

An overview of the resumes of students
Biosystems Engineering



Study Association BSc Agrotechnology &
MSc Biosystems Engineering

June 2020 - May 2021

Dear reader,

This guide contains the resumes of fourteen students of the MSc Biosystems Engineering at Wageningen University & Research who are just graduated or will graduate up until May 2021. The students are placed in order of the expected graduation date. Before the pages with our students resumes, you will also find recommendations from companies and of one of our chair groups. On top of that, a summary of the study programme of Biosystems Engineering is given. More detailed information about the study programme of Biosystems Engineering, consisting of the bachelor Agrotechnology and the master Biosystems Engineering, can be found at the end of this book.

This guide is made by the Master Committee of Heeren XVII. Heeren XVII is the study association for bachelor students Agrotechnology and master students Biosystems Engineering. The study association organizes a wide range of activities that differ a lot in nature and scope. Heeren XVII has the following objectives:

- ✓ Protection of the interests of students Agrotechnology and Biosystems Engineering.
- ✓ Encouraging of interaction between these students.
- ✓ Examining social relevance of the study programmes Agrotechnology and Biosystems Engineering.
- ✓ Controlling the quality of these study programmes.
- ✓ Encouraging contacts between students Agrotechnology, Biosystems Engineering and the employees of Wageningen University & Research, especially with the for the studies important chairgroups and institutes.
- ✓ Encouraging of personal and career-related development among students Agrotechnology and Biosystem Engineering.

To reach these objectives students are represented in the programme committees. Furthermore different activities are organised like a business day, a parents day, making a yearbook, excursions, sport events and social drinks. More information about the study association can be found on our website, www.heeren17.nl. For questions about the activities of Heeren XVII or other remarks you can always contact us by sending an email to mastercommittee.hxvii@wur.nl.

On behalf of the Master Committee of study association Heeren XVII,

Zwanet Herbert
Merel Arink
Judith Streng
Julian Hofmans
Robbin Blo

Recommendation Committee:

Ir. J.C. Meyboom-Fernhout	President of the Royal Institution of Engineers in the Netherlands KIVI
Dr. Ir. S. Heimovaara	General Director of the Agrotechnology and Food Sciences Group
Prof. Dr. Ir. A.P.J. Mol	Rector Magnificus of Wageningen University
Prof. Dr. Ir. E.J. van Henten	Professor in Farm Technology
Prof. Dr. Ir. P.W.G. Groot Koerkamp	Professor in Farm Technology
Prof. Dr. Ir. J.H. Bitter	Professor in Biobased Chemistry and Technology
Dr. Ir. G.D.H. Claassen	Associate Professor in Operations Research and Logistics
Prof. Dr. Ir. B. Tekinerdogan	Professor in Information Technology

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AIM OF STUDY PROGRAMME

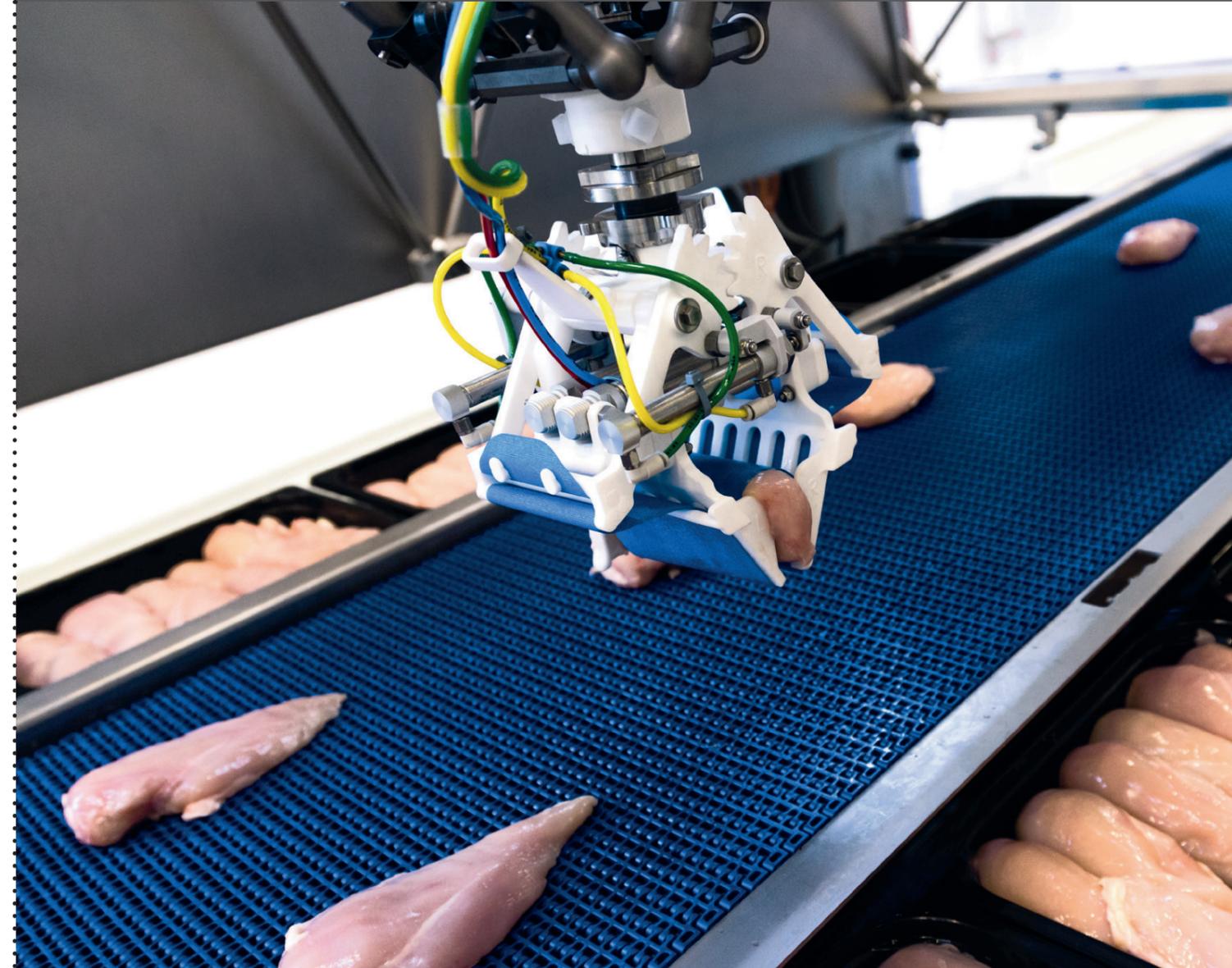
Biosystems Engineering is a multi-disciplinary academic programme that fulfils the needs of humankind in terms of sustainable food, feed, fuels, fibres and chemicals. It investigates, develops and combines knowledge and methods from technical sciences with biological, environmental, agricultural and social sciences. The Biosystems Engineering bachelor programme prepares students to address aspects of the question "How to sustainably feed 10 billion people in 2050?".

Systems engineering is central to this programme. Systems thinking ensures that generated technical solutions address relevant issues at the level of a system as a whole instead of focussing on isolated aspects or sub-systems. Systems engineering requires a multi-disciplinary mindset and expertise, and this aspect of the programme is supported by offering in-depth courses in selected relevant disciplines. Biosystems Engineering students are trained as system architects and learn to deal with the complexity of today's biosystems in the agri-food chain. Upon completion of this programme, students can act as an intermediary between different disciplines as well as between the application domain, science, engineering and society.

