Double Masters Degree in Field Vegetable Production and Supply Systems (VegSys) – a collaboration between LUH and WU

The program offers a new specialisation in field vegetable production and supply systems (VegSys) to be offered to German, Dutch and International students in collaboration between the Faculty of Natural Sciences, Leibniz Universität Hannover (LUH), and Wageningen University (WU). The course will lead to a double degree in Horticultural Science and is intended to provide an innovative educational opportunity in horticulture, and to increase education and research collaboration between the awarding institutions.
The VegSys Masters Course and the activities of the consortium will be jointly coordinated by an academic co-ordinator for the Faculty of Natural Sciences at Leibniz Universität Hannover (Professor Hartmut Stützel, Vegetable Systems Modelling Group) and Dr Uulke van Meeteren (Horticultural Supply Chains) for Wageningen University.

Purpose of the VegSys Masters Course

VegSys is aimed at EU and international students with a clear and strong interest in production, processing and distribution of field-grown vegetables in the horticultural produce supply chain. The course will provide insight into complex production systems from a scientific point of view. Specifically, the biological and technical processes along with the economic relationships will be taught on a system theoretical basis. Students will be enabled to understand these systems quantitatively so that they can draw rational conclusions for management decisions.
The proposed programme exploits the horticultural strengths of the two universities involved, adding the knowledge and experience with field vegetable production systems and their modelling established at Hannover to the strengths in quality and supply chain studies and their modelling at Wageningen. The collaboration is a timely extension of the portfolio of both universities into an area of international study that poses significant challenges to both Europe and other major vegetable producing regions of the world.

Structure of the VegSys Masters Course and mobility

In the first year of the course students would be enrolled at WU to receive the relatively broad introduction that the existing Masters programme in Plant Science at WU provides, as well as an introduction into systems-thinking and modelling. The delivery will be supplemented by selective input from various teachers from LUH, funded under the current Erasmus exchange programme.
The first year programme will (assuming continuing EU funding) include a specialist, residential course such as the IP Chains course currently offered by WU and with teaching contributions from LUH and a number of other European universities.
After successful completion of year 1, students will transfer to continue their studies at LUH where they will enter the field vegetable specialisation and undertake a vegetable systems-related academic research project (thesis), supervised jointly by staff from the two universities. The thesis topic will be strongly linked to the industry, with on-site collaboration where possible. In a similar vein to year 1, delivery will benefit from selective input from

colleagues at WU, funded via our Erasmus exchange agreement.

Academic courses/modules offered by the partners of VegSys

The taught modules at both LUH and WU are currently delivered as part of other programmes and no significant additions to the portfolio would be envisaged to start up the VegSys programme.

	Module title	**ECTS**
Year1 WU	HPC-20306 Physiology and Development of Plants in Horticulture*	6*
	HPC-21306 Crop Ecology*	6*
	HPC-30806 Product Quality and Post Harvest Physiology	6
	CWE-3xxxx Designing sustainable plant production systems through analysis and modelling	6
	CWE-31306 Research Methods in Crop and Weed Ecology	6
	HPC-30306 IP Chains[1] (Hortonomy)	6
	YMC-60803 Modular Skills Training	3
	YMC-60809 Academic Consultancy Training	9
	elective	12-24
Year 2 LUH	International Vegetable Production[2]	6
	Principles of Systems Modelling[3]	6
	Crop Modelling[3]	6
	Cropping Systems Modelling[3]	6
	Biological Plant Protection[4]	6
	Methods in Molecular Plant Breeding[4]	6
	Plant Protection in the Tropics[4]	6
	Biotechnology and Plant Protection[4]	
	Plant Protection and Environment (Risk Assessment) [4]	6
	Epidemiology and Population Dynamics[4]	6
	Plant Physiology[4]	6
	Market and Policy Analysis in the Agro-Food Sector[4]	6
	Economics in Developing Countries[4]	6
	Case Studies in Biostatistics[4]	6
	Nutrient Dynamics and Management in Tropical and Subtropical Agro-Ecosystems[4]	6
	Masters thesis[2,5]	42.0

*To be chosen when this course (or a course comparable to this one at another university) has not been part of your BSc-programme.
[1]Offered in collaboration between both partner universities
[2]Compulsory
[3]At least one module of this group has to be chosen
[4]Elective
[5]With joint supervision of both universities

Learning aims, outcomes and educational aims

The teaching activities will be described by a standard programme specification with defined educational aims and learning outcomes for each year of the programmes, including specifications and learning outcomes for each module (based on the appropriate national or institutional standards).

