WAT?

Introduction to WAT Learning outcomes and our Personal Learning Portfolio process

6.9.2017 @ Tuas5 – Marko & Meeri

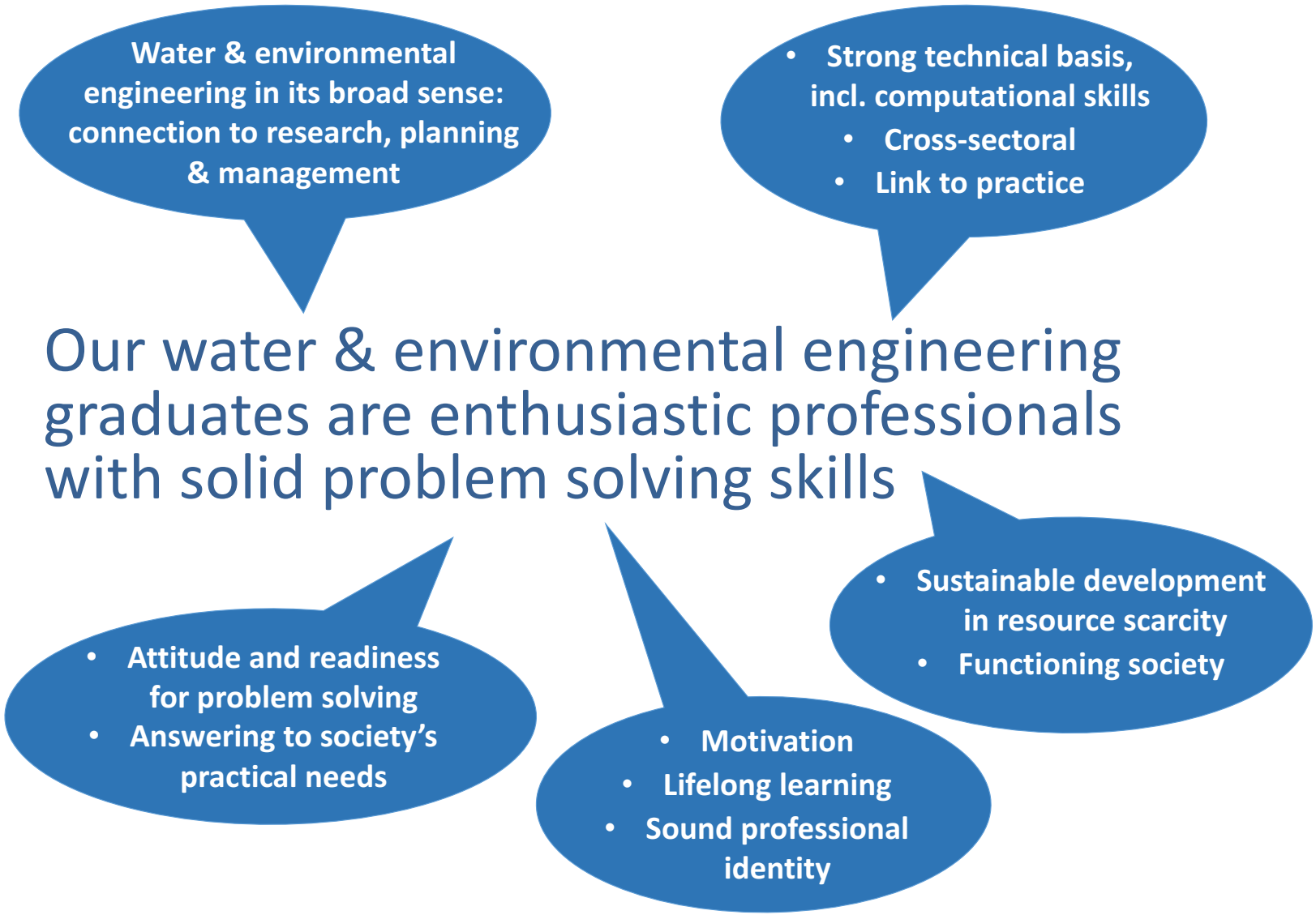
1) WAT Background: what our programme is about?

‘Ensuring a sustainable & functioning society’

Multi-disciplinary Master’s Programme bringing together the best of water andenvironmental engineering

- ✓Strong technical basis combined with sound understanding of the broader societal context
- ✓Making use of the students’ diverse background & allowing individualised study paths
  → Existing expertise + only 15 cr of common courses
- ✓Student-centered & problem-based learning
  → Group work, Personal Learning Portfolio, mentoring

WAT IN SHORT


Water & environmental engineering in its broad sense: connection to research, planning & management
• Strong technical basis, incl. computational skills
• Cross-sectoral
• Link to practice
Our water & environmental engineering graduates are enthusiastic professionals with solid problem solving skills
• Attitude and readiness for problem solving
• Answering to society's practical needs
• Motivation
• Lifelong learning
• Sound professional identity
• Sustainable development in resource scarcity
• Functioning society

