van hall larenstein
university of applied sciences

Information
Master of Science (MSc)
Innovative Dairy Chain Management

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CHAPTER 1 VISSION AND MISSION MASTER IDCM

Through excellent education and applied research, IDCM delivers innovative professionals dedicated to high quality dairy products that are available and affordable for all and made with a fair share for all chain stakeholders from field to table. Graduates will be capable of mainstreaming, stimulating and implementing technical and organisational changes that lead to increased governance, efficiency and sustainability of the entire chain. They work with people! Graduates of IDCM contribute to the renewal of professional practice and bridge the gap between theory and practice. In professional Master programmes, education and research are always based on questions from the world of work.

Challenges in the dairy industry (national and international).
Changing market conditions such as fluctuating milk prices, supply and demand, changing milk quality standards, critical awareness of the society and new technologies are some of the challenges the sector is facing. The Dutch standards and reputation to produce and process milk as well as the level of educating are high. The industry has in the past successfully demonstrated that the Dutch are well able to apply this knowledge and experience, both in the Netherlands and abroad. Because the work situation/practical experience and local industry of the individual participants of the Master IDCM are the focal point within the programme and study units, there is a continuous reconciliation of Dutch proven solutions to the participant's own context.

Focus of the program
IDCM focuses on farms delivering milk of sufficient quantity and excellent quality in a profitable manner while adhering to quality and safety requirements of the chain. It also focuses on milk processing from the perspective of the chain facilitator working for processing companies, collaborating with stakeholders in the chain or supporting the chain. The educational programme will make use of cases from dairy countries with a high reputation (e.g. the Netherlands and New Zealand) as well as from countries in transition (e.g. China and India). It is all about the international dairy industry and providing a reliable and sufficient volume of quality milk.
The programme is divided into three blocks. Block 1 and block 2 the entire dairy chain from grass to consumer is being studied. In block three (terms 3 and 4), the students selects a specific topic for the thesis which can be the entire chain or a specific part of the chain. Within each study unit (each with its own theme) students are working on a case study from one of the 3 phases within the chain. Substantive focus is on collecting of knowledge, interpreting and developing improvement proposals at every stage of the chain. Using cases from their own country, as well as leading dairy countries and by using own case material, students are trained in an international context. They contribute to the own business and the chain now and in the future.

Facilitator of change, 'Soft skills '/' 21st century skills'
The programme is based on two pillars. The first one is related to the dairy chain, the second related to facilitation of the process of change. The facilitation of change focus on the individual professional profiles and competences of the participants which are working in the milk value chain. Because the conditions in the different steps of the chain, and also beyond, will change the employee have to constantly work on his/her knowledge and personality development.
In response to the changing circumstances the promotion of agility and efficacy (together also called flexibility) of the participants is of great importance. An example of improving a soft skill is that students learn their own leadership style using a digital test.
Using the available (and self-selected) theory the student analysis how management should be handled in a particular situation.

CHAPTER 2 JOB PROFILES AND COMPETENCES

The programme has been designed for the following professional profiles:

- Chain professional (e.g. logistic manager, supply chain manager, strategy/policy manager, sales manager, corporate sustainability manager, product & marketing manager, project manager, CSR manager)
- Chain advisor (e.g. nutrition expert, financial expert, technical account manager)
- Visionary farm manager

Dairy farm manager
The farm manager manages a large dairy farm or oversees the management of a number of dairy farms. Milk is produced for the domestic and international market. The manager is responsible for overall management and supervises employees and communicates with experts in breeding, nutrition, forage production, herd health, reproduction, milk quality standards, finances and administration.

Dairy farm advisor to large or family owned dairy farms
The advisor has a broad perspective of the farm and chain but usually is specialist in specific aspects. He/she advises on innovations that lead to increased governance, efficiency and sustainability of a company in the chain or of the entire chain. The advisor is either a private consultant or an employee of a large dairy processing company or an employee of a chain supportive company such as financial institutions, feed industry, or certification bodies. In addition to advisor, typical jobs can be: dairy development managers, dairy development officer, or technical account manager.

