



# *Welcome to WAT!*

***Master's Programme in Water and Environmental Engineering***

*WAT Orientation Days  
Tue 29.8 & Wed 30.8.2023*

*Please prepare  
to introduce  
yourself shortly*

# ***WAT who?***

## **WAT TEACHERS**

Teemu Harri Marko Olli Meeri Markus Henri  
Anna Eliisa Matti Juha Matleena Elin Ilkka Elina

Päivi  
Planning officer at LES

Harri L.  
Coordinator at LES

→ You will get to know many of them already today during our Water Building tour – and latest then during WAT-E1100 course

*More info:  
[people.aalto.fi](http://people.aalto.fi)*

# *Who are here?*

## INTRODUCE YOURSELF:

- Name + where you come from (Aalto, else)
- Your expectation from WAT in max. 5 words

**Alarik**      **Chenyue**      **Daniel**      **Hanna**      **Maryam\***      **Mira**      **Nisha**  
**Annina**  
**Alisson\***      **Christine**      **Emma**      **Iiris**      **Meri\***      **Nabila**  
**Petra**      **Reeti**      **Sadia**      **Tuomas**      **Wei**  
**Qalander**      **Riku\***      **Soila**      **Veera**      **Zaahid**

**EXCHANGE  
STUDENTS**

***Emanuela***

***Nicolas***

***Marc Jean***

***Valentin***

**SOMEONE'S  
NAME MISSING?  
(or spelt wrongly?)**

# ***What happens today & tomorrow?***

- **TUE morning = Introduction + WAT info points**  
→ You get to know us at WAT
- **TUE afternoon: independent group work**  
→ You get to know your group
- **WED morning = group work + WAT info**
- **WED afternoon = WAT info + group presentations**  
→ You get to know you all
- **WED evening: AKVA x WAT Get-Together**



# What happens

- TUE morning
- TUE afternoon
- WED morning
- WED afternoon
- WED evening

## WAT ORIENTATION DAYS 29.-30.8.2023

Version  
25.8.2023

|                  | <b>Tuesday 29.8</b><br><i>Lecture Hall 286/287, Water Building</i>   | <b>Wednesday 30.8</b><br><i>Lecture Hall 286/287, Water Building</i>   |
|------------------|--|--|
| <b>Morning</b>   | <p><b>9.00- WELCOME TO WAT!</b></p> <ul style="list-style-type: none"><li>- Introduction to WAT</li><li>- Forming the WAT Groups</li></ul> <p>-&gt; Your group stays the same for the entire Master's Programme</p> <p><b>- Study tour in Water Building in groups (11-12.30)</b><br/>12-minute infopoints ('rasti') introducing WAT personnel &amp; research activities + AKVA student association</p>  | <p><b>10.00- GROUP WORK &amp; INTRO TO WAT</b></p> <p>Finalising your poster</p> <p>Intro to WAT Programme, Part 1</p>   |
|                  | <p><b>Lunch break</b></p>  | <p><b>Lunch break</b></p>  |
| <b>Afternoon</b> | <p><b>INDEPENDENT GROUP WORK</b></p> <p>-&gt; Each group independently in your chosen location; aim to get to know each other and create a Group Poster</p> <p><b>Tasks for group work:</b></p> <ol style="list-style-type: none"><li>1) Introductions: each student's background</li><li>2) Recognition of your existing knowledge &amp; skills</li><li>3) Expectations from the Master's studies + career plans</li></ol> <p>-&gt; These together = Group Poster</p> | <p><b>13.00- INTRO TO WAT &amp; STUDENTS</b></p> <p>Intro to WAT Programme, Part 2</p> <p>- Personal Learning Portfolio Process</p> <p><b>Coffee break</b></p> <p><b>14.30- Group Poster presentations</b></p> |
|                  |  | <p><b>16.00- AKVA x WAT Get-Together</b></p>   |

# WAT?

WAT = Water & Environmental Engineering

→ Our Master's Programme combines theory with practice, including case studies and project work

## *Many great things!*

- You! Skillful students with diverse backgrounds  
→ You will also learn from each other
- Approach: student-centered & problem-oriented
- Programme-focus (not just a set of courses)
  - Portfolio process: emphasis on learning (not just on credits)

**A?**  
Aalto University

*"Ensuring a sustainable & functioning society"*  
**MASTER'S PROGRAMME IN**  
**WATER & ENVIRONMENTAL ENGINEERING**

Water and environmental engineering is about making the world work. With limited natural resources and an increasing demand for water, food and energy, we look at practical ways to develop our society in a sustainable manner.

Three study themes: Water Resources, Water and Wastewater, Water & Development

Strong technical basis combined with sound understanding of the broader societal context

Making use of the students' diverse backgrounds & encouraging individualised study paths

Student-centered learning: group work, personal portfolio, mentoring

Water & environmental engineering in its broad sense, connection to research, planning & management

Strong technical basis and computational skills

Cross-sectional approach with link to practice

Our water & environmental engineering graduates are enthusiastic professionals with solid problem-solving skills

Needs for problem-solving

Answering society's practical needs

Professional identity

Life-wide learning

Sustainable development

Functioning society

**TOTAL 120 ECTS**

**COMMON COURSE 15 ECTS**

**ADVANCED COURSE 45 ECTS**

**ELECTIVE STUDIES 30 ECTS**

**MAJOR 60 ECTS**

**MAJORS**

**WATER RESOURCES**

- Groundwater hydrology
- Environmental hydraulics
- Hydrological modelling
- Surface water resources

**WATER & DEVELOPMENT**

- Sustainable built environment
- Sustainable Global Technologies SGT Studio (10 ECTS)
- Water and governance
  - Water and people in a changing world

**WATER & WASTEWATER**

- Urban water systems
- Design and management of water and wastewater networks
- Physical and chemical treatment of water and waste
- Modelling and control of treatment processes
- Biological treatment of water and waste

**WAT Project Course**

**WAT Special Course**

**COMMON COURSE**

**Water & environmental engineering (15 cr.)**

*In-depth introduction to the key themes and problem-solving methods in our field, through variety of group work and individual tasks.*

Head of the Programme: Associate Professor Maria Keskinen  
Planning Officer: Päivi Kuusimies  
Contacts: first.name.lastname@aalto.fi

@AaltoWAT

August 2022

WAT research and teaching organised through three key themes: what they are?

- Water resources
- Water & wastewater
- Water & development



*'Ensuring a sustainable & functioning society'*

# MASTER'S PROGRAMME IN WATER & ENVIRONMENTAL ENGINEERING

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Water & environmental engineering in its broad sense: connection to research, planning & management

- Strong technical basis and computational skills
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*Our water & environmental engineering graduates are enthusiastic professionals with solid problem-solving skills*

- Readiness for problem-solving
- Answering society's practical needs

- Professional identity
- Life-wide learning

- Sustainable development
- Functioning society



You will learn more about our three study themes in today's infopoints!

## ADVANCED COURSES

Select 45 credits across three study themes to create an individual specialisation, and strengthen it with 30 credits of elective courses and your Master's Thesis

## COMMON COURSE

Solid foundation for all our graduates



### WATER RESOURCES

- Groundwater hydrology
- Environmental hydraulics
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Head of the Programme: Associate Professor Marko Keskinen

Planning Officer: Päivi Kauppinen

Contacts: [firstname.lastname@aalto.fi](mailto:firstname.lastname@aalto.fi)

August 2022

# Info on WAT

All key information in Aalto Student Guide!  
<https://www.aalto.fi/en/programmes/masters-programme-in-water-and-environmental-engineering>



PÄIVI Kauppinen, Planning Officer

HARRI Långstedt, Coordinator



MARKO Keskinen, Programme Director

→ (firstname.lastname@aalto.fi)



This site contains the student study guide for the Master's Programme in Water and Environmental Engineering. Here you will find the programme curriculum as well as detailed guidelines for planning your studies. All the materials and instructions are for the students in the programme. If you are interested in applying to the programme, follow the link at the bottom of the site to the application page.

# AaltoENG Learning services (LES)

**WAT Coordinator Harri Långstedt**  
([harri.langstedt@aalto.fi](mailto:harri.langstedt@aalto.fi))

**WAT Planning Officer Päivi Kauppinen**  
([paivi.kauppinen@aalto.fi](mailto:paivi.kauppinen@aalto.fi))

**Shared email address:**  
[masterstudies-eng@aalto.fi](mailto:masterstudies-eng@aalto.fi)

**Student advisors:**  
[advisors-eng@aalto.fi](mailto:advisors-eng@aalto.fi)

**Student Service Desk and Learning service office: Otakaari 4, 1st Floor**

**Contact information (Student Guide):**  
<https://www.aalto.fi/en/support-for-studying/contact-information-for-learning-services>



# Your important tools

Sisu

***sisu.aalto.fi***

Student Guide

***aalto.fi/en/student-guide***

MyCourses

***mycourses.aalto.fi***

MyStudies

***mystudies.aalto.fi***

## ***Student Guide***

Information related to your studies: degree structure, instructions, academic rules and regulations

## ***Sisu***

Personal study plans ("HOPS"), registering for courses and exams, course descriptions, official electronic transcripts

## ***• MyStudies***

- Academic advising,
- study guidance

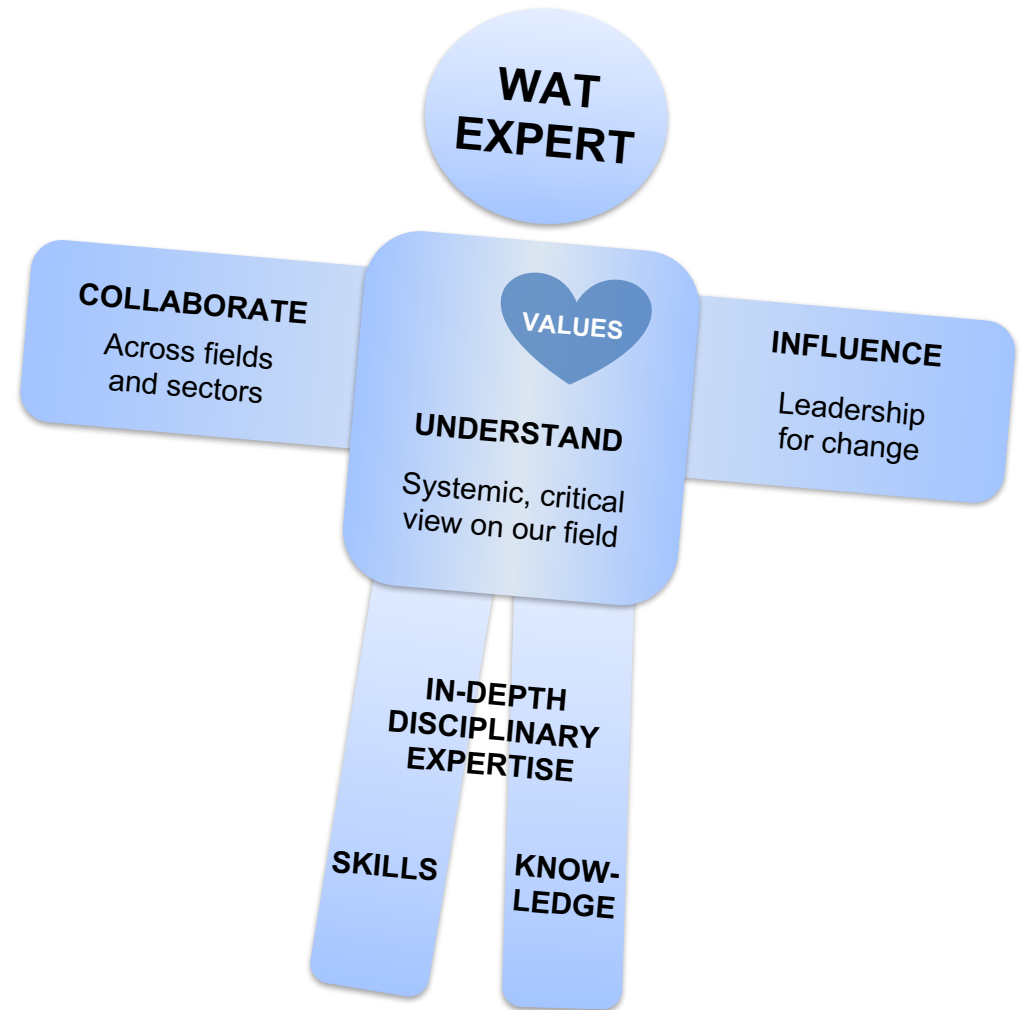
## ***MyCourses***

Learning environment, course workspace, news and materials

***Questions? Comments?***



# WAT EXPERT?



# EXPERTISE = COMBINATION OF MANY COMPETENCES

ETHICAL

FUNCTIONAL

COGNITIVE

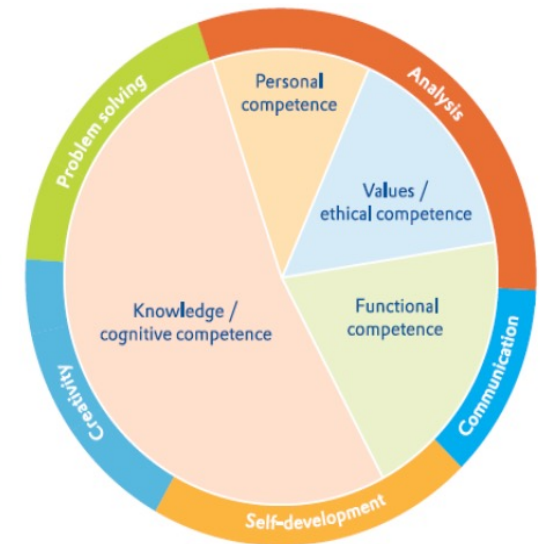
PERSONAL



**CATCHMENT AGENCY  
DIRECTOR**

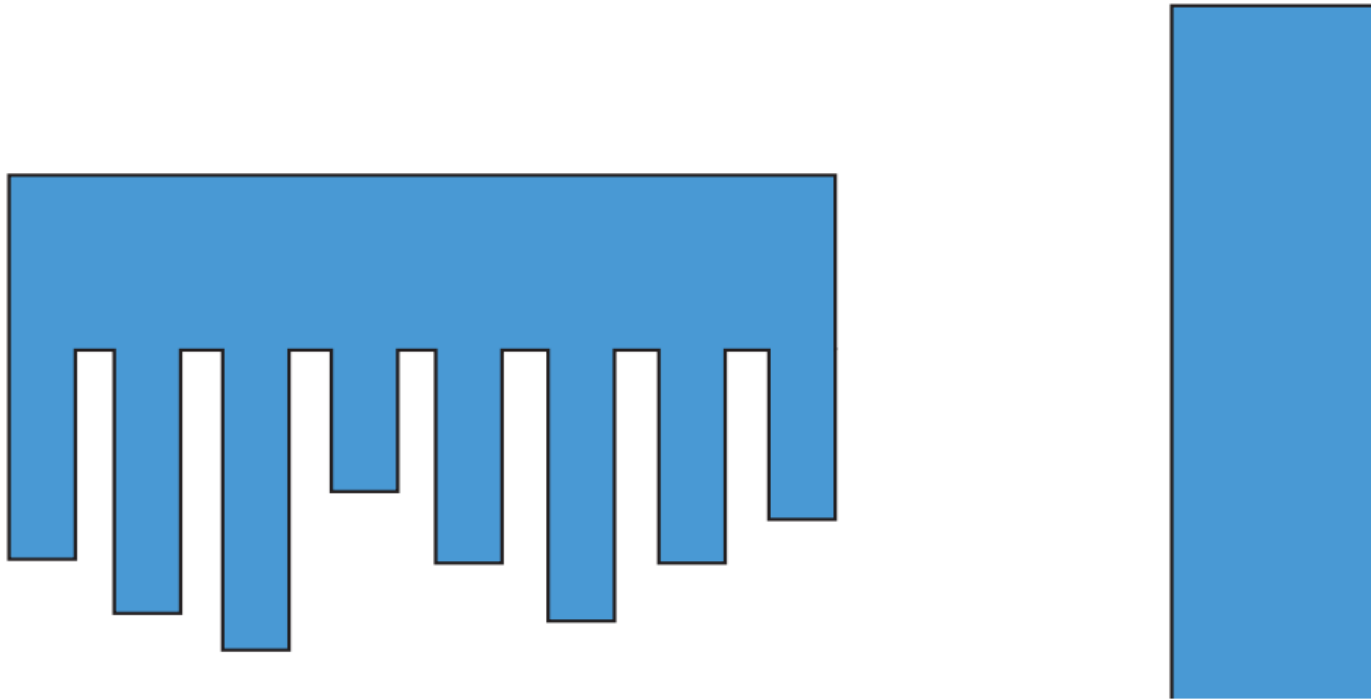


**WATER ENGINEERING  
CONSULTANT**



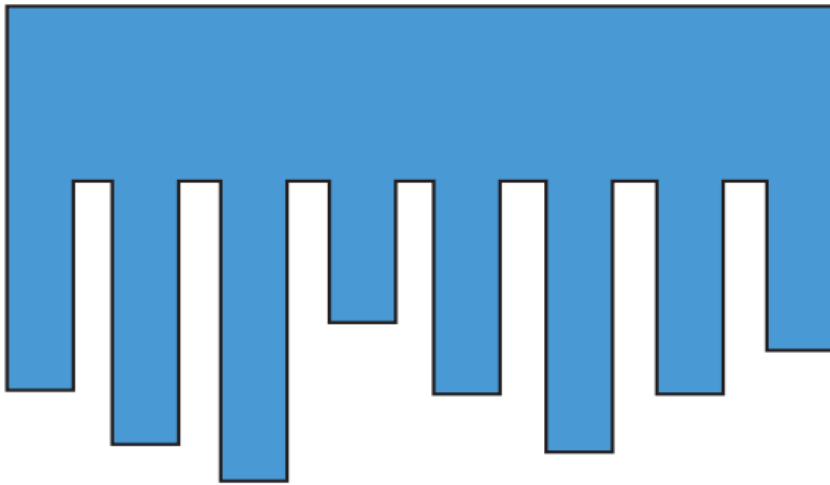
**RESEARCH  
WATER CHEMIST**

1. *Knowledge/cognitive competence*: the possession of appropriate work-related knowledge and the ability to put it into effective use, e.g. theoretical/technical knowledge of hydrology and hydraulics, tacit knowledge, procedural knowledge of finances or projects, contextual knowledge of geography or technology etc.
2. *Functional competence*: the ability to perform a range of work-based tasks effectively to produce specific outcomes, e.g. occupation specific skills like report writing, IT literacy, budgeting, project management etc.
3. *Personal or behavioral competence*: the ability to adopt appropriate behaviors in work-related situations, e.g. self-confidence, control of emotions, listening, objectivity, collegiality, sensitivity to peers, conformity to professional norms etc.
4. *Values/ethical competence*: the possession of appropriate professional values and the ability to make sound judgments, e.g. adherence to laws, social/moral sensitivity, confidentiality etc.