In the Biosystems Engineering programme, the heart of the domain is the agri-food chain and parts thereof. The agri-food chain starts with production in the field, in the barn or in the greenhouse, or sometimes even with plant breeding. The chain continues via intermediate steps like post-harvest grading and storage, processing, distribution, warehousing and retailing, ending with the consumer. A resilient and sustainable future requires down-stream side product utilization. At the same time, consumer demand governs the planning and the products that have to be produced, and streams of materials are returned in the chain; thus feedback in the chain is also assessed. Besides the more classical animal, arable or greenhouse production systems, the programme addresses more recent production systems for algae, seaweed, aquaculture and insects.

The Biosystems Engineering paradigm not only targets the improvement of individual steps in the agri-food chain, it also aims to improve larger parts of the chain. Design of production systems, sensing, data analysis, modelling and precise management are examples of the former, while reorganising the material flow in the chain by means of embedding pre-processing and on-farm recycling, optimising logistics on the farm as well as in the post-harvest chain, and effective software architectures and data management are examples of the latter.

Biosystems Engineering is an engineering programme similar to those at other technical universities in the Netherlands. However, its focus makes the programme unique: living organisms and products that are perishable, ripening or subject to decay. The main objective of the bachelor programme is to prepare students for a master in Biosystems Engineering in which they will further specialise and continue to develop their systems engineering skills.



MAREL ZOEKT AGROTECHNOLOGEN DIE HET WILLEN WETEN!

Aan jou de uitdaging om een bijdrage te leveren aan de ontwikkeling of verkoop van industriële systemen voor voedselverwerking!

SOLLICITEREN?

Voor meer informatie over onze actuele vacatures en stage/afstudeeropdrachten: jobs.marel.com

ADVANCING
FOOD PROCESSING



WHY STUDENTS BIOSYSTEMS ENGINEERING?

Company experience from HatchTech

At HatchTech, we have one aim: to provide our customers with consistent superior chick quality. We create research-based products for incubation, chick transportation and brooding. Knowledge of technology is key to meet our aim. Colleagues with the background of Agrotechnology are a perfect fit within HatchTech. Agrotechnology students have a broad range of expertise which makes them employable in different roles. We have several colleagues that studied Agrotechnology at different departments: Coaching & Training, Sales, Purchasing, IT and Product Engineering. To describe the diversity within the company, some personal experiences are given here:

“My role at HatchTech is a diverse combination of technical, animal and international social aspects. My finalised study Agrotechnology is a perfect background for this job at HatchTech.”

Marco Thiessen, Hatchery Coach at HatchTech

“At our department we are continuously busy with understanding the relation between the egg/chicken and the incubator. We develop practical solutions to support the superior chickens with HatchTech technology every day.”

Niek van den Top & Onno Flipse, Product Engineers at HatchTech

“After my internship I started at HatchTech. I can use my Agrotechnology skills to support our customers. My job is a marvellous combination of technology, cultures and food production. At HatchTech I can reach my ambitions.”

Marc de Visser, International Sales Manager at HatchTech



Company experience from Marel

When I applied for a Job with Marel (Stork at that time), I was asked why somebody with my background (agrotechnology) would be needed in the company. My spontaneous answer then was that I did not understand how they could do without. Now some 30 years later, employing on average 10-15 “technical” agrotechnologists, I am still convinced that’s true. They have proven their value as leaders and specifically as the people who connect different disciplines. In whatever role: procestechologist, R&D specialist, layout designer, logistic consultant or technical director. The broad view on global agrotechnological challenges is necessary to be able to design new product or business concepts. They have the right DNA to be successful in our world; pragmatic thinkers and cosmopolitans who like to take action and bring people together. I am happy that gradually students find their way to Marel themselves. Originally that was not logical in the eyes of many, because we do not supply equipment to farmers (other than life chicken handling). There are different reasons why the agro technologists chose to work for us. Very important is that the complexity of our challenge is very interesting and that the amount of money available for R&D, 5-6% of turnover, is much bigger than in most machine businesses. The equipment is often being used 16 hours per day which allows for more advanced technical solutions to be implemented. The innovation project teams consist of many different disciplines and often 3rd party specialists and universities are involved as well. On the other hand... Marel also is small. As agrotechnologist you can still physically see the result of your work being build and used by customers and get their direct feedback.

Wim Beeftink, Technical director



WHY STUDENTS BIOSYSTEM ENGINEERING?

WUR Farm Technology Group experience

It won't come as a surprise to you that as a professor heading the Farm Technology Group of Wageningen University, I am a proud supporter of and contributor to the Master Programme Biosystems Engineering at Wageningen University. A keen interest in technology is deeply rooted in the hearts of my staff members and the students Biosystems Engineering alike. Curiosity, a desire to innovate the agri-food chain and entrepreneurship are some other facets. Students and staff also share a strong interest in and commitment to the agri-food chain and to the need to provide a growing world population with food, feed, fuels and fibres in a sustainable way.

The MSc programme Biosystems Engineering is unique both nationally and internationally. It differentiates itself from other programmes by a strong emphasis on (parts of) the agri-food chain containing living organisms and products that are perishable, ripening or subject to decay. Non-linear dynamic responses to environmental factors, uncertainty in system inputs (e.g. weather, consumer demand, prices) and inherent variability within natural produce are amongst the particularities of biosystems that are addressed in some detail in this programme. In many other ways Biosystems Engineering is similar to engineering programmes at technical universities. The similarity is in the type of courses, the systems thinking approach and the systematic approach to science and engineering. With a solid multi-disciplinary training the programme Biosystems Engineering delivers systems engineers and systems architects; a key asset for employers when dealing with complex multi-disciplinary challenges in research and/or the development of new products.

Prof.dr.ir. Eldert J. van Henten
Farm Technology Group
Wageningen University

Francisco BV Pereira

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PERSONAL NOTE

My main interest is the integrated analysis and planning of agricultural systems. I worked with modelling of innovative farming practices, as where my thesis was about, and in commercial application development, from user experience to programming. I also have a strong basis in agronomy, plant sciences and hydrology from my bachelors. I am a goal oriented and creative worker and succeed in multidisciplinary team environments. My goal for the future is to work in consultancy or R&D projects of systems' planning and control technologies, with a sustainability focus.

EDUCATION

2017 - 2020 : Wageningen University (Wageningen, the Netherlands)
 Orientation : MSc Biosystems Engineering
 Thesis : Development of a decision support tool for planning of sustainable farming systems, through computational modelling of crop growth, field layout and operations - Awarded the NVTL biannual thesis prize.
 Supervisors : Dr. ir. A. (Bert) van 't Ooster & dr. ir. T.J. (Tjeerd Jan) Stomph
 Additional : MSc Track Farm Technology
 Minor in Data Science
 Academic Consultancy in Tanzania: Team fieldwork in coffee estate, research for investment in a sustainable farming system
 2014 – 2017 : Instituto Superior de Agronomia (Lisbon U, Portugal)
 Orientation : BSc Agronomy Engineering
 Internship : Herdade Vale da Rosa (Portugal) – Quality Control Technician
 Relevant Courses : Plant physiology, geo-information, economics, hydrology, statistics

WORK EXPERIENCE

Present : Schuman Traineeship at European Parliament (Belgium)
 Secretariat of the Committee on Agriculture and Rural Development
 Technical support for the Common Agriculture Policy (CAP)
 2019– 2020 : Internship AgroVision BV (Deventer, the Netherlands)
 Application Analyst: development of irrigation advice app (modelling, remote sensing, user experience)

OTHER EXPERIENCE

2018 – 2019 : Board member of MSc Committee from Heeren XVII (Wageningen)
 2017 : Participation in the Syngenta Challenge "24h Agriculture" – 2nd prize
 2014 – 2017 : Part-time Karate Teacher & Coach in UKL (Portugal)
 2001 - 2014 : Karate Black Belt Graduation (1st Dan)

Jits Riepma

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PERSONAL NOTE

Through my background in arable farming, I am mainly interested in precision agriculture. I worked with crop growth models, sensor technology and GIS data. I am always looking for efficient and sustainable solutions for problems. One of the strengths I developed during my study is to connect (data driven) technology with practise. My experience in arable farming through the family business and multiple jobs at different farms, helps me to combine theory with practice.

