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Milk processing on family farm (296611)

Nositelj kolegija

prof. dr. sc. Samir Kalit

Opis kolegija

Milk processing could be a significant business activity of many family farms. Milk processing could make the majority of the farms' profit. Problems of milk collecting are solved by milk processing on family farms, especially in areas where milk collecting is difficult and expensive (for instance in the Mediterranean islands and mountains' areas). Moreover, milk processing increases profit per farm due to the additional employment of family farm members which are involved in activities of milk production, processing and selling of dairy products. By higher profit per farm, depopulation of rural areas is avoided, as well as, protection of traditional dairy products is ensured. It is well known that Croatia is a country rich in such products that are still produced on small family farms. Through this course student's acquire basic knowledge about production of high quality milk on family farms which is crucial for production of the high quality traditional dairy products. Students will receive knowledge about treatment of milk after milking and knowledge about milk processing into different traditional dairy products. Moreover, the course will cover the basic requirements for building, adaption and equipment of small scale dairy plants, labeling of dairy products, hygiene and sanitation, hygiene indicators, introduction of guidelines for good hygienic practice and implementation of HACCP principles, traceability and safety, sensory evaluation, direct selling and the protection of dairy products. Students will be introduced to traditional Croatian dairy products through seminars.

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ECTS: **6.00**

E-učenje: **R1**

Sati nastave: 60
Predavanja: 30
Auditorne vježbe: 10
Vježbe u praktikumu: 8
Seminar: 12

Izvođač predavanja

- prof. dr. sc. Samir Kalit
- izv. prof. dr. sc. Nataša Mikulec
- izv. prof. dr. sc. Milna Tudor Kalit

Izvođač vježbi

- prof. dr. sc. Samir Kalit
- izv. prof. dr. sc. Marina Tomić Maksan
- izv. prof. dr. sc. Milna Tudor Kalit

Izvođač seminara

- prof. dr. sc. Samir Kalit
- izv. prof. dr. sc. Milna Tudor Kalit

Ocjenjivanje

Dovoljan (2): 60-70 %
Dobar (3): 71-80 %
Vrlo dobar (4): 81-90 %
Izvrstan (5): 91-100 %

Vrsta kolegija

- Undergraduate studies / BS Courses taught in English (Izborni kolegij, 2. semestar, 1. godina)

Opće kompetencije

Through the course, students are provided with the knowledge to independently organize milk production and processing on their own farm or how to provide consulting services to such farms.

Oblici nastave

- Lectures
- Laboratory practice/exercises
- Field work
- Seminars

Ishodi učenja i način provjere

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Ishod učenja	Način provjere
Recognise, explain and organise technology needs in the production of milk and dairy products on family farms.	Written (Partial written test No 1) and oral exam
Present practical technological steps (working operations) in the milk production and processing on family farms.	Written (Partial written test No 1) and oral exam
Identify the specificity and basic needs for milk production and processing on family farms.	Written (Partial written test No 2) and oral exam
Emphasis characteristics of Croatian traditional dairy products.	Seminar and oral exam
Enumerate facts for the protection of autochthonous cheeses in the EU and enumerate the facts for direct selling of dairy products.	Written (Partial written test No 2) and oral exam

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Način rada

Obveze nastavnika

Lectures
The lecturer of an individual unit should organize the lectures as a power point presentation with the time provided for interactive teaching. Lectures of teaching units that cover the subject should be organized according to the timeschedule and held within 15 weeks of direct teaching. All teaching materials that are not contained in the textbook are organized by teachers and according to teaching units available in the MOODLE system.

Seminars
Seminars are organized and conducted by a teacher on the subject in order to supplement and expand the knowledge from the course subject. The topics of seminar papers must be given to the students at the beginning of the semester and provide them with 10 weeks of preparation. The teacher gives instructions on how to create seminar papers, approaches to scientific literature and databases, useful links, and helps students (provides guidance) during the seminar work. The teacher organizes oral presentation of the seminar papers, actively participates in the discussion together with other students. The overall quality of the seminar work (oral presentation and power point presentation) is evaluated by the teachers with the grade that participate in the final grade.

Auditing and field exercises
The subject teacher should organize the lectures from the auditing exercises as a power point presentation with the time provided for interactive teaching. Field exercises are organized by the subject teacher with the aim of presenting practical work in medium and large scale dairy plants.

Forum for communicating with students; a calendar of important events for the course; information related to the course; the instructions for writing the seminar work and results of written exams are available in the MOODLE system.

Obveze studenta

Attending lectures, exercises and seminars is mandatory. In cases of justified or unjustified absence from the lectures and/or exercises and/or seminars, students are obliged to enclose a report stating the reason of the absence, during the semester or within 4 weeks after the end of the semester. In case of the absence of more than 20%, students lose the right of signature, and the subject must be re-enrolled in the next academic year. The obligation of each student is to make a seminar paper and present the topic discussed in the power point presentation (in 10-15 minutes) after which other students and teacher have the right to ask questions. The written part of the exam that is organized within the regular examination period or during the semester students can take written part of exam as two partial written exams. Oral exam is organized during regular examination period.

