wydawnicza „Hoża”, Warszawa 1997.
7. Zander L., Zander Z. Mleczarstwo. Technika i technologia. Wyd. Tetra Pak Sp. z o.o., Warszawa 2013.
8. Przewodnik do ćwiczeń dostępny na MS Teams.

Complementary literature:

Przegląd mleczarski, Przemysł Spożywczy and

1. Kalicka D., Pawlos M., Szajnar K. Serowarstwo na Podkarpaciu. Tradycja i współczesność. Poradnik serowara. Wyd. Stowarzyszenie na Rzecz Rozwoju i Promocji Podkarpacia PRO CARPATIA, Rzeszów 2015, wydanie I, s.108.
2. Kalicka D., Pawlos M., Szajnar K. Serowarstwo krok po kroku. Stowarzyszenie na Rzecz Rozwoju i Promocji Podkarpacia PRO CARPATIA, Rzeszów 2016, wydanie I, s.105.
3. Pawlos M., Znamiorska A., Zagała G., Buniowska M. Use of Calcium Amino Acid Chelate in the Production of Acid-Curd Goat Cheese. Foods 2020, 9, 994.
4. Pawlos M., Znamiorska A., Kalicka D., Szajnar K., Buniowska M., Kowalczyk M. Właściwości ekologicznych twarożków kozich z przyprawami ziołowymi. Żywność i jej bezpieczeństwo, red. nauk. G. Gajdek, C. Puchalski, G. Jaworska, Wyd. Uniwersytet Rzeszowski, Rzeszów 2020.
5. Pawlos M., Znamiorska A., Szajnar K. Effect of Calcium Compound Type and Dosage on the Properties of Acid Rennet Goat's Milk Gels. Molecules 2021, 26, 5563.
6. Pawlos M., Znamiorska-Piotrowska A., Kowalczyk M., Zagała G. Application of Calcium Citrate in the Manufacture of Acid Rennet Cheese Produced from High-Heat-Treated Goat's Milk from Spring and Autumn Season. Molecules 2022, 27, 5523.
7. Pawlos M., Znamiorska-Piotrowska A., Kowalczyk M., Zagała G., Szajnar K. Possibility of Using Different Calcium Compounds for the Manufacture of Fresh Acid Rennet Cheese from Goat's Milk. Foods 2023, 12, 3703.

Approved by the Head of the Department or an authorised person