

CHEM Programme & Portfolio Review 2023

Jouni Paltakari, Anni Rintala, Jukka Välimäki, Pauliina Ketola

18.8.2023



Aalto University
School of Chemical
Engineering

Programme for today

presemo.aalto.fi/pr23chem

12:30-13:00 Summary and review of academic year 2022-2023

- Overview of the strategy implementation
- KPI targets
- Admissions

13:00-14:30 Orientating for curriculum development 2024-26

- Workshops on curriculum development

14:30-14:45 Coffee break

14:45-15:15 Presenting workshop results

15:15-15:30 Conclusions/ ending session



Review of the academic year



Overview of the strategy implementation



KPI targets



Admissions



Strategy implementation

CHEM EDUCATION DEVELOPMENT MILESTONES HIGHLIGHTS 2022



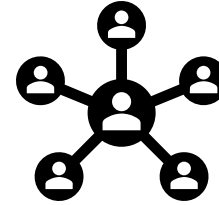
New master's degree programme portfolio – renewal ongoing



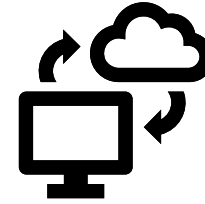
Teacher workload more even



Integrating sustainability in our programmes



Support for digital learning



User-centric development of (digital) support services and data-driven management and the effective use on learning analytics

2022

Number of degrees Number of MSc degrees increased significantly from previous year (116 -> 141). Also number of BSc degrees increased (131-> 135)

MSc portfolio renewal:

Work started in research focus area clusters and work with new programmes in high speed

Curriculum 2022-2024 launched:

- Pioneering work at Aalto of integrating sustainability into programmes curriculum 2022-2024 started with renewed content
- Reorganizing lab teaching for 200 student lab courses got good feedback from teachers and students.

Digital learning and services

- Digipedagogical support and development project ongoing
- Data-driven management in portfolio renewal work
- New digital services implemented

Marketing programmes

Attracting motivated applicants by contacting high schools and social media campaigns.

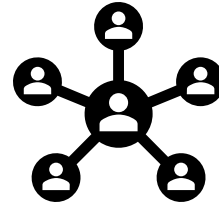
CHEM EDUCATION DEVELOPMENT MILESTONES HIGHLIGHTS 1-7/2023



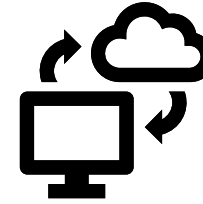
New master's degree programme portfolio – renewal ongoing



Teacher workload more even



Support for digital learning



User-centric development of (digital) support services and data-driven management and the effective use on learning analytics

2023

MSc portfolio renewal:

Work ongoing in high speed!

Part of MSc portfolio renewal looking at Teacher workload at the departments

Number of degrees Number of MSc degrees seems to be still increasing from previous year.

Forecast: Low number of Doctoral degrees.

Digital learning and services

- Digipedagogical support and development project ongoing
- Data-driven management in portfolio renewal work

Marketing programmes

Attracting motivated applicants by contacting high schools and social media campaigns.

Strategy milestones for the future

Curriculum 2024-2026 development

- New master's degree programme portfolio ready (2024)
- Marketing of new master's degree portfolio programmes and majors (2023-2024)
- Programme management clear (2024)
- Teachers workload will be made more even (2021-2024)
- Learning results in centre. Revision of assessment principles for curriculum period 2024-2026
- Students are more involved in planning and developing programmes and courses (2022-2026)
- Effective utilisation of student feedback on good practices in teaching and learning (2022-2024)
- Active participating in the development of cross-university studies (2024)
- Data-driven management (2022) and the effective use on learning analytics (2025)

Evaluation of curriculum

- Reviewing master's programme portfolio renewal Possible adjustments to 2026-2028 curriculum if needed. (2025-2026)
- Evaluating how integration of sustainability and multidisciplinary studies have succeeded (2025-2026)

Resources

- Resourcing for "growth with quality" is solved by 2024
- Investing in teaching environment. Facilities are already at their limits such as labs. (2023)

Life wide learning

- Continuous learning needs evaluated, and contents defined (2022) Continuing to define LWL offering needs and offerings from CHEM (2023-2025)
- Resourcing for continuous learning is secured (2024) Possible project proposal to additional LWL funding.
- Experiences in Life Wide Learning projects with stakeholders are implemented to degree programme education (2024)



Digitalization development and competences

- Digipedagogical competence development project: defining the current state and needs for developing competences. Target level reached with continuous competence development. (2024)
- Inclusive and accessible teaching practices part of our digital teaching and learning environments. (2022-2026)
- Virtual laboratory teaching more accessible (2024)

Services:

- User-centric development of support services. (2022-2025)
- Digitalized services enable the offering of personalized, easy-to-access support for students and teachers (2024)
- Take full advantage of University Teacher Services and IT services. Focus on Salesforce platform renewal and development. (2026)

New course feedback tool

New course feedback tool in October -

Main features

- During-the-course feedback surveys in addition to the automatic end-of-course feedback survey
- Editing and scheduling of surveys even before the course starts
- Continuous feedback function
- Possibility to publish multiple choice questions summaries for students
- Responding to the feedback
- Joint and personal question library for creating surveys
- Summary view of feedback surveys of your own courses with statuses (for both teacher and student)
- Available in MyCourses