EDUCATION

2017 - 2020 : Wageningen University (Wageningen, the Netherlands)
 Orientation : **MSc Biosystems Engineering**
 Thesis : Inverse modelling to estimate field-specific soil parameters
 Supervisors : Dr.ir. FK (Frits) van Evert & drs. A.P.H.M. (Arni) Janssen
 Additional : MSc Track Farm Technology
 2014 – 2017 : Wageningen University (Wageningen, the Netherlands)
 Orientation : **BSc Agrotechnology**
 Thesis : Drainage prevention and indication in soil-bound greenhouse horticulture
 Supervisors : Dr. ir. S. van Mourik & prof. dr. ir. E.J. van Henten
 2008 – 2014 : RSG Wieringerlant (Wieringerwerf, the Netherlands)
 Orientation : Pre-university education (VWO) - Nature and Technology, Nature and Health

WORK EXPERIENCE

2019 – 2020 : Royal Agrifirm Group (Apeldoorn, the Netherlands)
 Internship: Organic matter determination using satellite imagery
 2018 – 2019 : Wageningen University (Wageningen, the Netherlands)
 Student assistant course Research methods Biosystems Engineering
 2016 – 2017 : Wageningen University (Wageningen, the Netherlands)
 Student assistant course Programming Python
 2012 – 2018 : Raven Europe/SBG precision Farming (Middenmeer, the Netherlands)
 Production employee

OTHER EXPERIENCE

2017 – 2018 : Board member of study association "Ichthus Wageningen"
 2012 – current : Farm assistant on farm parents "Mts. Riepma"
 2008 – 2019 : All-round employee – Bulb grower company EJAS b.v.

LANGUAGES

Portuguese ●●●●●
 English ●●●●●
 Spanish ●●○○○
 French ●○○○○

SKILLS

Microsoft Office ●●●●○
 Data & Graphics ●●●○○
 MATLAB ●●●○○
 Python ●●○○○
 Research ●●●●●
 Communication ●●●●○
 Reporting ●●●●○
 Project management ●●●○○

Driver licence (B+BE)

INTERESTS

Karate
 History & Geography
 Outdoor activities
 Contact with family and friends

LANGUAGES

Dutch ●●●●●
 English ●●●●○
 German ●●○○○

SKILLS

Microsoft Office ●●●●●
 Python ●●●●○
 R ●●●●○
 MATLAB ●●●●○
 ArcGIS ●●●○○
 Project management ●●●●○

Crop protection Licence
 Driving Licence (B+BE, T)

INTERESTS

Cycling
 Reading
 Crafting
 Traveling

Wietse Smit

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Sander van Leijsen

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PERSONAL NOTE

From an early age I have been interested in agriculture and economics. Other people describe me as reflective, adaptive, and precise. After graduation I would like to work in the field between the industry market, R&D department and economics. I'm also interested in the practical implementation and development of solutions using scientific knowledge in the food production or processing industry.

PERSONAL NOTE

Master student Biosystems Engineering with experience in, and passion for the agricultural field. Team player, social person and an employee at a dairy farm since 2008.

LANGUAGES

Dutch ●●●●●
 English ●●●●○

SKILLS

Methodical Design ●●●●○
 Soil compaction ●●●●○
 Models ●●●●○
 Project management ●●●●○
 Accounting ●●●●○
 Economic analysis ●●●●○

Drivers Licence (AM-B-T)
 Forklift Certificate

INTERESTS

Farming and related activities
 Economics and Finance
 Value Investing
 Psychology
 Strength training
 Running
 Reading

CHARACTERISTICS

Reflective
 Reliable
 Adaptive
 Perseverance
 Precise
 Active listener
 Objective

EDUCATION

2018 - Present : Wageningen University (Wageningen, the Netherlands)
 Orientation : MSc Biosystems Engineering – Farm Technology track (FTE)
 Thesis : Design of a cropping system that improves soil quality
 Supervisor : Prof. dr. ir. P.W.G. (Peter) Groot Koerkamp

2016 : Study Abroad (Indiana, USA)
 Minor : Department of Agricultural and Biological Engineering, Purdue University

2014 – 2017 : Wageningen University (Wageningen, the Netherlands)
 Orientation : BSc Agrotechnology
 Thesis : Translation of soil compaction model combinable with a harvest simulation model
 Supervisor : Prof. dr. ir. E.J. (Eldert) van Henten

2008 – 2014 : Christelijk Gymnasium Sorghvliet (The Hague, the Netherlands)
 Orientation : Pre-university education (Gymnasium) - Nature and Technology + Economics

WORK EXPERIENCE

2018 – present : Freelancer (ZZP'er) in the agricultural sector, operating in The Netherlands and Germany. Helping out agricultural businesses during busy time periods. Duties include: operating farm machinery, general farm work, milking cows and transport.

2017 - 2018 : Kamper Enterprises Ltd. (Alberta, Canada), large size arable farm. Field Crop Foreman, duties included: general farm work, supervise and oversee growing and other crop-related operations, supervise work of general harvest labourers, operate farm machinery, general construction work, development of a track and trace system for consumption potatoes.

2007 – present : General farm worker – Dairy Farm Mts. Hamminga (Groningen, The Netherlands).

OTHER EXPERIENCE

2017 – 2018 : Sponsor committee EurAgEng2018 - Farm Technology group (WUR)
 As the chairman of the committee I was responsible for a part of the finances of this event.

LANGUAGES

Dutch ●●●●●
 English ●●●●○
 French ●●○○○

SKILLS

Microsoft Office ●●●●○
 Python ●●●●○
 MATLAB ●●●●○
 CAD ●●●●○

Drivers licence (B)

INTERESTS

Fitness
 Running
 Swimming
 Contact with family and friends

EDUCATION

2018 - present : Wageningen University (Wageningen, the Netherlands)
 Orientation : MSc Biosystems Engineering
 Thesis : Developing a model for early disease detection in calves
 Supervisors : Dr. P.P.J. (Rik) Rik van der Tol
 Additional : MSc Track Farm Technology

2014 – 2018 : Wageningen University (Wageningen, the Netherlands)
 Orientation : BSc Agrotechnology
 Thesis : Technical assessment of different design variants of the egg collection mechanism of the PoultryBot
 Supervisors : Dr.ir. A. (Bert) van 't Ooster, Dr. ir. B.A. (Bastiaan) Vroegindewei

2008 – 2014 : Lauwerscollege (Buitenpost, the Netherlands)
 Orientation : Pre-university education (VWO) - Nature and Technology

WORK EXPERIENCE

2008 – present : Agricultural employee at a dairy farm (Niehove, the Netherlands)
 Employable for almost every possible task on the dairy farm.
 Responsible for the entire farm if needed.