WHAT KIND OF EXPERT PROFILES THESE COULD BE?

→ Which one emphasises depth, which one breadth? 😊



## GENERALIST

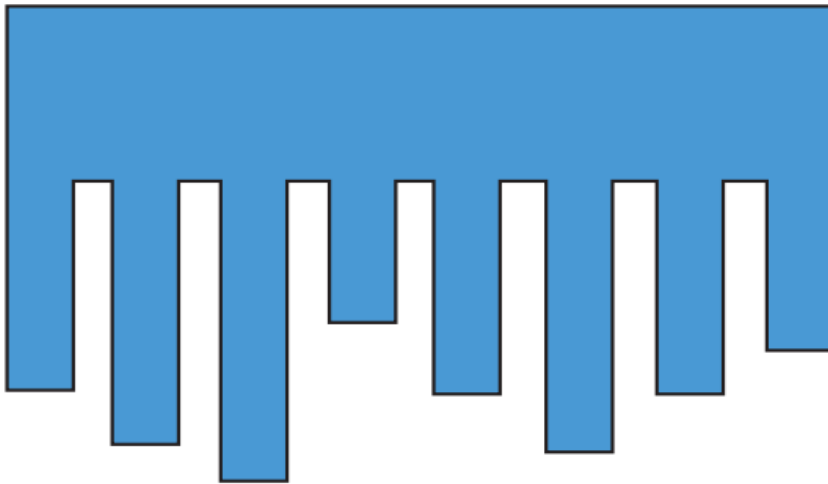
'Knowing something about many things'



## IN-DEPTH EXPERT

'Knowing a lot about something specific'

**BUT ENGINEERS SHOULD BE BIT BOTH!?**



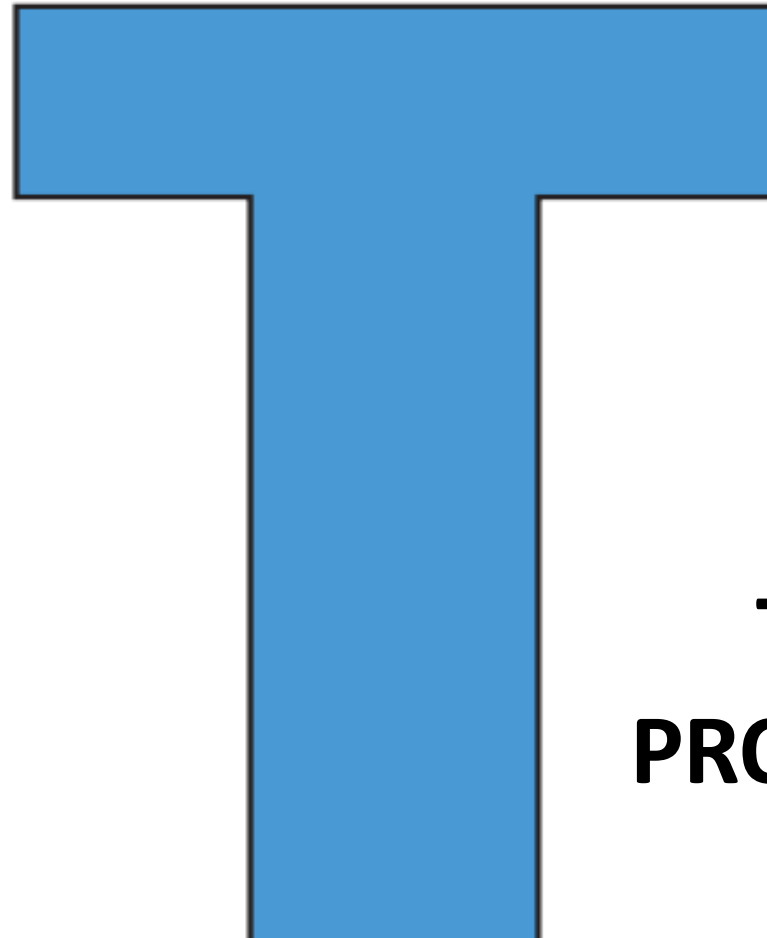
**GENERALIST**

‘Knowing something about many things’

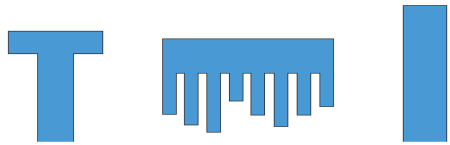


**IN-DEPTH  
EXPERT**

‘Knowing a lot about something specific’



# **T-SHAPED PROFESSIONAL!**

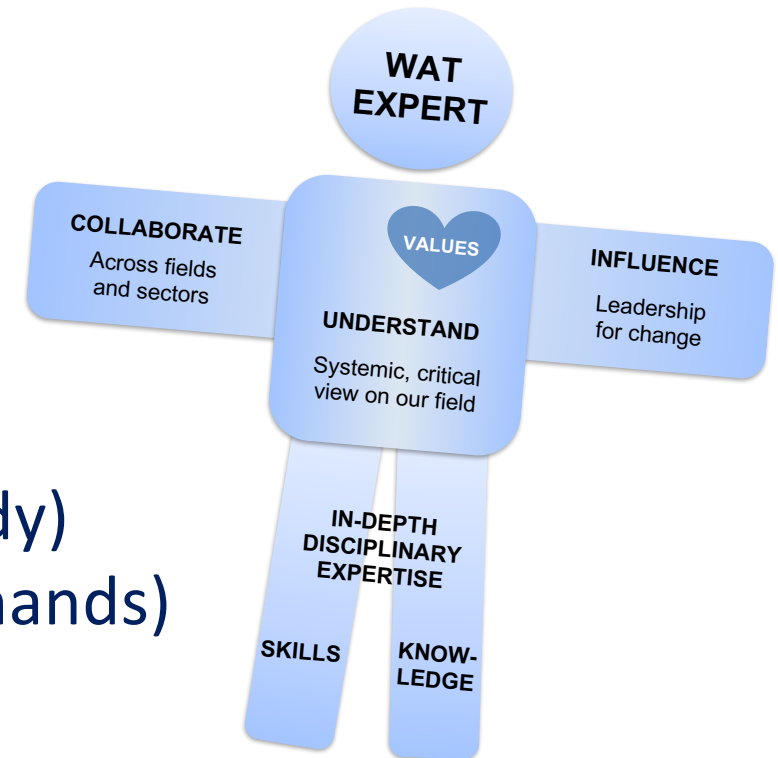


## WAT EXPERT – WHO, ME?

Our programme aims to provide you with a T-shaped expert profile

→ Combination of in-depth disciplinary expertise (legs), broader understanding (body) and capacity for collaboration & influence (hands)

→ Being aware of your own values (heart) important, too – and help you in all these



# **YOU = GROUP OF (emerging) EXPERTS!**

You have already diverse expertise

→ You come from different fields & have different degrees

→ Many have already work experience,  
some have also research experience

→ Also plenty of other kind of experience  
(e.g. from your hobbies)

**WAT's IDEA: build on that expertise and strengthen  
it with WAT-specific expertise, together**



# STRENGTHENING YOUR EXPERTISE

Four important ways to build your expertise at WAT:

**1) WAT and other courses, of course 😊**

**2) Portfolio & mentoring process**

→ Reflecting and synthesizing your learning

**3) Group learning**

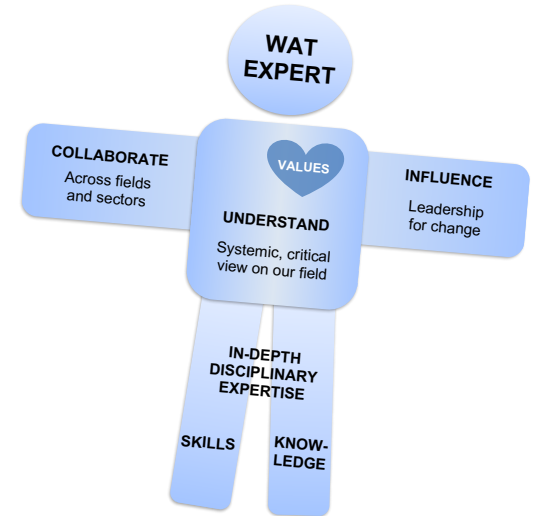
→ Most courses make use of group work activities

**4) You and your mindset**

→ Be ready to learn from each other

# How does this sound? Clear, confusing?

→ *Take a pair and discuss*



|  |  |  |
|--|--|--|
| <p><b>ADVANCED COURSES</b></p> <p>Select 45 credits across three study themes to create an individual specialisation, and strengthen it with 30 credits of elective courses and your Master's Thesis</p> | <p><b>WATER RESOURCES</b></p> <ul style="list-style-type: none"> <li>• Groundwater hydrology</li> <li>• Environmental hydraulics</li> <li>• Hydrological modelling</li> <li>• Surface water resources</li> </ul> <p><b>WATER &amp; DEVELOPMENT</b></p> <ul style="list-style-type: none"> <li>• Sustainable built environment             <ul style="list-style-type: none"> <li>• Sustainable Global Technologies SGT Studio (10 ECTS)</li> </ul> </li> <li>• Water and governance             <ul style="list-style-type: none"> <li>• Water and people in a changing world</li> </ul> </li> </ul> | <ul style="list-style-type: none"> <li>• WAT Project Course</li> <li>• WAT Special Course</li> </ul> <p><b>WATER &amp; WASTEWATER</b></p> <ul style="list-style-type: none"> <li>• Urban water systems</li> <li>• Design and management of water and wastewater networks</li> <li>• Physical and chemical treatment of water and waste</li> <li>• Modelling and control of treatment processes</li> <li>• Biological treatment of water and waste</li> </ul> |
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@AaltoWAT

Head of the Programme: Associate Professor Marko Keskinen  
 Planning Officer: Päivi Kauppinen  
 Contacts: [firstname.lastname@aalto.fi](mailto:firstname.lastname@aalto.fi)

August 2022

# EXPERTS, GET INTO YOUR GROUPS!

A key set of WAT expertise = **X** <sup>External experts</sup> + **A!** <sup>Aalto experts</sup>

- **IDEA:** to combine the expertise inside and outside Aalto, to share ideas, knowledge & skills + best practices

**HOW:** Make your **Expert Hat** based on your background:

**Yellow: coming from Aalto**

**Blue: coming from outside Aalto**

**Exchange student: white**



→ Write your name clearly to your hat!

# ***Introductions***

Before forming the groups, we'll help you to get to know each other a bit better

→ 3 min chat with your fellow student, changing the pairs every 3 minutes

With your pair, share 3 things:

1. Your name
2. Background
3. Interests

*Make sure to  
talk to hats of  
all colours*

You have just 3 minutes, so be clear and concise  
+ make sure both of you have the time to tell the 3 things!

# ***Forming the groups***

**TASK:** form six WAT groups of 3 experts,  
including **experts with both colours**  
(yellow, blue)

→ Add max. 1 exchange student per group

**HOW:** your choice

# ***It's your group!***

- This will be your first (but not only) peer-support group during your studies here at WAT:  
WAT-E1100 course group work also done in these groups
- Your task for this afternoon & tomorrow morning:  
get to know each other, and agree on how to present your group to others on Wed afternoon with a Group Presentation
  - Instructions in WAT-E1100 MyCourses: Orientation Days sub-page

***Questions? Comments?***

# Next: study tour in your groups

- Done through infopoints i.e. 'rastit', starting at 11.00
- Start with the infopoint that has your group number:  
Group 1 = infopoint 1 etc. Each infopoint lasts around 12 min.
- We'll finish around 12.30: after that lunch & afternoon's group work independently in Water Building or elsewhere

## STUDY TOUR: infopoints - Tuesday 29.8 @ 11.00-12.30

| <i>Theme + responsible persons</i>            | <i>Location (Water Building @ Tietotie 1E)</i> |
|---|--|
| 1) WAT Master's Programme (MARKO & MEERI)     | Coffee Room 247                                |
| 2) Water resources & hydraulics (TEEMU & CO)  | Lecture Hall 287                               |
| 3) Water & wastewater engineering (ANNA & co) | Laboratory (downstairs)                        |
| 4) Water & development (MATTI & CO)           | WDRG Corner Room 294                           |
| 5) Akva student association                   | Meeting Room 280                               |
| 6) Break with your group                      | Your decision :)                               |



Pick poster paper, radar charts and pens from this room before leaving for lunch

→ Alternatively, you can come back here for the afternoon (and you are anyway here then on Wed morning to finalise the poster)

# WAT ORIENTATION DAYS 29.-30.8.2023

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25.8.2023

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|  | Lunch break  | Lunch break   |
| <b>Afternoon</b>   | <p><b>INDEPENDENT GROUP WORK</b></p> <p>-&gt; Each group independently in your chosen location; aim to get to know each other and create a Group Poster</p> <p style="text-align: center;"><b>Tasks for group work:</b></p> <ol style="list-style-type: none"> <li>1) Introductions: each student's background</li> <li>2) Recognition of your existing knowledge &amp; skills</li> <li>3) Expectations from the Master's studies + career plans</li> </ol> <p>-&gt; These together = Group Poster</p> | <p><b>13.00- INTRO TO WAT &amp; STUDENTS</b></p> <p style="text-align: center;"><b>Intro to WAT Programme, Part 2</b></p> <p style="text-align: center;">- Personal Learning Portfolio Process</p> <p style="text-align: center;"><b>Coffee break</b></p> <p style="text-align: center;"><b>14.30- Group Poster presentations</b></p> |
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# ***WATER BUILDING & INFOPOINTS***

Laboratory  
(enter outside)

Break preferably  
outside 😊



***Questions? Comments?***



*Welcome to WAT!*

*Master's Programme in Water and Environmental Engineering*

*WAT Wednesday 30.8.2023*

# Entering Water Building

Students can access Water Building by using HSL card or Aalto Access Token

→ Please get the access as soon as possible, to avoid ringing the door bell!



- [Access control with HSL card | Aalto University](https://www.aalto.fi/en/services/access-control-with-hsl-card)

<https://www.aalto.fi/en/services/access-control-with-hsl-card>

- [How to get an access token and access rights](https://www.aalto.fi/en/services/how-to-get-an-access-token-and-access-rights)

<https://www.aalto.fi/en/services/how-to-get-an-access-token-and-access-rights>

→ Collect an access token from Väre or Undergraduate Centre lobby services

You have access from the main door from 7:45 until 15:30.  
(laboratory requires staff access)

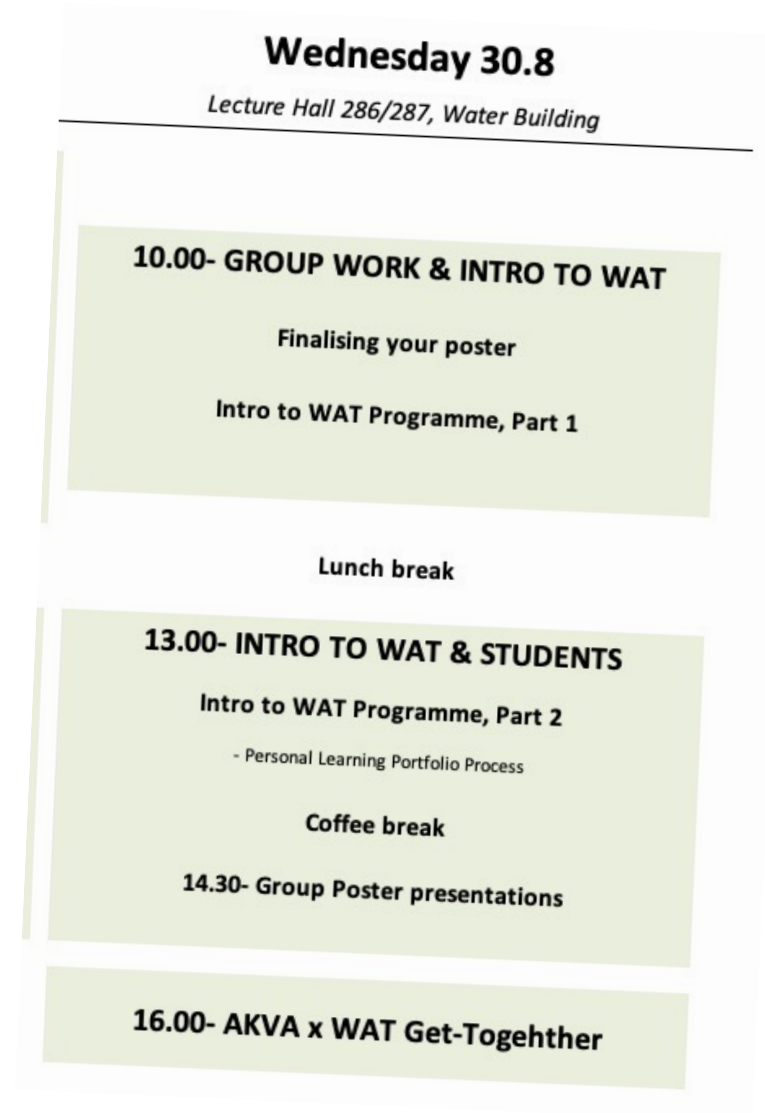
You can register your HSL card or Token at: <https://idcard.aalto.fi>

# WAT Wednesday

Today's tasks:

- 0) Get your posters ready
- 1) Talk about WAT
- 2) Talk about you and your expertise + expectations during Poster Walk
- 3) Mingle more freely during WAT & Akva Get-together 😊

Remember to send you group photo to Marko





# **WAT? Introduction to our Master's Programme in Water and Environmental Engineering, Part 1**

- Competences & ILOs
- WAT course structure & schedule
- WAT-E1100 course schedule



# WAT?



*'Ensuring a sustainable & functioning society'*  
**MASTER'S PROGRAMME IN**  
**WATER & ENVIRONMENTAL ENGINEERING**

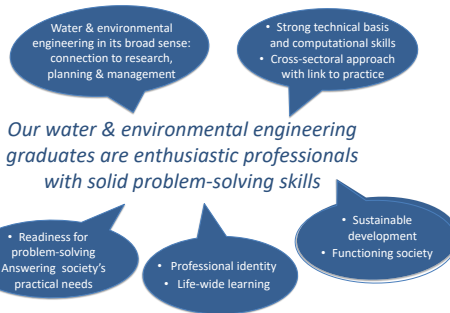
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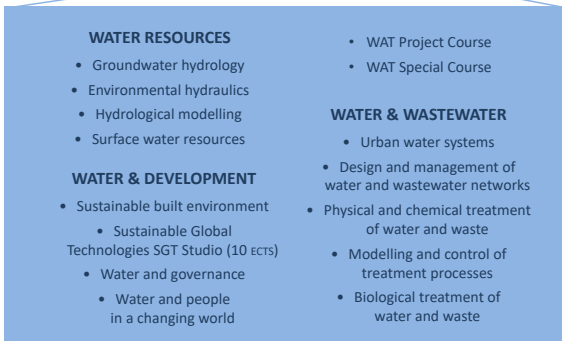
Student-centered learning: group work, personal portfolio, mentoring



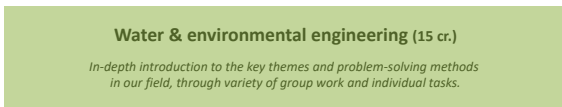
*Our water & environmental engineering graduates are enthusiastic professionals with solid problem-solving skills*



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**COMMON COURSE**  
 Solid foundation for all our graduates



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August 2022

Strong technical basis, combined with understanding of broader societal context.