Roll-out plan

New tool roll-out

23 October

New course feedback tool available in MyCourses from the period II onwards

23 October

1 November

Courses ending before 1 November
Course feedback in Webropol

- Notifications via emails
- 3 week open time for surveys

Courses ending 1 November or later
Course feedback in MyCourses

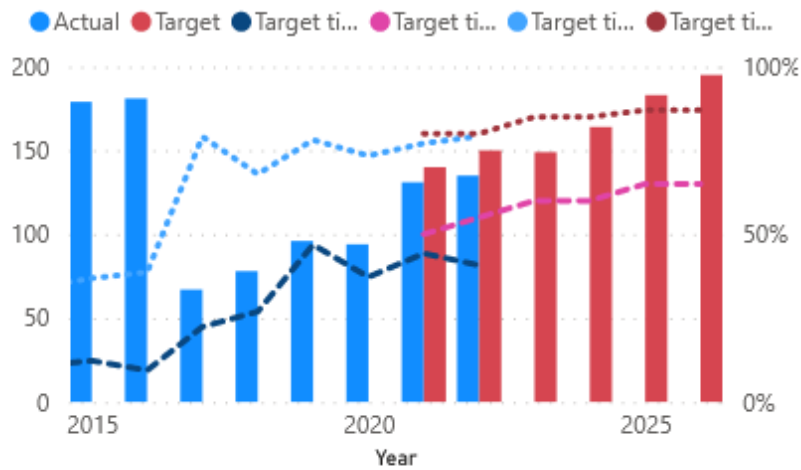
- All features available for teachers 23 October onwards
- 2 week open time for surveys
- Notification via email

- Custom notification via email during transition phase

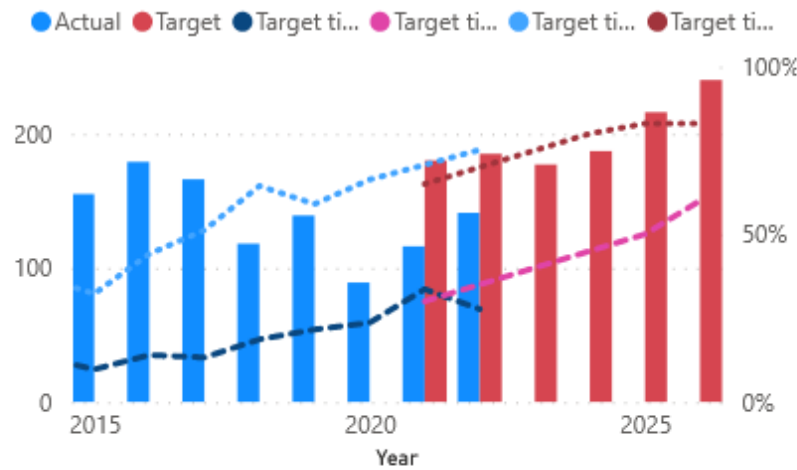
Education KPIs

2022

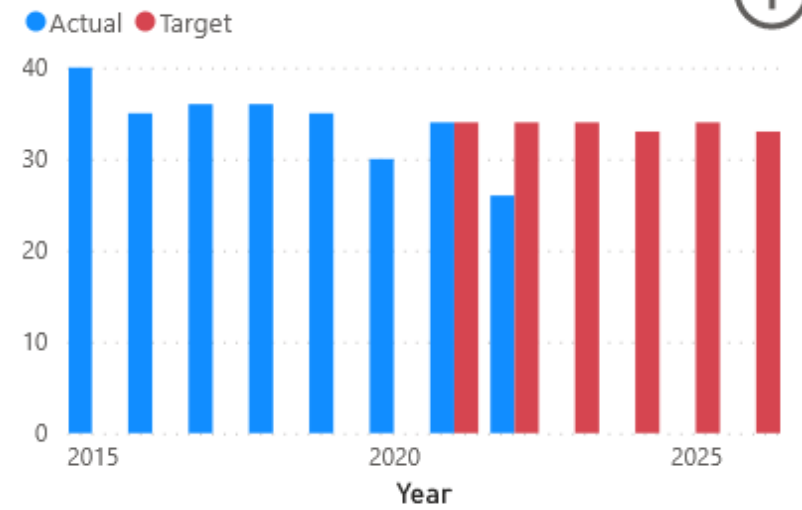
Bachelor's degrees, number of. Target times, share of.



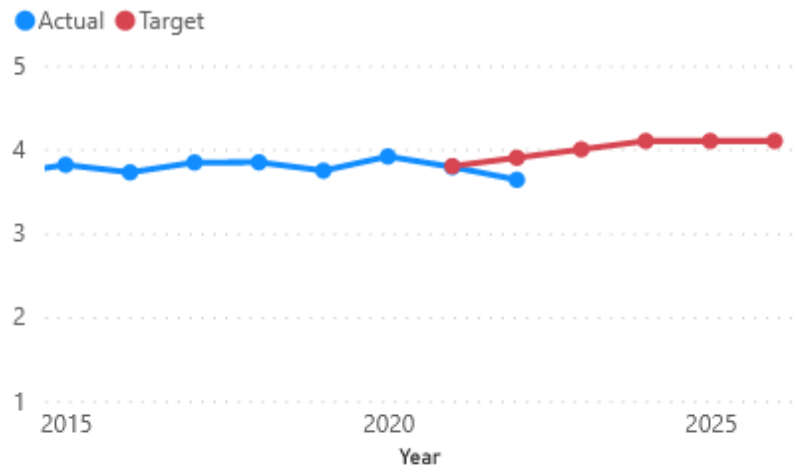
Master's degrees, number of. Target times, share of.



