Portfolio renewal: Progress review & discussion

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Kyösti Ruuttunen, Antti Karttunen, Kirsi Yliniemi, Riikka Puurunen

28.4.2023

Aalto University
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Agenda for today

12:30 – 12:45 Welcome & Introduction to questions of the day; recap of milestones

12:45 – 13:00 Introduction to curriculum mapping (J Välimäki)

13:00 – 13:20 Joining in on Vappu festivities; sima & munkki

13:20 – 14:25 Curriculum mapping & mapping support needs in clusters

14:25 – 14:40 Academic Learning Community (ALC): SWOT (K Ruuttunen)

14:40 – 14:50 Laboratory Safety: future of course (A Karttunen, K Yliniemi)

14:50 – 15:00 Introduction to Scientific Publishing D: proposal for course (R Puurunen)

15:00 – 15:15 Discussion on introductory course(s)

15:15 – 15:30 Conclusions, incl. next steps

Introduction to aims of today & Recap of progress

Recap of recent KTAK decisions

1. **Programme = Study option (application target)**
2. **Programme structure of new programmes**
   - Studies towards the major: 60-65 credits
   - Thesis, including a maturity essay: 30 credits
   - Elective studies: 25-30 credits
3. **Number and names of new programmes**
4. **Intended learning outcomes for new programmes**
5. **Majors of new programmes**

Specialisation tracks in new programmes – discussions ongoing in clusters

Programme	*Major(s)*	*Specialisation tracks*
Master's programme in Bioproducts Engineering	**Bioproducts Engineering**	*Discussion ongoing on whether to establish tracks*
Master's programme in Biotechnology	**Biotechnology**	• *Industrial Biotechology* • *Bioscience*
Master's programme in Chemical and Metallurgical Engineering	**Chemical and Process Engineering** **Sustainable Metallurgical Engineering**	
Master's programme in Chemistry and Materials Science	**Chemistry and Materials Science**	• *Chemistry* • *Materials Science*

Spring deadlines for clusters

Document/other outcome	Deadline for clusters	Next steps (for cluster information)
Programme-level ILO's and high-level structures (i.e. major(s) vs. track(s) & their number and creditload) to be submitted to Pauliina Ketola by cluster leaders	6.3.2023	Decision item at March DPC & April KTAK
Cluster input admission requirements and evaluation criteria for discussion	6.3.2023	Discussion item at March DPC & April KTAK; feeding into preparation work by LES in April
Admission requirements, evaluation criteria	2.5.2023	Discussion item at May DPC & KTAK Decision item at June DPC & KTAK
Student intake numbers	2.5.2023	Discussion item at May DPC & KTAK
Potential course names and provisional positioning of each course in 'studies towards major' structure	2.5.2023	Discussion item at May DPC & KTAK
Programme ('study option') descriptions, i.e. admissions and programme marketing material Comms material created in collaboration with cluster leaders	19.5.2023	Marketing material finalised by copywriters Translation by Translation Team into Finnish and Swedish

Project aims for after summer

Design of:

- **Course descriptions and ILO's;**
- **Degree requirements and course selection;**
- **Transition (routes) from old to new programmes;**
- **Bachelor-Master transition routes**

Main questions for today

What do you need or what would help with your curriculum development?

For example, could you be helped with:

- Guidelines? Support? Facilitated workshop?
- On what?

Post on Presemo: **presemo.aalto.fi/chemportfolio28april**

Context for today I

Degree Regulations & programme-level lLO’s determine aims and contents of each programme

- **Curriculum must be designed so that it corresponds to learning outcomes**
- **Useful tool of forming over-all picture of programme and ensuring alignment with lLO's is curriculum mapping, which can be used to different aspects of curriculum, e.g. map student workload and integration of different themes into curriculum**

Context for today II

Degree Regulations & programme-level lLO's determine aims and contents of each programme