WAT IN LONG

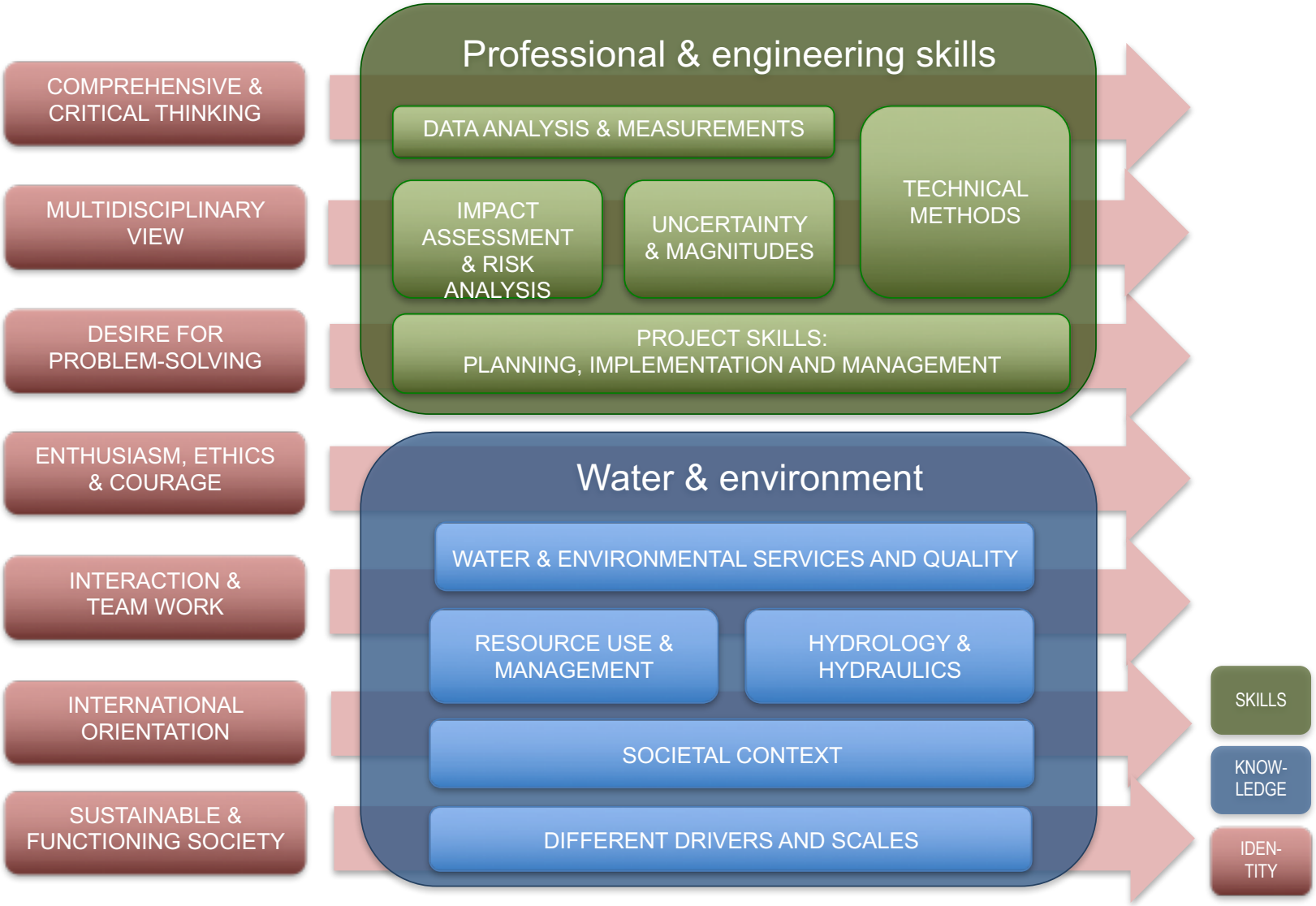
*Water and environmental engineering is **essentially about making the world work**.*
*With limited natural resources and an increasing demand for water, food, energy and shelter, we look at **practical ways to develop our society in a sustainable manner**.*
We combine a strong technical basis with a sound understanding of a broader societal context.
The ultimate aim of our programme is to ensure a sustainable and functioning society.

*Our Master's Programme is **multidisciplinary**, providing a broad view of the field and combining theory with practice. We collaborate with other Master's Programmes in Aalto, and encourage you to go for student exchange to diversify your views and skills. Our programme is **student-centered and makes use of our students' varied backgrounds**. Our field is diverse and you have several possibilities to pursue your career. To ensure that you will study things that you are thrilled about, you can design your own study path. Our **personal portfolio process** helps you to recognise your strengths and interests together with your mentor and peers.*

*Our Master's Programme is based at the Aalto University School of Engineering, and it focuses on what engineers do: **applying theory to practice to solve critical challenges of our society.***
*Our programme provides you with competences in three complementary fields: Knowledge, Skills and Professional Identity. Our **Knowledge competences** include e.g. sustainability, hydrological cycle, water and environmental services as well as resource use and management systems, while **Skills competences** relate e.g. to technical methods, data analysis and measurement, analysis and impact assessment as well as project work skills.*
***Professional Identity competences** include comprehensive and critical thinking, multidisciplinary view, desire for problem-solving, enthusiasm and ethics, interaction and group work skills, international orientation and, finally, promotion .of sustainable and functioning society*

2) WAT COMPETENCES: WHAT SHOULD YOU LEARN?

COMPETENCES



Our graduate is able to:

knowledge

1) Recognise the key **thematic components 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 constructed environments, including quantitative estimates of the water fluxes
3) Define and differentiate the main sections of **water and environmental services** and related infrastructure, including treatment of water and waste water
4) Understand the key principles of **water and environmental quality**, and their relation to pollution, contamination and restoration as well as to ecosystems and human health
5) Recognise the key **resource use and management systems**, including those related to water resources as well as to material and resource efficiency and waste management
6) Identify the **societal context** relevant to the water and environmental engineering, including the key institutional, legal and economic **aspects**
7) Comprehend the different **scales** (spatial and temporal) and **drivers** (e.g. climate change, population growth, urbanisation) applicable to water and environmental engineering

Our graduate is able to:

skills

1) Explain and apply **key technical methods** (e.g. modelling, statistics, GIS) related to water and environmental engineering
2) Understand relevant **data analysis and measurement** processes, including the use of data archives
3) Deal with the **uncertainty and different orders of magnitude** related to the measurements, data analysis and modeling
4) Understands the principles and key methods of water- and environmental-related **risk analysis and impact assessment**
5) Recognise and analyse the main components of water- and environment-related **planning, implementation and management processes, and use related basic project skills**

Our graduate:

identity

1) Thinks in a comprehensive and critical manner about his/her work and field
2) Maintains a multidisciplinary and -sectoral view related to water and environmental engineering
3) Is motivated and has desire for problem-solving
4) Is enthusiastic and has high level of ethics at work
5) Is able to work as a part of a team and has relevant skills for interaction and communication
6) Is internationally orientated and is aware of global dynamics related to water and environment
7) Promotes a sustainable and functioning society, and is aware of how welfare builds on the sustainable use of water and the environment