OTHER EXPERIENCE

2018 – 2019 : Bar commission at “K.S.V. Sint Franciscus Xaverius”
 2015 – 2020 : Member of student association “K.S.V. Sint Franciscus Xaverius”
 2014 – 2020 : Member of study association “Heeren XVII”

Gebrand Wicher (Andre) Hulsman

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Alessandro Barucci

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PERSONAL NOTE

My personal interests are mainly in the automation of current production systems. I am interested in technique and agriculture. Besides that I am interested in animals and to take care of them. Furthermore, I love to be in nature, and to work with nature. Besides that, I like to repair things, writing programming code and to work on my parents' farm in my spare time. Concerning work, I like to finish tasks in time, therefore I don't stop working until the work is finished. My future vision on agriculture is to farm in a more sustainable way.

PERSONAL NOTE

My main interests are in the new technologies that are revolutionizing the agricultural sector. I have worked a lot with machine vision, most recently during my Master thesis in the Farm Technology Group. I am a solutions-oriented professional committed to pursuing experience in transforming the agricultural field. I combine excellent analytical, technical, communication and leadership skills to solve complex problems. I am passionate about how technology and automation can efficiently produce the food that will feed the world.

LANGUAGES

Dutch ●●●●●
 English ●●●●○
 German ●●●○

SKILLS

Python ●●●●○
 MATLAB ●●●●○
 C++ ●●○○○
 R ●●●○○
 Java ●●○○○
 ROS ●●●●○
 Finance ●●●○○

Practical hydraulics (PTC+)

Drivers Licence (Am, B and T)

INTERESTS

Cycling
 Sailing
 Electronics
 Farming
 Old-timer Cars
 Welding
 Programming and Linux

EDUCATION

2017 - present : Wageningen University (Wageningen, the Netherlands)
 Orientation : MSc Biosystems Engineering (MAB)
 Thesis : Particle filter based localisation in a simulated field using a monocular camera. Supervisor: Dr.Ir. Gert Kootstra
 Additional : Specialization Track Farm-Technology (FTE) and Information technology (INF)

2014 – 2017 : Wageningen University (Wageningen, the Netherlands)
 Orientation : BSc Agrotechnology
 Thesis : Development of an end-effector for the Trimbot,
 Supervisors : Bart van Tuyll BSc, Toon Tielen MSc and Dr. ir. Joris IJsselmuiden

2012 – 2014 : Greijdanus college (Zwolle, the Netherlands)
 Orientation : Pre-university education (VWO) - Nature and Technology, Nature and Health

WORK EXPERIENCE

2019 – 2020 : Intern at Vencomatic Group (data science)
 2018 – 2019 : Student assistant at the course Sensor-technology, supervising students and development of interactive course materials (tutorials of how to imply sensor techniques).
 2012 – 2014 : Animal shelter Koningen; Dog care
 2010 – present : Dairy and meat farm Hulsman (farm of my parents): Milking, feeding, harvesting crops, seeding and other common farm tasks.
 2010 – 2014 : Boom BV, weekly newspaper delivery
 2010 – 2012 : Garden caretaker.
 2010 – 2012 : Interlanden BV, company papers delivery

OTHER EXPERIENCE

2017 – 2018 : Board member "fiscus" (Treasurer) & "vice-praeses" (Vice-President) at student association VGSW
 2017 : Member of Robatic Group Wageningen: Headland navigation, general software and social media.
 2016 – 2017 : Location & Housing committee of Happitaria (Pop-up Restaurant for charity)
 2015 – present : Different committees at HeerenXVII and VGSW; photo committee (VGSW and HeerenXVII); financial check committee (VGSW), education quality committee (HeerenXVII), parents day committee (HeerenXVII), activity committee (VGSW), Lustrum book committee (VGSW) .
 2015 – 2016 : Almanac-Committee at study-associatioon HeerenXVII

LANGUAGES

Italian ●●●●●
 English IELTS 7 (C1) ●●●●●
 Spanish ●●●●○
 Portuguese ●●○○○
 Dutch ●○○○○

SKILLS

Programming
 Microsoft Office ●●●●●
 Python ●●●○○
 MATLAB ●●●○○
 ArcGIS ●●●○○
 3D Prototyping/Printing ●●●●●
 Rhinoceros ●●●●○

Industry

Machine Learning ●●●○○
 Machine Vision ●●●○○
 Biosystems Design ●●●●○
 Quantitative Analysis ●●●○○
 Greenhouse Tech ●●●●●

Interpersonal

Projectmanagement ●●●●○
 Teamwork ●●●●●
 Critical Thinking ●●●●○

INTERESTS

Football (competitive level until 2016)
 Skiing
 Running
 Photography & Video Making
 3D printing

EDUCATION

2018 - present : Wageningen University (Wageningen, the Netherlands)
 Orientation : MSc Biosystems Engineering
 Thesis : Measuring features of several fresh agricultural products in 3D - Creating a research methods case.
 Supervisors : Dr. PPJ van der Tol & Dr.ir. A. (Bert) van 't Ooster
 Additional : FTE - Farm Technology Group

2013 – 2017 : University Statale of Milan (Milan, Italy)
 Orientation : BSc Agricultural Sciences and Technologies
 Thesis : The cultivation of Champignon mushrooms: energetic analysis of the production process.
 Supervisors : Dr. Ing. Riccardo Guidetti, Dr. Roberto Beghi.

2015 – 2016 : University of Porto (Porto, Portugal)
 Orientation : Erasmus + European Project
 Courses : Forest Biology, Microbiology with laboratories practice, Geology and Viticulture.

2007 – 2013 : Scientific Lyceum Elio Vittorini (Milan, Italy)

WORK EXPERIENCE

2020 – present : Viscon Group – Vivi ('s-Gravendeel, Netherlands)
 Curricular Internship: Designing and testing an automatic cutting machine for culture plants
 Supervisor : Msc. Damian Lopez Salazar - Consultant at Vivi

2018 – 2019 : Bayer CropScience (Milan, Italy)
 Extracurricular Internship: Campaign and Field Marketing
 Supervisor : Dr. Ing. Matteo Colombo, Head of Campaign and Field Marketing

OTHER EXPERIENCE

2019 – Present : Study association Foodsharing Wageningen (Wageningen, The Netherlands)
 Ambassador for External Communication & Head of the Promotion Team

2016 – 2018 : Freelance 3D printer Expert (Milan, Italy)
 Ultimaker Original +

Ziqiu Kang

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Alexander van Tuyll

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 LinkedIn : www.linkedin.com/in/alexvantuyll



PERSONAL NOTE

MSc Biosystems Engineering student with previous engineering experience in the ICT industry. I have a strong knowledge and skills of plant physiology, system modelling and machine learning. My interests is crop model development. I believe my knowledge in engineering, ICT and agriculture can be effectively combined in the area of modern agriculture.

PERSONAL NOTE

My interest lies in making improving farming (in particular circularity) through machine learning and precision farming. In my BSc thesis I learned about nutrient balances by modelling and minimising emissions in greenhouses. I have been involved in various projects related to circular agriculture, also through hands-on volunteer work. At the time of writing I am in my last year, finishing my MSc thesis on applying machine learning to optimise indoor climate control.