Polaganje ispita

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Elementi praćenja	Maksimalno bodova ili udio u ocjeni	Bodovna skala ocjena	Ocjena	Broj sati izravne nastave	Ukupni broj sati rada prosječnog studenta	ECTS bodovi
Partial written exam No1	35	< 60 % 60-70 % 71-80 % 81-90 % 91-100 %	Nedovoljan (1) Dovoljan (2) Dobar (3) Vrlo dobar (4) Izvrstan (5)	24	66	2.2
Partial written exam No2	35	< 60 % 60-70 % 71-80 % 81-90 % 91-100 %	Nedovoljan (1) Dovoljan (2) Dobar (3) Vrlo dobar (4) Izvrstan (5)	24	66	2.2
Seminar	20	< 60 % 60-70 % 71-80 % 81-90 % 91-100 %	Nedovoljan (1) Dovoljan (2) Dobar (3) Vrlo dobar (4) Izvrstan (5)	8	36	1.2
Oral exam	10	< 60 % 60-70 % 71-80 % 81-90 % 91-100 %	Nedovoljan (1) Dovoljan (2) Dobar (3) Vrlo dobar (4) Izvrstan (5)	4	12	0.4
Total	100 %			60	180	6

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Tjedni plan nastave

1. Parameters that influence the hygienic and chemical quality of milk on family farms. How to achieve high quality of milk.
2. Production of milk on family farms for processing. Milking, the control of animal health status and mastitis as a tool for the production of safe traditional dairy products. Milk treatment after milking.
3. Influence of the milk quality on the standardization of the quality of dairy products. The aim is to understand and solve the problems and the faults in cheese production as a consequence of the processing of bad quality milk.
4. Exercises in practical cheesemaking in small scale dairy plants from milk preparation for fermentation/renneting till packaging of the final products as well as cleaning and sanitation of the dairy. Part I
5. Exercises in practical cheesemaking in small scale dairy plants from milk preparation for fermentation/renneting till packaging of the final products as well as cleaning and sanitation of the dairy. Part II
6. Introduction of hygiene principles, chemicals for cleaning and sanitation, food safety, traceability, guidelines for good hygiene practice and the procedure of sanitation equipment in the dairy.
7. Sampling, storing and transporting samples to the laboratory, preparing of the samples for analysis, determining the moisture content by using the gravimetric method and fat by Van Gulic Gerber method for designing the declaration and labels of dairy products. Introduction of microorganisms: indicators of hygiene and safety
8. Basic facts, the reason why interest for direct selling is increased by consumers and farmers, the method (possibilities) of direct selling, new trends in direct selling, obstacles in direct selling, motives, preconditions, products adequate for direct selling as well as marketing and direct selling.
9. Law regulations, investigation for writing the specifications for the protection of some traditional dairy products (historical facts, animal breed, milk quality, technology of production, chemical and microbiological quality of the product and its sensory characteristics).
10. Milk processing on family farms: advantages – milk collection, higher income, decrease in the depopulation process from rural areas, tradition and following EU trends. Introduction to regulations regarding the requirements that buildings have to fulfil for the milk processing and storing of final products from animal origins. Building, designing and equipping of small scale dairy plants.
11. Introduction of the faults in technology: faults in dairy animal feeding, faults during fermentation, renneting, coagulum treatment, pressing, salting and ripening. The relationship between cheese faults and hygienic (microbiological) indicators.
12. Sensory analysis of dairy products using a numerical scale, introduction of terms: professional judger, panel, judging and product specification. Classification and sampling of dairy products for sensory analysis, terms that determine sensory quality, sample preparation, room for judging, documentation and practical work
13. Every student has to make a review of some particular traditional product. They will introduce the other students in the group with their seminar (dairy product), how it is produced, its quality and means of consumption. Part I
14. Written and oral exams
15. Every student has to make a review of some particular traditional product. They will introduce the other students in the group with their seminar (dairy product), how it is produced, its quality and means of consumption. Part II

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Obvezna literatura

1. Blowey, R., Edmondson, P. (1995): Mastitis control in dairy herds. An illustrated and practical guide. Farming Press.
2. Johnson, M., Law, B.A. (1999): The origins, development and basic operations of cheesemaking technology. U Technology of cheesemaking. Sheffield Academic Press.
3. Kalit, S. (2016): Summary: influence of dairy animal feeding on the milk quality, registration of small scale dairy plants, hygiene and sanitation - the principle of traciability and HACCP in small scale dairy plants (internal manuscriptsI
4. Eck, A. and Gillis, J.C. (2000): Cheesemaking from Science to Quality assurance. Second edition, Editions TEC and DOC, Londres, Paris, New York.

Preporučena literatura

1. Tudor Kalit, M., Kalit, S., Delaš, I., Kelava, N., Karolyi, D., Kaić, D., Vrdoljak, M., Havranek, J. (2014): Changes in the composition and sensory properties of Croatian cheese in a lamb skin sack (Sir iz mišine) during ripening. International Journal of Dairy Technology, 67 (2), 255-264.
2. Matić, A., Kalit, S., Salajpal, K., Ivanković, S., Sarić, Z. (2014): Consumers' preferences and composition of Livanjski cheese in relation to its sensory characteristics. Mljekarstvo, 64 (3), 170-177.
3. Valkaj, K., Kalit, S., Salajpal, K., Zubović, M., Marković, T. (2014): Chemical and microbiological characterization of Turoš cheese. Agriculturae Conspectus Scientificus, 79 (3), 201-207.

Sličan kolegij na srodnim sveučilištima

- University of Wisconsin, Madison, Wisconsin Center for Dairy Research

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