Hochschule Geisenheim University

DAAD Deutscher Akademischer Austauschdienst German Academic Exchange Service

UNIVERSITY OF THESSALY

SUMMER SCHOOL

Greenhouse Hydroponics

Automation & Management

September 23 – 29, 2019
Hochschule Geisenheim University
Classroom HS 3 in the Müller-Thurgau-Haus
Von-Lade-Str. 1, Geisenheim

An Event of the ZuGAbe Project:
Greek-German Research and Teaching Network on Productivity, Future and Environmental Compatibility of Protected Cultivation
Between Hochschule Geisenheim University (HGU) and University of Thessaly (UTH)

Program Summer School "*Greenhouse Hydroponics: Automation & Management*",
23 – 29 September 2019, Geisenheim University, Classroom HS 3 in the Müller-Thurgau-Haus

	23 Sept. Monday	**24 Sept. Tuesday**	**25 Sept. Wednesday**	**26 Sept. Thursday**	**27 Sept. Friday**	**28 Sept. Saturday**	**29 Sept. Sunday**
9:00 am		*Systems Modelling in Aquaponics with Case Studies* O. KÖRNER	*Excursion* Departure at: **6:25** from Geisenheim University **6:30** from Hotel Traube, Rüdesheim 10:00 Greenhouse Knodt, Tönisvorst 12:00 Research centre Straelen (incl. lunch) 14:15 Greenhouse Gerbera van Megen, Straelen 15:30 Greenhouse Rosen Wans, Straelen 20:00 Geisenheim/ Rüdesheim	*Excursion* Departure at: **7:40** from Geisenheim University **7:45** from Hotel Traube, Rüdesheim 9:30 Greenhouse Queckbrunnerhof, Schifferstadt 11:45 Research centre LVG Heidelberg (incl. lunch) 14:45 Seedlings Sinn, Lustadt 18:00 Geisenheim/ Rüdesheim	*A Pilot Greenhouse with Application of Aeropony: Problems and Future Aspects after two Years of Implementation* C. PAPAIOANNOU	Free day	*Excursion* Day trip in Rheingau valley using the cableway in Rüdesheim & Assmanshausen, hiking in the forest and sailing on the river Rhine!
9:45 am	*Registration & Opening* E. DIMKOU						
10:30 am	*Coffee break*	*Coffee break*			*Coffee break*		
11:00 am	*Types of Hydroponic Systems and Automations* N. KATSOULAS	*Adoption of Soilless Culture in Almeria and Local Research Related to These Growing Systems.* J. MAGAN CANADAS			*Management of Plant Health in Hydroponic Systems* A. LINKIES		
12:30 pm	*Lunch break*	*Lunch break*			*Lunch break*		
2:00 pm	*Control Technologies and Feedback Loop* F. LANGNER	*Types of Substrates and Fertigation in Hydroponic Systems* B. GAUDLITZ			*Irrigation of a Hydroponic Crop Based on Real Time Drainage Measurements* C. LYKAS		
3:10 pm	*Coffee break*	*Coffee break*			*Coffee break*		
3:20 pm	*ZINEG: the Project on Energy Consumption in Greenhouses* K. SCHOCKERT	*Vegetable Production in Modern Greenhouses* M. SCHLÜPEN			*Guided tour through the Greenhouses of Geisenheim University*		
4:30 pm					Closing, Wine & Music!		
8:00 pm	Get-together & Dinner						

The organizer reserves the right to make any changes, which may become necessary in the schedule.

SUMMER SCHOOL

Greenhouse Hydroponics

23 – 29 September 2019, Geisenheim University

TEACHERS & TOPICS

Nikolaos Katsoulas

Professor, University of Thessaly

Types of Hydroponic Systems and Automations

Nikolaos Katsoulas is Professor at the University of Thessaly (BSc-MSc in Agronomy- 1997, PhD in Agricultural Engineering-2002) and Director of the Lab of Agricultural Constructions and Environmental Control. He has more than 15 years academic, research and teaching experience. He is specialized in microclimate control in agricultural buildings with emphasis in greenhouses. His research interest include technologies, automations, design, modeling and control in greenhouses, irrigation scheduling, hydroponic and aquaponic systems, energy management, renewable energy sources, microalgae production and other. He has participated in more than 40 EU and national (Greek) funded research projects and has published more than 200 publications (more than 60 in peer-review journals).

Frederik Langner

Research Associate, Geisenheim University

Control Technologies and Feedback Loop

Frederik Langner is a scientist in the fields of plant nutrition and soil science. Since 2016, he is working at the Hochschule Geisenheim University and focussing on vegetable crops, especially under protected cultivation and greenhouse technology. He started as a plant biotechnologist in Hannover in the field of genetics and switched to greenhouse technology in his PhD. During his PhD, he developed a software to simulate the energy demand of greenhouses. In Geisenheim, he worked with international partners to develop a vacuum insolation for greenhouses and is right now working on optimisation of open fertigation systems via cascades.

Karl Schockert

Professor, Geisenheim University

ZINEG: A Short Look At the Big Project on Energy Consumption in Greenhouses

Karl Schockert studied horticulture in Geisenheim and Hannover Technical University and worked at the Institute for Horticultural Technics (ITG) focusing on insulating covering greenhouses, indoor climate and energy consumption. His did his PhD on "Low Temperature Heating Systems Using Waste Heat for Greenhouse Heating". He worked as a teacher and consultor for horticultural technics and teaches at the Geisenheim University since 1995.