LANGUAGES

Chinese ●●●●●
 English ●●●●○
 Dutch ●○○○○

EDUCATION

2018 - present : Wageningen University (Wageningen, the Netherlands)
 Orientation : MSc Biosystems Engineering
 Thesis : Investigation of Machine Learning for Production Lines
 Supervisors : Prof. dr. ir. B. (Bedir) Tekinerdogan & Prof. C. (Cagatay) Catal

2013 – 2015 : University of New South Wales (Sydney, Australia)
 Orientation : MSc Environmental Engineering (Coursework)

2010 – 2013 : University of New South Wales (Sydney, Australia)
 Orientation : BSc Electrical Engineering
 Thesis : Electric Motor Control Systems
 Supervisors : Prof. F. Rahman

SKILLS

Machine Learning ●●●●○
 Microsoft Office ●●●●○
 SQL ●●●●○
 Python ●●●●○
 Plant Physiology ●●●○○
 Java ●●●○○
 PHP ●●●○○
 MATLAB ●●●○○
 ArcGIS ●●○○○

WORK EXPERIENCE

2015 – 2018 : Digital Distribution Australia (Sydney, Australia)
 Network Engineer: Network operation and development

2015 : Efiniti Telecommunication Services (Sydney, Australia)
 Network Engineer: Network construction design

OTHER EXPERIENCE

2020 : Hackathon Digital Agriculture Competition (Cornell University, USA)

2013 : UNSW IT Service internship (Sydney, Australia)

2010 – 2012 : Active member of Toastmaster Speech Club (Sydney, Australia)

INTERESTS

Reading
 Contact with family and friends

LANGUAGES

English ●●●●●
 Dutch ●●●●○
 French ●●●○○
 Spanish ●●○○○
 German ●○○○○

SKILLS

Microsoft Office ●●●●○
 Python ●●●●○
 MATLAB ●●●●○
 R ●●●○○
 Java (Eclipse) ●●●○○
 Git ●●●○○
 SVN ●●●○○
 Autodesk Inventor ●●●○○
 SketchUp ●●○○○
 Public speaking ●●●●○
 (Toastmasters Competent Communicator award)

Driving licence (AM-B)

INTERESTS

Drawing
 Writing
 Cricket
 Weightlifting
 Reading

EDUCATION

2018 - present : Wageningen University (Wageningen, the Netherlands)
 Orientation : MSc Biosystems Engineering
 Thesis : *Rule-Based Climate Control Using a Genetic Algorithm*
 Supervisors : Dr.ir. S. (Simon) van Mourik, A.S. (Anna) Petropoulou MSc, I. (Ilias) Tsafaras MSc
 Additional : President of Toastmasters Wageningen (2019 –)

2015 – 2018 : Wageningen University (Wageningen, the Netherlands)
 Orientation : BSc Agrotechnology
 Thesis : *Nutrient Emissions in Greenhouses: A Model-Based Approach*
 Supervisor : Dr.ir. A. (Bert) van 't Ooster
 Additional : Exchange at Nanyang Technological University (Singapore), BSc Honours Programme

2008 – 2015 : European School Mol (Mol, Belgium)
 Orientation : Advanced maths; physics, chemistry, biology

WORK EXPERIENCE

2020 : Wageningen University (Wageningen, the Netherlands)
 Teaching assistant, Greenhouse Technology

2018 : Wageningen University (Wageningen, the Netherlands)
 Teaching assistant, Programming in Python

OTHER EXPERIENCE

2020 : Ellen MacArthur Foundation From Linear to Circular programme

2019 : July/August at aquaponics farm (Eindhoven, the Netherlands)

2019 : Speaker & panel moderator at NovelFarm, Pordenone, Italy

2018 – 2019 : Vice President Public Relations, Toastmasters Wageningen

2018 : Speaker at TEDx Wageningen University

2018 : Urban Greenhouse Challenge, team Green Spark
 Special prize for innovative substrate

2018 : Field Robot Event, team Robatic
 Second prize for weed removal

2017 – 2019 : Volunteer, Association for Vertical Farming

2016 – present : Personal blog at alexgrowsup.com

Robert van de Ven

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PERSONAL NOTE

My personal interest is in the automation of plant production systems. I worked a lot with machine vision and the programming of robots. For this, I followed optional courses in my BSc and MSc. In my work, I am precise and driven. In the future I like to work in the agricultural sector, especially with robotics, machine vision and machine learning.

LANGUAGES

Dutch ●●●●●
 English ●●●●○

SKILLS

Microsoft Office ●●●●○
 Python ●●●●○
 R ●●●●○
 ROS ●●●○
 MATLAB ●●●○
 MySQL ●●●○
 Project management ●●●○

Practical hydraulics (PTC+)
 Drivers Licence (B)

INTERESTS

Camping
 Studying nature
 Quidditch
 Contact with family and friends

EDUCATION

2018 - present : Wageningen University (Wageningen, the Netherlands)
 Orientation : MSc Biosystems Engineering
 Thesis track : Learning human motion to robots
 Supervisors : Dr.ir A.T. (Ard) Nieuwenhuizen & Dr. A. (Ali) Leylavi Shoushtari

2015 – 2018 : Wageningen University (Wageningen, the Netherlands)
 Orientation : BSc Agrotechnology
 Thesis : The effects of laser labelling on apples, cucumbers and sweet potatoes
 Supervisors : Prof. dr. ir. E. J. (Eldert) van Henten & Prof. dr. ing. E. J. (Ernst) Woltering

2005 – 2011 : Scholengemeenschap St. Ursula (Horn, the Netherlands)
 Orientation : Pre-university education (VWO) - Nature and Technology & Nature and Health

WORK EXPERIENCE

2018 – 2019 : Wageningen University (Wageningen, the Netherlands)
 : Student assistant course Building Physics & Climate Engineering
 : Student assistant course Field Robot Design
 : Demonstrating the robot of Field Robot Design at the BSc Open Day

2018 – 2019 : NVTL (Wageningen, the Netherlands)
 : Technical assistant during study days

2018 : AgEng 2018 (Wageningen, the Netherlands)
 : Recruiting technical assistants

OTHER EXPERIENCE

2017 – 2019 : Board member of study association “Heeren XVII”

2016 : Board member of “Nederlandse Jeugdbond voor Natuurstudie”, a Dutch youth association which organises outdoor activities

2014 – present : Various committees of “Nederlandse Jeugdbond voor Natuurstudie”. This includes:
 - Organising summer camps, weekend camps and day excursions
 - Managing materials for activities

Dana Vernooij

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 Nationality : Dutch
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PERSONAL NOTE

My personal interests are mainly focussed on automation in livestock production or fruit production/sorting. During my studies I worked with machine vision, logistics planning, modelling and software engineering. In my work I am very motivated and curious as to how things work and might be able to work more efficiently. For the future, I would like to work in the agricultural sector in data analysis, product/process optimisation or in R&D.