- **Some of contents and aims have been fulfilled by Academic Learning Community (ALC) course**
- **If ALC is discontinued, it is programmes that must ensure that students are equipped with aims and contents as specified by Degree Regulations & programme-level lLO's**
- **How can it be ensured these aims and contents get attention that they deserve?**

Degree regulations: MSc (Tech) degree provides students with:

1) knowledge of their field: in-depth knowledge of field of major and knowledge and skills to understand its problems from point of view of users, technical and social systems, and environment and ethics;
2) skill to analyse and solve problems: knowledge and skills needed for operating as expert and developer of field, also when operating in international environment;
3) ability for scientific thinking: knowledge and skills needed to apply scientific knowledge and scientific methods independently;
4) knowledge and skills needed for doctoral education and continuous learning;
5) language and communication skills needed to follow scientific developments in field and to engage in scholarly communication in field of science and technology.

Education shall be based on both scientific research and professional practices of fields requiring expertise in science and technology.

Curriculum mapping

Planning teaching so that it corresponds to learning outcomes

Jukka Välimäki

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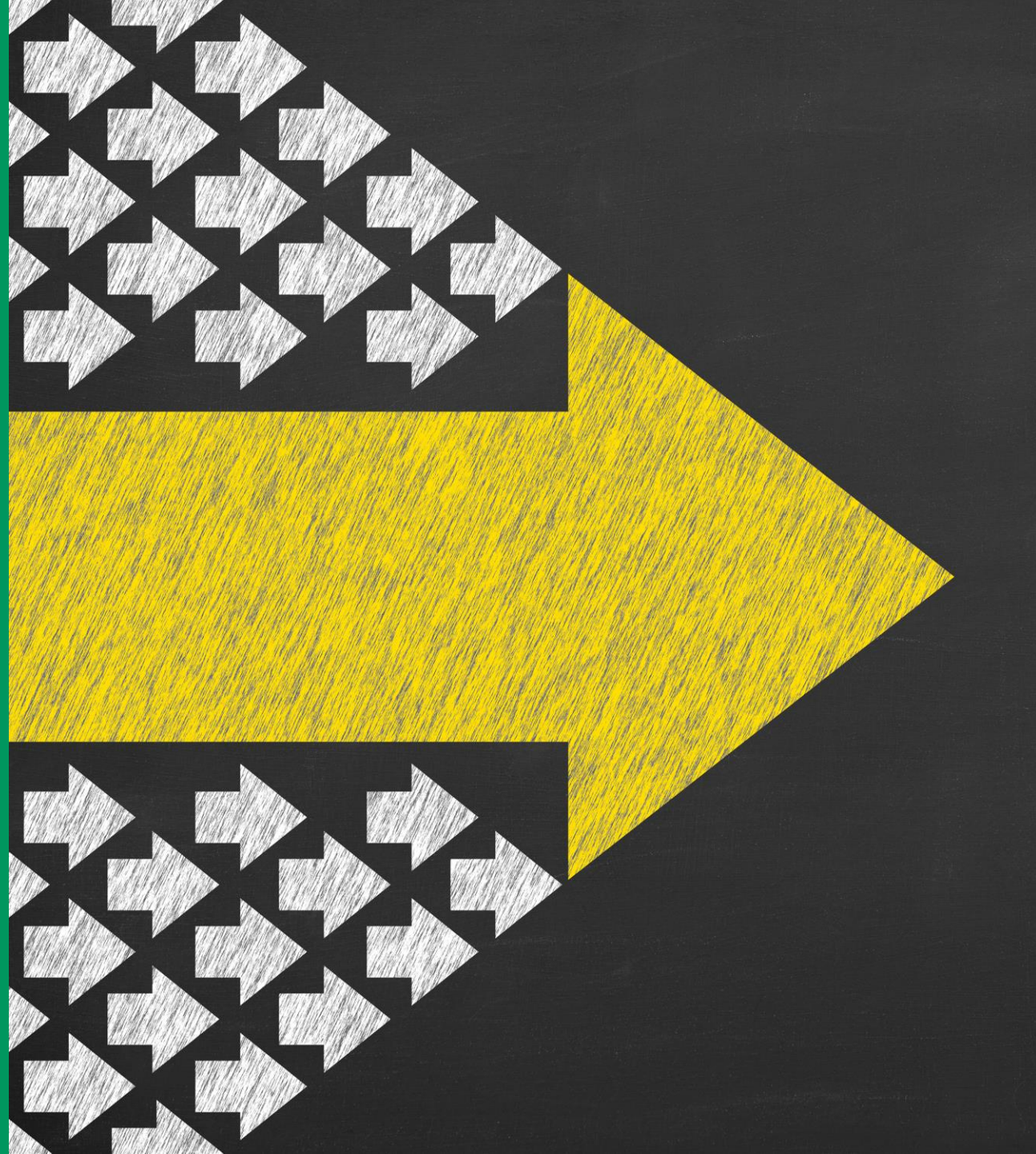