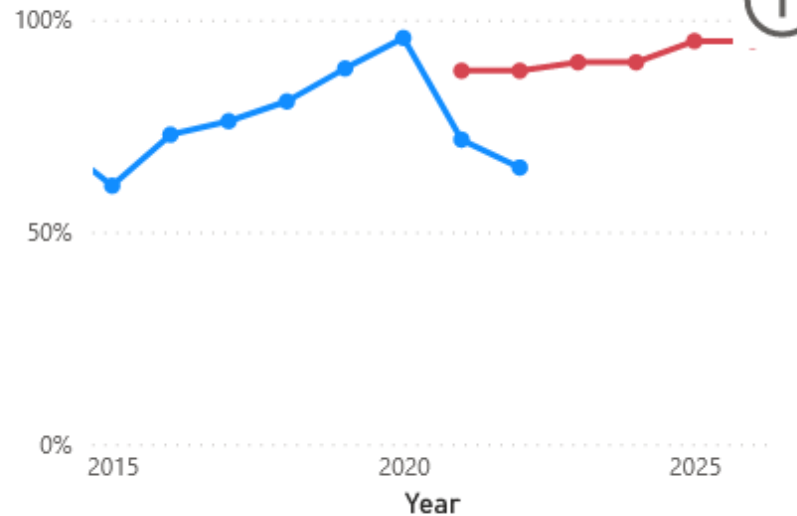
Doctoral degrees, number of



Bachelor's feedback, average assessment for funding model questions



Bachelor's feedback, response rate

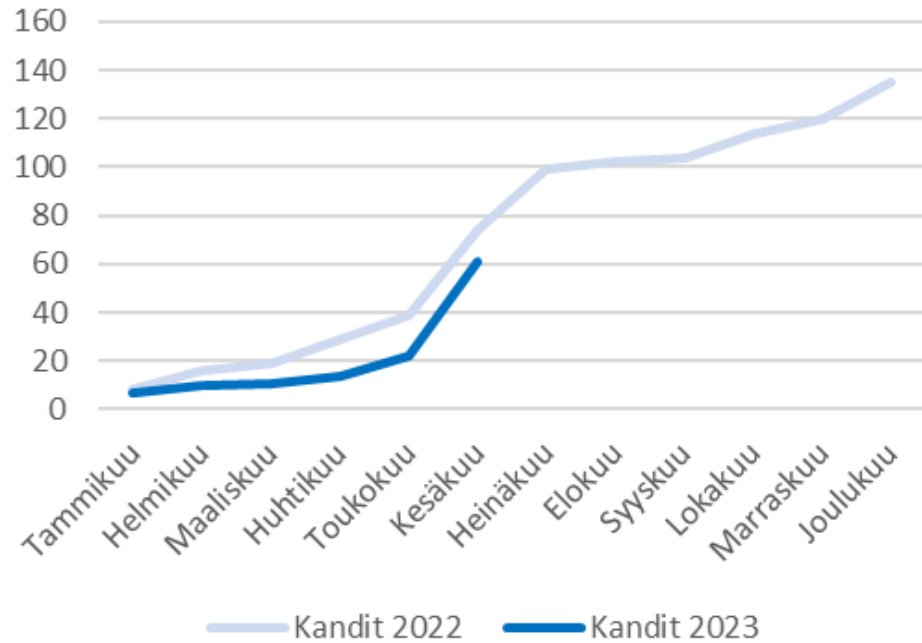


Continuous learning, number of credits

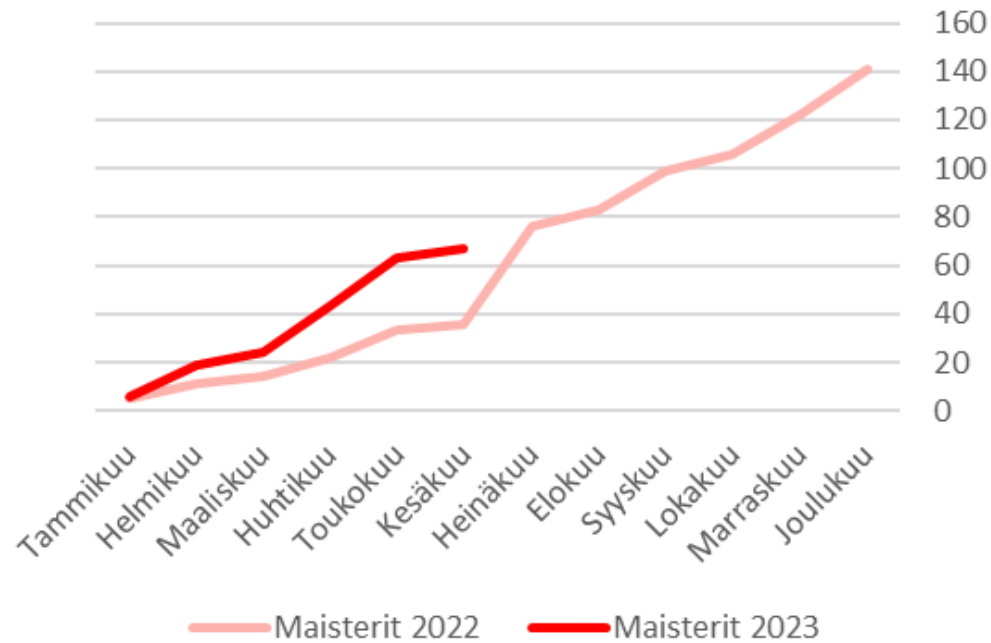


2023

BSc degrees
Kandidaatin tutkinnot
2022 / 2023



MSc degrees
Maisterin tutkinnot
2022 / 2023

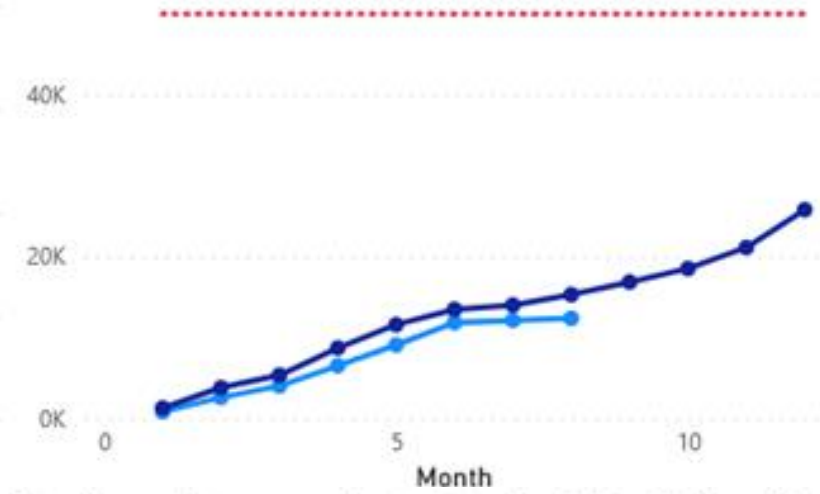


Degree	
BSc	61
MSc	67
Doctoral degree	7