Three study themes, corresponding our research themes.

Strong emphasis on project and interaction skills.

→ Programme planned with the help of extensive surveys to our alumni and stakeholders on our field's future needs: idea to provide you with right kind of competence

Check poster from MyCourses





# WAT competences

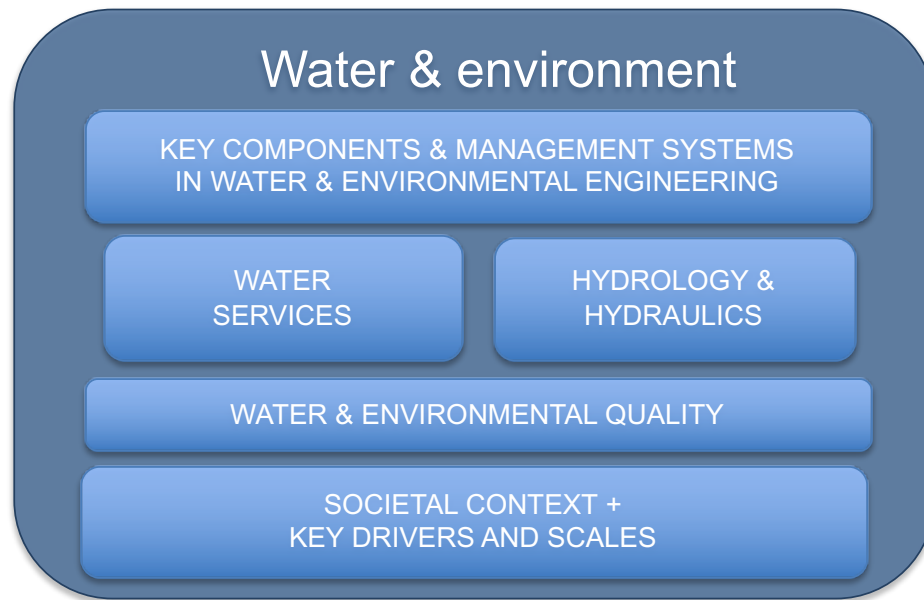
## **What are these?**

→ Hint: expertise mapping structured around those

Key knowledge, skill and identity competences and related learning outcomes (ILOs) that our WAT programme aims to provide you with

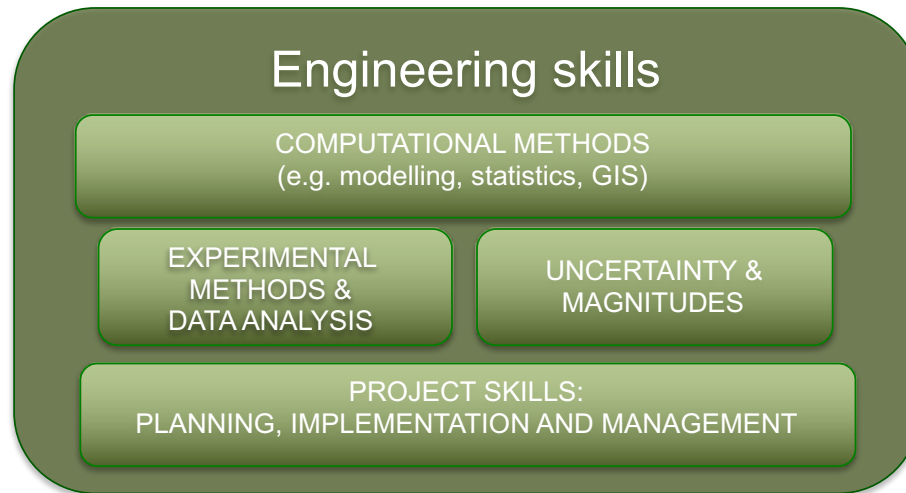
- Our view on the essence of water & environmental engineering
- Our 'quality promise', to you and our field
- Remind you about what the entire programme is about (when e.g. planning your advanced courses)

*But remember: half of the credits during your studies come from elective courses and Master's Thesis: allows individual specialization also beyond our programme and its competences*



WAT  
competences:  
knowledge

# WAT competences: skills



# WAT competences: identity

DESIRE FOR  
PROBLEM-SOLVING

COMPREHENSIVE &  
CRITICAL THINKING

MULTIDISCIPLINARY  
& -SECTORAL VIEW

INTERACTION &  
TEAM WORK

SUSTAINABLE &  
FUNCTIONING SOCIETY

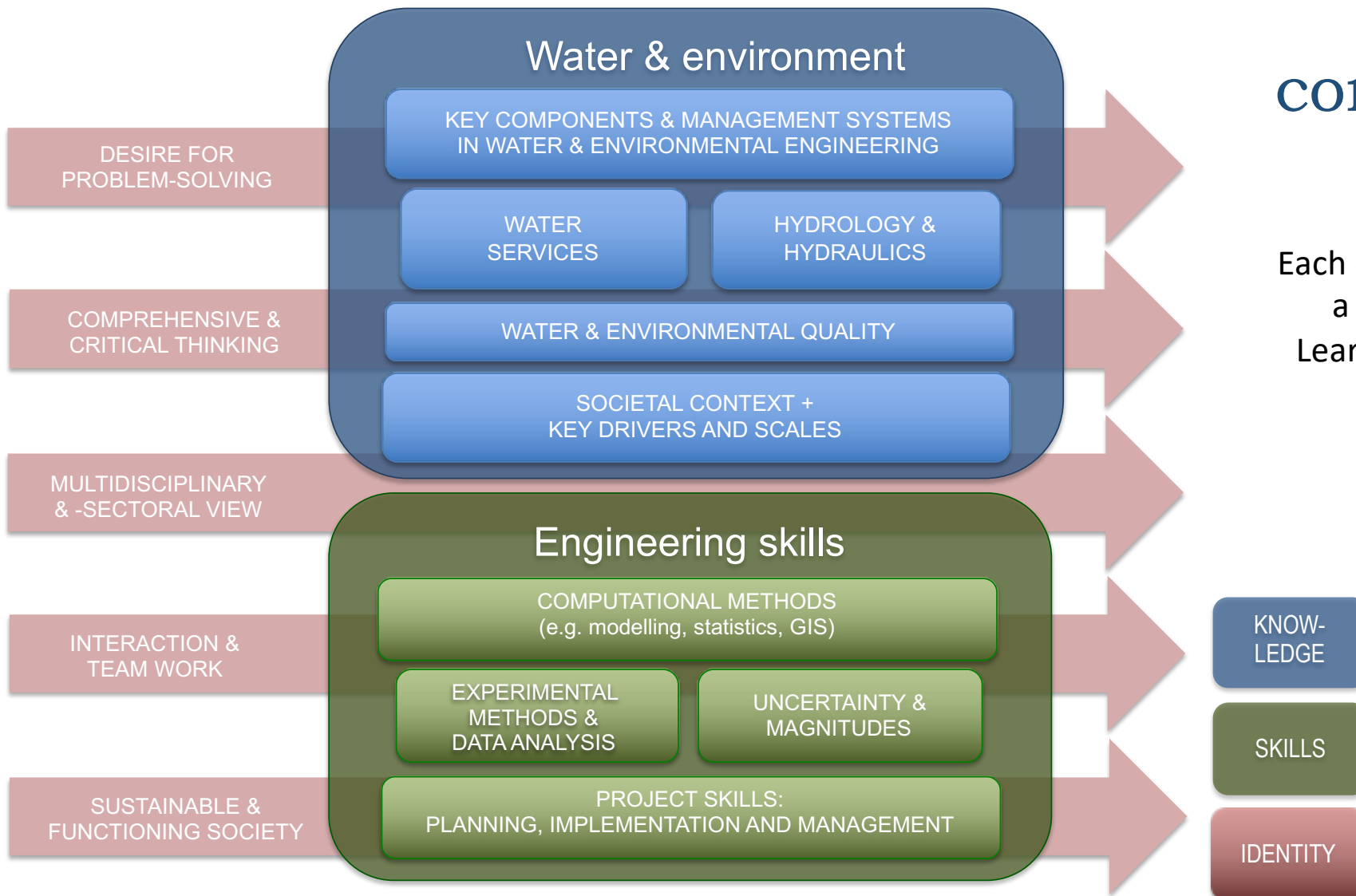
What is the difference  
between skills &  
identity (skills)?

→ Skills are specific and  
come in many forms  
(and thus can also be  
outsourced: not everyone  
has to be a GIS wizard)

→ But identity skills  
everyone should have:  
general working-  
life skills

# WAT competences

Each competence also has  
a specific Intended  
Learning Outcome (ILO)



## ILOs: knowledge

Our graduate is able to:

- 1) Recognise the key **components and management systems in water and environmental engineering**, and understand the relevance of **sustainability** for the field
- 2) Understand the principles of the **hydrological cycle** and movements of water in natural and built environments
- 3) Define and differentiate the main sections of **water services and environmental services**, with focus on the treatment of water and waste water
- 4) Understand the key principles of **water and environmental quality**
- 5) Identify the **societal context** relevant to the water and environment, and comprehend the different **scales** and key **drivers** applicable to water and environmental engineering

KNOW-  
LEDGE

## ILOs: skills

SKILLS

Our graduate is able to:

- 1) Apply **key computational methods** related to water and environmental engineering
- 2) Understand relevant **experimental methods and data analysis** processes, including the use of data archives
- 3) Comprehend **uncertainty and different orders of magnitude** related to the measurements, data analysis and modeling
- 4) Recognise and analyse the main components of water- and environment-related **planning, implementation and management processes, and use related basic project skills**

# ILOs: identity

(i.e. general working-life skills)

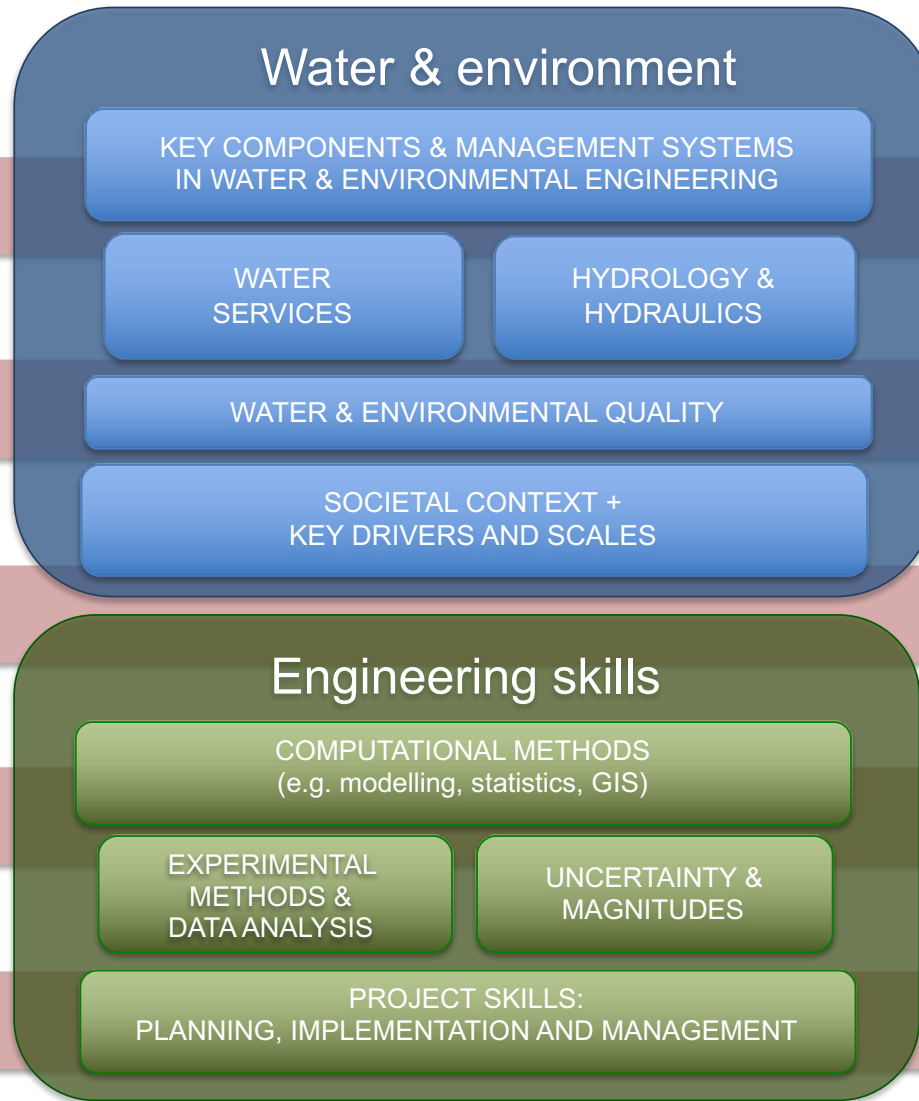
IDENTITY

Our graduate:

- 1) Is motivated and has a desire for **problem-solving**
- 2) Thinks in a **comprehensive and critical manner** about his/her work and field
- 3) Maintains a **multidisciplinary and -sectoral view** related to water and environmental engineering
- 4) Is able to work as a part of a team and has relevant skills for **interaction and communication**
- 5) Promotes a **sustainable and functioning society**



# WAT competences



DESIRE FOR PROBLEM-SOLVING

COMPREHENSIVE & CRITICAL THINKING

MULTIDISCIPLINARY & -SECTORAL VIEW

INTERACTION & TEAM WORK

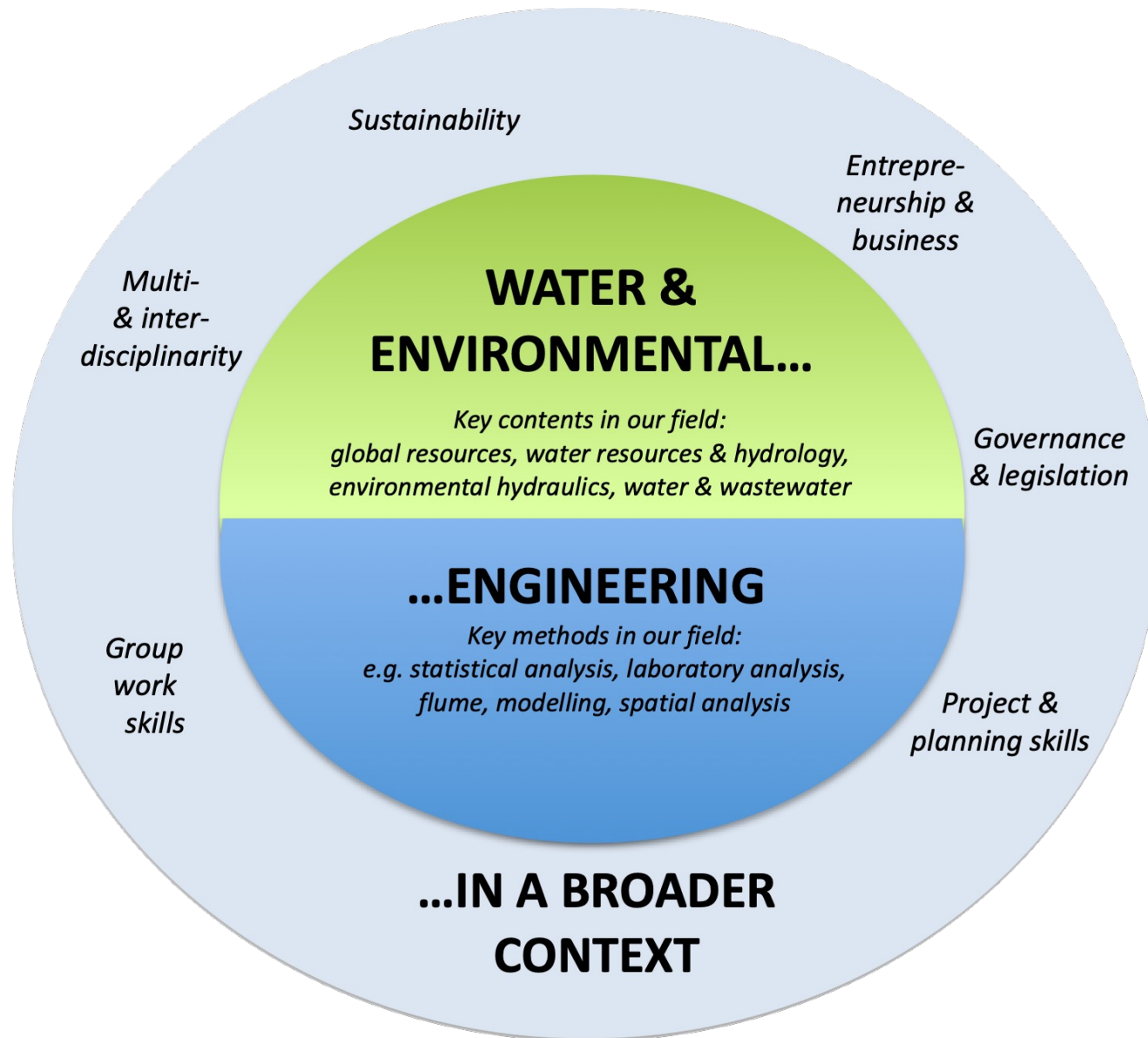
SUSTAINABLE & FUNCTIONING SOCIETY

KNOWLEDGE

SKILLS

IDENTITY

# WAT?



Our 'WAT doughnut' seeks to combine our field and its key competences with a broader context that our field is located

# WAT EXPERT

What this all means to you?