3) WAT Courses and timetable

BASIC COURSE STRUCTURE

Size for the Major:	60 cr
• Common Courses:	15 cr
• Advanced Courses:	45 cr

• Elective Courses:	30 cr
• Master's Thesis (diplomityö):	30 cr
TOTAL:	120 cr

ADVANCED COURSES

Select 45 credits to create an individual specialisation, and strengthen it with 30 credits of elective courses

WATER RESOURCES

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

WATER & WASTEWATER

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

WATER & DEVELOPMENT

- Sustainable Built Environment
- Sustainable Global Technologies SGT Studio (10 cr)
- Water and governance
- Water and people in a changing world

ENVIRONMENTAL ENGINEERING

- Sustainability in environmental engineering
- Environmental risk analysis
- Circular economy in environmental engineering
- Environmental management in industry* (by Aalto-CHEM)

* provided by AaltoCHEM

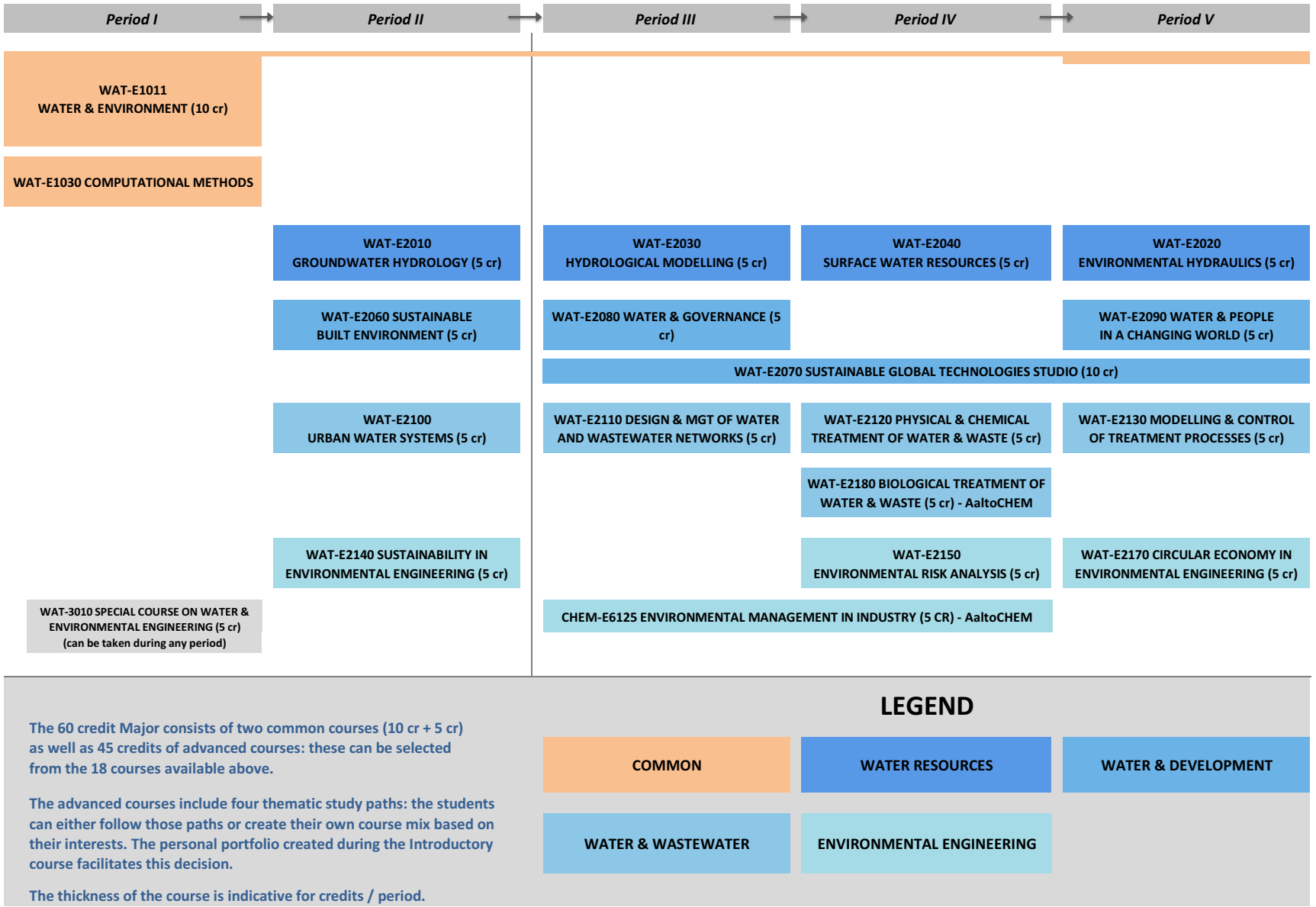
COMMON COURSES

Solid foundation for all our graduates

Water & environment *(10 cr)*

Computational methods in water and environmental engineering *(5 cr)*

1st year studies

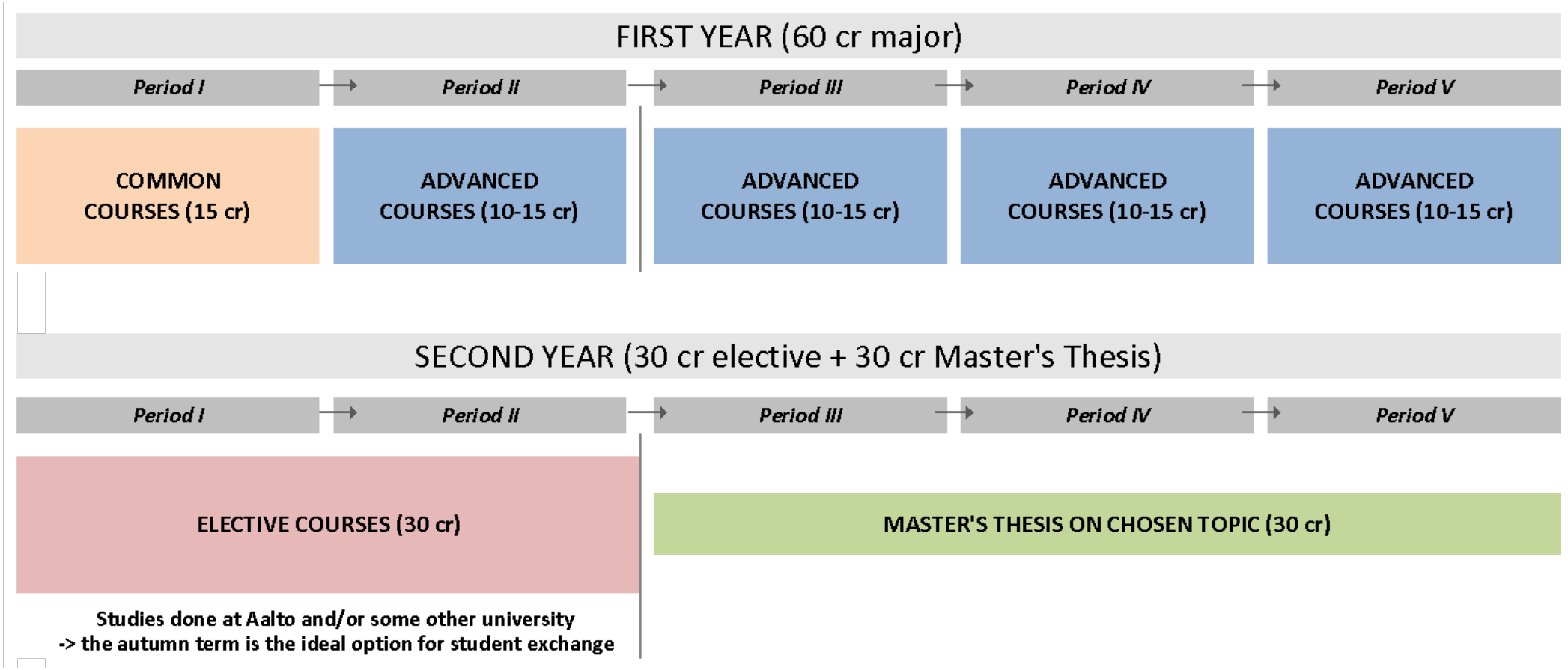


The 60 credit Major consists of two common courses (10 cr + 5 cr) as well as 45 credits of advanced courses: these can be selected from the 18 courses available above.

The advanced courses include four thematic study paths: the students can either follow those paths or create their own course mix based on their interests. The personal portfolio created during the Introductory course facilitates this decision.

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

1ST & 2ND YEAR


FIRST YEAR (60 cr major)
Period I
Period II
Period III
Period IV
Period V
COMMON COURSES (15 cr)
ADVANCED COURSES (10-15 cr)
ADVANCED COURSES (10-15 cr)
ADVANCED COURSES (10-15 cr)
ADVANCED COURSES (10-15 cr)
SECOND YEAR (30 cr elective + 30 cr Master's Thesis)
Period I
Period II
Period III
Period IV
Period V
ELECTIVE COURSES (30 cr)
MASTER'S THESIS ON CHOSEN TOPIC (30 cr)
Studies done at Aalto and/or some other university
-> the autumn term is the ideal option for student exchange

2COURSES I.E. OUR TWO COMMON COURSES