2023

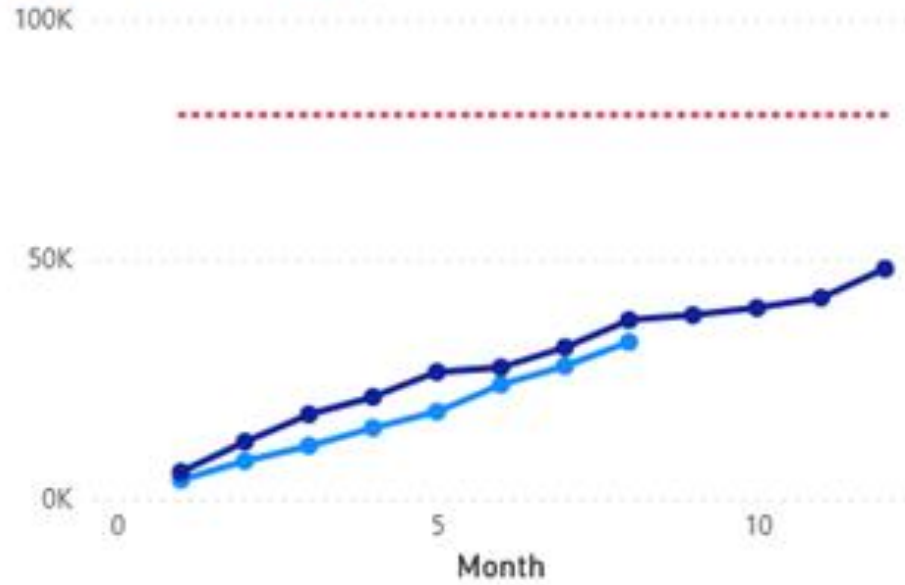
Continuous learning, number of credits

● Current ● Previous ● Target



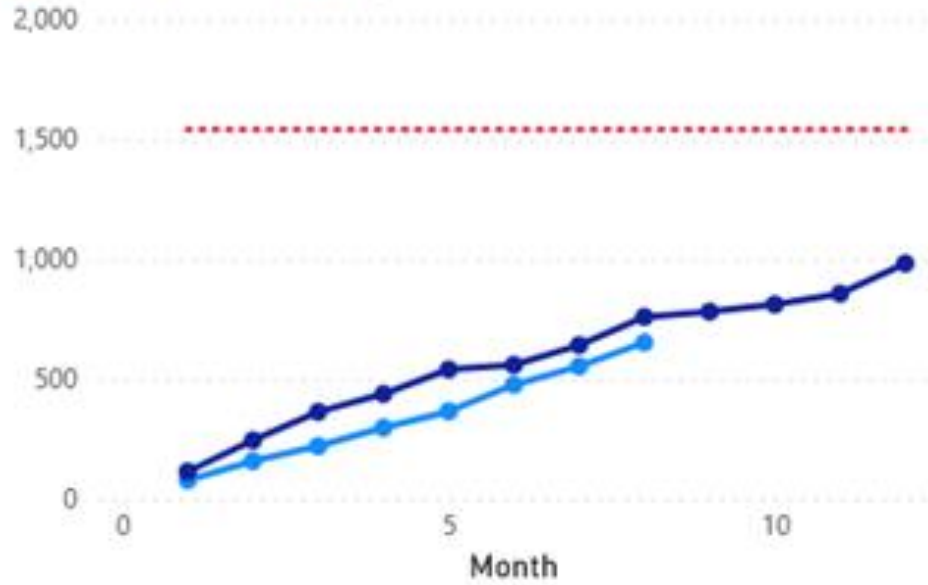
Bachelor's feedback score

● Current ● Previous ● Target



Number of respondents for bachelor's feedback

● Current ● Previous ● Target



Tilastot Statistics

Admissions 2023

Lähteet: Opintopolku, Vipunen ja
<https://dia.fi/lisatietojahakemisesta/tulokset-ja-oikaisumenettely/#pills-Aiempienvuosienpisterajat>