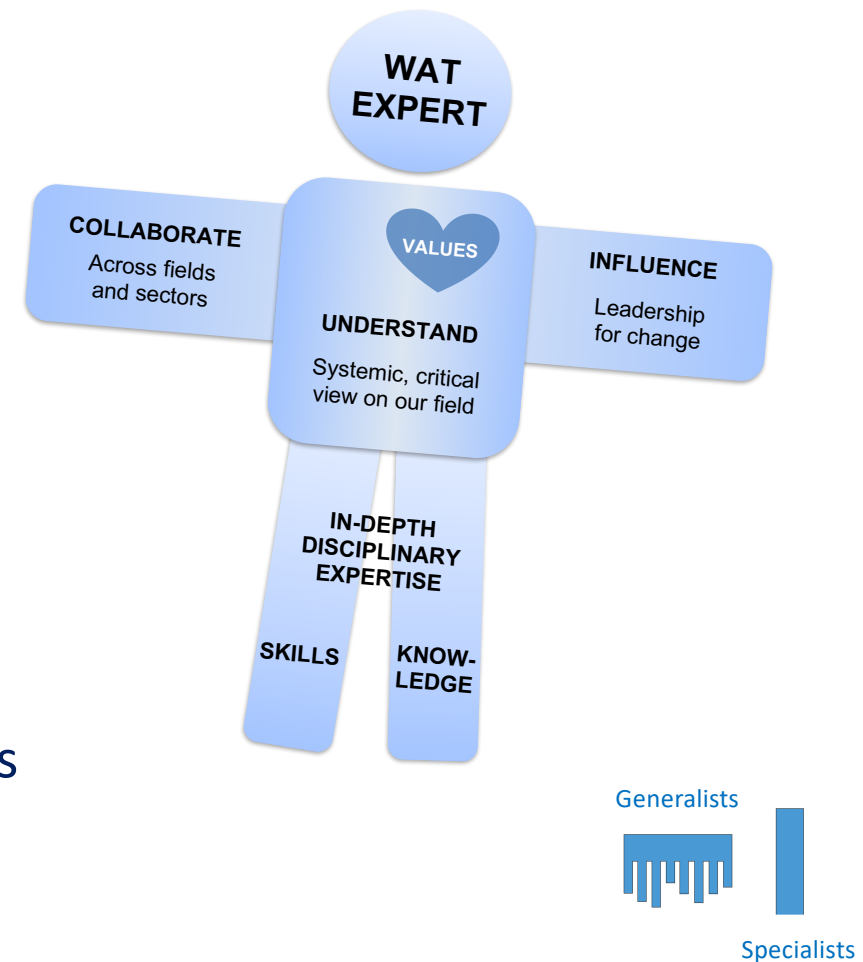
→ Our programme aims to provide you with a **T-shaped expert profile**

Combination of in-depth disciplinary expertise (legs), broader understanding (body) and capacity for collaboration and influence (hands)

→ Legs = key contents in our courses

→ Arms & body = cross-cutters + through electives

→ Heart (values) = you build yourself

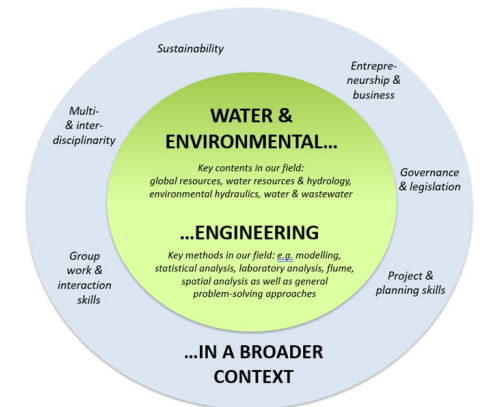


***Questions? Comments?***

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# Essential elements

...for 'ensuring a functioning and sustainable society'



# Essential elements

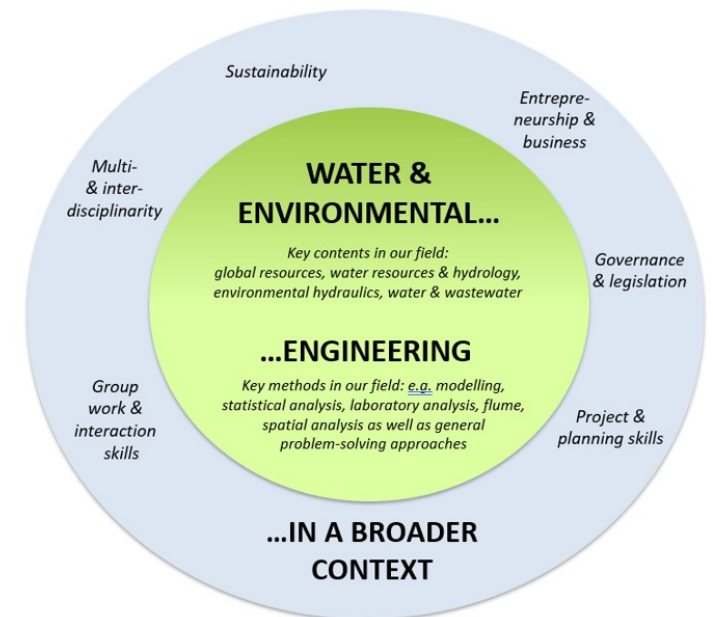
...for 'ensuring a functioning and sustainable society'

3+1 critical elements for our WAT Master's Programme

→ Hint1: all start with S

→ Hint2: all link to the WAT context

- Sustainability (the aim & crosscutter)
  - Society (the context)
  - Systems (the way to think)
- Science (the foundation of our teaching)



# SUSTAINABILITY

Sustainability = a state of a **system** (where system maintains its critical functions under change)

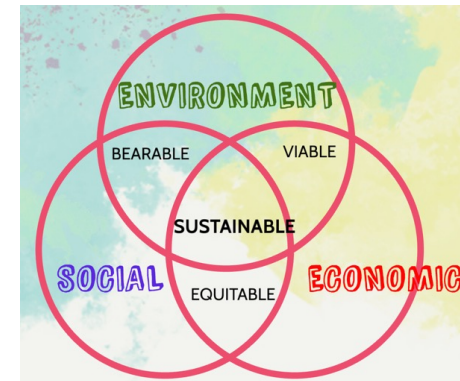
*Sustainability is the ability of a human, natural or mixed system to withstand or adapt to endogenous or exogenous change indefinitely.*

*Sustainable development is therefore a pathway of deliberate change and improvement which maintains or enhances this attribute of the system, while answering the needs of the present population.*

*Dovers & Handmer 1992*

*“Sustainable development ... meets the needs of the present without compromising the ability of future generations to meet their own needs.”*

*Our Common Future i.e. Brundtland Report 1997*



# SOCIETY

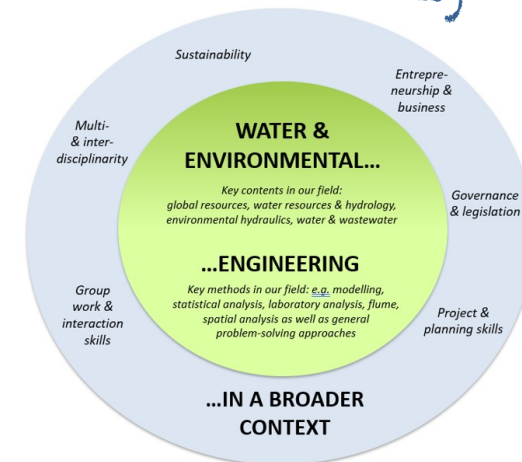
”A large group of people who live together in an organized way, making decisions about how to do things and sharing the work that needs to be done.”

*Cambridge Dictionary*

Society forms the main **system** for water and environmental engineering: we are at the society’s service!

→ Yet, society has different scales: sometimes it’s about a city, sometimes about a nation, sometimes about entire globe

...for 'ensuring a functioning and sustainable society'



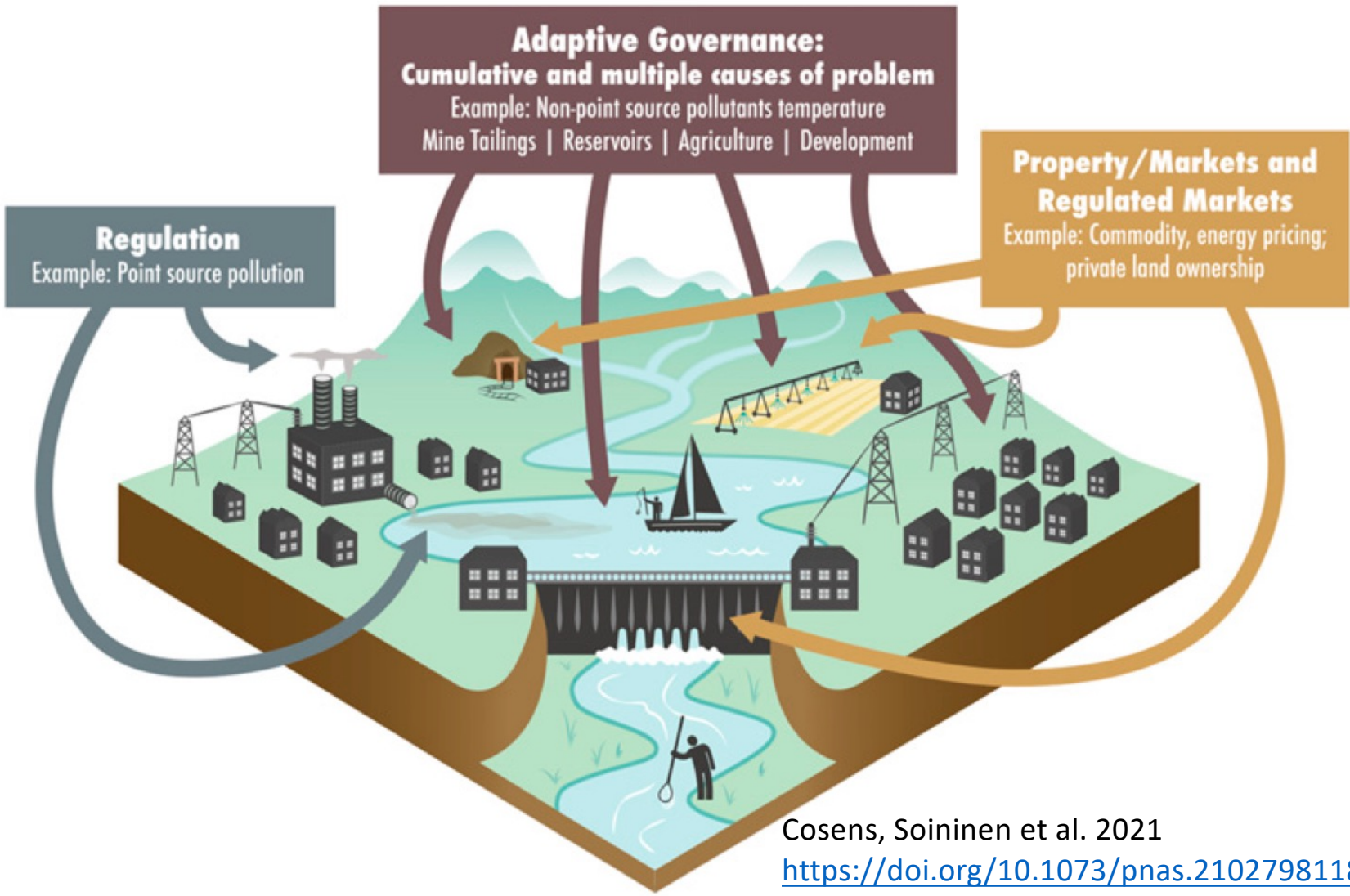
*Light blue doughnut = society*



**Adaptive Governance:**  
**Cumulative and multiple causes of problem**  
Example: Non-point source pollutants temperature  
Mine Tailings | Reservoirs | Agriculture | Development

**Regulation**  
Example: Point source pollution

**Property/Markets and Regulated Markets**  
Example: Commodity, energy pricing;  
private land ownership



Society arranges itself through GOVERNANCE

→ Different possibilities for water-related governance

# SYSTEMS

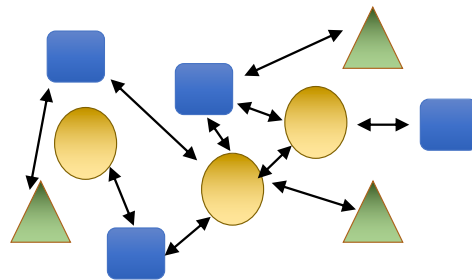
A system is a set of things – people, cells, molecules, or whatever – interconnected in such a way that they produce their own pattern of behavior over time.

Meadows, D.: Thinking in Systems, a Primer. 2008.

→ System includes but also excludes:  
**system boundaries** therefore very critical to understand and describe

*Confusion and disagreement often because we talk about different systems (or their scales)*

SYSTEM ELEMENTS + THEIR INTERACTION = SYSTEM'S PURPOSE

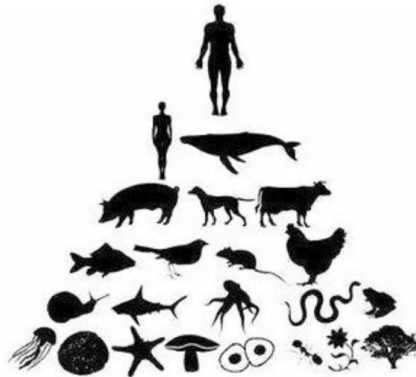


*(e.g. functioning water supply, designing new area, national security, sustainability)*

# SYSTEMS

<http://glancesideways.com/2012/10/progression-and-conceptual-adjustment/>

Man at the top,  
world as a resource



The dominant  
culture of our time

Food production: industrial  
scale, with aim to maximum  
economical profit

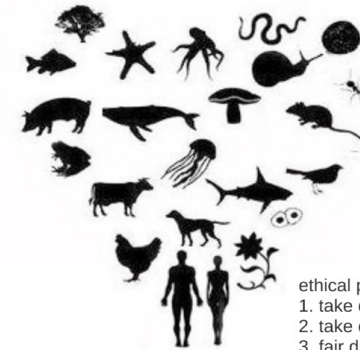
Complex, connected  
web of life - mutualism



Many indigenous  
cultures

Food production:  
interconnected web –  
energy and nutrition cycles

Regenerative  
worldview



Regenerative design,  
e.g. Permaculture

Food production: while producing  
food for humans, we should heal  
damaged natural systems

ethical principles:  
1. take care of the planet  
2. take care of people  
3. fair division of surplus

Also differing views on how  
systems work and interact,  
and what is their purpose

# SCIENCE

“A systematic way to study world”

- Being university, our teaching is science-based
  - Our teaching organized around our research themes
- ‘Method’ has an important role in scientific study
  - Allows the study of phenomena that are too complex to understand just by thinking
  - WAT Programme aims to provide you with a set of rigorous, science-based methods to be used during your career

# Essential elements

...for 'ensuring a functioning and sustainable society'

Note: none of these elements has its own specific course

→ Instead, they cut through our teaching  
(some courses emphasise these more than others)

Yet, important to consider and understand:

help you to put your learning into a broader perspective

35 35 35 35 35  
35 35 35 35 35

**Questions? Comments?**

# WAT COURSE STRUCTURE

Unique course structure with only 15 credits for common studies:  
WAT-E1100 course (i.e. 'WAT course') during Period I

→ But it means intensive studying, then!

Leaves rest of your major i.e. 45 credits to your advanced courses:  
you can select these courses as you wish from our selection

→ Complement with 30 credits of elective studies & Thesis

→ More freedom and possibilities to  
study themes you are interested in



# *WAT COURSES: three themes*

Three key study themes, corresponding to our research themes:  
Water Resources Management and Environmental Hydraulics,  
Water and Wastewater Engineering, and Water and Development

→ All have courses in Periods II, III, IV and V

→ Two general advanced courses: WAT Project Course (V period, 5 cr.)  
and WAT Special Course (any period, 1-5 cr.)