After completing the VegSys programme the graduate will be in possession of a portfolio of knowledge, skills and competences such that they can:

- Give an account of the stages of development of a range of commercial horticultural crops in terms of fundamental horticultural science
- Demonstrate and apply a comprehensive understanding of the nature and importance of the horticultural production chain to the management of vegetable production and quality
- Explain, in scientific terms, the nature of the interactions between horticulture, the natural environment and human society
- Provide a critical analysis and understanding of new insights/technologies in horticultural science both with respect to their value for problem-solving and their effects on society at large
- Demonstrate a depth of knowledge concerning the science that underpins horticultural production and supply, with a particular emphasis on vegetables
- Deal with complex issues in horticultural science, interpreting information both systematically and creatively to make informed judgments in relation to existing knowledge
- Apply knowledge and skills that allow for prediction of vegetable development, harvest, yield and keeping quality, and availability in known horticultural circumstances.
- Use a comprehensive understanding of techniques of research and advanced scholarship to plan studies aimed at answering specific research questions in horticultural science, with particular relevance to vegetable crops
- Communicate horticultural science effectively to specialist and non-specialist audiences, at a variety of levels, using modern information and communication tools
- Demonstrate a capacity for independent thought, creativity and rigour in the application of knowledge, and an understanding of how research and enquiry is used to create new knowledge
- Critically analyse research and advanced scholarship in horticultural science and, where appropriate, derive new hypotheses for further investigation
- Judge their significance and use of methods, theories and hypotheses within horticultural sciences in the context of a given problem in work situations as well as in research
- Use theories, principles and data from appropriate sources to aid the development of hypotheses in basic and applied science
- Demonstrate self direction and originality in tackling and solving problems, and act autonomously in planning and implementing tasks in work processes

- Work effectively in a team, or on an individual basis, exercising initiative, personal and management responsibilities as required
- Appreciate the advantage of mobility for achieving open-mindedness, integrity, reflection, evidence-based thinking as well as knowledge about global and European cultural patterns and consumer behaviour relevant for everyday-life and professional career.
- Value lifelong learning as a principle and demonstrate the independent learning ability to structure ongoing learning processes effectively

Recruitment and enrolment of students

Each year the courses will start at the beginning of the academic session for the country of study. Selection of students will be based on their academic background and they must be in the possession of a Bachelor degree (or equivalent) at an appropriate level (industrial experience may be taken into account) and, where appropriate, documented skills in written and spoken English (550 points in paper-based TOEFL, 213 points in computer-based TOEFL or 6.0 IELTS-test).
The VegSys collaboration will agree and adopt common standards and procedures for application, student selection, admission, and examinations.
The annual deadline for student applications for study start by 1 September will be 1 May for non-EU students and 1 August for EU students. Final decisions on non-EU admittance will be made by 1 March. For EU applicants the decision is made at the earliest possible point in August.
To achieve an appropriate level of recruitment to the programmes a dedicated website will be required to support the promotional activity in all three universities. It will also highlight the added value in the programmes and the possibility of scholarships for international students, and industry-sponsored scholarships for European students, as and when appropriate. The development teams believe that a targeted recruitment drive in the E. European/Baltic countries of the EU, where there is a significant and rapidly developing industry, for the early years of the scheme, would be productive.
The partner universities have extensive networks that will form a key marketing tool for the courses, together with the established university pathways of information dissemination, such as homepages, education fairs and brochures.

Registration and payment of fees

All students of the VegSys programme will start their programme in the first year at WU and therefore will be enrolled at WU only. They will have to pay in advance to WU the tuition fee due for the first year of the VegSys programme (see table).
In the second year all VegSys students will study at LUH and be enrolled at both WU and LUH. Students will have to pay in advance to WU the tuition fee due for the second year of the VegSys programme (see table).