Period I requires intensive studying, including both contact sessions and individual / group work: be prepared to be present Mon-Fri!

→ Note that the schedule in MyCourses and Oodi is indicative only: actual schedule available in WAT-E1011 MyCourses

→ General weekly schedule available here: http://bit.ly/2eKtSSp

2courses: General weekly structure

	Mon	Tue	Wed	Thu	Fri
Morning	WAT-E1011 CONTACT SESSION	WAT-E1011 CONTACT SESSION / GROUP WORK	WAT-E1011 CONTACT SESSION / GROUP WORK	WAT-E1030 WEEKLY EXERCISE	WAT-E1030 WEEKLY EXERCISE Individual / group work
Afternoon	WAT-E1011 CONTACT SESSION / GROUP WORK	WAT-E1011 CONTACT SESSION / GROUP WORK	WAT-E1011 CONTACT SESSION / GROUP WORK	WAT-E1030 WEEKLY EXERCISE Individual / group work	WAT-E1030 WEEKLY EXERCISE

DRAFT SHOWING THE OVERALL STRUCTURE; ALL WEEKS NOT LIKE THIS!
-> e.g. SOME WEEKS WAT-E1030 EXERCISE IS ON WED & THU

4) What has changed from last year?

DEVELOPING OUR PROGRAMME

Last year's students gave excellent feedback, in many ways

→ For summary of feedback, see http://bit.ly/2w2Phsx

The key things we have changed based on the feedback

- 3courses → **2courses**: less assignments, less thematic weeks, more time to assignments they found useful
- Less and different **group work**: findings new ways to work together (e.g. pair work, better feedback)
- Thinking about our study paths: how to enhance **'deeper' learning** with such a short study times?
- Revised **Portfolio process**

WAT SURVEY 2017 - MAIN RESULTS

- 77% of the WAT students have gained more than 50 credits.
  70% has worked during studies
  - Working hindered studies for some, but for some not
  - V period challenging for some time-wise
- Knowledge, skills and identity: everyone has learned something
  and thought about how to differentiate between these three
  - Skills: modelling, many software, data analyses, applying math, big data
  - Identity: group work, sustainable and multidisciplinary thinking, international environment, English, critical and academic thinking, engineering approach, communications

WAT SURVEY 2017 - MAIN RESULTS

• Portfolio process: 24/27 found benefits =
documenting and visualizing own learnings, recalling and structuring what one has learned, understanding the entity of the skills and knowledge gained