*Note: different study themes have a bit differing emphases:*

*WAT-E1100 Course, course descriptions and also  
your mentor help to figure these out*



## WATER RESOURCES

- Groundwater hydrology
- Environmental hydraulics
  - Hydrological modelling
  - Surface water resources

## WATER & DEVELOPMENT

- Sustainable built environment
  - Sustainable Global Technologies SGT Studio (10 ECTS)
  - Water and governance
  - Water and people in a changing world

- WAT Project Course
- WAT Special Course

## WATER & WASTEWATER

- Urban water systems
- Design and management of water and wastewater networks
- Physical and chemical treatment of water and waste
  - Modelling and control of treatment processes
  - Biological treatment of water and waste

COMMON  
COURSE  
15 ECTS

ADVANCED  
COURSES  
45 ECTS

MAJOR 60 ECTS

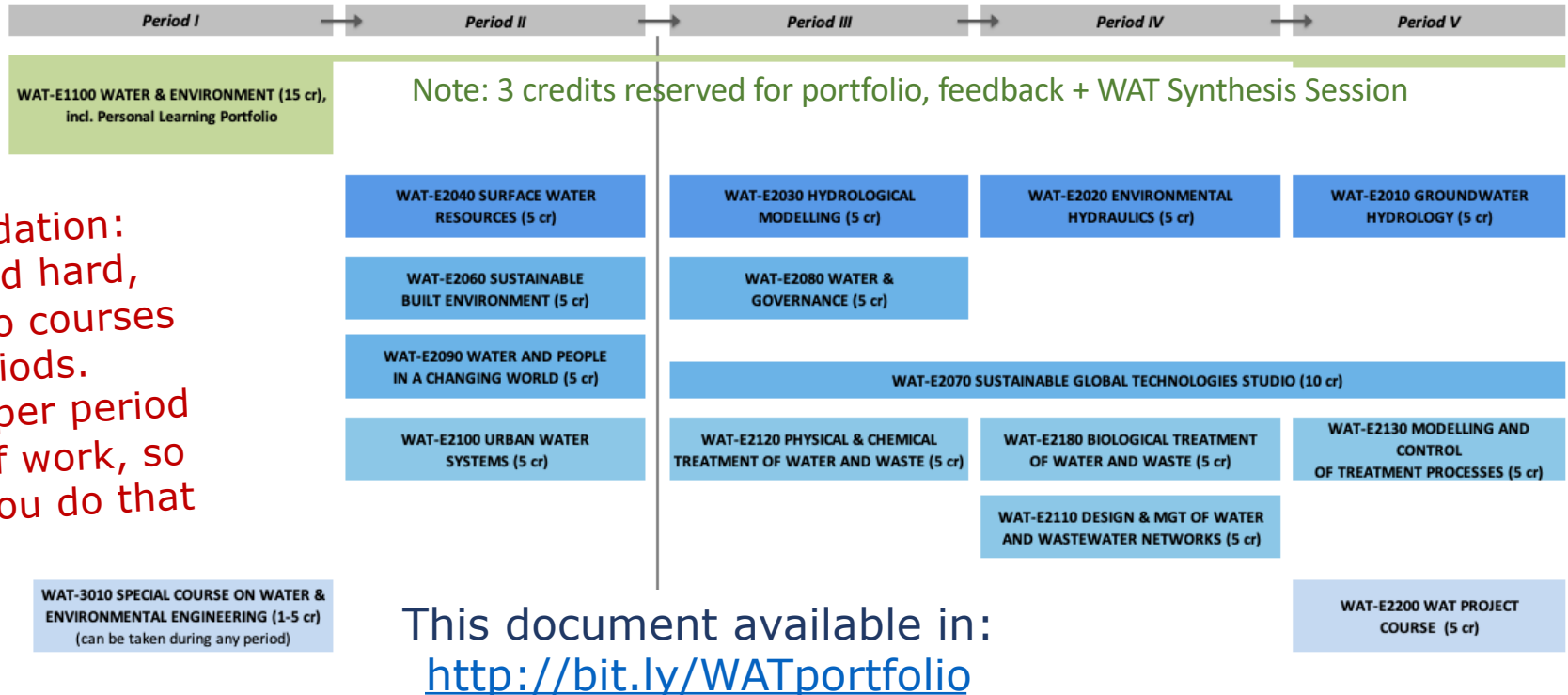
## Water & environmental engineering (15 cr.)

*In-depth introduction to the key themes and problem-solving methods in our field, through variety of group work and individual tasks.*

# Master's Programme in Water and Environmental Engineering (WAT)

## COURSE TIMETABLE FOR THE 1st YEAR

10.8.2022



Our recommendation: study first period hard, and then take two courses for other periods. → Three courses per period requires plenty of work, so plan carefully if you do that

The 60 credit Major consists of 15 credit common course (WAT-E1100) as well as of 45 credits of advanced courses that can be selected from the 15 courses available above.

The advanced courses include three themes: the students can take all courses in a given theme or create their own course mix based on their interests. The personal learning portfolio helps in the course selection.

The thickness of the course is indicative for credits / period.

### LEGEND

|                        |  |                               |
|------------------------|--|-------------------------------|
| <b>COMMON COURSE</b>   | <b>GENERAL ADVANCED COURSE</b><br>(not related to any study theme) |                               |
| <b>WATER RESOURCES</b> | <b>WATER &amp; DEVELOPMENT</b>                                     | <b>WATER &amp; WASTEWATER</b> |

# WAT Master's Programme: Weekly timetable for advanced courses

19.10.2022

|           |             | Mon  | Tue           | Wed           | Thu           | Fri           |   |
|-----------|-------------|--|---------------|---------------|---------------|---------------|---|
| Morning   | 9.00-12.00  | Course slot 1  | Course slot 2 | Course slot 3 | Course slot 4 | Course slot 5 | The morning sessions can start earlier in some courses  |
|           | LUNCH       | Advanced courses planned so that you can take any course combination without major overlaps<br>→ This document available in: <a href="http://bit.ly/WATportfolio">http://bit.ly/WATportfolio</a> |               |               |               |               |   |
| Afternoon | 13.00-16.00 | Course slot 3  | Course slot 4 | Course slot 5 | Course slot 1 | Course slot 2 | The afternoon sessions can finish later in some courses |

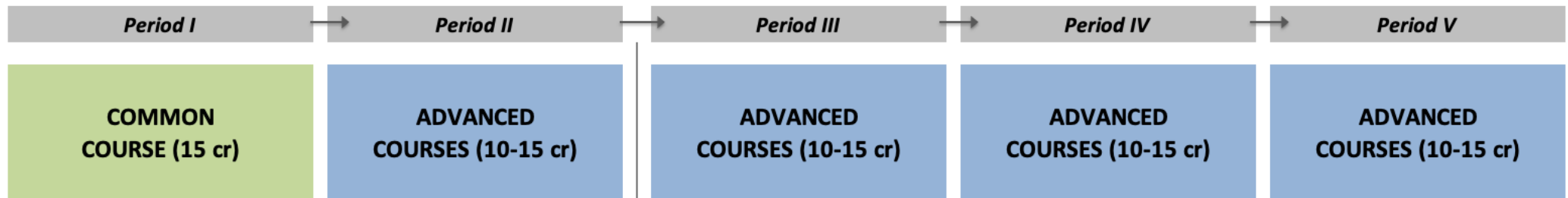
|                      | Period II   | Period III   | Period IV   | Period V   | Exceptions  |
|----------------------|---|--|---|--|---|
| <b>Course slot 1</b> | -   | <b>WAT-E2030</b><br>Hydrological Modelling, HARRI          | <b>WAT-E2110</b><br>Design & Management of..., RIKU | <b>WAT-E2010</b><br>Groundwater hydrology, TEEMU   |   |
| <b>Course slot 2</b> | <b>WAT-E2040</b><br>Surface Water Resources, ELIISA *         | <b>WAT-E2080</b><br>Water & Governance, MARKO *            | -   | -  | * WAT-E2040 sessions: Tue morning & Thu afternoon<br>* WAT-E2080 sessions: Tue morning & Thu morning<br>* WAT-E2010 sessions: Tue morning & Thu afternoon |
| <b>Course slot 3</b> | <b>WAT-E2060</b><br>Sustainable Built Environment, OLLI *     | <b>WAT-E2070</b><br>SGT studio, MATLEENA *                 | <b>WAT-E2070</b><br>SGT studio, MATLEENA *          | <b>WAT-E2070</b><br>SGT studio, MATLEENA *         | * WAT-E2060: sessions on Mon morning & Wed morning<br>* WAT-E2070: some sessions in other course slots  |
| <b>Course slot 4</b> | <b>WAT-E2090</b><br>Water & people in a changing world, MATTI | -  | <b>WAT-E2180</b><br>Biological Treatment..., ANNA   | <b>WAT-E2200</b><br>WAT Project Course, MEERI      |   |
| <b>Course slot 5</b> | <b>WAT-E2100</b><br>Urban Water Systems, RIKU                 | <b>WAT-E2120</b><br>Physical & Chemical Treatment..., ANNA | <b>WAT-E2020</b><br>Environmental hydraulics, JUHA  | <b>WAT-E2130</b><br>Modelling and control..., ANNA |   |

*Note that these are general slots for key Contact Sessions: courses will include also assignments etc.  
Also note that the times are indicative only: check final Contact Session times from MyCourses!*

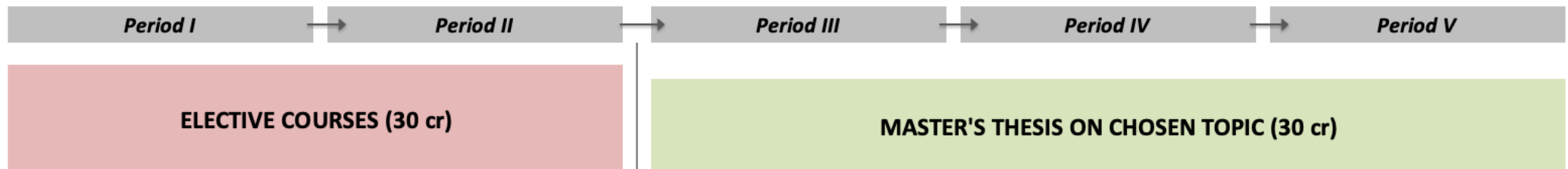
## Master Programme on Water and Environmental Engineering

# INDICATIVE COURSE TIMETABLE FOR 1st & 2nd YEAR

### FIRST YEAR (60 cr major)



### SECOND YEAR (30 cr elective + 30 cr Master's Thesis)



Studies done at Aalto and/or some other university  
-> the autumn term is the ideal option for student exchange

**Leave Aalto (but do come back)!**

Our programme structure provides you a perfect chance to go for study exchange during 2nd year: make use of it!

# ***Pair discussion***

- How does WAT and our approach sound?  
Any surprises?
  - How do our courses sound?
- Do you already have some ideas on what advanced courses to take?
  - Anything unclear?

# *...and yes: we start with a bang!*

WAT-E1100 course requires full-time studying from Monday morning till Friday afternoon

- Not all of it Contact Sessions, but part of it group work and part individual studying
- Clear weekly structure for you to follow

AIMS:

- 1) Learning to know our research and related teaching
  - 2) Learning our field's basic knowledge and skills
  - 3) Learning to know each other
- Helps you to plan your advanced courses, too!

KIND OF 'WAT SCHOOL'  
→ Period II starts then  
the WAT university 😊

# **WAT-E1100 course i.e. WAT course**

Organised through 6 thematic weeks + a synthesis week

- Each week has a specific theme that links to both our research and teaching
- Each week has also a specific skill (but note that skill is general to our field, and not only linked to the weekly theme)
- Some weeks have also broader context sessions



# **WAT course: themes...**

## **WEEKLY THEMES**

- 1) Water & development MATTI & OLLI**
- 2) Hydrology & water resources management HARRI**
- 3) Water & wastewater engineering ANNA**
- 4) Water and environmental quality ILKKA**
- 5) Environmental hydraulics ELIISA & JUHA**
- 6) Env. management and sustainability MEERI**
- 7) Synthesis MARKO**

# ...and methods + contexts

## WEEKLY THEMES

- 1) Water & development MATTI & OLLI
- 2) Hydrology & water resources management HARRI
- 3) Water & wastewater engineering ANNA
- 4) Water and environmental quality ILKKA
- 5) Environmental hydraulics ELIISA & JUHA
- 6) Env. management and sustainability MEERI
- 7) Synthesis MARKO

## WEEKLY METHODS

- 1) Statistical analysis
- 2) Simulation modelling
- 3) Spatial analysis
- 4) Laboratory analysis
- 5) Hydraulic flume & modelling
- 6) Life Cycle Assessment LCA

## WAT CONTEXTS

- Team roles & group work (Week 1)
- Entrepreneurship & business (Week 3)
- Governance + science (Week 7)

# WAT-E1100 course

## WEEKLY THEMES

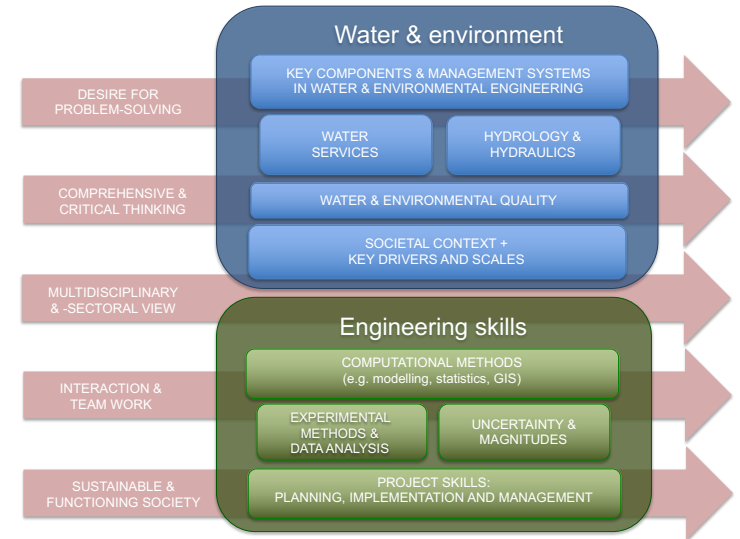
- |   |   |
|---|---|
| 1) Water & development MATTI & OLLI             | 4) Water and environmental quality ILKKA    |
| 2) Hydrology & water resources management HARRI | 5) Environmental hydraulics ELIISA & JUHA   |
| 3) Water & wastewater engineering ANNA          | 6) Env. management and sustainability MEERI |
|   | 7) Synthesis MARKO                          |

## WEEKLY METHODS

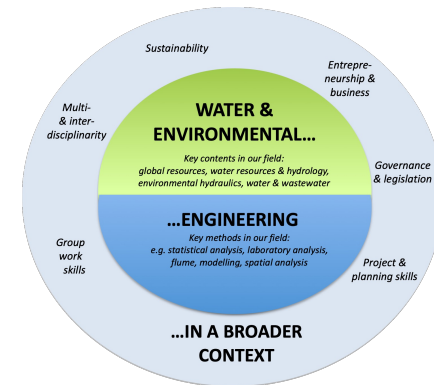
- |                         |                                |
|-------------------------|--------------------------------|
| 1) Statistical analysis | 4) Laboratory analysis         |
| 2) Simulation modelling | 5) Hydraulic flume & modelling |
| 3) Spatial analysis     | 6) Life Cycle Assessment LCA   |

## WAT CONTEXTS

- |  |                                 |
|--|---------------------------------|
| - Team roles & group work (Week 1)     | - Governance + science (Week 7) |
| - Entrepreneurship & business (Week 3) |                                 |



This all link together! 😊  
 → More on Monday



Weekly timetable for WAT-E1100 course available in MyCourses under 'Course structure and practicalities' sub-page

→ But likely to change: check the weekly MyCourses sub-page for final, detailed timetable!

| WEEKLY TIMETABLE: WAT-E1100 Water and Environmental Engineering        |  |   |  |  |   |
|--|--|---|--|--|---|
| <b>1st WEEK</b>  |  |   |  |  |   |
| <b>Water &amp; development (Matti, Olli, Matleena) + Intro (Marko)</b> |  |   |  |  |   |
|  | Mon 4.9.   | Tue 5.9.  | Wed 6.9.                                 | Thu 7.9.                                   | Fri 8.9.  |
| Morning (9.00- )   | CONTACT SESSION: Intro + group work practices [Marko]                                    | CONTACT SESSION: sustainability, global resources + SGT cases [Olli & co] | THEMATIC TASK: individual / group work   | WEEKLY EXERCISE: statistical analysis      | WEEKLY EXERCISE: Individual / group work          |
| Afternoon (-4pm)   | <i>DRAFT SHOWING THE OVERALL STRUCTURE: FINAL SCHEDULE IN MYCOURSES' WEEKLY SUB-PAGE</i> |   |  |  |   |
|  | CONTACT SESSION: global water issues [Matti]   | AALTO DAY ONE: no contact sessions  | THEMATIC TASK: SWOT wrap-up [Matti & co] | WEEKLY EXERCISE: Individual / group work   | WEEKLY EXERCISE: statistical analysis             |
| <b>2nd WEEK</b>  |  |   |  |  |   |
| <b>Hydrology &amp; water resources management (Harri &amp; co)</b>     |  |   |  |  |   |
|  | Mon 11.9.  | Tue 12.9.   | Wed 13.9.                                | Thu 14.9.                                  | Fri 15.9.   |
| Morning (9.00- )   | CONTACT SESSION: water resources management & hydrology [Harri & co]                     | THEMATIC TASK: HBV modelling [Harri]                                      | WEEKLY EXERCISE: modelling               | WEEKLY EXERCISE: Individual / group work   | THEMATIC TASK: individual / group work            |
| Afternoon (-4pm)   | <i>DRAFT SHOWING THE OVERALL STRUCTURE: FINAL SCHEDULE IN MYCOURSES' WEEKLY SUB-PAGE</i> |   |  |  |   |
|  | CONTACT SESSION: water resources management & hydrology [Harri & co]                     | THEMATIC TASK: individual / group work                                    | WEEKLY EXERCISE: modelling               | WEEKLY EXERCISE: modelling                 | THEMATIC TASK: HBV wrap-up [Harri]                |
| <b>3rd WEEK</b>  |  |   |  |  |   |
| <b>Water &amp; wastewater engineering (Anna)</b>                       |  |   |  |  |   |
|  | Mon 18.9.  | Tue 19.9.   | Wed 20.9.                                | Thu 21.9.                                  | Fri 22.9.   |
| Morning (9.00- )   | CONTACT SESSION: water & wastewater engineering [Anna]                                   | CONTACT SESSION + TASK: ENTREPRENEURSHIP by Aalto Ventures Programme AVP  | WEEKLY EXERCISE: spatial analysis & GIS  | WEEKLY EXERCISE: Individual / group work   | THEMATIC TASK ON ENTREPRENEURSHIP: pitch clinic   |
| Afternoon (-4pm)   | <i>DRAFT SHOWING THE OVERALL STRUCTURE: FINAL SCHEDULE IN MYCOURSES' WEEKLY SUB-PAGE</i> |   |  |  |   |
|  | CONTACT SESSION: water and wastewater engineering [Harri M.] + GIS intro [Teemu]         | THEMATIC TASK on ENTREPRENEURSHIP: group work / interviews                | ENTREPRENEURSHIP SESSION by AVP          | ENTREPRENEURSHIP: introduction to pitching | ENTREPRENEURSHIP PRESENTATIONS + WRAP-UP with AVP |