Dairy chain facilitator
The facilitator is employee of a large dairy processing company or cooperative. The chain facilitator works for a processing enterprise. The enterprise is huge and in control of collecting quality milk from farmers and process milk for the market.
The chain facilitator is employee of a public organisation involved in supporting chain processes. The public sector is involved in making regulations or lobbying for a safe and compatible dairy sector or in monitoring and evaluation. This person is employee at a Ministry of Agriculture, an NGO, or alike of any country.
Typical jobs are: sales manager (of services), project manager, policy or strategy developer, corporate sustainability manager, dairy lobbyist, QESH manager, dairy innovation manager, dairy chain developer, logistic manager, business development manager, product and marketing manager or supply chain manager.

The IDCM student is trained in the following eight competences:

A. To identify innovative needs in (inter)national dairy chain projects and processes
B. To advise on sustainable dairy business development
C. To facilitate dairy chain governance towards sustainability and efficiency
D. To mainstream policy development for inclusive dairy value chains
E. To manage quality assurance in the dairy chain
F. To conduct applied research in a dairy value chain
G. To communicate effectively and convincingly in a varying multicultural sector
H. To apply an independent and creative learning attitude in a continuously changing international business environment towards sustainability.

CHAPTER 3 CONTENT AND CURRICULUM

Type of study and location
The Master programme Innovative Dairy Chain Management is offered in both a full-time and part-time variant at the location Leeuwarden. The full-time variant is a one-year Professional Master programme with a student workload of 60 credits. The part-time variant has the same total load of 60 credits but it divided over 2 or 3 years.

Language of instruction
The education and the examinations are given in English.

Degree
Master of Science

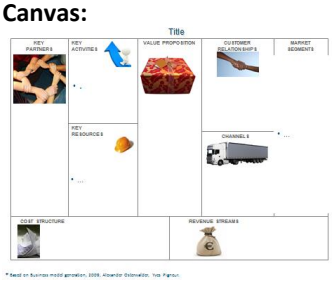
Curriculum of the Master programme

<table>
<tr><td>Term 1</td><td>Dairy Chain Innovations
7 credits</td><td>Dairy Business Development
7 credits</td><td rowspan="2">Professional Development Part 1
2 credits</td></tr>
<tr><td>Term 2</td><td>Dairy Chain Governance
7 credits</td><td>Quality Assurance
7 credits</td></tr>
<tr><td>Term 3</td><td>Research Design and Implementation
7 credits</td><td rowspan="2">Thesis
21 credits</td><td rowspan="2">Professional Development Part 2
2 credits</td></tr>
<tr><td>Term 4</td><td></td></tr>
</table>

*Optional for international students: save costs and follow the second part of the master online. This applies to the study unit Research Design & Implementation and the study unit Thesis. Guidance in assignments and the Thesis will be given via online tools. In this way, your stay in the Netherlands will be limited to 20 weeks, in case there is a need to save costs for board and lodging.

CHAPTER 4 LIST OF MODULES (STUDY UNITS)

<table>
<tr><td>Study unit – name</td><td>Dairy Chain Innovations</td></tr>
<tr><td>Competences</td><td>Competence A. To identify innovative needs in (inter)national dairy chain projects and processes
Competence G. To communicate effectively and convincingly in varying multicultural sector
Competence H. To apply an independent and creative learning attitude in a continuously changing international business environment towards sustainability</td></tr>
<tr><td>Learning outcomes</td><td>A:
- Is able to understand innovation processes
- Is able to analyse the context and its stakeholders and to identify opportunities for innovation
- Is able to design an innovation process in your home country or professional setting
G:
- Is able to present effectively and convincingly
- Is able to promote innovative projects and processes
H:
- Is able to work as an independent chain development professional
- Is able to demonstrate a creative attitude</td></tr>
<tr><td>Content</td><td>
<table>
<tr><td>Themes</td><td>Upstream chain</td><td>Mid-stream chain</td><td>Downstream chain</td></tr>
<tr><td></td><td>Production to factory
(raw material)</td><td>Processing
(transfor-mation)</td><td>Consumption
(finished product)</td></tr>
<tr><td>Understand innovation processes</td><td></td><td></td><td></td></tr>
<tr><td>- Innovation theory and concepts (MSP))</td><td>X</td><td>X</td><td>X</td></tr>
<tr><td>- Need for innovation</td><td>X</td><td>X</td><td>X</td></tr>
<tr><td>- Context of innovation s</td><td>X</td><td>X</td><td>X</td></tr>
<tr><td>Innovation pathways</td><td>X</td><td>X</td><td>X</td></tr>
<tr><td>Assessing the context and analyze stakeholders and their interests</td><td></td><td></td><td></td></tr>
<tr><td>- Identify hardware, software, orgware</td><td>X</td><td>X</td><td>X</td></tr>
<tr><td>- analyze stakeholders</td><td>X</td><td>X</td><td>X</td></tr>
<tr><td>- conduct interviews with case presenters</td><td>X</td><td>X</td><td>X</td></tr>
<tr><td>Communication skills</td><td></td><td></td><td></td></tr>
<tr><td>- Presentation and documentation</td><td>X</td><td>X</td><td>X</td></tr>
<tr><td>- Promotion</td><td>X</td><td>X</td><td>X</td></tr>
</table>
</td></tr>
<tr><td>Teaching methods and students workload</td><td>lectures/excursions plus matching assignments, instructions and/or online quizzes, training and workshops.</td></tr>
<tr><td>Professional product</td><td>Innovation project plan</td></tr>
<tr><td>Professional role</td><td>Project manager, advisor</td></tr>
</table>