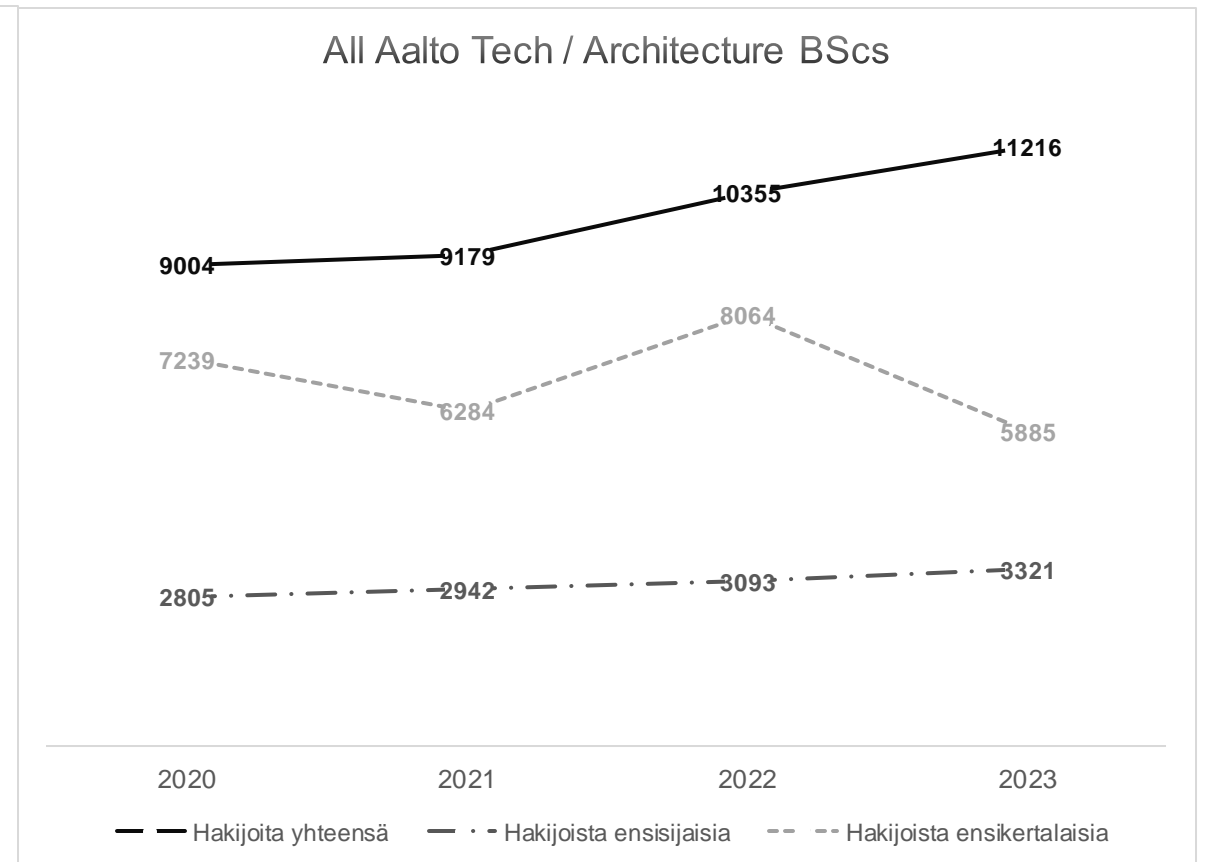
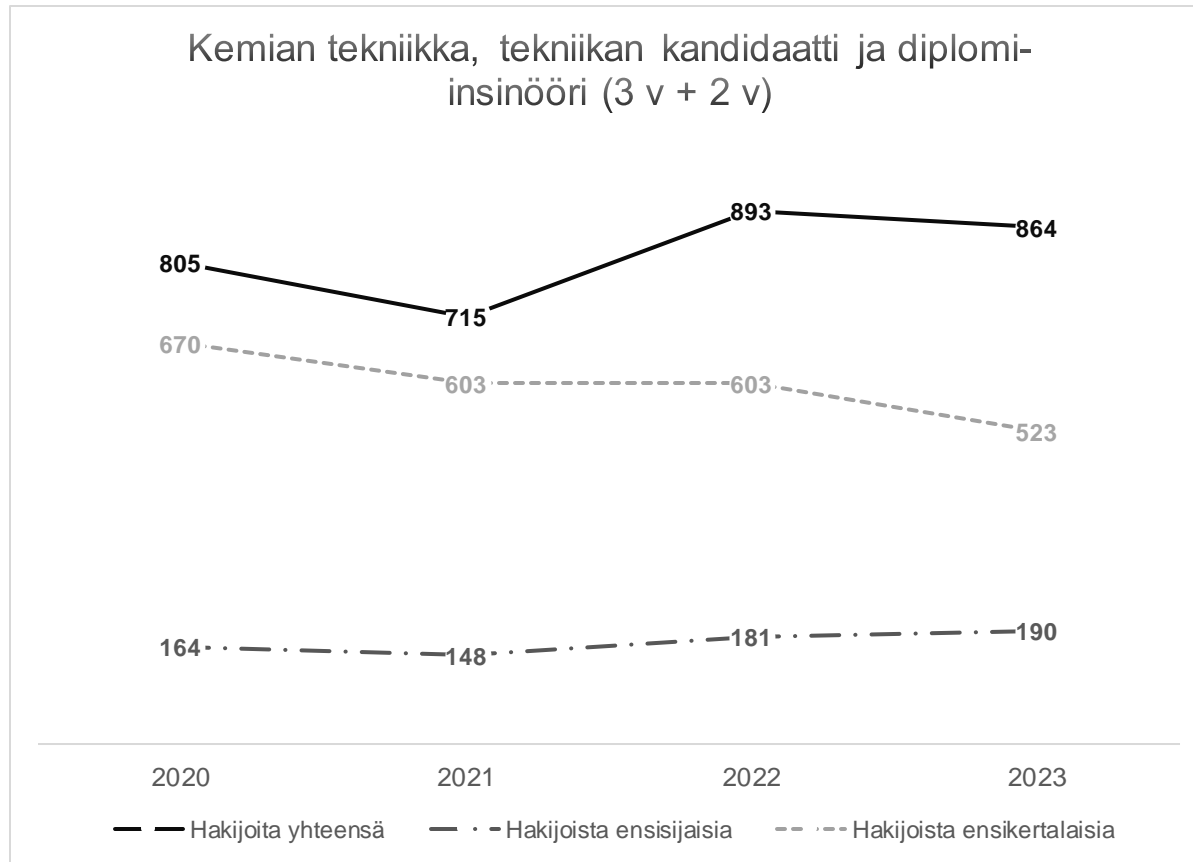
Kari Lehti, Anni Rintala