|  |  |  |   |   |   |
|--|--|--|---|---|---|
| <b>4th WEEK</b>  |  |  |   |   |   |
| <b>Water &amp; environmental quality (Ilkka)</b>             |  |  |   |   |   |
|  | Mon 25.9.  | Tue 26.9.  | Wed 27.9.<br><i>Starting at 8.00</i>  | Thu 28.9.<br><i>Starting at 8.00</i>  | Fri 29.9.   |
| Morning (9.00- )   | CONTACT SESSION + TASK: water & environmental quality [Ilkka & co]                           | WEEKLY EXERCISE: introduction to laboratory work       | WEEKLY EXERCISE: laboratory work & analysis (Groups 3-5)  | WEEKLY EXERCISE: laboratory work & analysis (Groups 1-2)                        | WEEKLY EXERCISE: time to prepare the presentations  |
| Afternoon (9.00- )   | <i>DRAFT SHOWING THE OVERALL STRUCTURE: FINAL SCHEDULE IN MYCOURSES' WEEKLY SUB-PAGE</i>     |  |   |   |   |
|  | Time to read for the home exam: individual work  | WEEKLY EXERCISE: laboratory work & analysis (Group 6)  | WEEKLY EXERCISE: laboratory work & analysis (Groups 3-5)  | WEEKLY EXERCISE: laboratory work & analysis (Groups 1-2)                        | TASK & WEEKLY EXERCISE WRAP-UP  |
| <b>5th WEEK</b>  |  |  |   |   |   |
| <b>Environmental hydraulics (Elisa &amp; Juha)</b>           |  |  |   |   |   |
|  | Mon 2.10.  | Tue 3.10.  | Wed 4.10.   | Thu 5.10.   | Fri 6.10.   |
| Morning (9.00-12:00)   | CONTACT SESSION: Environmental hydraulics & hydro-environmental engineering solutions [Juha] | THEMATIC TASK: EHL flume measurements in groups [Juha] | CONTACT SESSION: lecture and group work (hydraulic modelling) [Elisa]   | Independent work: weekly exercise (HEC-RAS model). Help-desk at 10-11 am [Erik] | Independent work time: Work on weekly exercise (HEC-RAS model)  |
| Afternoon (13:00-16:00)                                      | <i>DRAFT SHOWING THE OVERALL STRUCTURE: FINAL SCHEDULE IN MYCOURSES' WEEKLY SUB-PAGE</i>     |  |   |   |   |
|  | THEMATIC TASK: EHL flume experimental research intro [Juha]                                  | THEMATIC TASK: flume analysis & reporting by groups    | WEEKLY EXERCISE: [Erik] HEC-RAS model application, instructions and task starts                                 | Independent work: Weekly exercise (HEC-RAS model). Help-desk at 1-2 pm [Erik]   | CONTACT SESSION: lecture and wrap-up [results of the task] [Elisa & Erik]                                       |
| <b>6th WEEK</b>  |  |  |   |   |   |
| <b>Environmental management &amp; sustainability (Meeri)</b> |  |  |   |   |   |
|  | Mon 9.10.  | Tue 10.10.   | Wed 11.10.  | Thu 12.10.  | Fri 13.10.  |
| Morning (9.00- )   | WEEKLY EXERCISE: Life Cycle Assessment   | WEEKLY EXERCISE: Individual / group work               | WEEKLY EXERCISE WRAP-UP   | THEMATIC TASK: individual / group work  | CONTACT SESSION: Dilemma board game [Meeri]   |
| Afternoon (9.00- )   | <i>DRAFT SHOWING THE OVERALL STRUCTURE: FINAL SCHEDULE IN MYCOURSES' WEEKLY SUB-PAGE</i>     |  |   |   |   |
|  | WEEKLY EXERCISE: Individual / group work   | WEEKLY EXERCISE: Individual / group work               | CONTACT SESSION: environmental and sustainability management [Meeri]  | THEMATIC TASK: individual / group work  | TASK & WEEKLY EXERCISE WRAP-UP  |
| <b>7th WEEK</b>  |  |  |   |   |   |
| <b>Synthesis (Marko)</b>                                     |  |  |   |   |   |
|  | Mon 16.10.   | Tue 17.10.   | Wed 18.10.  | Thu 19.10.  | Fri 20.10.  |
| Morning (9.00- )   | CONTACT SESSIONS: Governance + Science [Marko]   | SYNTHESIS WORK: Individual synthesis + group work      | FEEDBACK & WAY FORWARD SESSION [Marko]  | TIME FOR FINALISING YOUR ASSIGNMENTS  | TIME FOR FINALISING YOUR ASSIGNMENTS  |
| Afternoon (-4pm)   | SYNTHESIS WORK: Individual synthesis + group work  | SYNTHESIS SESSION [Marko]                              | <i>(possibility for mentor meetings + planning your studies and preparing your Personal Learning Portfolio)</i> |   | <i>(possibility for mentor meetings + planning your studies and preparing your Personal Learning Portfolio)</i> |

*LUNCH BREAK,  
let's continue at 13.15!*

*And send the group photo:  
marko.keskinen @aalto.fi*

# WAT Wednesday

Today's tasks:

- 0) Get your posters ready
- 1) Talk about WAT
- 2) Talk about you and your expertise + expectations during Poster Walk
- 3) Mingle more freely during WAT & Akva Get-together 😊





## **WAT? Introduction to our Master's Programme in Water and Environmental Engineering, Part 2**

- WAT research: alumni & stakeholder surveys
- Personal Learning Portfolio



# WAT surveys

We develop the WAT programme in a research-based manner, mainly through surveys

→ Aim to understand how you students but also our alumni and stakeholders view our field and its future needs

- *WAT Student Feedback Surveys (at the end of first year)*
- *WAT Teacher Surveys*
- *WAT Alumni Survey in 2017*
- *WAT Stakeholder Survey in 2020*





# WAT alumni & stakeholder surveys

English summary slides of **WAT Alumni Survey** and **WAT Stakeholder Survey** are available in WAT-E1100 MyCourses' Orientation week sub-page

You also had to read them through as a part of your group work  
→ Any thoughts? Questions? Surprises?

Employment and career of  
Aalto University water and  
environmental engineering alumni

WAT ALUMNI SURVEY RESULTS 2017



Stakeholder survey results 2020  
Aalto University's Master's Programme in Water  
and environmental engineering

Stakeholders' perceptions of the development of the field,  
role and skills of graduates, and working life needs

Julia Renko, Anni Kaikko, Meeri Karvinen and Marko Keskinen



Report (in Finnish): <http://um.fi/JRN:ISBN:978-952-60-3785-1>

Next some  
selected  
results from  
both surveys

# WAT surveys

In addition to the survey presentations, also plenty of other material!

**WAT Stakeholder Survey** report (in Finnish): <http://urn.fi/URN:ISBN:978-952-60-3785-1>

Also check alumni survey -related Master's Thesis + two articles:

<https://aaltodoc.aalto.fi/handle/123456789/31604>

<https://www.mdpi.com/2071-1050/10/8/2605>

<http://bit.ly/KarvinenVehmasKeskinen>

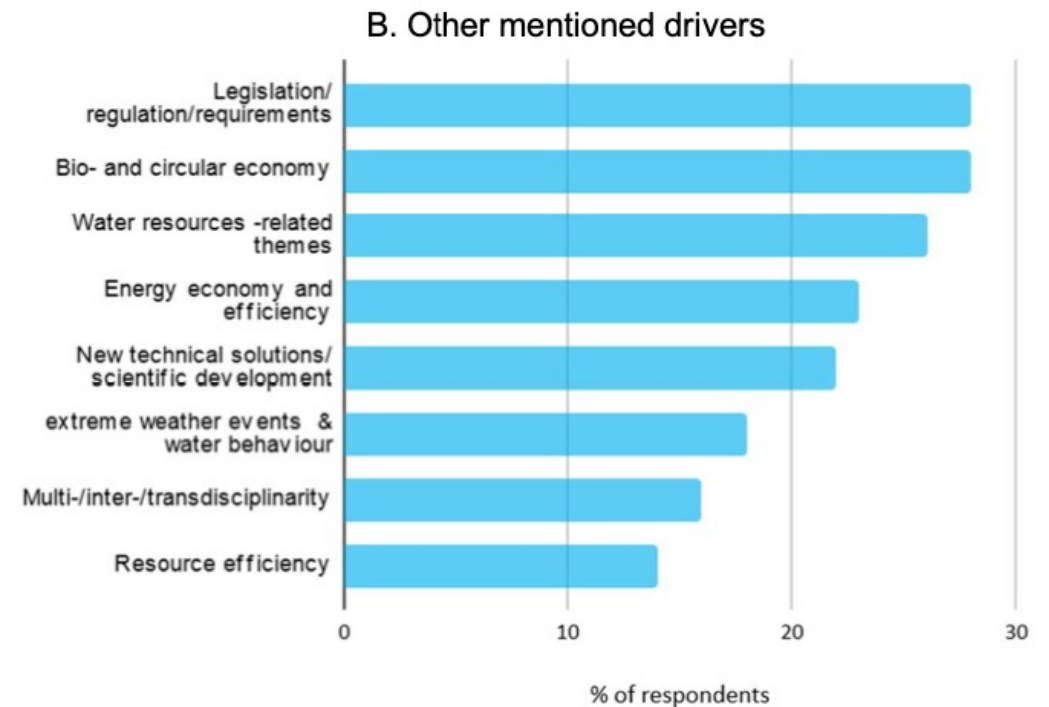
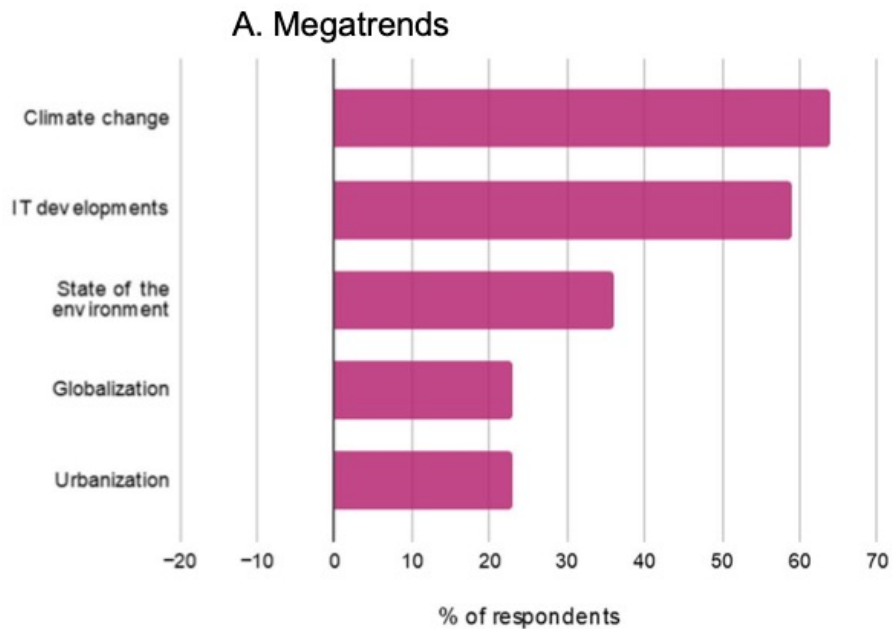
**Main messages:** employment situation in our field is good; its societal relevance is increasing; both the tasks & employees diverse

→ But also new kinds of challenges emerging, requiring new competences

# WAT Stakeholder Survey

## Most important global drivers affecting the field

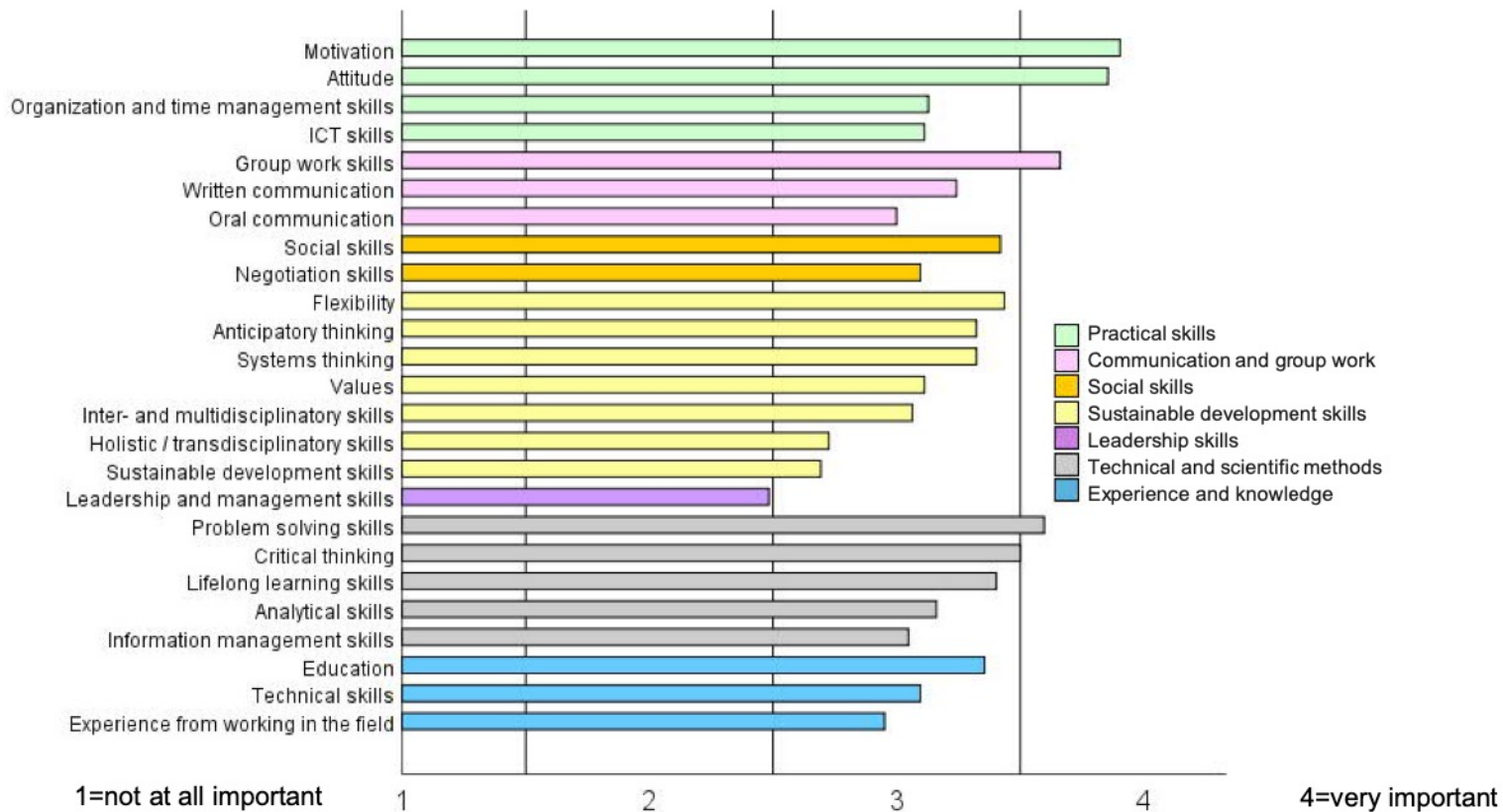
Open text answers of both questionnaires + interviews  
(n = 72)



# WAT Stakeholder Survey

## Competences considered important when recruiting

Employer questionnaire (n = 62)



It is a mix of many competences!