Introduction to curriculum mapping

Helps to form a complete preview of the degree programme as a whole

→ **Programme components (such as courses) viewed as part of the larger picture**

→ **Connections between the content and methods of different courses identified**

Utilized in other schools at Aalto

- **To share information between teachers in a programme (ELEC)**
- **To develop programme alignment (ENG)**
- **To check and assess existing programme structure and alignment (BIZ)**

Main principles

Courses are on columns

Mapped items are on rows

Helps to form a complete programme preview

What is mapped	Course 1	Course 2	Course 3	Course 4
Component 1				
Component 2				
Component 3				
Component 4				
Component 5				

What can curriculum mapping be used for?

We can map different things…

- **Programme ILO's**
- **Programme contents**
- **Particular themes e.g., sustainability**
- **Teaching methods**
- **Workload**
- **...**

…and from different directions

Finding the gaps and overlaps

- *How do courses match with renewed programme ILOs?*

Building alignment

- *Are the courses organized so that students can build upon what they have learnt on previous courses?*
- *How can we balance the workload throughout the studies?*

Checking the alignment when making updates

- *When making changes, how are the programme ILOs and courses aligned?*

Tracing hidden elements

- *What kind of sustainability related topics are we currently teaching?*

Mapping the future potential

- *Which courses could contribute to sustainability related ILOs?*

Programme ILOs

Example

1/5

“x” when a course supports program learning outcomes

Programme ILOs	Course 1	Course 2	Course 3	Course 4
ILO 1	x			
ILO 2	x	x		x
ILO 3			x	x
ILO 4				x
ILO 5				

Programme ILOs & alignment

Example

2/5

1 = Introduced
Relevant competences are presented

2 = Practiced
Competences are developed further / at a deeper level

3 = Mastered
Sufficient (graduate) level should be developed / achieved

Programme ILOs	Course 1	Course 2	Course 3	Course 4
ILO 1	1			
ILO 2	1	2		3
ILO 3			1	2
ILO 4				1
ILO 5				

Programme ILOs & alignment

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ILO 5				

Programme ILOs & methods

Example

3/5

Sharing information about teaching practices

Programme ILOs	Course 1	Course 2	Course 3	Course 4
ILO 1	Introduced in lecture 1			
ILO 2	Introduced in lecture 3. Assignment for recognizing…	A team project about a related topic		The course delves deeper into the topic…
ILO 3			Presented in a reading assignment	Practiced in exercises. Assessed in exam.
ILO 4				A visiting expert from…
ILO 5				

Programme ILOs & methods

Example

3/5

Sharing information about teaching practices

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ILO 4				A visiting expert from…
ILO 5				

Introduced | Practiced | Mastered

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Programme content or a particular theme (e.g. sustainability)

Example

4/5

Content can be divided into subtopics.

