

 **Water** **People** **Earth**

Water and people in a changing world

WAT-E2090; Spring 2022

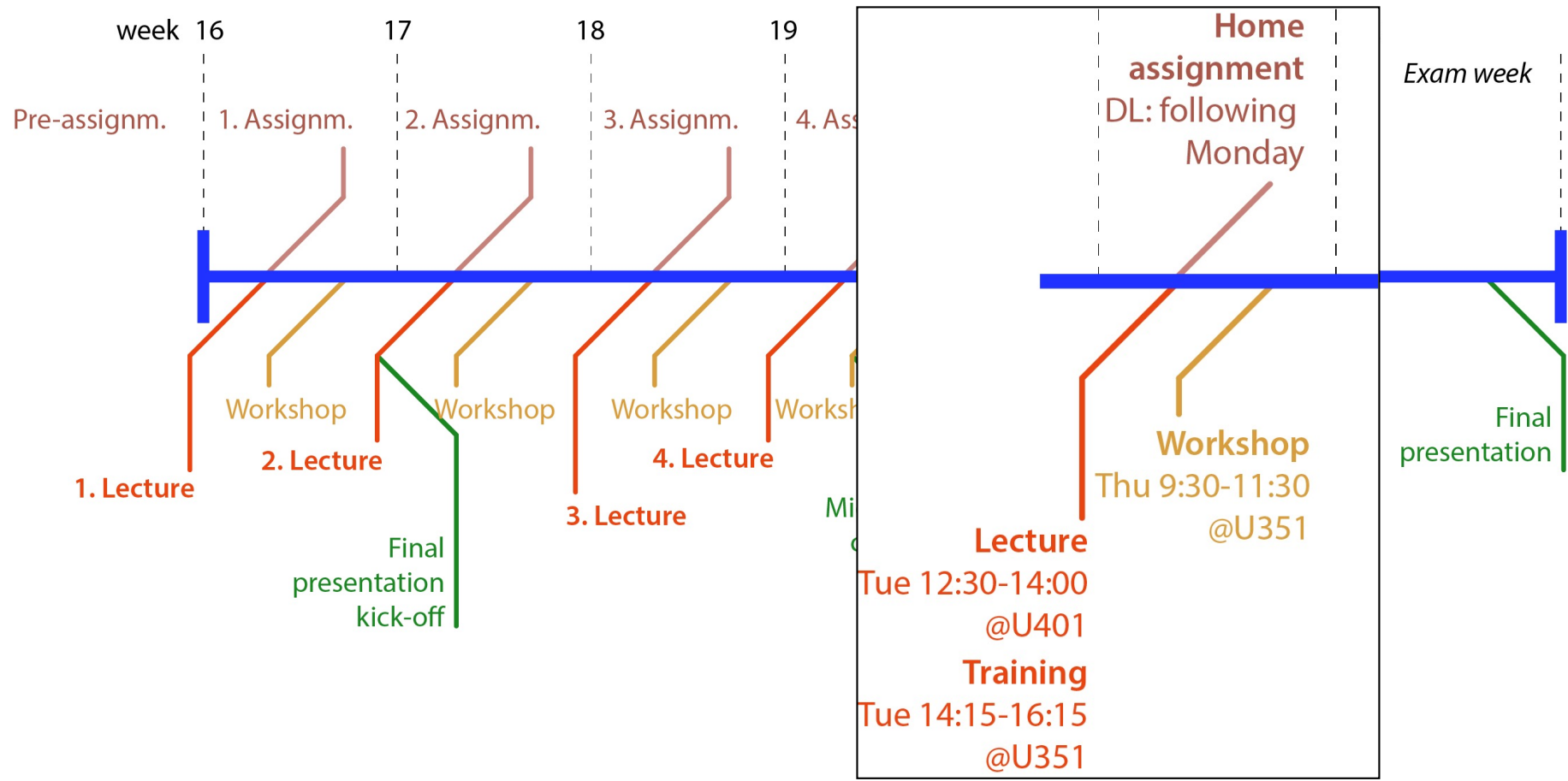


*Water & Development
Research Group*

Intended learning outcomes

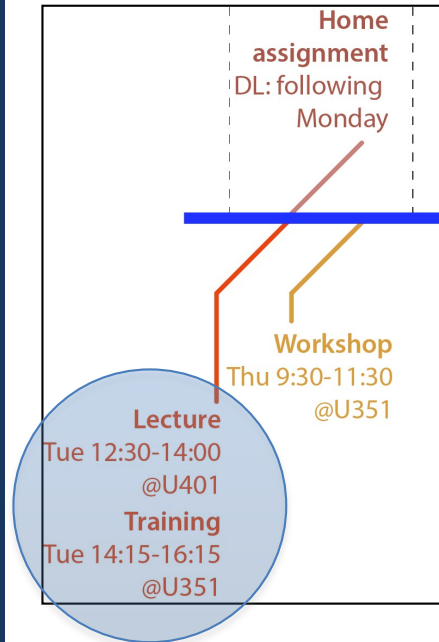
- *analyse and assess* how global water resources are distributed in relation to human population and how this has changed over time
- *recognise the connection between food production and use of water*
- *analyse* the water stress and water scarcity in various scales by using spatial datasets and estimate their impact on human society
- *apply R on global water challenges*
- *use* different kind of spatial datasets as a part of scientific research
- *recognise the basics of visual scientific communication, and create informative maps and graphs*





Course schedule

Lectures+hands-on



Contains normally following parts:

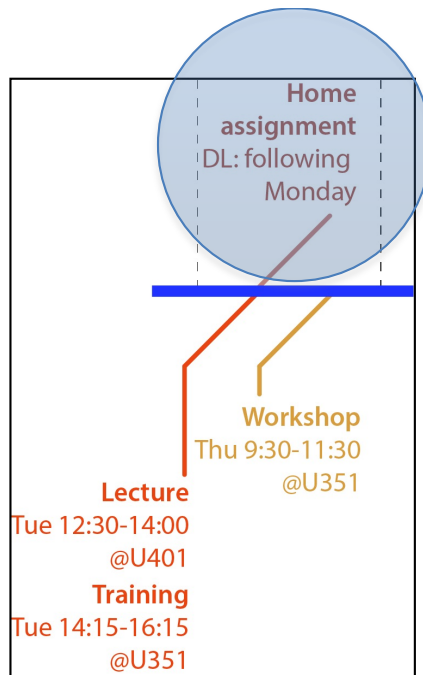
- Introduction (10 min)
- Discussion of home assignment (10 min)
- Motivation lecture to the theme (40 min)
- Break (5 min)
- Group work (30 min)