Study unit – name	***Dairy Business Development***
Competences	Competence B. To advise on sustainable dairy business development Competence G. To communicate effectively and convincingly in varying multicultural sector Competence H. To apply an independent and creative learning attitude in a continuously changing international business environment towards sustainability
Learning outcomes	B: - Is able to identify business opportunities - Is able to develop a business strategy for a dairy chain - Is able to demonstrate entrepreneurship and leadership in chain development G: - Is able to present effectively and convincingly - Is able to produce professional reports - Is able to promote innovative projects and processes - Is able to defend projects and proposals H: - Is able to work as an independent chain development professional - Is able to demonstrate a learning attitude - Is able to demonstrate a creative attitude
Content **Canvas:**  	

	Early chain	**Middle chain**	**Late chain**
	production to factory	**processing**	**consumption**
Project management			
- Writing a project proposal		X	
- Organising projects		X	
- Planning projects		X	
- Implementing projects		X	
Business development		X	
- Economic prospects of dairy innovation	X	X	
- International dairy markets	X	X	X
- Profitability, value creation		X	X
- Fair trade, organic	X	X	X
- Comparison international economic indicators		X	X
- Unique selling points of business and chain		X	X
- Level player field	X	X	X
- Scenario thinking and selecting options		X	
- Stake holders analyse	X	X	X
Facilitator of change			
- Leadership and entrepreneurship		X	
- Sustainability		X	
- Multi-disciplinary cooperation skills		X	

Teaching methods and student workload	Lectures, excursion, workshops
Professional product	- Business plan - Unit operations plan
Professional role	Manager Advisor dairy business development, from external to internal

Study unit – name	***Dairy Chain Governance***
Competences	Competence C. To facilitate dairy chain governance towards sustainability and efficiency Competence D. To mainstream policy development for inclusive dairy value chains Competence G. To communicate effectively and convincingly in a varying multicultural sector Competence H. To apply an independent and creative learning attitude in a continuously changing international business environment towards sustainability
Learning outcomes	C: - Is able to recognise quantitative and qualitative chain improvements - Is able to develop a coherent governance strategy for a dairy chain - Is able to develop scenarios for different dairy chain stakeholders - Is able to facilitate change processes D: - Is able to translate the impact of dairy chain innovations for (inter)national legislation - Is able to lobby for and advocate chain development policies - Is able to manage conflicting situations G: - Is able to produce professional reports - Is able to promote innovative projects and processes H: - Is able to work as an independent chain development professional - Is able to demonstrate a learning attitude - Is able to demonstrate a creative attitude
Content	

Themes	Upstream chain	Mid-stream chain	Downstream chain
	Production to factory (raw material)	Processing (transformation)	Consumption (finished product)
Dairy value chains, networks and systems:			
- Chain stakeholders: facilitator; stakeholder analysis; service providers; supporters; influencers	X	X	X
- Milk procurement	X	X	
- Dairy industry	X	X	X
- Marketing of milk and dairy products		X	X
- Inter(national) dairy demand and supply value chains	X	X	X
- Re(design) of dairy value chains	X	X	X
Change within dairy chain and networks:			
- Institutional change	X	X	X
- Change management	X	X	
Chain governance:			
- Governance	X	X	X
- Risk management	X	X	X
Mainstream policy development:			