Helps in noticing gaps, overlaps & connections

	Course 1	Course 2	Course 3	Course 4
Creating products				
Wood	1			
Crops	1	2		3
Plants			1	2
Organic waste				1
Sustainability				
LCA			1	2

1 = Introduced **2 = Practiced** **3 = Mastered**

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Helps to get a complete preview of a programme

Example

5/5

Course types can be separated

Different components can be mapped in one table

Component	Compulsory courses		Elective studies	
	Course 1	Course 2	Course 3	Course 4
Creating products				
Wood	1			
Crops	1	2		3
Plants			1	2
Organic waste				1
Sustainability				
LCA			1	2
Assessment	Written exam	Project	Oral exam	Weekly assignment

1 = Introduced **2 = Practiced** **3 = Mastered**

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Task: What should you map in your programme?

What information has to be shared in your programme? What do you need an overall picture of? E.g.

- **Course content (to find gaps, overlaps and connections)**
- **Programme level ILOs in relation to course ILOs (to see how courses are aligned with them)**
- **Degree regulations (to see how you meet them)**
- **Sustainability or other themes (to see which courses contribute to it)**
- **Something else?**

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Mapping Excels in Teams, in CLUSTER WORSPACES for each programme

- Bioproducts engineering
- Biotechnology
- Chemical and metallurgical eng.
- Chemistry and material science

Please consider:

- Evenly distributed student workload
- Teacher resources
- Cross-cutting themes
- Other than your MSc programme students (Aalto joint programmes, international partner programmes, etc)

Please consider

Student workload

- Not all students enter MSc in September; Aalto bachelors can now start at any point of academic year
- Student perspective: Workload and labs spread across periods
- Workload currently perceived high in periods I-II (lots of labs)

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Manageable individual workload

- Starting in 2024 with core contents & core offering
- New courses can be introduced at later stage
- Are resources tied into relatively small courses?
- How many courses can one responsible teacher handle?

Other than your MSc programme students

- Students on Aalto joint programmes and international partner programmes & courses offered on these programmes
- Students studying CHEM minor(s)
- Potential for Lifewide Learning (LWL) provision
- Exchanges students

CHEM-E0105 Academic Learning Community - SWOT analysis

Kyösti Ruuttunen

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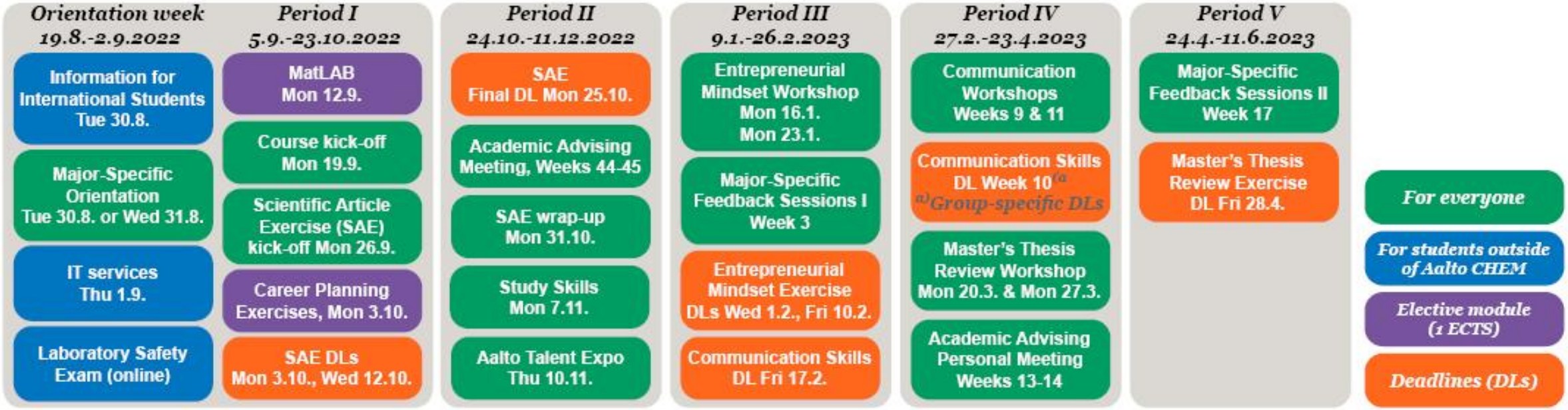
Course Schedule