LANGUAGES

Dutch ●●●●●
 English ●●●●●
 German ●○○○○
 French ●●○○○

SKILLS

Microsoft Office ●●●○○
 Python ●●●○○
 MATLAB ●●●○○
 Project management ●●●○○
 Data management ●●●○○
 Process thinking ●●●○○
 System thinking ●●●○○
 Organising ●●●○○

Practical hydraulics (PTC+)
 Drivers Licence (B)

INTERESTS

Swimming
 Reading
 Contact with family and friends

EDUCATION

2018 - present : Wageningen University (Wageningen, the Netherlands)
 Orientation : MSc Biosystems Engineering
 Thesis : The effect of farmer-specific circumstances on the success of implementation of pro-active auditing in the pig production sector.
 Supervisors : Dr. SA (Sjoukje) Osinga

2015 – 2018 : Wageningen University (Wageningen, the Netherlands)
 Orientation : BSc Agrotechnology
 Thesis : Classifying non-target species in pelagic fisheries
 Supervisors : Dr.ir. A. (Bert) van 't Ooster

2005 – 2011 : College de Heemlanden (Houten, the Netherlands)
 Orientation : Pre-university education (VWO+) - Nature and Technology, Nature and Health

WORK EXPERIENCE

2019 – present : Royal de Heus (Ede, the Netherlands)
 Order-entry

2017 – 2018 : Wageningen University (Wageningen, the Netherlands)
 Student assistant course Programming in Python

2015 – 2020 : Jonkheer de Ram (Schalkwijk, the Netherlands)
 Waitress

OTHER EXPERIENCE

2019 – 2020 : Board member of lustrum committee of Heeren XVII

2018 : Participant in the Field Robot Event

2016 – 2018 : Member of the Redaction committee of Heeren XVII

2015 – 2019 : Member of the national excursion committee of Heeren XVII

2015 : Gaining a CPE certificate of proficiency in English

2007 – 2019 : Farm assistant on laying hen & fruit production farm parents

Jelte Zijlma

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Jan Morssink

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PERSONAL NOTE

Raised on a farm, educated in the city, both studied and worked abroad, all together made me develop a broad interest and quite a diverse and unique skillset. I would describe myself as a typical coordinator and facilitator, aiming to make use of my own and my colleagues' competences to the fullest. In a future job I would like to implement both the academic skills developed at the university related to (precision) farm technology, with the practical knowledge acquired during my work in the agricultural sector.

PERSONAL NOTE

My personal interests are mainly related to the optimisation of current production systems. During my education I focussed on mathematics and control engineering, such as systems and control theory and parameter estimation. Next to that I explored the field of automation. In the future I would like to work in the agricultural sector, especially with control and automation. Next to that, I would like to do field work as well, to keep a good feeling with the practical applications and implications of innovations.

LANGUAGES

Dutch ●●●●●
 English (C1) ●●●●○
 German (B1) ●●○○○

SKILLS

Arable farming ●●●●●
 Project management ●●●●○
 Business plan writing ●●●○○

 Microsoft Office ●●●●●
 MATLAB ●●●●○
 AutoCAD ●●●○○
 Python ●●●○○
 R statistics ●●●○○

Drivers Licence (AM-B-T)

INTERESTS

Arable farming
 Soccer
 Running
 Reading
 Cooking
 Travelling

CHARACTERISTICS

Honest
 Active Listening
 Coordinator
 Facilitator

EDUCATION

2018 - present : Wageningen University (Wageningen, the Netherlands)
 Orientation : MSc Biosystems Engineering - Farm Technology Track (FTE)
 Relevant courses: Precision Farming, Automation for Bio-production, Data Management, Information Systems for Manager and Engineers
 Thesis : Crop rotation planning in a controlled traffic farming system using intercropping
 Supervisors : Dr.ir. A (Bert) van 't Ooster, Dr.ir. TJ (Tjeerd-Jan) Stomph

 2016 – 2017 : Exchange Semester (Chicago, USA)
 Minor : Agricultural Business and Economics at the University of Illinois

 2014 – 2017 : Wageningen University (Wageningen, the Netherlands)
 Orientation : BSc Agrotechnology
 Thesis : Modelling potato growing conditions for initial storage quality
 Supervisors : Prof. Dr. ir. K.J. (Karel) Keesman, MSc. N.L.M. (Nik) Grubben

 2008 – 2014 : H.N. Werkman College (Groningen, the Netherlands)
 Orientation : Pre-university education (VWO) - Nature and Technology, Nature and Health

WORK EXPERIENCE

2014 – present : Maatschap Zijlma (Zuurdijk, the Netherlands)
 Agricultural enterprise specialized in breeding classified seed potatoes. Tasks: Supervising employees, Bookkeeping, Machine maintenance & Field work.

OTHER EXPERIENCE

2017 – 2018 : Sponsor committee EURAGENG2018 (Wageningen, the Netherlands)
 Committee devoted to raise sponsors for the European Agricultural Engineering Conference of 2018.

 2017 : Exchange Kazakhstan (Almaty, Kazakhstan)
 Holland innovation challenge. Exchange project as part of the world exposition in Astana 2017, where Dutch and Kazakh students and young professionals worked on innovative ideas to implement in Kazakhstan.

LANGUAGES

Dutch ●●●●●
 English ●●●●○
 German ●●●○○
 French ●●○○○

SKILLS

Python ●●●●○
 MATLAB ●●●●○
 Java ●●●○○
 ROS ●●●○○
 Business process modelling ●●●○○
 Microsoft Office ●●●●○
 Adobe CC ●●●○○

Drivers Licence (B+BE+T)

INTERESTS

Farm work
 Farm machinery
 Swimming

EDUCATION

2019 – present : Wageningen University (Wageningen, the Netherlands)
 Orientation : MSc Biosystems Engineering
 Thesis : Simulation of crop flow in a combine harvester to prevent internal blockages without operator interference (in progress)
 Supervisors : dr. ir. A van 't Ooster & ir. P. Maelegheer(CNHI) at the Farm Technology chair group

 2016 – 2018 : Wageningen University (Wageningen, the Netherlands)
 Orientation : BSc Agrotechnology
 Thesis : Modelling business processes of fertilizing in potatoes at farm enterprises
 Supervisors : Dr. ir. A. Kassahun & prof. dr. ir. B. Tekinerdogan at the Information Technology chair group

 2015- 2016 : Technische Universiteit Delft (Delft, the Netherlands)
 Orientation : BSc Mechanical Engineering

 2009 – 2015 : Alfrink College (Zoetermeer, the Netherlands)
 Orientation : Pre-university education (VWO) - Nature and Technology

WORK EXPERIENCE

2017 – 2020 : Wageningen University (Wageningen, the Netherlands)
 Student assistant at Farm Technology group & consultant at high schools

 2016 – present : Roy Schouten, contracting and gardening (Alphen a/d Rijn, the Netherlands)
 All round employee

 2012 - 2016 : Boomkwekerij B. Wansinck (Hazerswoude, the Netherlands)
 All round employee

OTHER EXPERIENCE

2018 – 2019 : Grain harvest in Australia, all-round employee at Mt. Sheridan Farms in Varley (WA)
 2017 – present : 2 weeks of all round summer holiday at a dairy farm in Germany
 2016 – present : Several committees at study association "Heeren XVII"
 2008 – present : All round assistant at the dairy farm/contracting/concreting business of my uncle

References on request

Thijmen Wiltink

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Mitch Meulenstein

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 LinkedIn : www.linkedin.com/in/mitch-meulenstein-62935b161



PERSONAL NOTE

I have an interest in sustainable innovation, circular economy in relation to entrepreneurship. I have experience with Reflective Interactive Design, biorefinery and the valorisation of waste streams to close cycles.

PERSONAL NOTE

My personal interests are mainly in the automation and innovation of current and upcoming production systems. During my study, I worked a lot with precision farming and modelling of different biosystems. I see myself as a positive, open-minded, flexible yet persistent worker who has both practical and theoretical skills in the agricultural field. In the future I would like to work in the agricultural sector, especially with smart controlling techniques, or robotic solutions for agricultural problems.