	- Mainstream policy development	X	X	X
	- Compliance	X	X	X
	Facilitator of change			
	- Lobby and advocacy	X	X	X
	- Sustainability	X	X	X
	- Multicultural collaboration and cooperation	X	X	X
Teaching methods and students workload	Lectures, excursion, workshop with stakeholders SPOC, participation in VHL professorship projects			
Professional product	Policy and advocacy plan			
Professional role	Change agent, facilitator Facilitator of change: independent chain governance development professional.			

Study unit – name	*Quality Assurance*
Competences	Competence E. To manage quality assurance in dairy chains Competence G. To communicate effectively and convincingly in a varying multicultural sector Competence H. To apply an independent and creative learning attitude in a continuously changing international business environment towards sustainability
Learning outcomes	E: - Is able to design quality control systems - Is able to develop protocols for crisis management - Is able to conduct quality control audits G: - Is able to produce professional reports H: - Is able to work as an independent chain development professional
Content	

Themes	Upstream chain	Mid-stream chain	Downstream chain
	Production to factory (raw material)	Processing (transfor-mation)	Consumption (finished product)
Animal health			
- Animal health focuses on control diseases affecting milk quality, such as zoonotic diseases and mastitis.	X		
- Animal welfare and the public concern	X		X
- Herd health management programs	X		
Milk quality and safety			
- Control systems, measures and instruments for assurance (HACCP and others)	X	X	X
- Food safety hazards and crisis management	X	X	X
- Milk quality and safety focuses on control measures for contaminants (such as antibiotics) and bacteriological status of milk.	X	X	X
- Milk quality legislation in relation to food safety	X	X	X
Milk technology			
- Milk technology in relation to quality, consumer demand and sustainable production.	X	X	X
Milk composition			
- Milk composition focuses on relationship of composition with milk payment systems, including possibilities to influence composition on farm.	X		
Networking and training			
- Networking and training are offered in the context of	X	X	X

	working with or organising stakeholders in the chain in order to have clean milk production, handling and processing.			
Teaching methods and student workload	lectures/excursions plus matching assignments, instructions and/or online quizzes, training and workshops.			
Professional product	- Quality management review presented in a dashboard that satisfies the execution of internal audits and external certification. It includes a training strategy - Audit report			
Professional role	Quality control manager			

Study unit – name	***Research Design and Implementation***
Competences	Competence F. To conduct applied research in dairy chains Competence G. To communicate effectively and convincingly in a varying multicultural sector Competence H. To apply an independent and creative learning attitude in a continuously changing international business environment towards sustainability
Learning outcomes	F: - Is able to analyse and interpret complex research issues - Is able to design appropriate applied research proposals - Is able to collect and report data/information adequately - Is able to draw logical conclusions and formulate realistic, innovative and sustainable recommendations G: - Is able to present effectively and convincingly - Is able to produce professional reports - Is able to promote innovative projects and processes - Is able to defend projects and proposals H: - Is able to work as an independent chain development professional
Content	The overall aim is to train the development and formulation of relevant research strategies contributing to operational interventions. Conceptual design (*this part early in the course, before term 3*) - Role of research in addressing needs - Justification of research needs or gap identification - Designing a research project – context, objectives and research questions - Literature searches - Conceptual framework of the dairy value chain Implementation and reporting - Research types and tools - Action research - On-farm research - Surveys and case studies - Data analysis - Interpretation of research output - Interviewing - Participatory Rural Appraisal - Addressing sustainability - Reporting skills Quantitative data analysis - SPSS skills - Descriptive statistics - Inferential statistics - Survey Mini research 25%. A Rubric will be used that corresponds to the one used for thesis examination. Groups of 2 or 3 students. Research proposal development The own proposal is already initiated as an individual case in part 1 of the study unit, but in the end the proposal is finalised and presented for approval.