Intended Learning Outcomes

After the course, the student will be able

- to adopt the code of conduct of the academic community
- to set personal goals for effective learning and skills development
- to communicate and collaborate in a multicultural and multidisciplinary learning environment
- to identify opportunities for academic entrepreneurship and career development
- to work safely in laboratory and conduct the principles of scientific research and communication

Course Contents

The minimum requirements (giving 3 cr)

- Answering five quizzes on the topics covered during study sessions
- Attending the major-specific orientation session, two personal meetings with the academic advisor, and two major-specific feedback sessions
- Participating Aalto Talent Expo recruitment fair
- Completing Communication Skills module
- Finalising Scientific Article Exercise module
- Participating successfully Thesis Review module
- Completing Entrepreneurial Mindset module

Two additional one-credit modules

- MatLAB basics
- Career Planning Exercises

SWOT

Strengths

- Dedicated course & teachers
- Straightforward to ensure that teaching the general skills reaches all
- Students clearly need and appreciate many parts of the course

Weaknesses

- Managing the course is tedious
- Many modules with separate deadlines hard to handle
- Very long (five periods)
- Many teachers → scheduling hard

Opportunities

- Enables learning in multidisciplinary teams
- Formation of teachers' network (CHEM staff, Language Centre, Aalto Ventures Programme, Learning Services, Career Design Lab, Learning Centre)

Threats

- Some students have very low motivation
- Insufficient teaching resources allocation

Food for Thought: Soft Skills and Employment

Soft skills

- Skills and competences seen especially important in working life
- Communication & teamwork skills, problem-solving skills, leadership, social skills, creativity, service orientation, multicultural skills, ability to link theory and practice…