LANGUAGES

Dutch ●●●●●
 English ●●●●○
 German ●●○○○

SKILLS

Microsoft Office ●●●●○
 Process design ●●●○○
 Reflexive interactive design ●●●●●
 Project management ●●●○○
 Business plan writing ●●●●○
 Presenting ●●●●●
 Promotion/marketing ●●○○○
 Business model creation ●●●●○
 Consultancy ●●●○○

Drivers Licence (B)

INTERESTS

Sustainable innovation
 Storytelling
 Biorefining
 Athletics
 Swimming
 Darts
 Snowboarding
 Ice-skating
 Improvisation theatre
 InDesign
 Cycling
 Circular economy
 Presenting
 Duckweed
 Improv
 Sustainable entrepreneurship
 Reflective Interactive Design

EDUCATION

2018 – present : Wageningen University (Wageningen, the Netherlands)
 Orientation : MSc Biotechnology
 Thesis : The optimization and sustainable design of processing networks for agricultural residues using a modelling approach
 Supervisor : Dr.ir. P.M. (Ellen) Slegers
 Additional : MSc Track Entrepreneurship

2017 – present : Wageningen University (Wageningen, the Netherlands)
 Orientation : MSc Biosystems Engineering
 Thesis : The design of a cropping system for lily bulbs controlling virus transmission by aphids without using plant protection products (PPPs)

Supervisors : Drs. A.P.H.M. (Arni) Janssen & dr.ir. T.J. (Tjeerd-Jan) Stomph
 Additional : MSc Track Entrepreneurship

2014 – 2017 : Wageningen University (Wageningen, the Netherlands)
 Orientation : BSc Agrotechnology
 Thesis : Biorefining of duckweed at ECOFERM!
 Supervisor : Dr. Ir. A.J.B. (Ton) van Boxtel

2008 – 2014 : Atheneum College Hageveld (Heemstede, the Netherlands)
 Orientation : Pre-university education (VWO) - Nature and Technology, Nature and Health with Latin

WORK EXPERIENCE

2020 – present : Student assistant – Bachelor course: Physical transport phenomena Wageningen University & Research
 • Moderating the online forum
 • Grading the practical reports of the Bachelor students
 2019 : Student assistant – Master course: Greenhouse technology Wageningen University & Research
 • Helping with the greenhouse technology practical's
 • Grading the practical report of the Master students
 2011 – present : Saturday assistant and holiday worker Fa.J.Th.Groenendijk
 • Responsible for the harvest of 5 hectares of flowers
 • Knowledge on harvesting methods, flowers and greenhouses.

OTHER EXPERIENCE

2016 – 2017 : Open party commissioner student association
 2015 – 2016 : Acquisition commissioner yearbook student association

LANGUAGES

Dutch ●●●●●
 English ●●●●○
 French ●○○○○

SKILLS

Microsoft Office ●●●●○
 Python ●●●○○
 MATLAB ●●●●○
 Project management ●●●●○
 Organisation skills ●●●○○
 Practical thinking ●●●●○

Drivers Licence (B)
 CPR course

INTERESTS

Cycling
 Soccer
 Contact with family and friends

EDUCATION

2018 - present : Wageningen University (Wageningen, the Netherlands)
 Orientation : MSc Biosystems Engineering
 Thesis : Analysing the effect of different lighting on the performance of a tomato greenhouse
 Supervisors : PhD candidate D. (David) Katzin & Dr. Ir. S. (Simon) van Mourik

2015 – 2018 : Wageningen University (Wageningen, the Netherlands)
 Orientation : BSc Agrotechnology
 Thesis : Dairy heifer growth monitoring
 Supervisors : Dr. PPJ. (Rik) van der Tol & F (Friso) van Ooststroom (Lely)

2009 – 2015 : Commanderie College (Gemert, the Netherlands)
 Orientation : Pre-university education (VWO) - Nature and Technology, Nature and Health
 Additional : Cambridge Advanced English (CAE), grade C

WORK EXPERIENCE

2020 : Wageningen University (Wageningen, the Netherlands)
 Student assistant course Greenhouse Technology
 2018 – present : Handyman at dairy farm Leato (Beek en Donk, The Netherlands)
 2018 : Wageningen University (Wageningen, the Netherlands)
 Student assistant course Programming in Python
 2014 – 2017 : Various jobs at various farmers and employers. Tasks varied from constructing a pig house to working in a supermarket

OTHER EXPERIENCE

2017 : Studied engineering at SDU for 6 months (Odense, Denmark)
 2012 : Cycled for Alpe d'HuZes to raise money for a cancer charity

STUDY PROGRAMME BSc AGROTECHNOLOGY

The study programme Biosystems Engineering consists of a bachelor programme (BSc) of three years (180 credits) and a master programme (MSc) of two years (120 credits). One year study corresponds to 60 credits. At the end of the BSc the student gets the title Bachelor of Science (BSc). After that there is a possibility to continue with the MSc Biosystems Engineering. After completing the MSc study programme the student gets the title Master of Science. The BSc and MSc titles are internationally known and indicate that the student finished a scientific study.

BSc AGROTECHNOLOGY (IN DUTCH: BSc AGROTECHNOLOGIE)

The BSc Agrotechnology is unique in the Netherlands. The program is unique because it integrates knowledge of technology and living (higher) organisms through a system approach, taking into account the need for sustainable production of food, non-food and raw materials. An important characteristic of the program is the focus on design and technology for an unstructured, highly variable environment that is difficult to control. The goal of the bachelor programme is providing understanding of the basic disciplines of Biosystems Engineering and the awareness of a multidisciplinary approach. The three years of the bachelor have different functions in the education.

OVERVIEW OF BACHELOR PROGRAMME

COMPONENT	SIZE (credits)
Compulsory courses	114
Restricted optionals	12
Bachelor thesis	24
Free choice	30
Total Bachelor	180

Important learning purposes of the study are:

DOMAIN-SPECIFIC KNOWLEDGE AND UNDERSTANDING

- Understand and fathom - through a systematic approach - the technology needed for the production of food, non-food and raw materials;
- To understand the underlying biology of an agro-production, with an emphasis on the factors that influence the growth and can be controlled through technology;
- To understand the interaction and the role of various stakeholders in the agricultural production chain and society;
- To adjust the relevant knowledge of mathematics, physics, chemistry and biology to biosystems engineering related problems;
- To apply engineering principles and specific agro-technology related methods to biosystems engineering related problems;

SPECIFIC ACADEMIC SKILLS

- To apply the different steps of a scientific research or design process of a project to from setting up the project plan till carrying out the research or to make a design;
- Collecting and interpreted biosystems engineering related data with the purpose of observing, monitoring and managing of agricultural production systems;

DOMAIN-SPECIFIC SKILLS

- To apply different programming methodologies for measuring, modeling, system analysis, mathematics and statistics;
- To design and evaluate technology for an agricultural production system and in relation to different conditions through a methodic way;



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“HatchTech allows me to be creative. Each day, I am challenged to come up with smart and reliable solutions for complex problems, which I find extremely rewarding.”

Niek van den Top MSc,
Product Engineer at HatchTech
Studied Biosystems Engineering (WUR)



ACADEMIC SKILLS

- Communicate both in speaking and in writing with regard to ideas, problems, solutions as a result of an research or a project with both specialists and non-specialists in Dutch and English where necessary;
- Be able to work in a team;
- Make an assessment on social needs and constraints in relation to biosystems engineering;
- To collect information in the field of agro-technology and assess the value of this information;
- To design and plan a private learning path with the main goal of learning your whole life.

