Module Name	Module Code
Dairy Processing and Quality	AEF-ds004
Module Coordinator	
apl.-Prof. Dr. Charles Franz	
Organizer	
Max Rubner-Institut: Department of Microbiology and Biotechnology & Department of Safety and Quality of Milk and Fish Products	
Faculty	
Faculty of Agricultural and Nutritional Sciences	
Examination Office	
Faculty of Agricultural and Nutritional Sciences - Examination Office	

ECTS Credits	6
Evaluation	Graded
Duration	one semester
Frequency	Only takes place during winter semesters
Workload per ECTS Credit	30 hours
Total Workload	180 hours
Contact Time	60 hours
Independent Study	120 hours
Teaching Language	English

Module Courses			
Course Type	**Course Name**	**Compulsory / Optional**	**SWS**
Lecture	Milk and Dairy Microbiology	Compulsory	2
Lecture	Industrial Dairy Processing	Compulsory	2

Examination(s)				
Examination Name	**Type of Examination**	**Evaluation**	**Compulsory / Optional**	**Weighting**
Written Examination: Dairy Processing and Quality	Written Examination	Graded	Compulsory	100
Further Information on the Examination(s)				
1.+2. period in winter semester 1. period in summer semester QIS: 300500 with exam 300510				

Course Content

Industrial dairy processing of fermented and non-fermented dairy products (e.g. yogurt, cheese, butter, milk, concentrated dairy products, etc.). Various processing operations from pasteurization, homogenization and UHT treatment to filtration; impact of raw material composition on product quality parameters; hygienic process design and food safety aspects; regulatory framework of milk processing; Hazard Analysis of Critical Control Points (HACCP); current und novel quality parameters of dairy products; starter culture development and applications; novel developments of packaging development and process development (non-thermal heating techniques) towards shelf life extension of dairy products; functional dairy ingredients; current research trends in dairy technology.
Milk and Dairy Microbiology: Microbiota of milk and their role in spoilage. Bacterial pathogens associated with milk. Preservation of milk by pasteurization, 'sterilisation' and other methods. Lactic acid bacterial and other starter cultures used for production of fermented milk products (physiology, taxonomy and metabolism, production of bacteriocins). Dairy phages and their role in fermentation disorders. Fermented milk products (sour milk products and cheese)

Learning Outcome

Students will be able to understand principal dairy processing technologies on industrial scale and their broad applications. They will be able to consider relevant food safety parameters for the operation of dairy plants. Students are able to identify and evaluate global drivers of dairy product innovations with emphasis on technical and microbiological aspects and are able to follow the ongoing debate about the further dairy product development in a global market context. They are able to interpret, evaluate and apply technical and microbiological data and to solve conflicts of goals.
Hygiene and microbiological aspects such as starter bacterial application for the production of safe and high quality dairy products will be trained.

Reading List

Journal of Dairy Science and Technology, International Journal of Dairy Technology, Monographs of dairy technology/processing: Dairy Science and Technology Handbook: Volume I, II, & III Y. H. Hui (Editor) Wiley ISBN: 978-0-471-18797-4;
Johannes Krämer: Food Microbiology (Lebensmittelmikrobiologie); Widyastuti A. et al. The role of lactic acid bacteria in milk fermentation. Food and Nutrition Science 2014, 5, 435-442. Cogan, T. et al: Advances in starter cultures and cultured foods. J. Dairy Sci. 90:4005-4021.

Additional Information

Maximum number of participants: 30 - Up to 20 places will be allocated preferably to students in the Dairy Science master's program

Enrollment by OLAT within workdays Monday through Friday in the 1st week of the 2. audit period of the preceding semester. The allocation of the places takes place in the 2nd week of the 2. audit period of the preceding semester. Notification will be sent to the stu-email address.

Acceptance of the place by students only through participation at the first day of the course. Students without a place can get a place at the first day of the course by move-up procedure.