Oliver Körner

Senior Scientist, Leibniz-Institute of Vegetable and Ornamental Crops

Systems Modelling in Aquaponics & Case Studies

Oliver Körner (PhD, Scientist Protected Cultivation Systems) is a scientist with focus on crop growth modelling, greenhouse climate control and soft-sensor based decision support systems. Active member of the European scientific aquaponics community, co-founder of Desertfoods International and main author of the open-source model project 'The Virtual Greenhouse'. He obtained his MSc-degree from University of Hannover and after his PhD in Resource Conservation & Production Ecology at Wageningen University, he worked as Assistant/Associate professor at Copenhagen University, as Senior Scientist at Wageningen UR and as Senior Specialist at Danish Technological Institute. He is guest professor at Aarhus University and Shanghai Academy of Agricultural Sciences. Since November 2017 he is Head of the Department Next-generation Horticultural Systems and research group leader of protected environment horticultural systems at the Leibniz-Institute for Vegetable and Ornamental Crops.

Juan Jose Magan Cañadas

Scientist, Estación Experimental Cajamar

Adoption of Soilless Culture in Almeria (Spain) and Local Research Related to These Growing Systems.

Juan José Magán is an agronomist with a PhD at the University of Almeria (Spain). He worked for several years as an advisor at CASI, one of the largest cooperatives in Almeria. Since 1997, he is working as a researcher at the Experimental Station of Cajamar Foundation, which is a non-profit private entity aiming at developing a more sustainable and profitable agriculture and promoting knowledge transfer to the final users. He is currently responsible of the Greenhouse Technology Department. He has participated as a member of the Focus Group of the EIP-Agri on Circular Horticulture. His main expertise is on fertigation management and soilless culture. He has worked on subjects related to closed soilless systems and the effect of salinity. He has also experience with the management of climate conditions in greenhouses and with growing microalgae.

Brigitte Gaudlitz

Chemist, Planta Fertilizers GmbH Regenstauf

Types of Substrates and Fertigation in Hydroponic Systems

Brigitte Gaudlitz studied chemistry at the Friedrich Schiller University in Jena and since 1990 she is working for the company Planta Fertilizers GmbH Regenstauf, Germany's leading producer in fully water-soluble NPK fertilizers. She is responsible for the quality control of the products, which she carries out in the laboratory of the company as well as for the product development and the technical advice of customers.

Matthias Schlüpen

Scientist, Forschungszentrum Gartenbau Straelen

Vegetable Production in Modern Greenhouses

Matthias Schlüpen is responsible for the research experiments in vegetable cultivation under glass at the Chamber of Agriculture of North Rhine – Westphalia, research center Forschungszentrum Gartenbau Straelen and is doing consulting in the field of horticulture technology.

Chryssoula Papaioannou

Professor, University of Thessaly

A Pilot Greenhouse with Application of Aeropony: Problems and Future Aspects after two Years of Implementation

Chryssoula Papaioannou, studied Mechanical Engineering NTUA and did her PhD in Agricultural Sciences at the University of Thessaly where she works as a Professor in the Department of Agricultural Engineering Technologists. She has more the 27 years' teaching and administrative experience and is a member of scientific organizations and organizing committees of international conferences. She is also member of LIFE Programme Steering Committee (ADAPT2CHANGE), coordinator and collaborator in research projects regarding new technologies in agriculture and author of more than 15 articles and book chapters with more than 45 citations (H-index=3). Her research interests include greenhouse design, greenhouse covering materials, aeroponics and hydroponics, quality control of agricultural products and other.

Ada Linkies

Research Associate, Geisenheim University

Management of Plant Health in Hydroponic Systems

Ada Linkies studied horticulture with focus on tree nursery and phytopathology at the HGU, followed by a MSc in biotechnology in Wageningen University and a doctorate on molecular biology in the field of seed physiology at the Albert-Ludwigs-University in Freiburg. She was employed as scientific researcher at the department of Crop Protection at HGU from 2013- 2018, doing research and teaching on pathogens in horticulture. Since April 2019 she is leading the project "mikroPraep" in the same department: Development of a microbiological crop protection product for special crops.

Christos Lykas

Assistant Professor, University of Thessaly

Irrigation of a Hydroponic Crop Based on Real Time Drainage Measurements

Christos Lykas studied Agronomy and did his PhD in soilless culture in 2005. He is now Assistant Professor in the University of Thessaly and is specialized in the use of mathematical models for hydroponic nutrient solution management and ornamental plants growth.

Pavlos Kalaitzoglou

Director of Plant Research, InFarm GmbH

Indoor Farming

Pavlos Kalaitzoglou is appointed as Director of Plant Research in INFARM since 2016. INFARM is an indoor farming start-up that aims to bring vertical farming into the city to grow fresh local produce, no matter the season. INFARM's core innovation is a scalable, patented technology, that allows far greater production efficiency of leafy greens and vegetables than any other technology on the market today. His part in INFARM is to organise and manage the Plant Research Department.