- Time-consuming, submission too often, more feedback,
  did not facilitate to think about own learning or selecting courses, mentoring mainly a good thing, groups varied a lot

• WAT programme & teaching: Almost 90% somewhat/very/ extremely satisfied with the programme and teaching

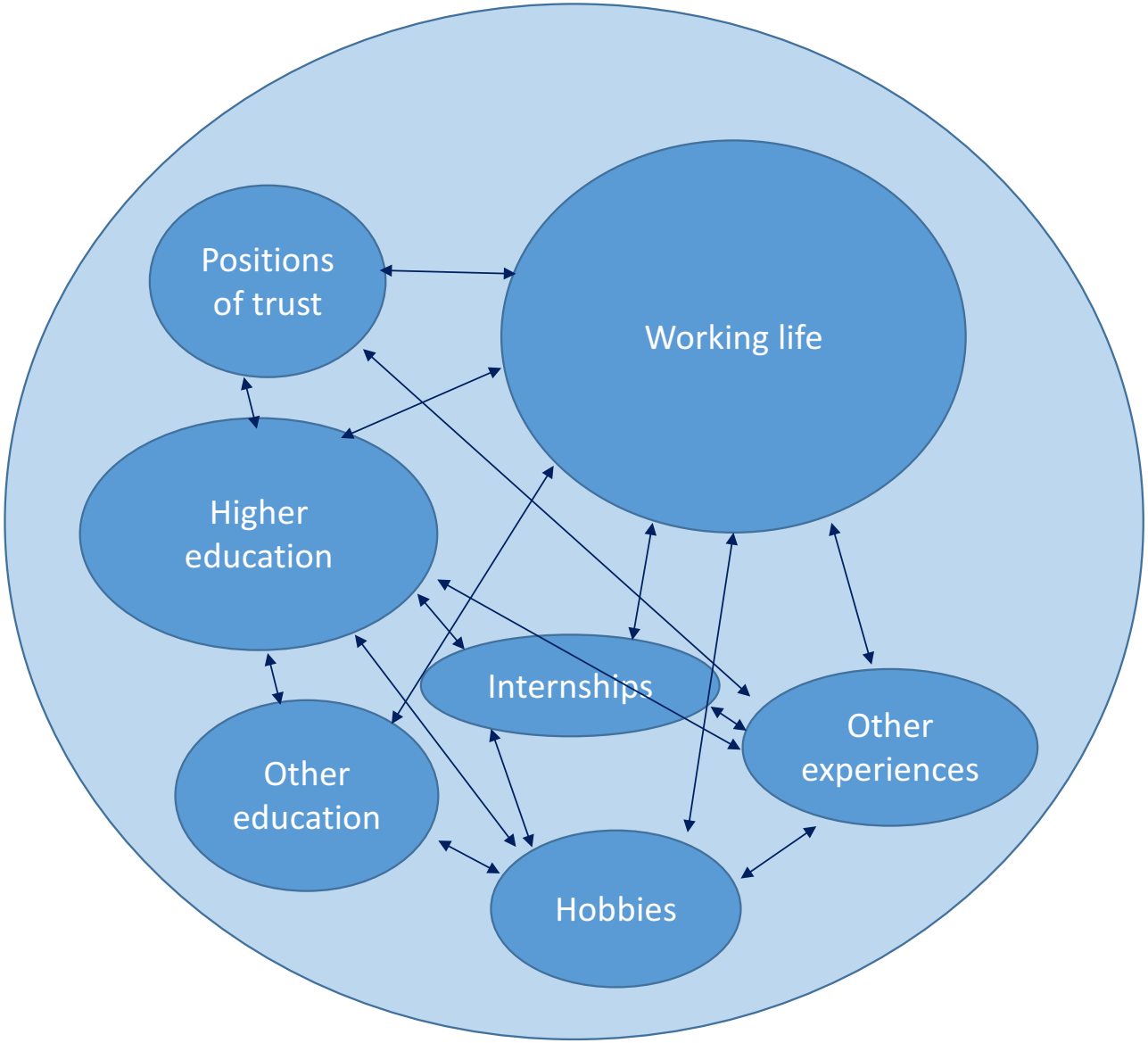
- Less group work, mandatory sessions and poorly planned/implemented teaching
- More in-depth knowledge and presenting current research, modelling,
  software (GIS, MatLab etc), lab work, analyzing of data, applying the theoretical knowledge discussed in lectures

5) Personal Learning Portfolio & mentoring: what are those?

What kind of experiences affect your identity as a WAT graduate, and also your skills and knowledge?

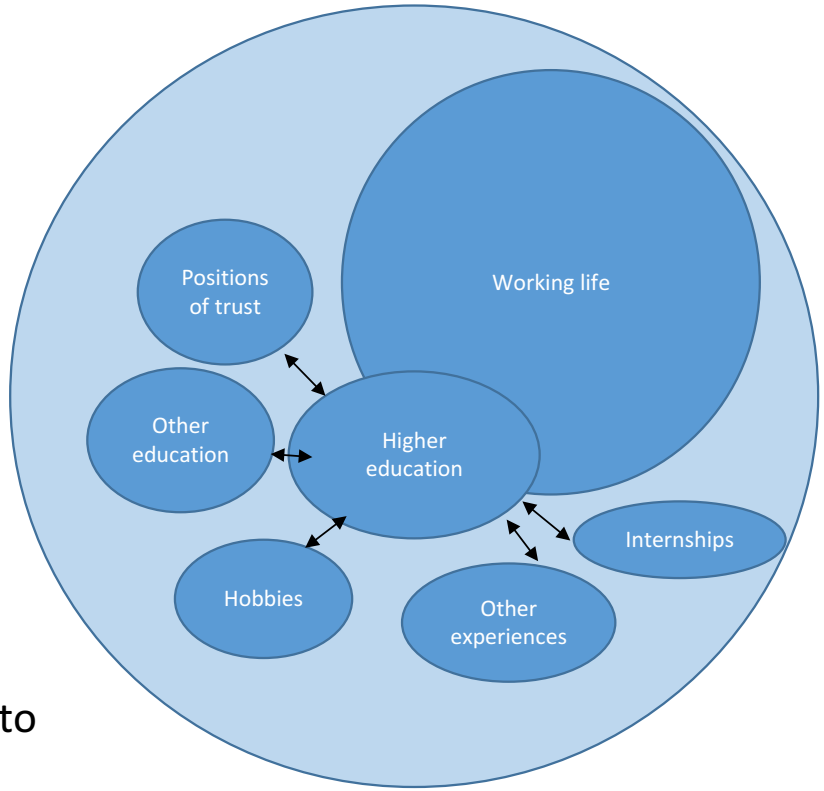
The Master's programme offers methods and scientific background from WAT field and means to apply them in practice. Is that enough for your fufure career as a WAT graduate?

