Python & R Tools Module

Kick-Off: October 2025

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October 8, 2025

Last revised: February 24, 2026

UKUDLA

African German Centre

for Sustainable and Resilient Food Systems and Applied Agricultural and Food Data Science

Supported by: Federal Foreign Office

With funding from the: Federal Ministry of Research, Technology and Space

Supported by: Federal Ministry of Agriculture, Food and Regional Identity

by decision of the German Bundestag

Project Manager: Federal Office for Agriculture and Food

DAAD

Deutscher Akademischer Austauschdienst

German Academic Exchange Service

science, technology & innovation

Department: Science, Technology and Innovation

REPUBLIC OF SOUTH AFRICA

NRF National Research Foundation

Agenda for Today

1. Short Round of Introductions
2. Motivation for the *Python* & *R* Tools Modules
3. Material and Platform for the *Python* & *R*
   - Learning module via *UKUDLA Education Server*
   - Access via *DIGI-FACE*
4. “Office hours” for the *Python* & *R*
   (subject to change)
5. Examination for the *Python* & *R* Tools Modules
   (subject to change)
6. Open Questions

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Short Round of Introductions

Please briefly introduce your background in terms of:

- Research interests
- Experience with coding in general, and with *Python* & *R* in particular

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Motivation (1/3)

Python

- "Python is a high-level, general-purpose programming language. Its design philosophy emphasizes code readability with the use of significant indentation." (see Wikipedia contributors, 2025a)
- "Python consistently ranks as one of the most popular programming languages, and it has gained widespread use in the machine learning community." (see Wikipedia contributors, 2025a)

R and *RStudio*

- "R is a programming language for statistical computing and data visualization." (see Wikipedia contributors, 2025b)
- "It has been widely adopted in the fields of data mining, bioinformatics, data analysis, and data science." (see Wikipedia contributors, 2025b)

See also:

Stack Overflow Survey (2025)

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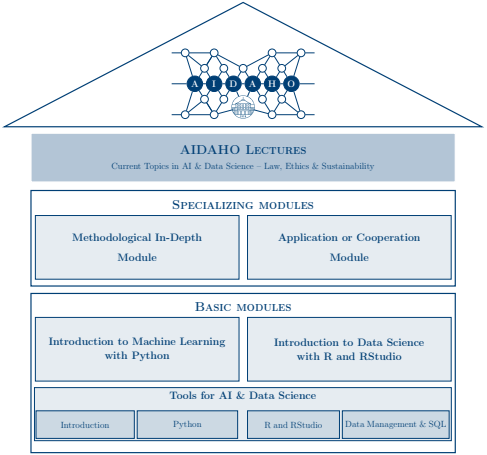
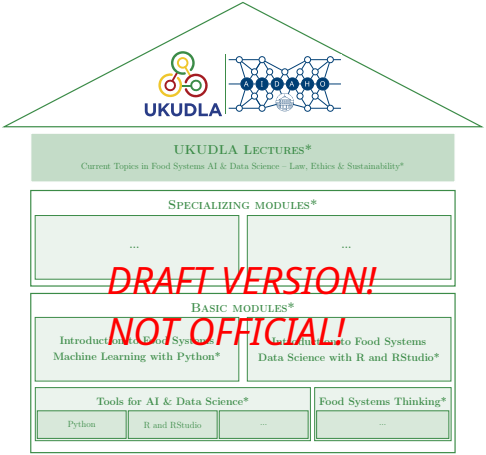
Tools course of the *AIDAHO* certificate

- Content is drawn from the *Python* and *R* parts of the *Tools for AI & Data Science* course in the *AIDAHO* certificate at University of Hohenheim.
- Working hours (WH):
  - *Python* module: 3 ECTS $\Rightarrow$ 90 WH
  - *R* module: 3 ECTS $\Rightarrow$ 90 WH

Outlook: This will be part of our “Integrated Food Systems & Data Science certificate”.

Motivation: UKUDLA Certificate Sketch (3/3)





DRAFT VERSION!
NOT OFFICIAL!

* Sketch, not yet decided!

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Material/Platform

DIGI-FACE Platform

- Central platform for UKUDLA
- Register and Login on *DIGI-FACE*

UKUDLA “Education Server”

- Server to provide learning materials
- Access the learning modules via *UKUDLA Education Server*

“Office Hour”: Proposal (1/3)

Discussion of *submitted* questions/problems

- Please send individual questions or problems to *markus.moessler@uni-hohenheim.de*
- Deadline: 24 hours before the start of the “office hour”.