FIRST YEAR (BSc-1)

The first year of the study is mainly introductory and contains a wide range of subjects. All courses of the BSc-1 are compulsory; an overview of the courses is given in Table 2. The students get acquainted with different disciplines and different types of problems are presented. Skills as Oral Presenting and Information literacy are also integrated in different courses.

OVERVIEW OF BSc-1 COURSES

BIOSYSTEMS ENGINEERING (6 credits) Introduction to Biosystems Engineering	PHYSICS (6 credits) Basic Physics
MATHEMATICS / IT (15 credits) Statistics Mathematics	CHEMISTRY (6 credits) Physic chemistry Organic chemistry
ENGINEERING (15 credits) Engineering Process science for technologist	ECONOMY AND SOCIETY (12 credits) Biosystems Engineering and society Introduction to business economics and marketing

SECOND AND THIRD YEAR (BSc-2 AND BSc-3)

The second and third year offer a more comprehensive programme. In this year the students get more disciplinary knowledge. An overview of the compulsory courses of the BSc-2 and the BSc-3 year is given in Table 3. There is also the possibility for free choice, next to the compulsory courses.

OVERVIEW OF COMPULSARY COURSES OF BSc-2 AND BSc-3

TECHNOLOGY (24 credits) Physical transport phenomena Modelling dynamic systems Control and Process engineering Sensor technology	RESEARCH SKILLS (12 credits) Research methods Biosystems Engineering 1+2
DESIGN (6 credits) Engineering design	BIOLOGY (12 credits, choice out of:) Biology of plants Animal sciences Microbiology Soil-plant relations
MATHEMATICS / IT (12 credits) Decision sciences Programming in Python	BACHELOR THESIS (24 credits) Bachelor thesis Agrotechnology
	FREE CHOICE (30 credits) Free choice or Minor

BACHELOR THESIS

A thesis project marks the end of the bachelor programme. Bachelor thesis projects are supported by the following Chair groups: Farm Technology, Biobased Chemistry and Technology, Information Technology, Operations Research and Logistics, and Environmental Technology. Thesis projects often have a multi-disciplinary nature, combining plant or animal sciences with technical solution directions in view of requirements set by society or industry. A multi-disciplinary approach is sometimes further enhanced when a thesis project is supervised by staff from two Chair Groups.

ELECTIVES OR MINOR

The students have 30 credits of electives to broaden their knowledge in a field relevant to their study programme. They can do a minor either at Wageningen University or another Dutch university, or at a university abroad. Alternatively, students can choose a set of elective courses. Their choice should contribute to the programme learning outcomes and needs approval from the study adviser and the Examining Board. For instance, if students are looking for more in-depth knowledge on economics, they can choose the minor 'Agricultural Business Economics' or choose free elective courses in this field. Another relevant often-chosen minor is 'Supply Chain Management'.

The MSc Biosystems Engineering is a tailor made thesis oriented study programme. The whole programme is taught in English and takes two years. The learning purposes are:

DOMAIN-SPECIFIC KNOWLEDGE AND UNDERSTANDING

- To know the various engineering aspects of agro production systems;
- State-of-the-art knowledge to understand and apply at least one of the sub-domains of the study for the Master's thesis;
- Be able to apply the relevant knowledge and methods of engineering in general and agricultural technology especially in domain related cases;
- Capability of making a realistic model of an agricultural production system and how it interacts with the environment;

SPECIFIC ACADEMIC SKILLS

- Capability of making a research plan in the field of biosystems engineering and critically reflect on the different stages of research or design;
- Capability of performing a research plan in the field of biosystems engineering adequately with the use of appropriate methods and techniques for collecting and interpreting the data;

DOMAIN-SPECIFIC SKILLS

- Capability of designing and evaluating innovative technology and systems for agricultural production in a structured way through the analysis of the system and stakeholders through the integration of knowledge, calculations, models and simulations;

ACADEMIC SKILLS

- Communicating in writing and speaking in the field of ideas, problems, solutions as a result of a research or a project with both specialists and non-specialists in English;
- Work in a multidisciplinary and / or multicultural team on a research or design project relevant to the domain;
- Make an assessment on social needs and constraints in relation to biosystems engineering;
- To collect information in the field of agro-technology and assess the value of this information;
- Design and plans a private learning path, based on a continuous reflection on gathering knowledge on new topics relevant to the agricultural technology and improve skills, attitude and performance.

OVERVIEW OF MSC PROGRAMME

COMPONENT	SIZE (credits)
Compulsory Biosystems Engineering courses	18
Thesis preparatory courses	12
Academic master cluster	12
Internship	24
Thesis	36
Electives for deepening or broadening	18
Total Master	120

The total compulsory part of the MSc study comprises 102 credits. The thesis and internship together are 60 credits and other compulsory parts take 42 credits.

COURSES

In the MSc programme three courses are compulsory for all students. In the course Modelling biobased production systems the student gets more profound knowledge on biosystems engineering with an emphasis on modelling. The course Biosystems Design is a continuation of the course Methodical approach to engineering design in the BSc. In this course the students learn how to design the technology for a complex biosystem. In the course Quantitative Analysis of Innovative Biosystems the students learn to quantitatively analyse an innovative or new biosystem, taking into account that for these systems in most cases a limited

amount of specific and quantitative information is available.

The students have to do two advanced courses for thesis preparation. The specific courses the student has to do, depend on the thesis. The remaining 18 credits are for broadening or deepening the knowledge. The 18 credits can also be used to increase the duration of the thesis or the internship. The electives are chosen in consultation with the study adviser and appointed in the study contract. The total program must be coherent and is approved by the examining board.

ACADEMIC MASTER CLUSTER

The Academic master cluster consists of two main parts:

- A part of 3 credits which consists of several professional skills. The students can choose from a wide range of modules, for example project management, project design, strategic planning and communication (negotiation, adequate reporting, etc.) and participating in and chairing and reporting of meetings.
- Academic consultancy training of 9 credits. In this course the students learn in a multi-disciplinary and multicultural setting to execute a consultancy assignment on academic level. An important part of the course is that the students work on further development of their personal skills. They are coached on this too.
The consultancy assignments originate from 'real-life' and require the input from different disciplines.

INTERNSHIP

The internship is an important part of the MSc in which the student can apply its obtained knowledge in a work environment that is similar to the professional practice. During the internship, many professional skills are developed like insight in functioning of another organisation, adaption capacity, independence, and time management. Together many learning outcomes are covered by the internship. It is an excellent way to prepare the student for the labour market. When the internship is done abroad a student also learns how to deal with other cultures and he or she can learn or improve a foreign language. A large number of Biosystems Engineering students are doing their internship abroad.

THESIS

All students have to do a thesis which is the culminate point of the study. They have to select one of the following different specialization:

- Farm technology (FTE)
- Information technology (INF)
- Environmental engineering (ETE)
- Biobased Chemistry and Technology (BCT)
- Operations research and logistics (ORL)

The thesis consists of doing independently research or a part of a research in which the knowledge and the skills gained in the BSc study, the MSc courses and the academic master cluster are being applied.

The objective of a thesis is doing scientific research in all its faces and aspects; these are:

- Searching, analyzing and evaluating of the available literature and other information in relation to the problem.
- Planning of lab experiments and / or steps to develop and test a mathematical model.
- Individually doing lab experiments and / or developing and testing mathematical models.
- Analysing and evaluating own research results, including the critical comparison with literature and results of thirds
- Giving one or more oral presentations and writing a scientific report.
- In most cases, following chair group colloquia.
- Depending on the subject the different aspects can be of more or less importance.

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