→ You cannot naturally have them all, but can build your own mix based on your interests

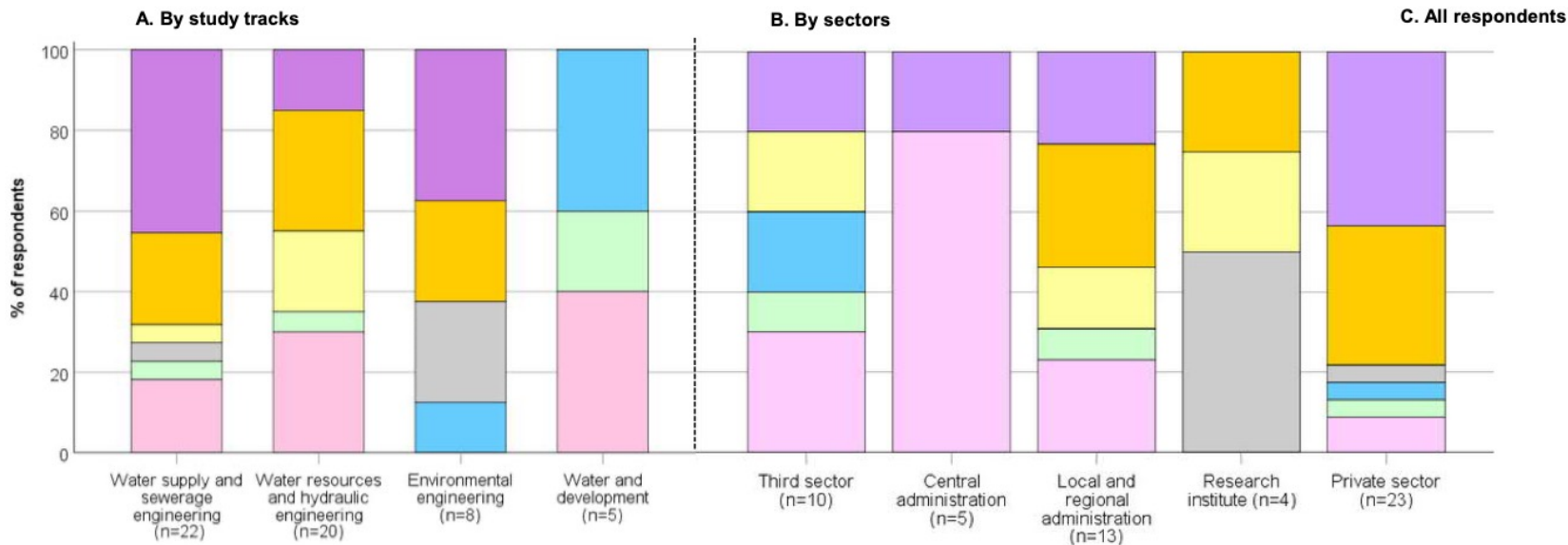
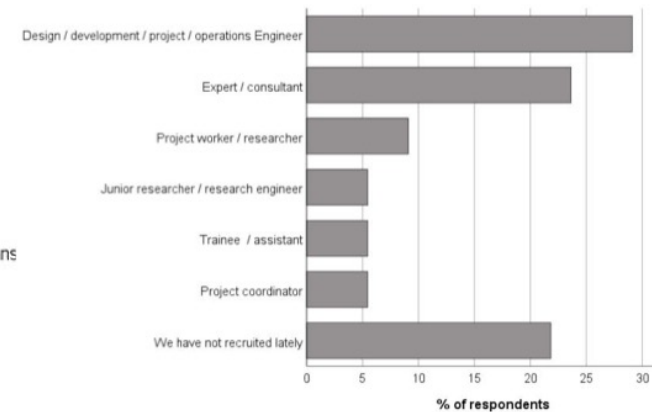
→ Portfolio and T-shaped expert profile one way to think about this

# WAT Stakeholder Survey

## Graduates' positions in recruitment

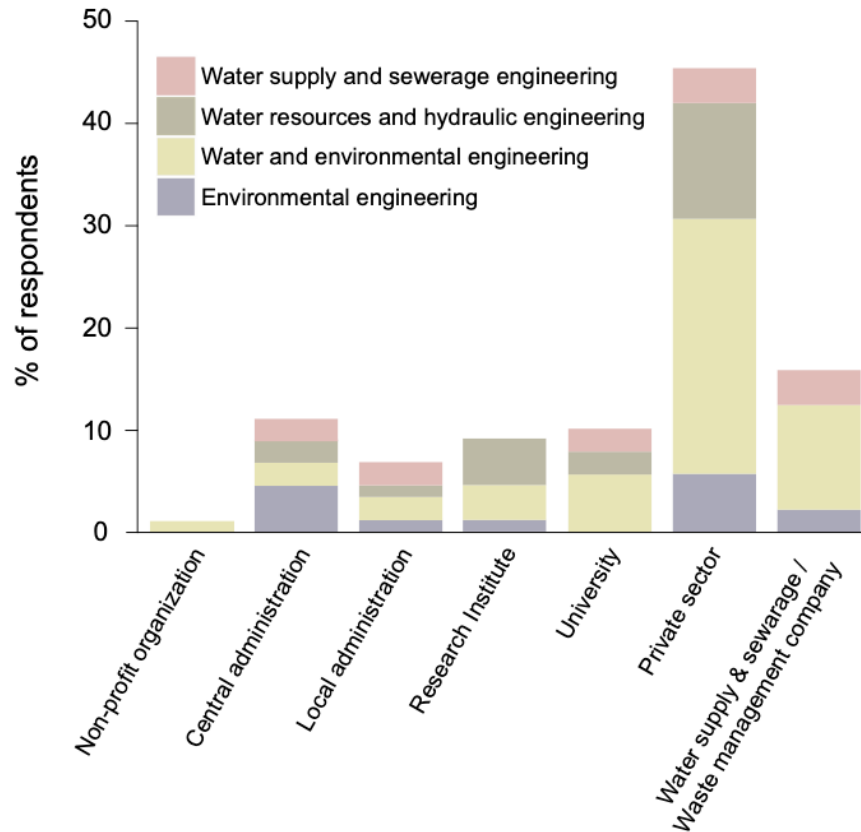
Employer questionnaire (n = 55)

- Design / development / project / operations Engineer
- Expert / consultant
- Project worker / researcher
- Junior researcher / research engineer
- Project coordinator
- Trainee / assistant
- We have not recruited recently



# WAT Alumni Survey

## Employer sectors



In 2007-2016, 191 water and environmental engineers graduated from Aalto University or Helsinki University of Technology

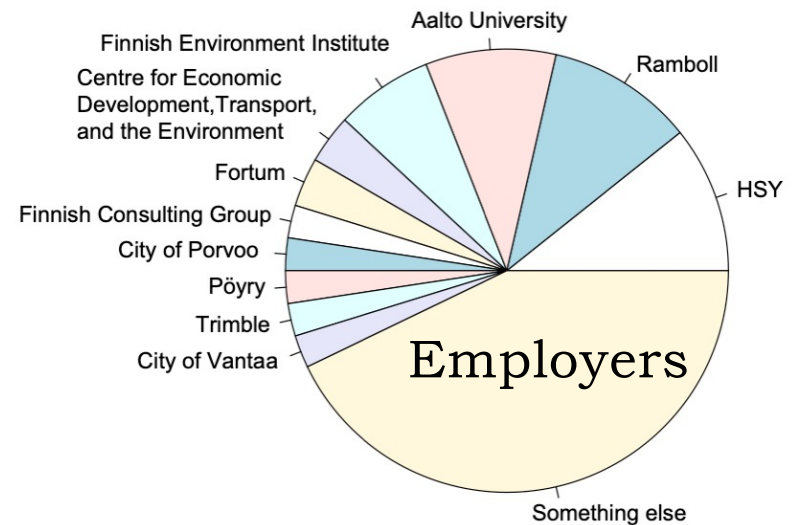
- Majors: water resources & hydraulic engineering, water supply & sewerage engineering, environmental engineering, water & environmental engineering

- 176 questionnaire invitations were sent, 88 replied

**Response rate 50**

- 64 women and 24 men replied

- 32 respondents had studied water & environmental engineering, 28 water resources & hydraulic engineering, 15 water supply & sewerage engineering, 13 environmental engineering as their major



*Note: Alumni Survey was done for those alumnis who had graduated before our current WAT Master's Programme started  
→ Slightly different themes, and mainly in Finnish*

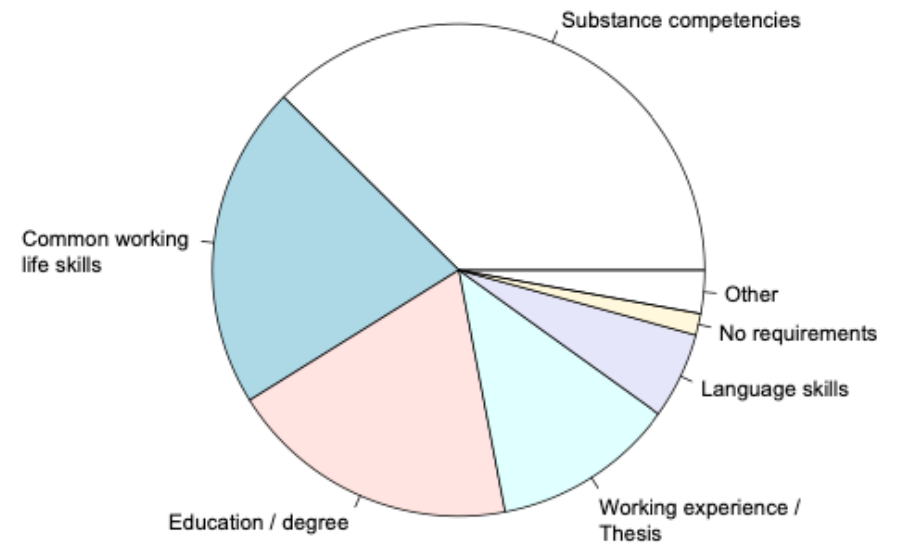
# WAT Alumni Survey

## First job

How did you get your first job after graduation?

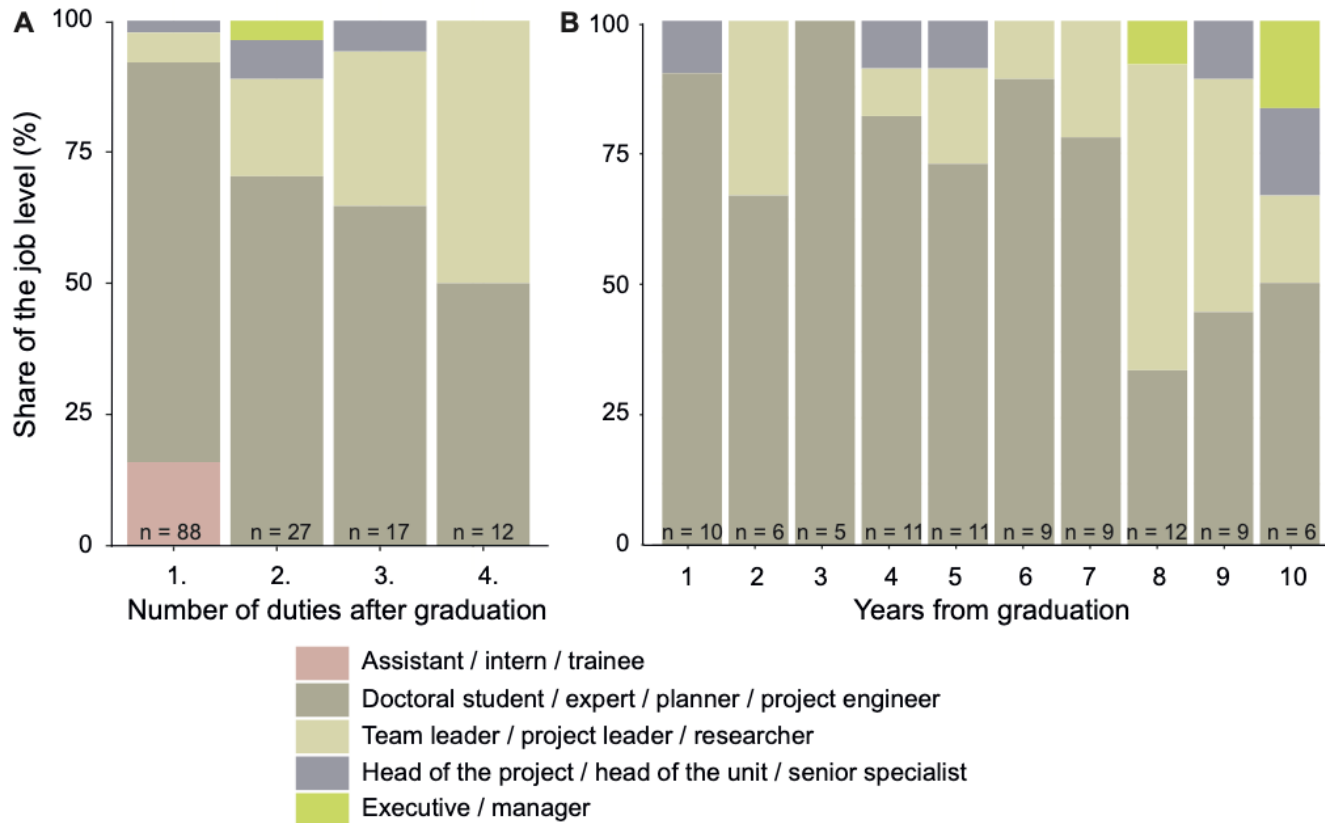


Requirements for the first job

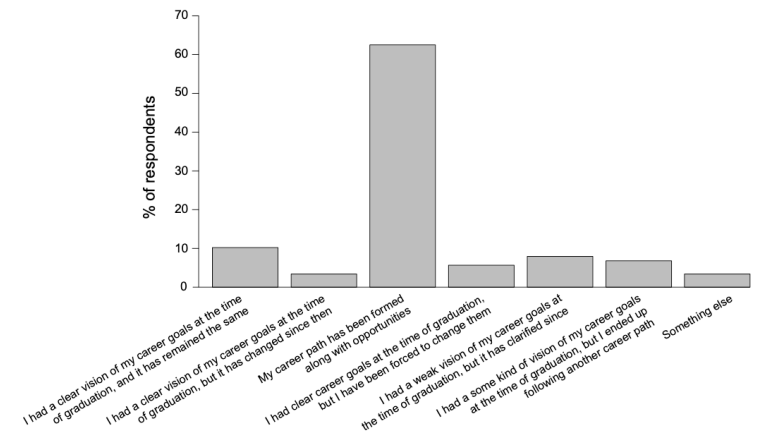


# WAT Alumni Survey

## Career path



## Career development





# WAT Alumni Survey

## The central working life skills at different levels

### Practical skills

Arrangement & coordination skills  
Initiative & self-direction  
Time management & prioritization

### Communication & group work skills

Communication & presentation skills  
Group work skills  
Scientific writing

### Social skills

Negotiation skills  
Social skills

### Sustainable development skills

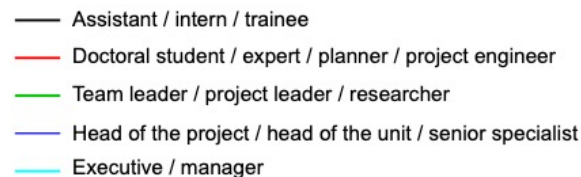
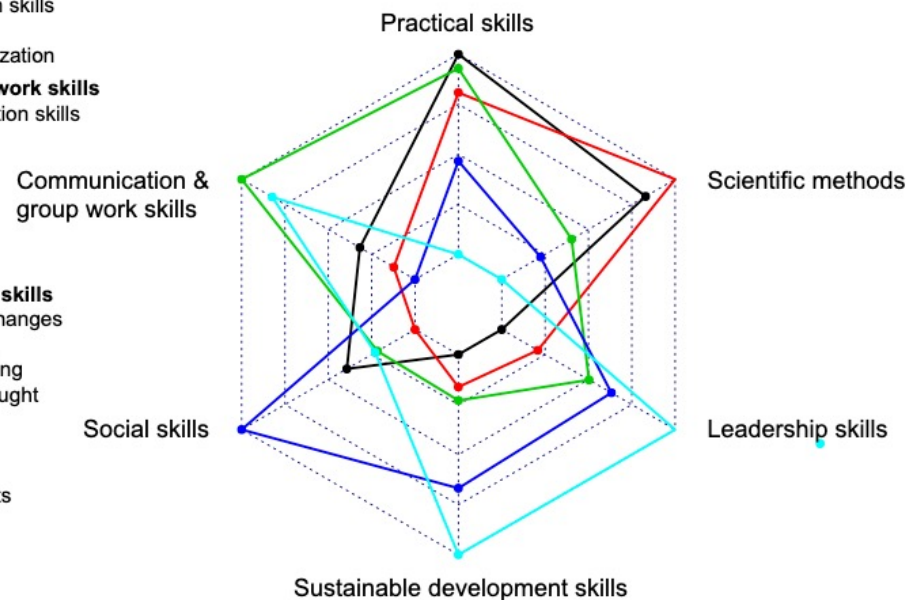
Ability to make & execute changes  
Creativity & flexibility  
Ethical & value-based thinking  
Future orientation & forethought  
Systemic, wide-ranging, connective thinking  
Transdisciplinarity, acting in multidisciplinary environments

### Leadership skills

Leadership  
Decision making & responsibility  
Teaching & supervision

### Scientific methods

Analytical & critical thinking  
Comprehension & application of theories  
Computational skills  
Problem solving  
Searching & updating information, active learning



## The central knowledge at different levels

### Solutions

Circular economy & waste management  
Governance & legislation of own field  
Life cycle thinking  
Principles of business & economy  
Social responsibility  
Theories of own field

### Challenges

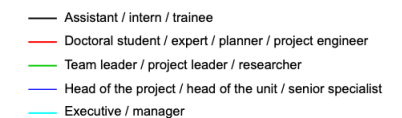
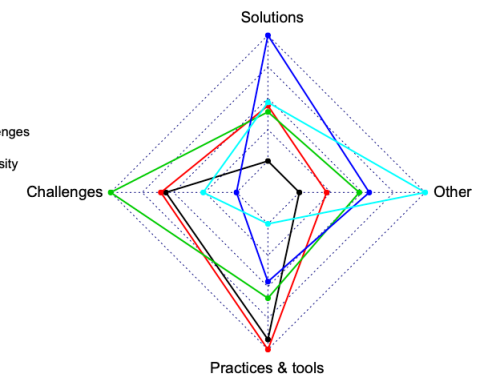
Climate change  
Cycling of phosphorus & nitrogen  
Eutrophication & pollution  
Global sustainable development challenges  
Land-use change  
Understanding significance of biodiversity

### Practices & tools

Engineering knowledge (e.g. IT, Excel, GIS, programming)  
Hydrology & hydraulics  
Knowledge of environmental engineering practices  
Knowledge of water supply & sewerage practices  
Risk assessment

### Other knowledge

Entrepreneurship  
Knowledge of construction engineering practices  
Leadership  
Knowledge of other fields (forestry, energy technology, understanding how society works)



# ***Questions? Comments?***

## ***Pair discussion (with a new pair)***

- How do these results sound?  
→ Do they help you to plan your studies?
- Anything surprising? Anything unclear?

*Who has done a  
(learning) portfolio  
already?*

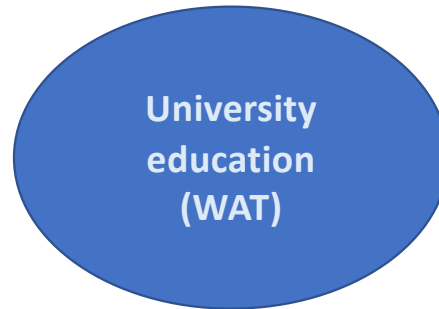
# Personal Learning Portfolio process

## AIMS:

- Helping you to recognise your existing competences
  - Facilitating you to recognise and visualise your learning
  - Supporting your career planning
- Contributes to your mentoring process, too!

What kind of experiences affect your identity and competence as a WAT graduate?