Discussion of *selected* questions/problems

- Discussion of selected concepts, implementations, ...
- Based on the current session (see: “Office Hour” schedule)

Potential Dates: Rotating schedule

- Tuesday, 09:00-10:00 (CET)
- Thursday, 16:00-17:00 (CET)

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“Office Hour” Schedule (subject to changes!) (2/3)

Session	Week	Date	Topic
Kick-Off	CW 41	Wed, 08.10.2025, 16:00-17:00 (SAST)	Kick-Off
Python Session 00	CW 42	Tue, 14.10.2025, 09:00-10:00 (SAST)	S.0 - Tooling Up
Python Session 01	CW 43	Thu, 23.10.2025, 16:00-17:00 (SAST)	S.1 - Basic Concepts
Python Session 02	CW 44	Tue, 28.10.2025, 10:00-11:00 (SAST)	S.2 - Language Elements
Python Session 03	CW 45	Thu, 06.11.2025, 15:00-16:00 (SAST)	S.3 - Boolean Algebra
Python Session 04-01	CW 46	Tue, 11.11.2025, 10:00-11:00 (SAST)	S.4.1 - Data Structure I
Python Session 04-02	CW 47	Thu, 20.11.2025, 15:00-16:00 (SAST)	S.4.2 - Data Structure II
Python Session 05	CW 48	Tue, 25.11.2025, 10:00-11:00 (SAST)	S.5 - Control Structures
Python Session 06	CW 49	Thu, 04.12.2025, 15:00-16:00 (SAST)	S.6 - Functions & Modules
Python Session ???	CW 50	Tue, 09.12.2025, 10:00-11:00 (SAST)	???
Christmas Break	CW 51	—	Christmas Break

Python Tools Module Schedule Overview

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“Office Hour” Schedule (subject to changes!) (3/3)

Session	Week	Date	Topic
Christmas Break	CW 52	—	Christmas Break
Christmas Break	CW 01	—	Christmas Break
Christmas Break	CW 02	—	Christmas Break
R Session 00	CW 03	Tue, 13.01.2025, 10:00-11:00 (SAST)	S.0: Welcome & Tooling Up
R Session 01	CW 04	Thu, 22.01.2025, 15:00-16:00 (SAST)	S.1: Basics
R Session 02	CW 05	Tue, 27.01.2025, 10:00-11:00 (SAST)	S.2: Functions & Packages
R Session 03	CW 06	Thu, 05.02.2025, 15:00-16:00 (SAST)	S.3: Data Wrangling
R Session 04	CW 07	Tue, 10.02.2025, 10:00-11:00 (SAST)	S.4: Creating Visuals
R Session ???	CW 08	Thu, 19.02.2025, 15:00-16:00 (SAST)	???
R Session ???	CW 09	Tue, 24.02.2025, 10:00-11:00 (SAST)	???

R Tools Module Schedule Overview

Examination (subject to changes!)

We are planning an examination at the end of the first lecture period, i.e., around March 2026.

You can expect the following:

- Quiz questions similar to those in the learning modules
- Individual examination dates under supervision, e.g., of your supervisor
- You may (and should) bring your own laptop
- You will not be allowed to use additional sources such as ChatGPT.

However, as a *UKUDLA* student, you are expected to have a basic understanding of *Python* and *R*. Focus on the learning process rather than the examination itself.

Outlook

Planned activities:

- Course survey for the evaluation of the Tools course
- UKUDLA survey to better understand your data pipeline
- Examination tool for the Tools course
- Kick-off of the Introduction to Data Science course

Your input:

- What suggestions do you have?
- What are your thoughts on the “Office Hour”?

Proposed Office Hour:

- Date: Tue, 24.03, 10:00–11:00 (SAST)
- Topic: Current status and next steps

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Open Questions?

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South African government and the National Research Foundation

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Department:
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German government and the German Academic Exchange Service

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Federal Foreign Office

With funding from the:

Federal Ministry of Research, Technology and Space

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Federal Ministry of Agriculture, Food and Regional Identity

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Project Manager:

Federal Office for Agriculture and Food

Deutscher Akademischer Austauschdienst
German Academic Exchange Service

References i

Wikipedia contributors (2025a). Python (programming language) — Wikipedia, the free encyclopedia. Accessed: 2025-10-06.

Wikipedia contributors (2025b). R (programming language) — Wikipedia, the free encyclopedia. Accessed: 2025-10-06.