Universität zu Köln

Universität zu Köln • Albertus-Magnus-Platz • 50923 Köln

Institut für Pflanzenwissenschaften
Universität zu Köln

Zülpicherstr. 47b
50674 Köln

Prof. Dr. Marcel Bucher

POL – Praxisorientierte Lehrveranstaltung (English event)

"InnoBioDiv - Innovative research on plant-environment interactions in a changing climate combining biology and modern Internet-of-Things technologies."

Aim of the overall project: Use of an interdisciplinary innovation platform to investigate the influence of climate change on plant growth and soil biodiversity. Development of concepts for the adaptation of plants and soil biomes to climate change using state-of-the-art technology (robotics, sensorics, IoT).

Special feature: Interdisciplinary collaboration of biology and engineering students, and with students from Ukraine (Bachelor, Master and PhD student level) within the framework of an international cooperation program.

Structure of the POL: The POL is split into two blocks; 2 CP are awarded for each block.
Block A: Theoretical background of the InnoBioDiv project (biology and engineering); planning of experiments; getting to know the FarmBot (farming and gardening robot) and other technologies.
Block B: Conducting experiments with the FarmBot and available technologies.

Dates / workload:
Block A: 25.04. – 19.05.2023 (calendar week 17 – 20); ~60 hours
Block B: 22.05. – 14.07.2023 (calendar week 21 – 28); ~60 hours

Further meeting dates (presence, online via Zoom) are announced succinctly to the registered students as a daily/event calendar. Apart from the attendance time described in the calendar of events (online/in person), the time allocation in each team is relatively free.

Conducted by: Prof. Dr. Marcel Bucher and his team in collaboration with the team of Prof. Dr. Uwe Dettmar at University of Applied Sciences Cologne (TH Köln)

Location: Online via Zoom, Cologne Biocenter incl. greenhouses of Institute for Plant Sciences, TH Cologne

Recommended literature: https://farm.bot/

Credits: 2 – 4 ECTS points (60 – 120 hours)

Albertus-Magnus-Platz
50923 Köln
Telefon +49 221 470-0 (Zentrale)
Telefax +49 221 470-5151

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Requirements:

- Good basic knowledge of English language.
- Enrolment in at least the third semester of the BSc Biology.
- Interest in cross-disciplinary teamwork and technology. Previous knowledge of robotics or programming is an advantage, but not a prerequisite.
- Interest in developing climate adaptation concepts (e.g. drought stress) in an interdisciplinary team. For example, by simulating climate parameters with the FarmBot using model- and crop- plants.
- Participation in feedback rounds, progress/final reports and concept reports (verbal) during weekly one-hour meetings via ZOOM.

Students deliverables:

- Experimental investigation of developed concepts with discussion (recorded as an electronic Lab-book -word document-)
- Final report of the developed concept, experiments and analyzed results in written (10 to max. 20 pages, in English) and a PowerPoint presentation (10-15 slides)

Number of participants: 3 - 6 (Bachelor of Science in Biology); interested students please send an email to InnoBioDiv@uni-koeln.de and cc. to Prof. Dr. Marcel Bucher (m.bucher@uni-koeln.de).

Application deadline: 14.04.2023

Cologne, 23.03.2023 ....

Prof. Dr. Marcel Bucher

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