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BSc admissions DIA / DIA-kandivalinta



Tilastoja CHEM kandivalinta 2023

Statistics CHEM BSc admissions 2023 /Kemian tekniikka

Hakukohde	Hakijat yht. Applicants	Hakijoista ensisijaisia/ First priority	Hakijoista ensikertalaisia/ First time applicants	Hyväksytyt yht. Accepted	Paikan vastaanottaneet yht. Registered
Haku avoimen yliopiston väylän kautta, Kemian tekniikka	7	2	5	2	2
Kemian tekniikka, tekniikan kandidaatti ja diplomi-insinööri (3 v + 2 v) Kemian tekniikan korkeakoulu DIA-valinta	864	190	698	257	183
Siirtohaku	4	2	0	0	0



BSc in science and technology applicants, accepted and attending

Application target, Bachelor of Science (Technology) + Master of Science (Technology) (3+2 yrs)	Applicants total	First choice	First time applying	Accepted total	Accepted study offer	Attending	Non-attending	Quota
Chemical Engineering	748	334	678	128	27	23	0	35
Computational Engineering	1274	450	1165	152	33	28	4	40
Data Science	1697	679	1527	79	28	24	1	30
Digital Systems and Design	950	190	842	131	37	35	2	45
Quantum Technology	712	197	633	94	30	25	4	35
Total	8673	3522	7855	759	363	301	42	354

Master's Programme in Chemical, Biochemical and Materials Engineering

Application target	Applications	Acceptable	Accepted the place	Quota
Biomass Refining	72	15	7	10
Biotechnology	205	38	15	15
Chemical and Process Engineering	128	42	18	20
Chemistry	90	14	9	15
Fibre and Polymer Engineering	82	32	14	15
Functional Materials	95	16	4	15
Sustainable Metals Processing	44	15	8	10
Total	716	172	75	100

CHEM international and Aalto joint programmes

	Applications	Acceptable	Accepted the place	Quota
Advanced Energy Solutions - Industrial Energy Processes and Sustainability (CHEM)	70	24	15	15
Creative Sustainability	56	19	14	15
International Design Business Management	95	21	16	20
Advanced Materials for Innovation and Sustainability (AMIS)	20	20	18	15
Biological and Chemical Engineering for a Sustainable Bioeconomy (Bioceb)	7	7	7	10
N5T Polymer Technology (Nordic Master)	3	3	3	0

