Urban Ecology

ECTS: 6 (for the summer semester of 2025, Geoecology students, IfGG, BGU faculty, KIT)
ECTS: 7 (for the summer semester of 2025, Biology students, CHEM-BIO faculty, KIT)
Module provider: Dr. Somidh Saha, Reiner Gebhardt, and other colleagues (remark: students will get the opportunity to interact with key stakeholders like colleagues from the Gartenbauamt of Karlsruhe City)
Workload: 180 hours or 210 hours based on program
Module start date and timing: **07.05.2025 at 11.30 in IfGG (Building 10.50 Raum 704.1; all interested students must come on this opening day).** This module will run for the entire summer semester from 7th May 2025, with lectures and field instructions taking place on Wednesdays from 11:30 to 15:30, which includes a one-hour lunch break**.** Students have the flexibility to organize their field data collection and report writing. The written exam and report submission must be completed by September 30, 2025.
Topic: In the field-based module "Urban Ecology," students are introduced to this discipline with a focus on urban trees and forests and their sustainable management. Students learn to assess urban environmental conditions and vegetation characteristics and evaluate the ecosystem services of urban green spaces. They learn how to use suitable measuring instruments and assess the data. Urban green spaces offer diverse ecosystem services, but they are under pressure worldwide due to climate change's impacts and cities' growth and densification.

Planned Activities	**Approximate Hours (Geoecology students of BGU faculty) - 6 ECTS**	**Approximate Hours (students of CHEM-BIO or other faculties)- 7 ECTS**
Classroom lecture	16	16
Instructions at field	16	20
Data collection by students	70	70
Report writing and submission	40	40
Exam Preparation	30	30
Additional study and coaching by Dr. Somidh Saha on urban ecology	optional	26
Written exam, students' presentation, and course evaluation	8	8
Total approximate hours	**180**	**210**

Potential themes for field data collection in 2025 and group projects

- Linking biodiversity values of city trees to other ecosystem services in newly established and first digital twin of urban forests in Karlsruhe
- Learning about urban trees drought stress and mitigation potential by optimizing irrigation
- Keeping large trees in cities without compromising safety: sonic tomography, trunk damage assessment, and tree care

Learning goals: After the module, students should develop the following knowledge and skills:

- Tree inventory of city trees and calculation of ecosystem services
- Theoretical and practical knowledge of arboriculture, urban silviculture, ecosystem services, urban biodiversity, and urban tree vitality
- Designing experiments in the fields of urban ecology and urban forestry
- Learning real-world challenges in urban ecology
- State-of-the-art instruments, tools, and sensors used in long-term ecological monitoring and inventory in cities
- Students will be introduced to state-of-the art research projects like URBORETUM and UT-UBGI (https://www.urboretum.de/; https://www.itas.kit.edu/projekte_saha24_utubgi.php)