WU will reimburse to LUH fees for those students of the VegSys programme enrolled at LUH in the second year in accordance with the fee regulations at LUH, for a maximum amount not exceeding the tuition fees paid by the

students to WU for the second year.

The fees to be paid by each student will be agreed upon each year by the academic coordinators who ensure compliance with the fee regulations at both institutions as well as the legal regulations in both the Netherlands and Germany.
All students admitted to the VegSys programme will be informed about the tuition fees due well in advance of their enrolment at WU.

Table: Fees 2010/2012 VegSys

VegSys programme	1st year	2nd year
EU students	€ 1650,-	ca. € 1650,-
Non-EU students	€ 9480,-	ca. € 1650,-

Examination

Students completing successfully the VegSys Masters Course will receive a double degree consisting of an MSc in Horticultural Science ("Gartenbauwissenschaften" LUH) and an MSc Plant Science (WU), acknowledging the academic contribution of the partner universities. A joint diploma supplement will be provided.
For the purposes of administration, assessment and quality management the first year of the VegSys Masters Course will be considered as a specialization within the existing MSc in Plant Science programme at WU, and the second year as specialization within the MSc in Horticultural Science at LUH.

Quality assurance

A number of measures are in place to ensure a systematic regular assessment of the quality of the double degree programmes. These measures can be divided into two groups: (i) general standard measures at the partner institutions involved, and (ii) Consortium initiated additional measures:
General standard measures. All three participating institutions undertake quality assurance of modules and courses through:

- Use of external examiners. There are variations across the three institutions but all use external examiners to guarantee the long-term quality of modules and courses. Always used in connection to MSc theses.
- Standard module evaluation. At the participating universities, there are standard approaches to annual evaluation of modules, including student feedback.
- Contact to employers. At the participating universities, there will be contact with the main employers to collect feedback on quality and performance of graduates.

Additional measures. To be able to compare performance at the two participating institutions and ensure structured feed-back from students:

- All graduates will complete a standard programme the same evaluation form upon completion of their studies.

- An Alumni Association will be established to provide close contact with VegSys graduates and collect ideas to further develop the programmes.

Administrative structures & course teams

The appointed academic co-ordinators will be responsible for the smooth running of the academic and administrative tasks related to the programmes, with administrative assistance allocated by each partner university. A course team will be formed that consists of the academic coordinator and one other member of the teaching team from each university, plus one student representative.

The range of activities will include

- Leading and organising the development of the academic programme and its modules
- Quality assurance; monitoring student performance and evaluating the programme
- Preparation of meetings, reports etc.
- Co-ordination of student application procedures and admission to the programme
- Administration of scholarships
- Co-ordination of degree awarding procedures
- Assist in the practical preparation and implementation of the Joint Summer Module
- Assistance with student services, marketing and recruitment, brochures etc.

Team meetings

The course teams will meet three times each year. In February-March the meeting will consider selection of non-EU students for admission and identifying potential candidates for scholarships, as well as continuing the rolling review of progress, planning and development.

The second meeting will be held in June-July to consider, particularly, results from taught modules, progression from year 1 to year 2 and thesis progress. Admissions for EU students will be dealt with at this meeting and, latterly, by an ad hoc arrangement between the academic co-ordinators during August.

A third meeting will be held in October to consider degree awards

Student support structures

The partner universities have long-standing experience in receiving and servicing non-national students:

Services		**Hannover**	**Wageningen**
Accommodation		Yes	Yes
Coaching and counselling		Yes	Yes
Social activities		Yes	Yes
Language courses		Yes	Yes

Practical issues (e.g. visa)		Yes	Yes
Multi-linguistic coverage		Yes	Yes
'Buddy' arrangements[1]		Yes	Yes

[1] Where incoming non-national students are received and coached, individually or in small groups, by a fellow student

The partner institutions can assist students with formalities such as permits of stay and finding accommodation. They can also ensure that students obtain access to language courses, libraries, canteens, study rooms and computer facilities (including personal e-mail address). Social integration is actively addressed through social activities.