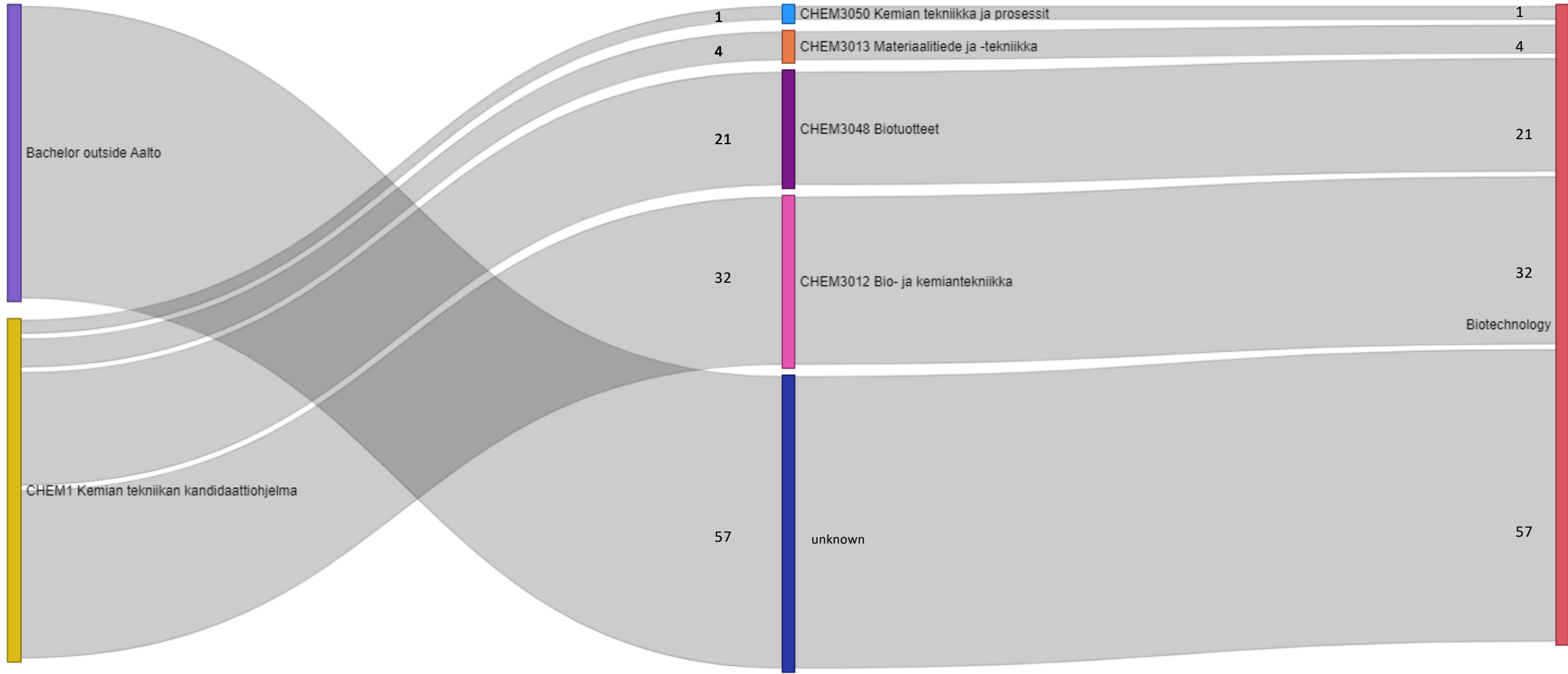
Student flows BSc to MSc: rough prediction from 2024