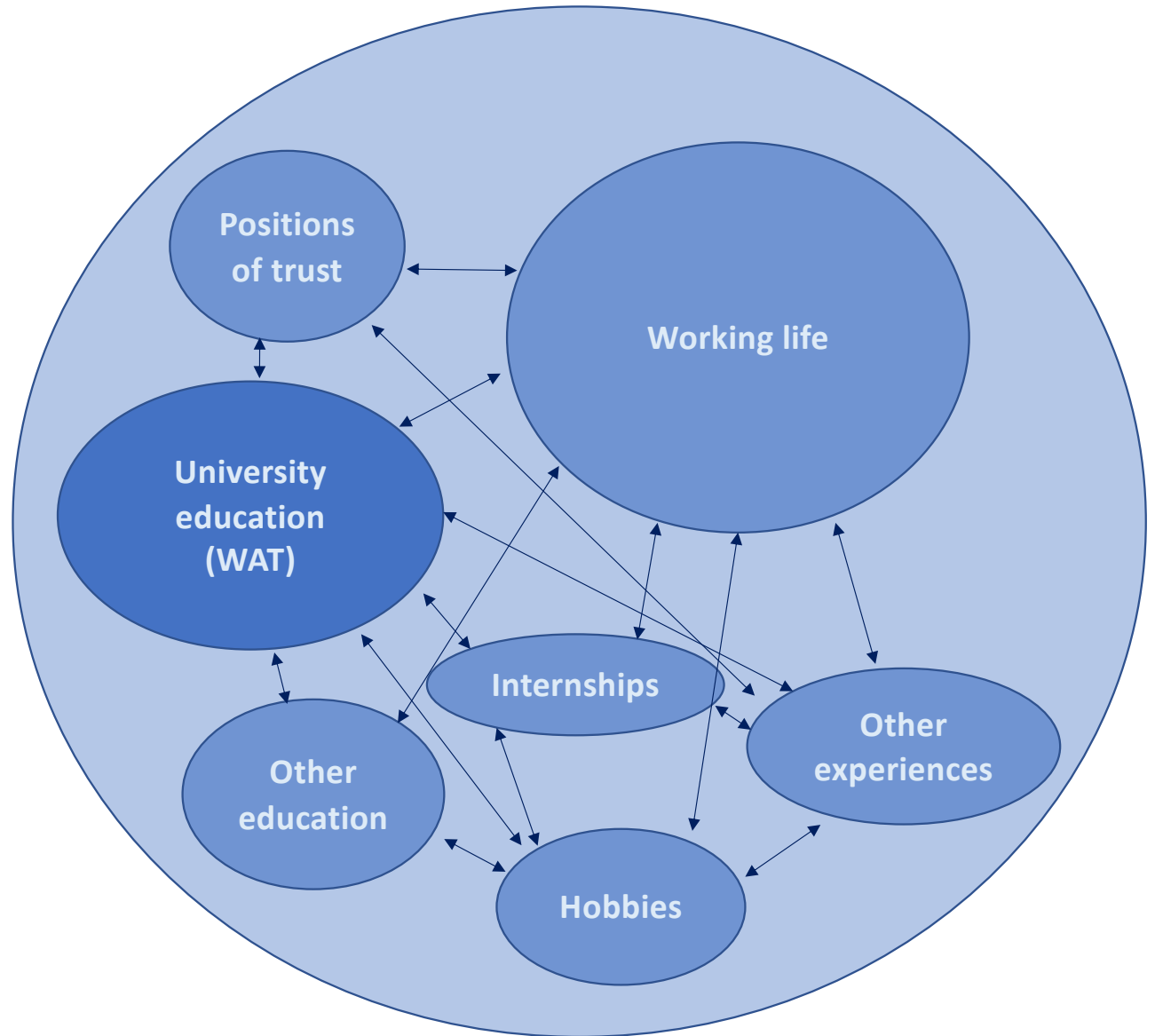
Our Master's programme offers methods and scientific background from our field and means to apply them in practice.



But is that enough for your future career as a WAT graduate?

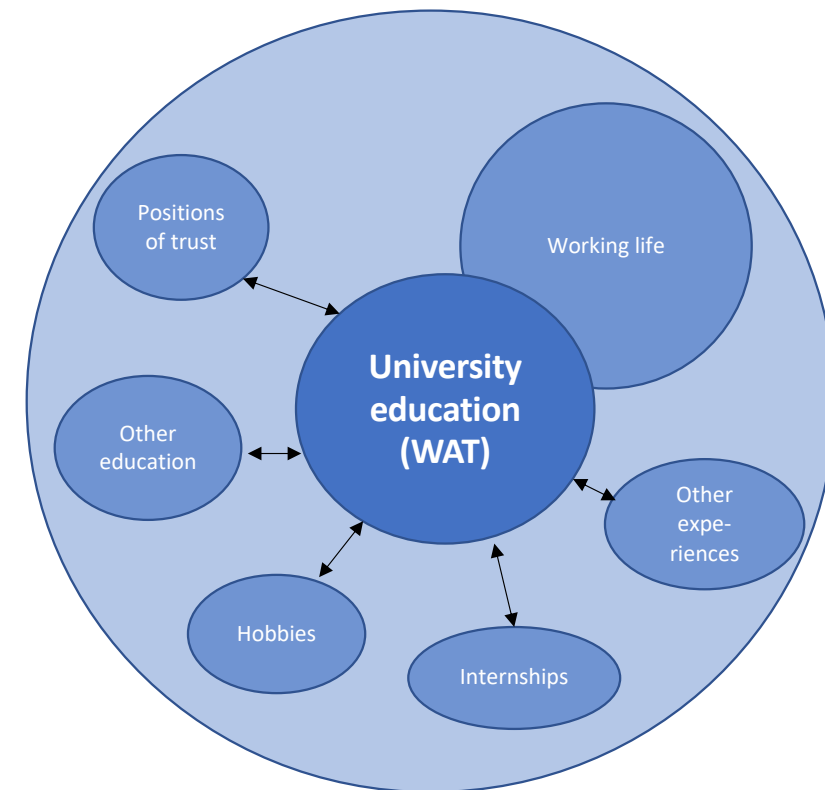
→ How to make good use of all your experiences in life?

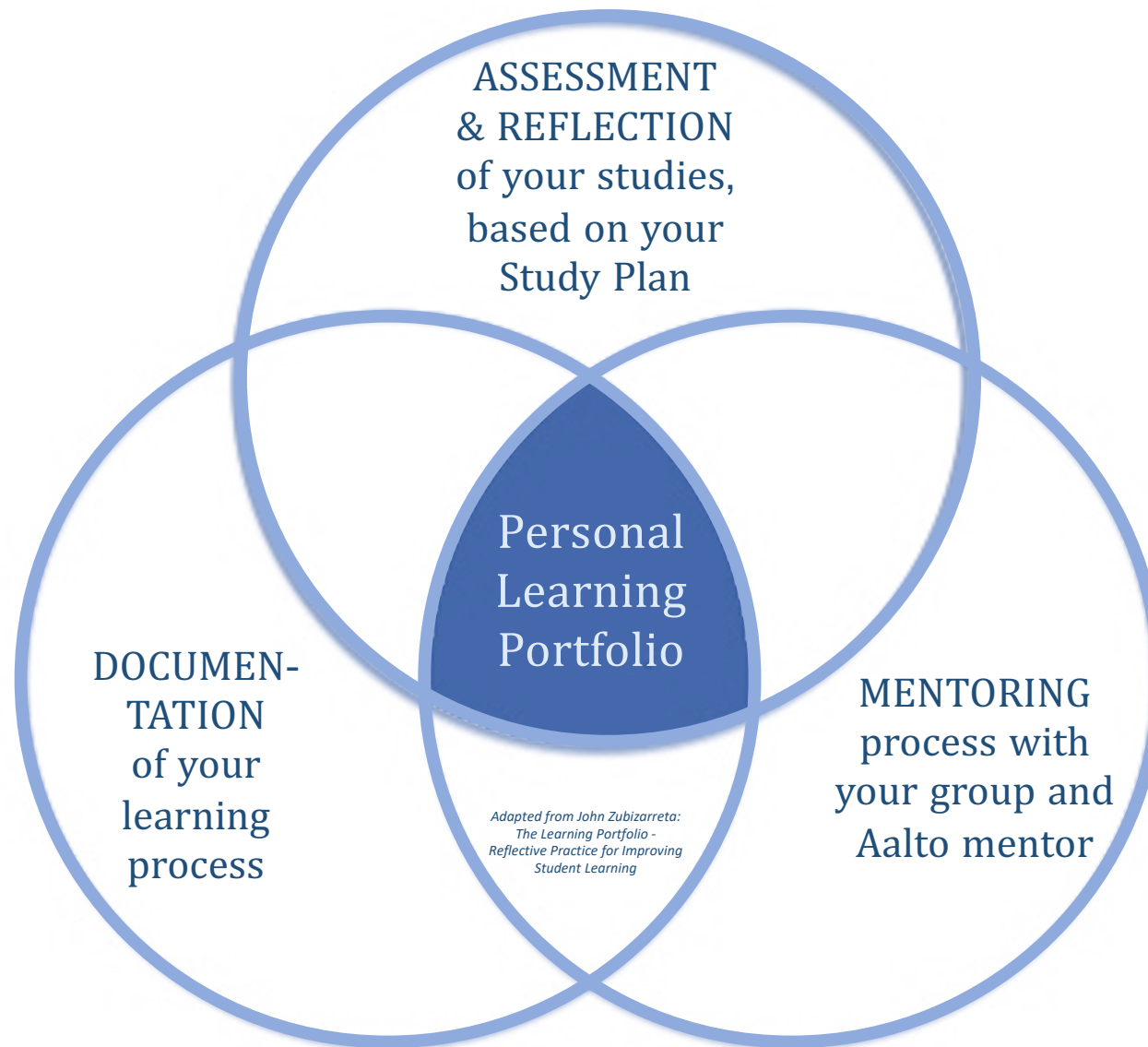
Your personal identity and competence builds through a combination of different activities and experience, inside and outside the university



# Personal Learning Portfolio

- Aims to combine your previous skills, knowledge and values with the new competences you gain during your Master's education: you do it for you!
- WAT Master's Programme and the competences it provides is at the center, but consider also other activities and experiences





# Personal Learning Portfolio

- Consists of compulsory parts:
  - Creating your own Personal Learning Portfolio & its submissions to MyCourses
  - Meetings with your WAT group for peer support
  - Meetings with your Aalto Mentor (autumn + spring)
  - Attending WAT Synthesis session in May 2024
  - Attending the Master's thesis process 2023-2024
- Also optional parts highly recommendable
  - Attending the Aalto Career Services activities
  - Making use of Aalto courses on these themes



# Portfolio structure

Portfolio is a process,  
so start working on it now  
and update during your  
studies

The format is free

→ Can be e.g. Word doc,  
powerpoint or webpage

For more, see: <http://bit.ly/WATportfolio>

## TEMPLATE: WAT Personal Learning Portfolio

Each portfolio must answer to the following key questions:

### 1) Current status: WHAT ARE MY CURRENT KNOWLEDGE & SKILLS?

What is my current level of expertise in my field?  
What have I learned so far during my studies?  
What other experience I have?

→ This is the main question you should answer in your portfolio

You should group your learning according to three criteria:

- Knowledge
- Skills
- Identity / Attitude ('general working-life skills')

### 2) Future plans: WHERE DO I WANT TO GO + HOW DO I GET THERE?

What I want to achieve during my studies?  
What is my plan for my future career?  
What kind of knowledge and skills I still need?  
What kind of courses and activities will provide those?

These questions help you to plan your studies and career,  
and reflect what you have learned so far

# Portfolio schedule

## KEY DATES

1. Submit your portfolio to MyCourses twice
  - End of March 2024 + final version when you graduate
2. Self-organised session with your Mentor Group before the 1<sup>st</sup> portfolio submission (Feb-March 2024)  
→ Include short report of the session into your portfolio
3. Discuss your portfolio with your WAT-mentor during your spring meeting 2024

This requires work,  
so we have reserved  
2 credits (54 hours)  
for it from this course

For more, see: <http://bit.ly/WATportfolio>

# WAT feedback & Synthesis session

We also collect general feedback on your first year of WAT studies (i.e. major studies) during spring 2024 through a Webropol survey: survey is sent to you in April-May 2024

- *The survey helps you to reflect and synthesise your learning, and provides us feedback on how the WAT programme works as a whole*
- *This way also complements the portfolio process*

We will discuss the survey results and your first year together at the end of first year: last Thursday of Period V i.e. **Thu 6.6.2023 at 14.00**

- *Mark it already now to your calendar!*

# Master's Thesis process

Consists of:

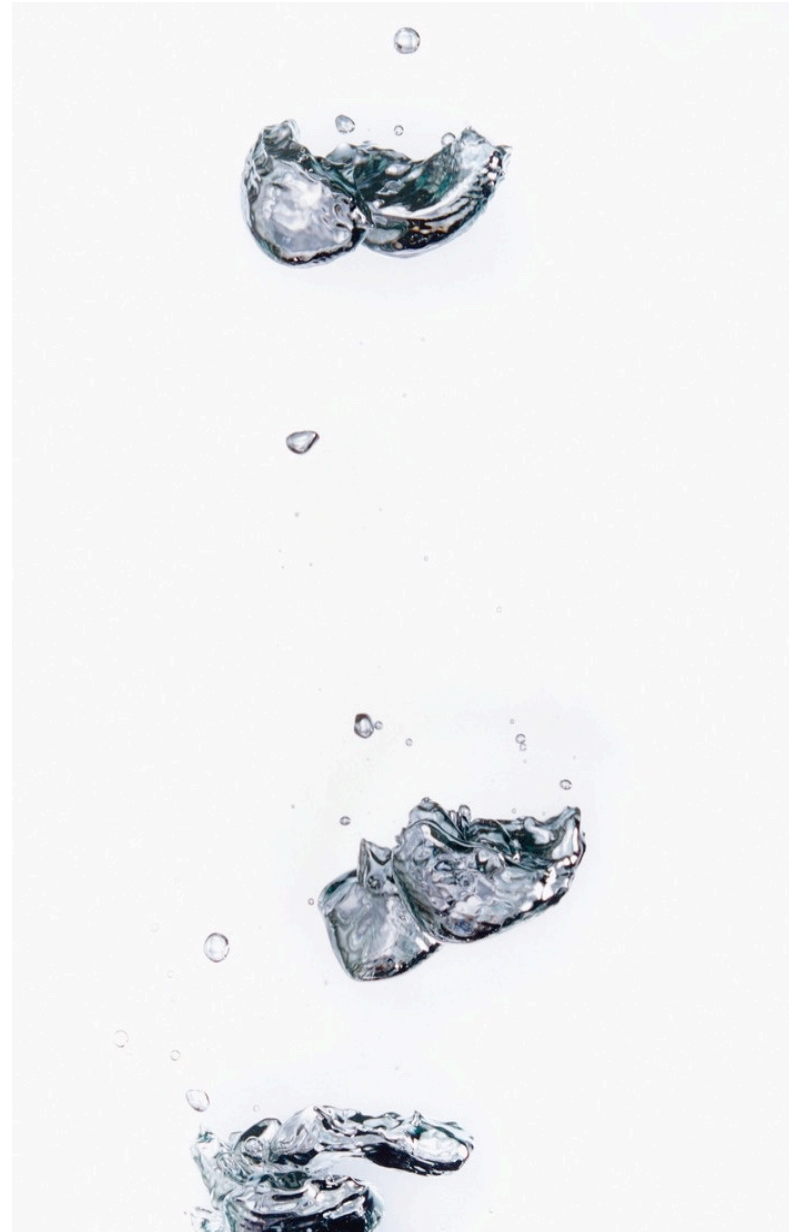
1. Listening to at least one Master's Theses Seminar before you start your own thesis
  - Recommended to attend the seminars anytime during your studies to learn from other's work
2. Attending a pre-seminar: presenting the research plan of your thesis
3. Attending a finalising session to review your almost-ready-thesis
4. Presenting your thesis in a Master's Thesis Seminar

Seminars arranged monthly, see schedule in MyCourses:

<https://mycourses.aalto.fi/course/view.php?id=30301>

***Questions? Comments?***

Few, lot of  
information  
- you need a  
BREAK!



***BREAK!***

***Let's continue at 14.30***

Task for the break:  
talk at least to one fellow  
student you don't know  
yet that well

# WAT Mentor

Your WAT Group have a personal WAT Mentor (also called Academic Advisor)

- Mentor = your personal contact point in our WAT programme
  - Mentor meetings: mentor invites you for a meeting;  
twice in the first year (autumn + spring), 1-2 times in the 2nd year
- Discussion on your study and career plans,  
linking also to on your personal learning portfolio

NOTE: You can still contact our other staff, if you want to know more e.g. about Thesis positions on a specific theme

→ General questions about studies: Student Guide + Päivi + Marko



# Let's get you a Mentor!

Eliisa Lotsari(A)  
Juha Järvelä (B)  
Marko Keskinen (C)

Matti Kummu (D)  
Olli Varis (E)  
Teemu Kokkonen (F)

Matti and Eliisa are travelling:  
Eliisa tries to join us online

One of your group  
members picks a letter,  
starting from Group 6

# Let's get you a Mentor!

Now your group has a mentor; get into groups and introduce yourselves to each other (~12 min)!

Mentor: who you are and what you do at WAT

Students: who you are and why you came to WAT

You can also discuss about our courses  
(particularly those that your mentor is involved in)

# ***Group Presentations with posters***

~6 min per group

→ Introduce your own group;  
questions & comments welcome too!

Let's form three  
Presentation groups: A, B, C  
→ One member from your  
WAT group to each  
Presentation Group

- Names & background of your group members
- Your existing expertise from our field
- Your expectations for WAT Master's Programme

# *REFLECTIONS?*

With your mixed group  
discuss **1-2 key points** you have  
learned about yourselves as a group today

→ *About your existing expertise as a group*

→ *About your expectations for WAT as a group*

*Any surprises?*



*That's all from WAT Orientation: now you all are invited to Akva & WAT Get-Together!*

*See you next Monday morning at 9.00 in this same place!*