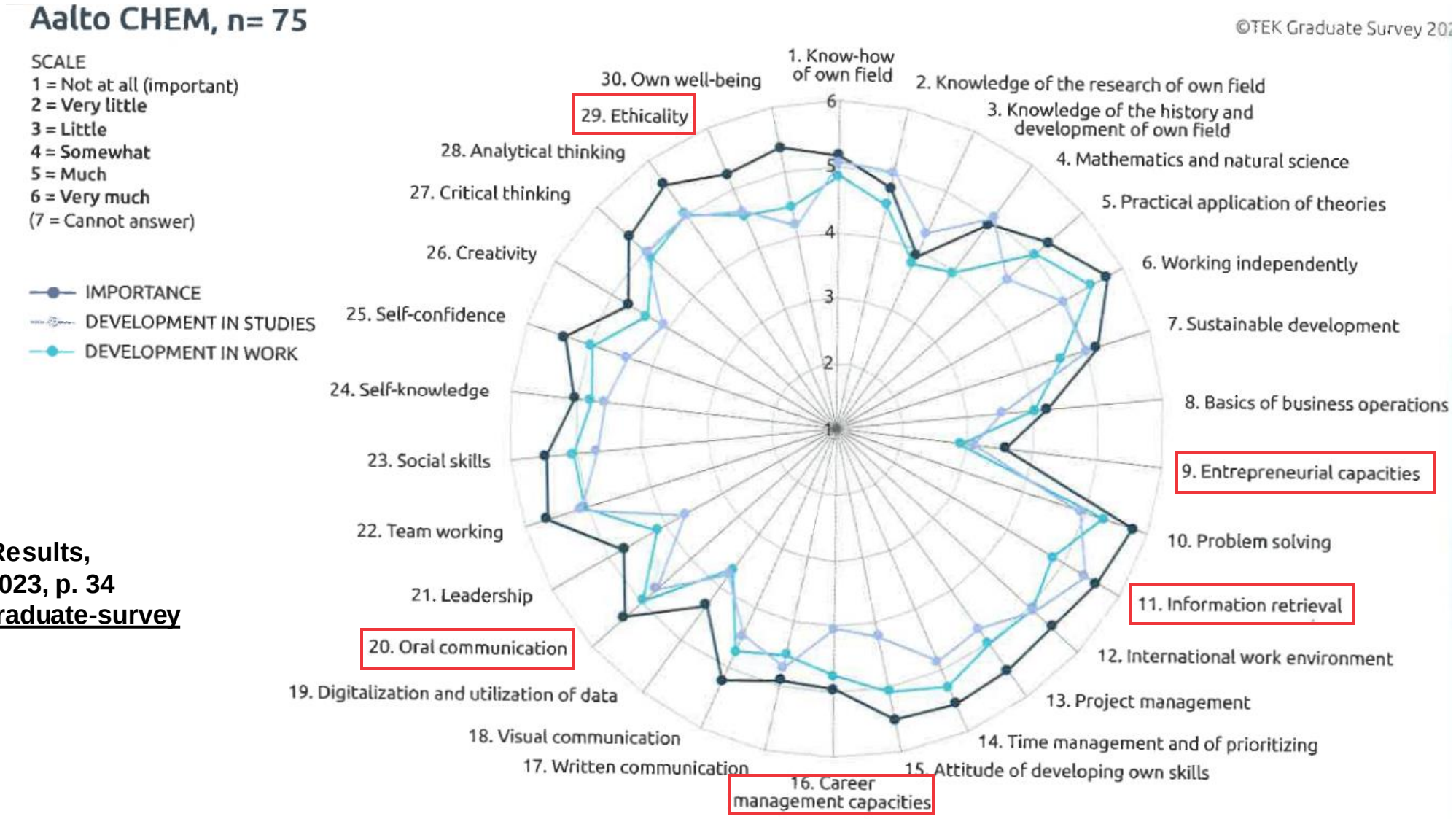
Soft skills increase the employability

- Studies: good soft skills → employment after graduation
- Self-efficacy beliefs also important

→ **The better we teach the students soft skills, the better their employment**

Tuononen T. et al. in Higher Education Transitions, 2017, pp. 238-253

Food for Thought: TEK Graduate Survey



TEK Graduate Survey 2022, Results, Tekniikan Akateemiset TEK 2023, p. 34
See also https://www.tek.fi/graduate-survey

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Laboratory safety course – Proposal for future

Antti Karttunen, Kirsi Yliniemi

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Engineering

Laboratory safety courses: Current status

- Laboratory safety is crucial part of education at CHEM.
- We currently have three courses with the same contents.
- CHEM-A1010 - Turvallinen työskentely laboratoriossa (**0 cr**) for BSc (fi/sv). Workload part of ABC course (2 cr)
- CHEM-E0140 - Laboratory Safety Course (**0 cr**) for everyone else (en). Workload part of ALC course (5 cr). Aalto BSc students do not re-do this for MSc.
- CHEM-EV05 – Laboratory and Chemical Safety (**1 cr**). For University of Eastern Finland students (almost 500 students in 2022-2023)

Laboratory safety course: from 0 cr to 1 cr

- Work done by students should be rewarded.
- Proper course with 1 cr in study transcript also highlights that we value laboratory safety.
- Other Finnish universities typically have 1 cr safety course and we already offer 1 cr course to UEF.
- Some new contents could also be added to the upgraded course.
- Suggestion: Starting Fall 2024, we offer **1 cr** laboratory safety course for both BSc and MSc students (fi/sv/en)
- For MSc students who have not completed the course during BSc, the 1 cr course will be obligatory. Where to put the credit in the curriculum (elective block?)
- In BSc programme, the credit can be taken from ABC (2 cr -> 1 cr). English BSc programme to be discussed.