Teaching methods and study workload	Lectures, workshops, presentations, individual and group assignments. Individual assignments will be based the students own research proposal. Intervision of research proposals will take place (present, give feedback, receive feedback). Mini research: All theoretical aspects of the study unit will be put into practice. Topics of the mini research will be from the perspective of the IDCM.
Professional product	- Mini research report - Research proposal
Professional role	Researcher
Entry requirements/ prerequisites	2 dairy chain study units of terms 1 and 2 in part-time variant 4 dairy chain study units of terms 1 and 2 in full-time variant

Study unit – name	***Thesis***
Competences	In the thesis several competences will be integrated and they will be jointly assessed. Depending on the choice of the topic, one or more of the competences A to E will be prominently present. In all thesis competences F, G and H will be present. Competence F. To conduct applied research in dairy chains Competence G. To communicate effectively and convincingly in a varying multicultural sector Competence H. To apply an independent and creative learning attitude in a continuously changing international business environment towards sustainability
Learning outcomes	Selection from competences A to E. F: - Is able to analyse and interpret complex research issues - Is able to collect and report data/information adequately - Is able to draw logical conclusions and formulate realistic, innovative and sustainable recommendations G: - Is able to present effectively and convincingly - Is able to produce professional reports - Is able to promote innovative projects and processes - Is able to defend projects and proposals H: - Is able to work as an independent chain development professional - Is able to demonstrate a learning attitude - Is able to demonstrate a creative attitude
Content	In the final thesis assignment the student explores a problem from the professional field. The research must be dairy chain related and –if possible- be relevant for the employer of the student. The student applies theories and concepts for preparation, collection and analyses of data and demonstrates the ability to integrate knowledge and formulate judgements. The thesis report should contain a description of the problem to be studied, a review of relevant literature, the research methodology including the justification of research strategy and tools for analysis, findings, conclusions and recommendations. The execution of the thesis is considered to be a project-based activity.
Teaching methods and study workload	- The student conducts the thesis research project independently and has full responsibility for planning and execution. - Self-study under supervision of a thesis supervisor.
Professional product	Thesis report or any other professional product approved in the proposal defence.
Professional role	Researcher, consultant
Study period	3 and 4
Entry requirements/prerequisites	First five study units in the taught programme must have been successfully completed.

Study unit – name	***Professional Development***
Competences	Competence G. To communicate effectively and convincingly in a varying multicultural sector Competence H. To apply an independent and creative learning attitude in a continuously changing international business environment towards sustainability
Learning outcomes	G: - Is able to present effectively and convincingly - Is able to produce professional reports - Is able to promote innovative projects and processes - Is able to defend projects and proposals H: - Is able to work as an independent chain development professional - Is able to demonstrate a learning attitude - Is able to demonstrate a creative attitude
Content	Studying and ICT at VHL - Educational philosophy - Essential study skills, learning processes - ICT at VHL - Studying in the Netherlands - Culture stress, intercultural communication Personal and professional development - Portfolio development - Self-development, personal development plan - Communication and learning styles - Analysis of communication styles with Q4Profiles - Study mentoring
Teaching methods and student workload	Classrooms and other approaches on own initiative of student, individual meetings with study mentor
Professional product	Digital portfolio: all student assignment reports, written products, exam results and other relevant products, reflections and Personal Development Plan.

CHAPTER 5 ADMISSION

Entry requirements to the programme
Prospective students who wish to be admitted to the Master's degree programme must have the following education qualifications:

- a first degree in life sciences or related fields,
- proven practical experience
    - two years relevant professional experience in life sciences or related fields; or
    - for prospects without or less than two years professional experience: proven practical training in undergraduate training in the form of placements or alike in dairy production, dairy sciences or dairy development.
- English: a certificate for fluency in English: TOEFL 550 points/ IELTS 6.0 or other certificates equivalent to these.

The following students are exempt from providing proof of their English language proficiency:

- Native English speakers (USA, UK, Australia, New Zealand, Ireland, South-Africa, Kenya, Zimbabwe and Canada (English-speaking areas).
- Applicants with a Dutch VWO diploma
- Applicants with a Dutch HAVO diploma, with final grade 6 or higher for English
- Applicants from Austria, Belgium (Flanders), Denmark, Germany, Estonia, Finland, Hungary, Latvia, Lithuania, Luxemburg, Norway, Romania, Slovakia and Sweden who have obtained one of the following diplomas, including a final examination in English.