- Break (15 min)
- Hands-on research on day's theme (120 min; 10 min break after an hour or so)

Mandatory – to pass the course, you need to be present at least in 5/6 lectures

Optimally very interactive; learning together!



Home assignments



- Based on day's theme
- You have free hands to explore the theme
 - Aim to be research based assignment, i.e. you explore the most interesting parts of the theme for you
 - We'll give some example research questions to foster the work
- You will choose a large river basin in the world on which your home assignments and final presentation will focus
- *Feedback to each assignment on Wed*



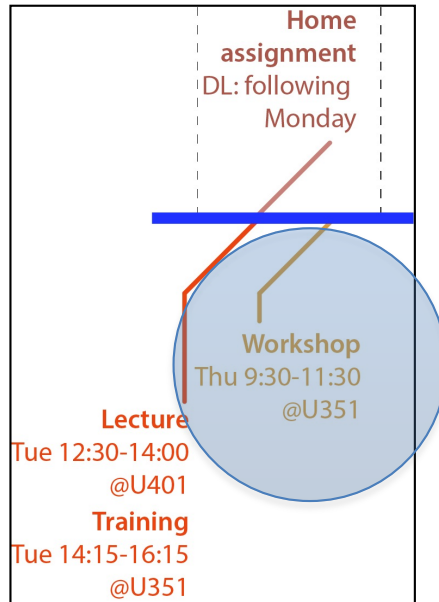
Specs for home assignments

- Main emphasis on graphics and illustrations
- BUT do not forget short reflection and interpretation of results
- 1-page (strict!) poster type presentation
- DL Monday evenings – **if delayed, you'll get only half of the points** (if delayed over a week, no points at all)

Are you ok to share your home assignment with others after DL?