CHEM-Exxxx Introduction to Scientific Publishing D (1 ECTS)

Proposal for MSc students at Aalto CHEM
Optional for doctoral candidates

Riikka Puurunen

Aalto University
School of Chemical Engineering

CHEM-Exxxx Introduction to Scientific Publishing D (1 ECTS)

Proposal to CHEM Curriculum after portfolio renewal
For all (?) MSc students at Aalto CHEM
Optional for doctoral candidates (?)
Prof. Riikka Puurunen

Course: CHEM-Exxxx Introduction to Scientific Publishing D (1 ECTS)

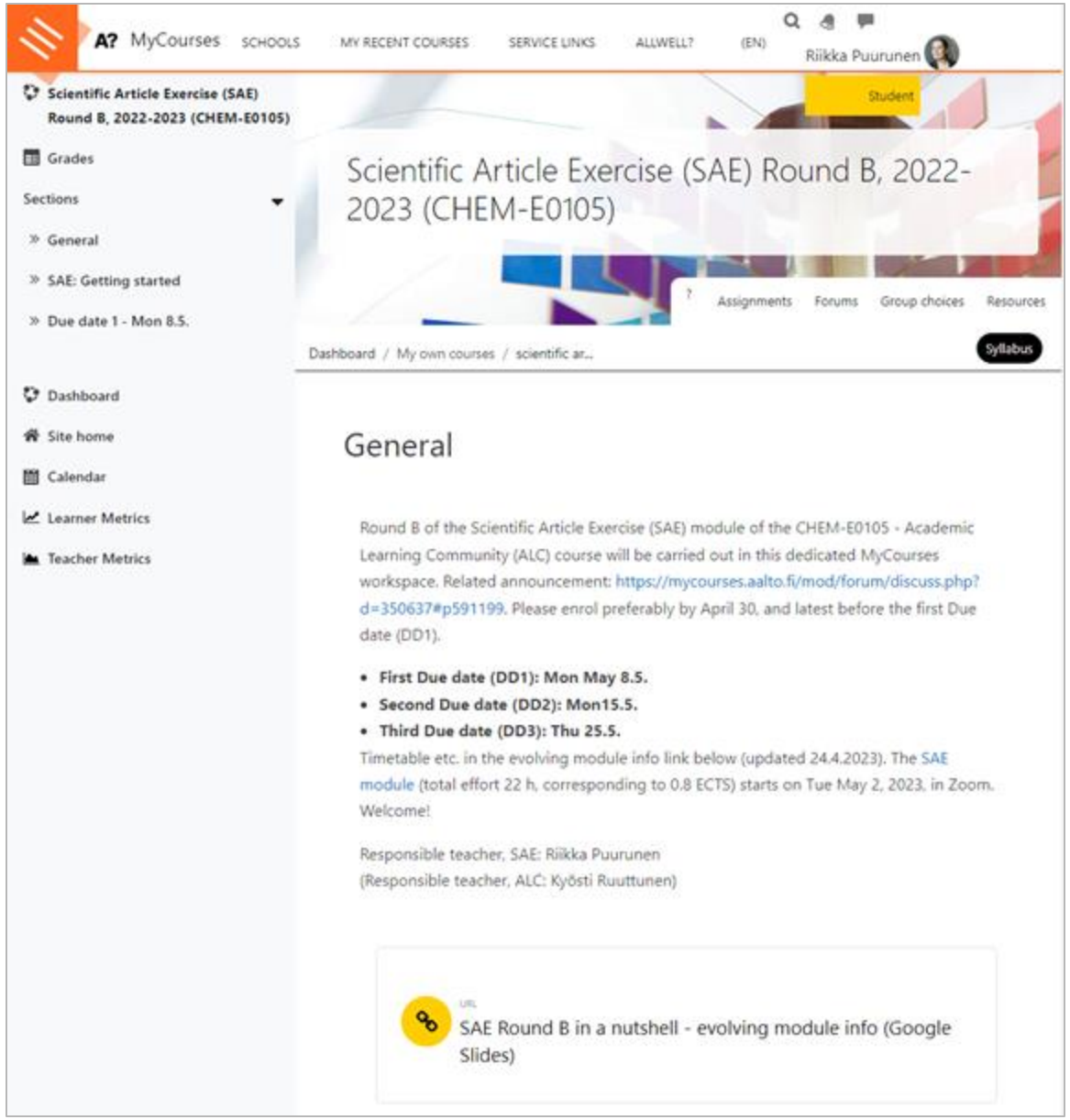
Description: *This course introduces the student to the field of scientific publishing: what is a scientific article and how it differs from a web page, what is peer review, how to find scientific journals and how is the quality of various scientific publishing forums attempted to be assessed. As part of the course, the student will do an exercise, where the student finds a unique peer-reviewed scientific article reporting original research, makes a structured analysis of it, uses a similarity detection software, and gives and gets peer feedback.*