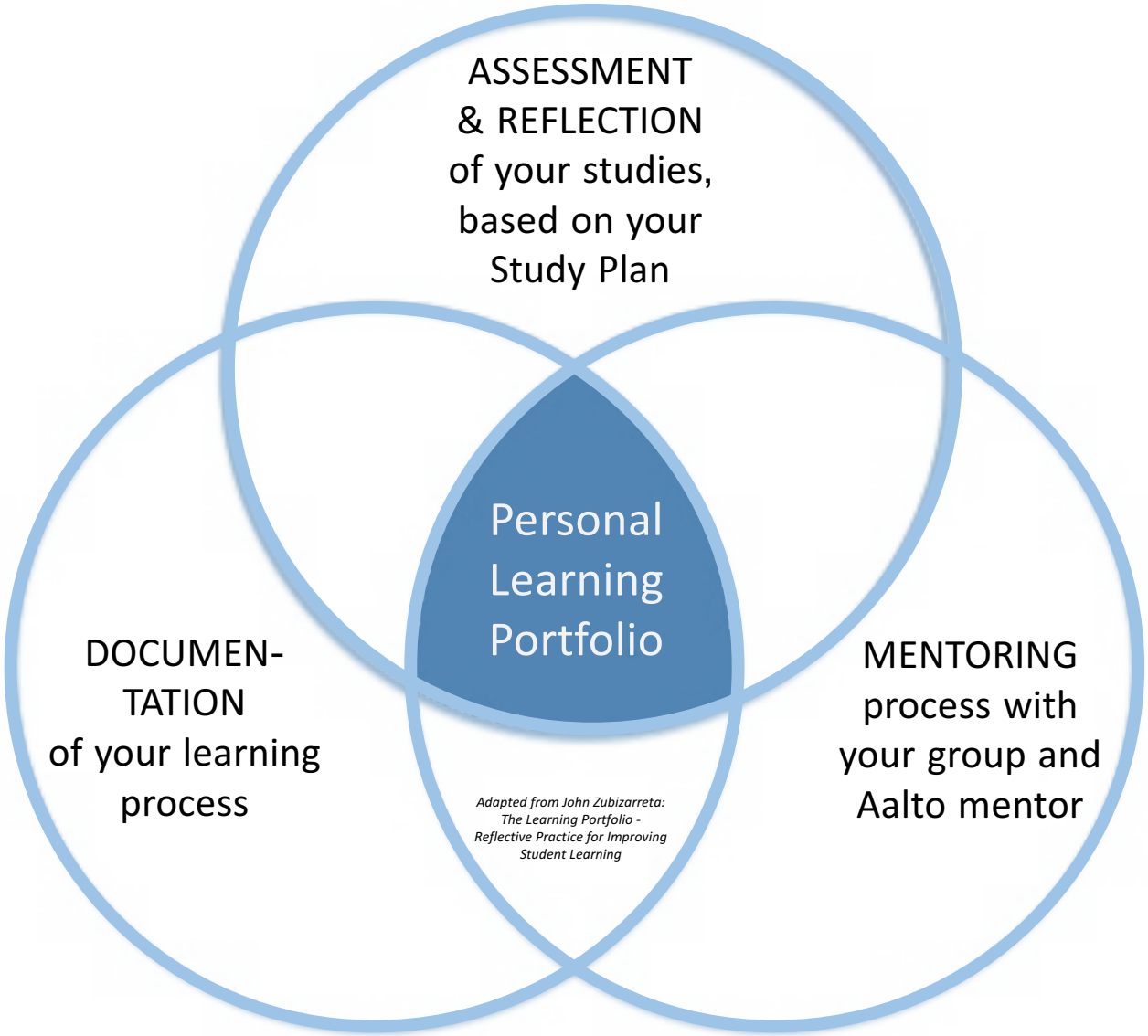
→How to make good use of all your experiences in life?



Portfolio and mentoring process

1. Aims to combine your previous skills, knowledge and values with your master's education. **WHY?** For recognising your competences and identity as a WAT graduate and for facilitating your career-planning and employment
2. Consists of compulsory parts:
   a) Creating your own learning portfolio
   b) Meetings with your mentor-group for peer support
   c) Meetings with your Aalto-Mentor
   d) Attending the WAT Syntheses session in May 2018
   e) Attending the Master's theses process 2018-2019
3. Also optional parts highly recommendable
   - Meeting your mentor from working-life with your group
   - Attending the WAT infopoints on employment practices, and to Aalto Career Services activities




ASSESSMENT
& REFLECTION
of your studies,
based on your
Study Plan
DOCUMEN-
TATION
of your learning
process
MENTORING
process with
your group and
Aalto mentor
Personal
Learning
Portfolio
Adapted from John Zubizarreta:
The Learning Portfolio -
Reflective Practice for Improving
Student Learning

Behind the scenes..