Workshops



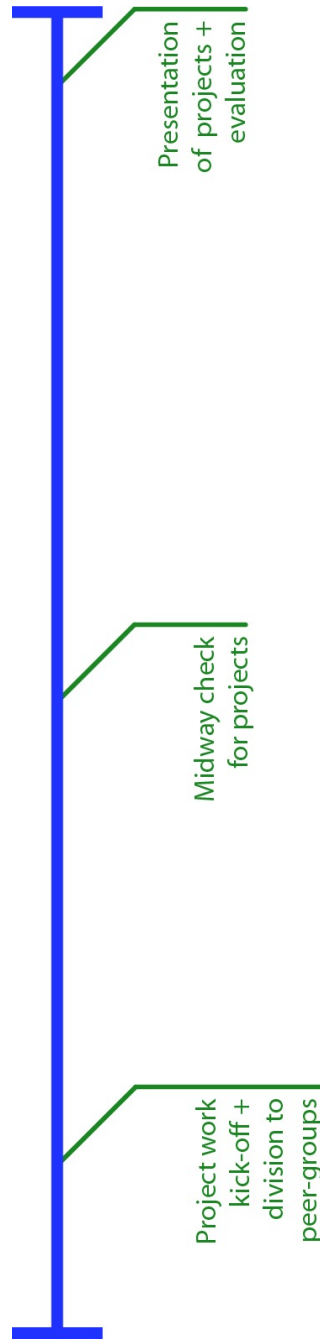
- Starts normally with short lecture on Adobe Illustrator
- No fixed structure
- Teachers available for the whole time
- Aim to support your home assignments
- Discuss about the assignments with your peer-learners
- **Optional**, but *potentially very useful*



Final presentation

- Each student will select a large river basin (*or other geographical area*) and make home assignments for that area
- At the final week, each gives a presentation of the area, related to the themes of the course
- Individual work, but supported by peer-learners
- **Builds on home assignments**
- Need to be presented to a small group at final week

Kick-off in the second week...



Content

Content – themes of each week

- W1 Global water resources;
+ Introduction to the course
- W2 Population dynamics;
+ Kick-off of the final presentation
- W3 Land cover change and food production
- W4 Water use
- W5 Water scarcity
- W6 Socio-economics of water and food
(workshop on Wed 25th of May – ok?)
- W7 *Presentations in small groups (~2-3 hrs)*



Content – methods and tools

- Each week we have specific
 - Thematic contents within the theme
 - Datasets and data types
 - R tools
 - Graph types
- Together these give a good understanding of the global water issues and give you a comprehensive set of spatial tools to work with in the future

Tools

- **R**
 - + powerful for raster and vector calculations, easy to run analysis with multiple timesteps, relatively good reporting results, very easy to repeat calculations
 - + open source - free
 - coding, take a while to learn the logic and basics
- **Adobe Illustrator**
 - + great software to put the final touch on the graphs and maps
 - takes some effort to learn the basics
 - no license to own computer, you need to use over remote connection

*Alternatives for own computer:
Affinity Designer (~60 eur), Inkscape (free)*



Research-based learning

Course is largely based on research based learning, meaning:

- Information is not given ready chewed, but students will construct that themselves based on their findings – with the help of others and supported by teachers
- Close to scientific research –the **passion of discovering**
- Foster ability it is often mo what is the p

“If I had an hour to save the world, I would spend 59 minutes defining the problem and one minute finding solutions.” – Albert Einstein



Practicalities

Workload

Contact teaching (lecture-exercise sessions):	24h (6x4h)
Pre-assignment, orientation to lectures:	24h (6x4h)
Home assignments:	48h (6x8h)
Final presentation:	40h
TOTAL	136h

We aim to reduce the workload by:

- Motivating why these themes are important
- Providing 1 to 1 help with flexible hours
- Very applied assignments and final presentation (no need to learn by heart) + own research questions
- Giving supervision and instructions in weekly workshops
- Immediate feedback to each home assignment



Grading

	Criteria	Division of points	Max points
<i>Lectures</i>	Participation to contact teaching (<i>both lecture & hands-on training; 12:15-16:00</i>)	2 p / lecture 0.5 p / workshop (extra-points)	12 p (+3 p)
<i>Home assignments</i>	5 p if repeated what done in lecture with some reflection & interpretation of results + <i>own research question</i> + <i>innovative analysis</i> + <i>beautiful illustration</i> + <i>good reflection</i> – <i>no reflection / interpretation</i> – <i>no effort for illustration</i>	1-10 p / assignment <i>If submitted late, only half of the points will be given.</i> <i>If more than a week late, no points at all.</i>	60 p
<i>Final presentation</i>	<ul style="list-style-type: none"> • research questions • findings • illustrations • presentation (logic, structure, etc) 	Peer-evaluation (8 p) Self-evaluation (8 p) Teacher evaluation (8 p)	24 p
Total			96 p (+3 p)

Grading thresholds:

1-50% of total points (i.e. 48p) **2-60%**(58p) **3-70%**(67p)
4-80%(77p) **5-90%**(86p)



Communication

- **MyCourses -page**
 - Basic information of the lectures
 - Lecture material available after the lecture
 - Demo code and data
 - Instructions for home assignments
 - Submission of home assignments & grades
 - Additional material
- **Communicating**
 - *Whole course (e.g. Q&A, etc):* Teams
 - Links to recorded lectures
 - *Within the peers:* please work and communicate with your co-learners!



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