- Workload: 1 ECTS
- Evaluation: Pass/fail
- Duration: one period
- Timing Period I or Period II

Predecessor for Introduction to Scientific Publishing (ISP): Scientific Article Exercise (SAE), 0.8 ECTS

- SAE part of CHEM-E0105 Academic Learning Community since 2020-2021
- Developed earlier in CHEM-E1140 Catalysis for biomass refining
  - “Individual article summary”
  - Organized the last time in 2019-2020
- Next round starting 2.5., anyone interested can join!
  - To join, self-enrol in Voluntary group of SAE Round B, preferably by April 30th

https://mycourses.aalto.fi/course/view.php?id=38181



2023 ALC SAE Round B - evolving module info - Google Slides [anyone with the link can view]

CHEM-E0105 Academic Learning Community (ALC) (2022-2023) Scientific Article Exercise (SAE) Round B in a nutshell

https://mycourses.aalto.fi/course/view.php?id=38181#section-0

Period V: Multimodal teaching period 24 Apr –11 Jun 2023

SAE Round B activity	SAE Week 1							SAE Week 2							SAE Week 3							SAE Week 4							SAE Week 5							SAE Week 6						
	Week 17, starting 24.4.							Week 18, starting 1.5.							Week 19, starting 8.5.							Week 20, starting 15.5.							Week 21, starting 22.5.							Week 22, starting 29.5.						
	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S
Kick-off session (online, 9:15)									L																																		
Six short videos																																										
DD1: ~Find article															x																											
DD2: ~Analyse article																						x																			
DD3: ~Peer evaluation																																x										
Wrap-up session (online, 9:15)																																										
L = lecture. x = Due date (DD)									*L: Tue 2.5.*																																*L: Mon 30.5.*						
															DD1: Mon 8.5.							*DD2: Mon 15.5.*											*DD3: Thu 25.5.*													

Teacher in charge for SAE: Riikka Puurunen (email: firstname.lastname@aalto.fi)
Teacher in charge for ALC: Kyösti Ruuttunen (email: firstname.lastname@aalto.fi)

SAE, Intended learning outcomes: Students…

- understand what differentiates scientific articles from other publications such as web pages,
- are able to recognize typical parts of scientific articles that report original research (IMRaD) and find the conclusion of an article,
- know how to formulate citation, in a given format (we practice the format of Aalto CHEM instructions),
- are able to describe how the impact of a scientific journal and of an individual article is (attempted to be) assessed,
- have practiced formulating his/her own view (/comment/opinion) on a scientific article,
- be able to use a similarity detection software,
- have made peer evaluation.

- *For ISP, these learning outcomes will be fine-tuned.*
- *There is 0.2 ECTS space to add a bit of contents to the module - feedback welcome*

Closing remarks

This May-June, work will resume and be completed on:

- **Programme descriptions (support from copywriters);**
- **Admissions and evaluation criteria**

Upcoming portfolio events:

- **25.5. Portfolio renewal coffee (13:30-14:30; C100 Aluminium, Vuorimiehentie 2)**
- **18.8. Combined Programme and Portfolio Review (12:30-15:30; KE1)**

Thank you for participating!
Have a good Vappu!

aalto.fi

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