WAT development project:

- Active collaboration with our stakeholders: ”WAT collaboration group”
  - 6 different sectors of WAT represented in the group, meets twice/year
- Research on our education:
  - Survey to WAT alumni and teachers 2017 on working-life skills, employment and career
  - Learning outcomes relating to sustainability 2016-2018
- Developing our teaching:
  - Systematic feedback from courses and the programme as a whole
  - Mapping how we collaborate with working-life in our courses

Portfolio in practice

1. Submission of portfolio drafts twice a year = 4 submissions during your Master's studies
   - Before Christmas 2017, April-May 2018, Christmas 2018, May-June 2019 (final)
     - The detailed DL-dates will be sent trough MyCourses
2. Tutoring on portfolio available always before the submission deadline
   - The tutoring dates will be informed trough MyCourses
3. Feedback Session with your Mentor Group always after the portfolio submission DL
   - Facilitated and organized by WAT staff
4. Feedback from submissions given also individually
   - Remember also the tutoring offered by Aalto ENG Career services

Mentoring in practice

1. Aalto-Mentors: professors and lecturers
   - Each group has an own mentor
   - Individual meetings once/semester (topics to discuss will be given beforehand)
     - 1st meeting: Oct 24th, your mentor will be in touch about the times
2. Mentor from working life: WAT alumni
   - Each group will have an own mentor
   - At least one meeting in March-May 2018 in groups (Meeri organises)
     - You can agree on a 2nd meeting for autumn 2018 when you meet with your mentor
3. Aalto mentoring programme by Aalto Career Services
   - Individual mentoring process with one of our alumnae
     - Application to the mentoring programme usually in the beginning of April

2017

2018

1st meeting with your group before submitting the portfolio draft. Tutoring available before the DL

CV Clinic Nov-Dec

Mentor meeting 24 Oct

CV infopoint 16-20 Oct

LinkedIn infopoint 9 Oct, 12.30 am

Portfolio infopoint 6 Sept 14.00-15.30

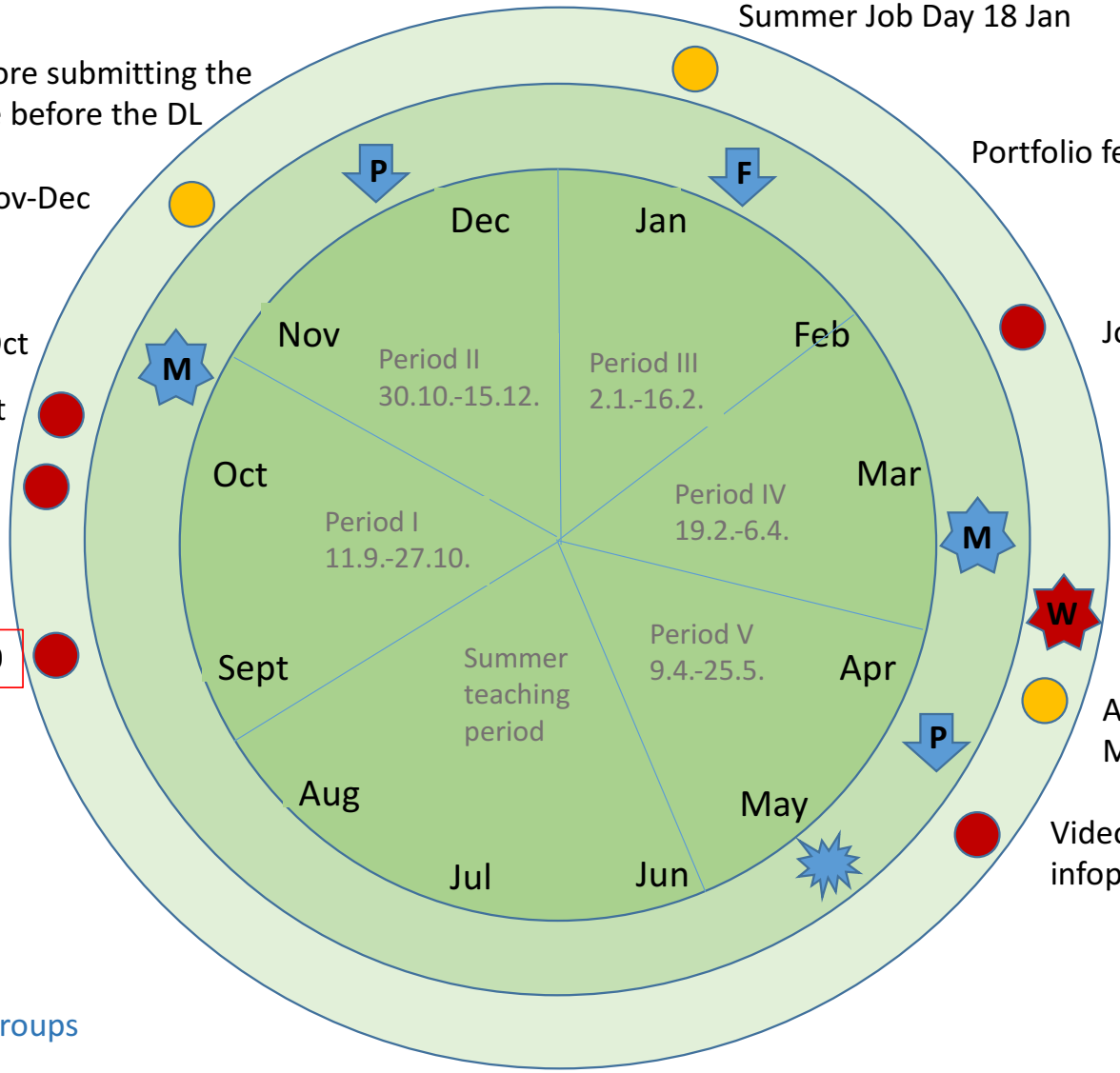
Summer Job Day 18 Jan

Portfolio feedback session

Job interview infopoint

Apply to Aalto Mentoring Programme

Video presentation infopoint



Part of WAT Programme, compulsory:

- M — Aalto-Mentor Meeting
- P — Portfolio submission incl. tutoring and peer group meeting
- Synthesis Session

Optional but recommended:

- W — WAT Working life Mentor Meeting in groups
- WAT Working life infopoint
- Activities offered by Aalto Career Sercives

In addition: Report on a Master's theses seminar during April-May or Sept-Oct 2018

Master's Theses process in practice

Consists of:

a) Reporting on one theses in a Master's Theses Seminar before you start your own theses
   - Recommended to attend the seminars anytime during your studies to learn from other's work

b) Attending a meeting-series: 3 meetings with peers and a facilitator (Meeri/Marko)
   - 4 meeting-series will be started during 2018-2019 (you choose one of them):
     - Sept-Nov-Jan / Nov-Jan-Mar / Jan-Mar-Jun / Mar-May-Aug (preliminary schedule, tba)
     - 1st meeting on research idea and plans, 2nd meeting on preliminary results, 3rd meeting for practicing your presentation and acting as an opponent to one of your peers

c) Presenting your theses in a Master's Theses Seminar
   a) Seminars will be arranged 2-3 times/semester

→Everything will be informed more detailed in and trough MyCourses

2018

2019

3rd meeting with your group before submitting the portfolio draft. Tutoring available before the DL

3rd peer meeting: presenting to others

Individual feedback-session if needed

2nd peer meeting: results

One Aalto-mentor meeting either during autumn or spring

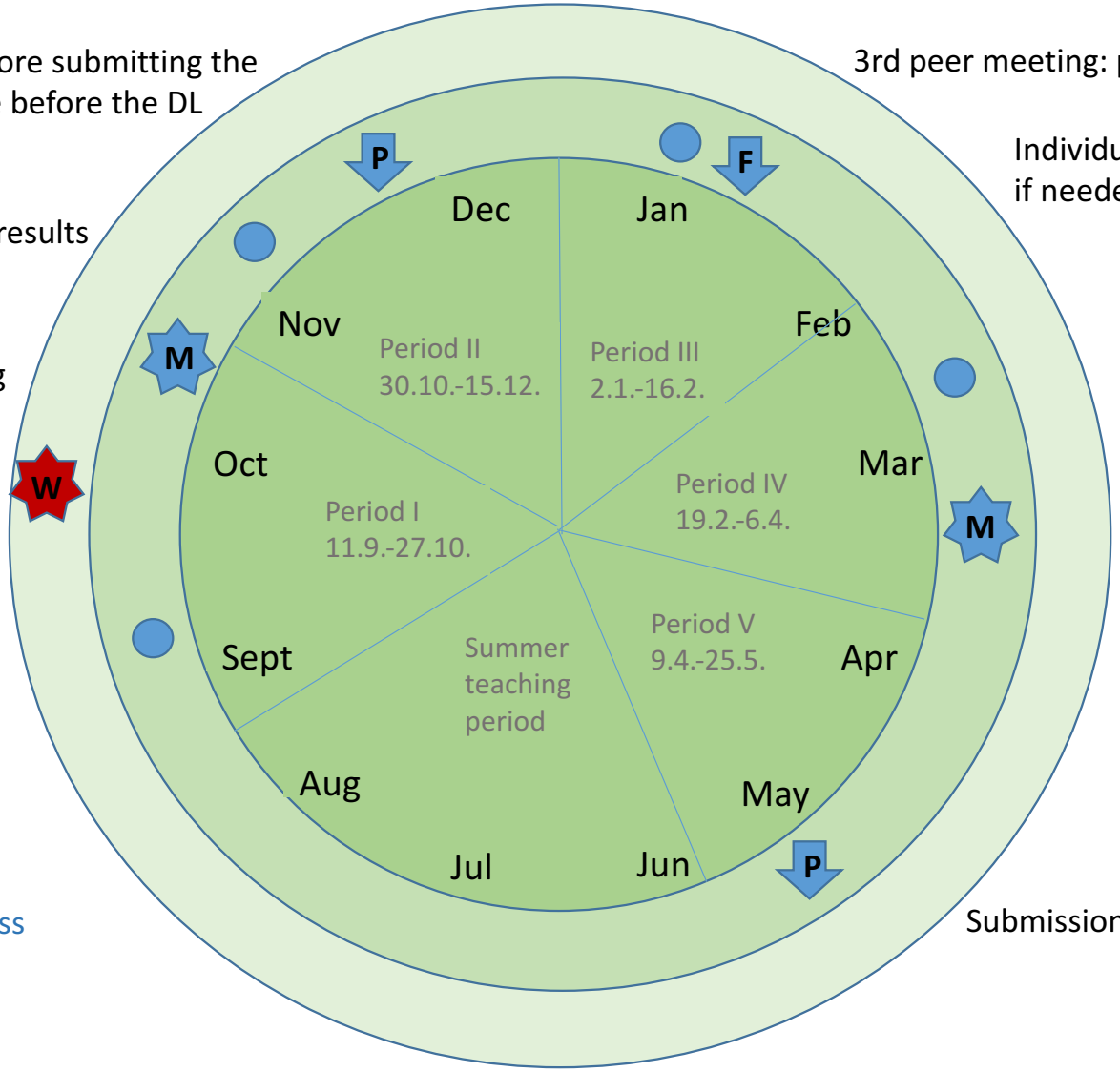
Master's theses Seminar

Optional 2nd meeting

One Aalto-mentor meeting either during autumn or spring

1st peer meeting: research idea and plans

Submission of the final version



Part of WAT Programme, compulsory:

- M — Aalto-Mentor Meeting
- P — Portfolio submission incl. tutoring and peer group meeting (if in Finland)
- An example of a Master's theses process starting in Sept

Optional but recommended:

- W — WAT Working life Mentor Meeting in groups

You can attend the infopoints and Career Services activities also during this year if you wish.

More information

After this in a separate Portfolio session!

→ 2pm at Lecture Hall AS2

MyCourses: WAT Personal Learning Portfolio
https://mycourses.aalto.fi/course/view.php?id=16103

QUESTIONS?