Based on study rights to CHEM21 in 2017-2023

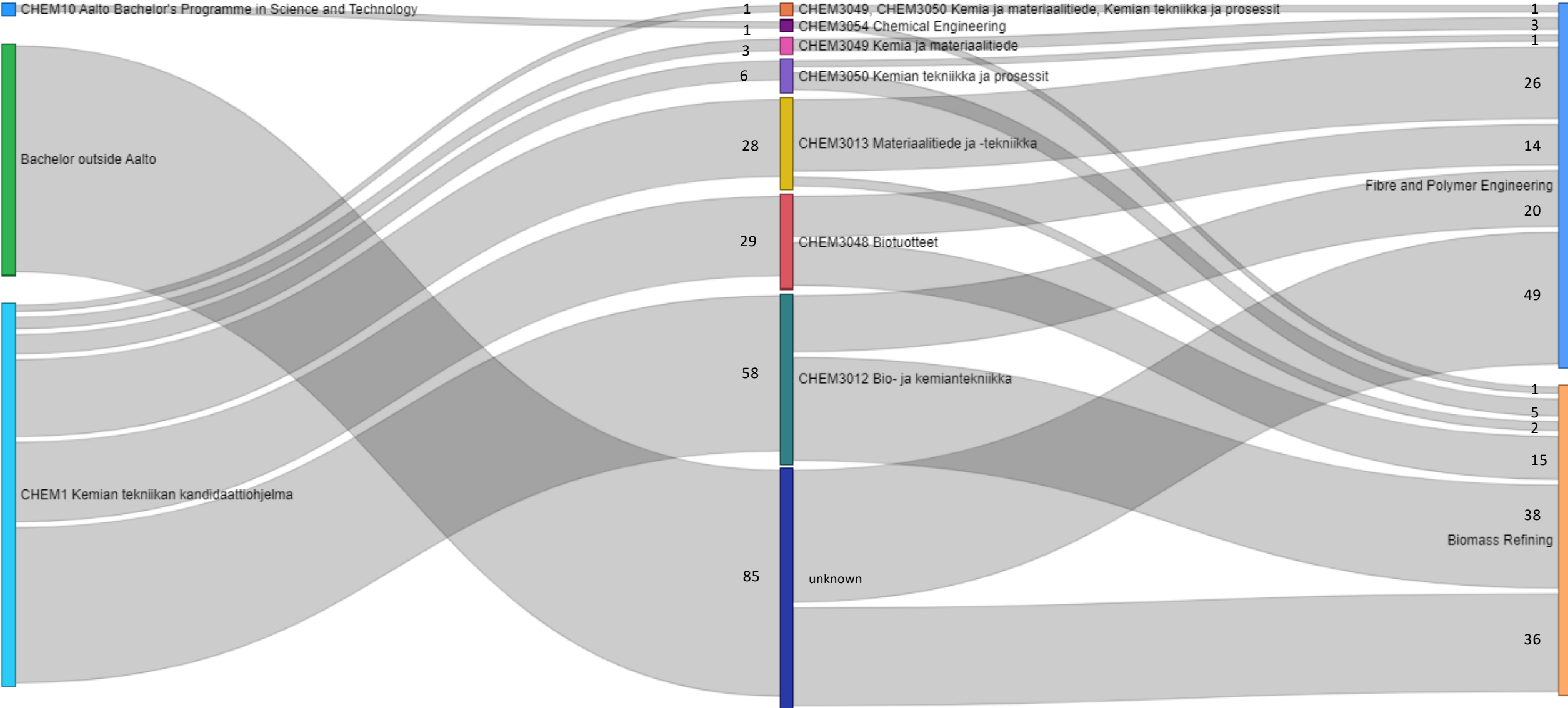
Student flows: further information

- Data in visual from left to right: BSc programme -> BSc major -> CHEM21 MSc major. Study rights in BSc programmes not associated with CHEM21 MSc programme are not included.
- Figures in grey “flow” indicators represent number of study rights associated with each combination within the CHEM21 programme cohort in 2017-2023. These may differ from actual student numbers as students sometimes have multiple study rights.
- This data and visualisation are currently under development to be included in [Degree programme report tool](#). For more details, please contact amanda.sjoblom@aalto.fi

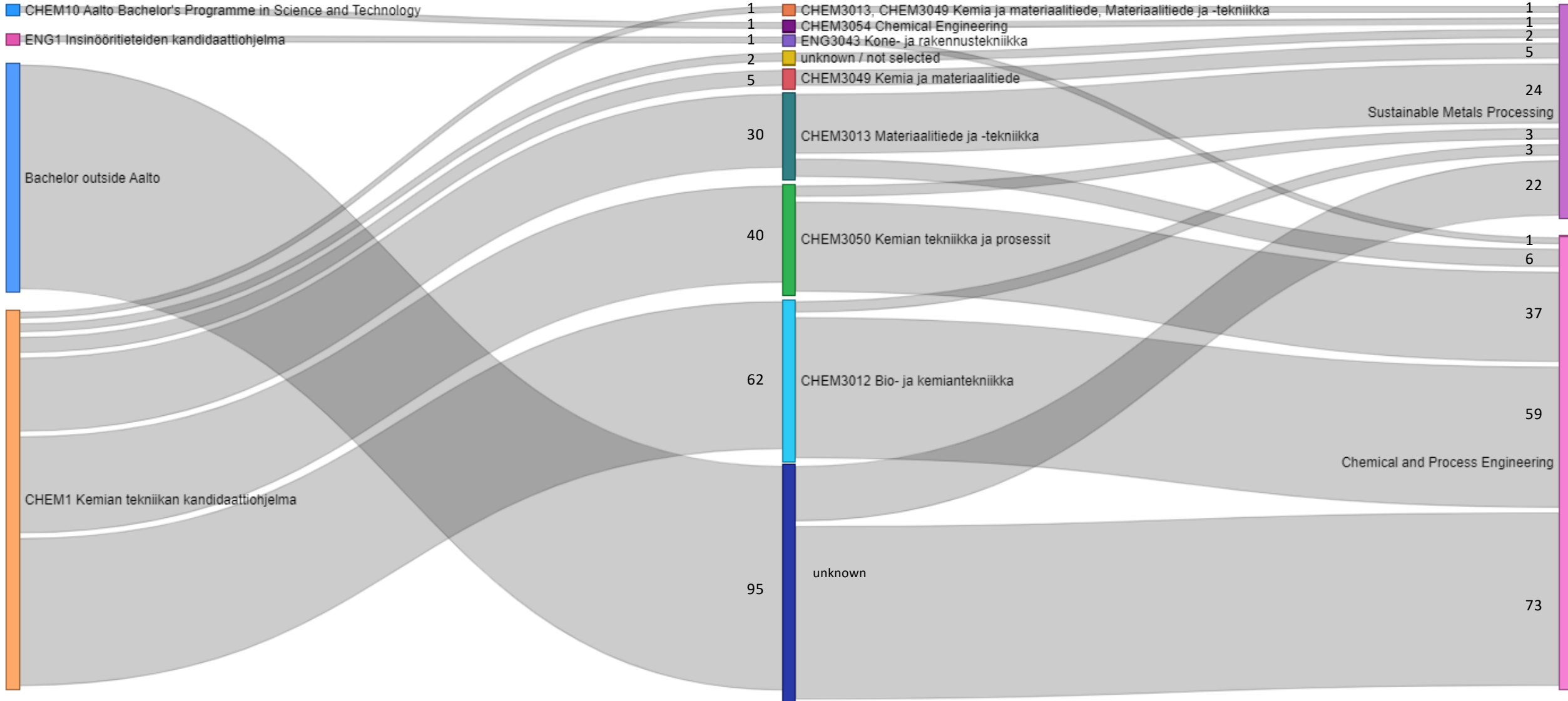
Biotechnology



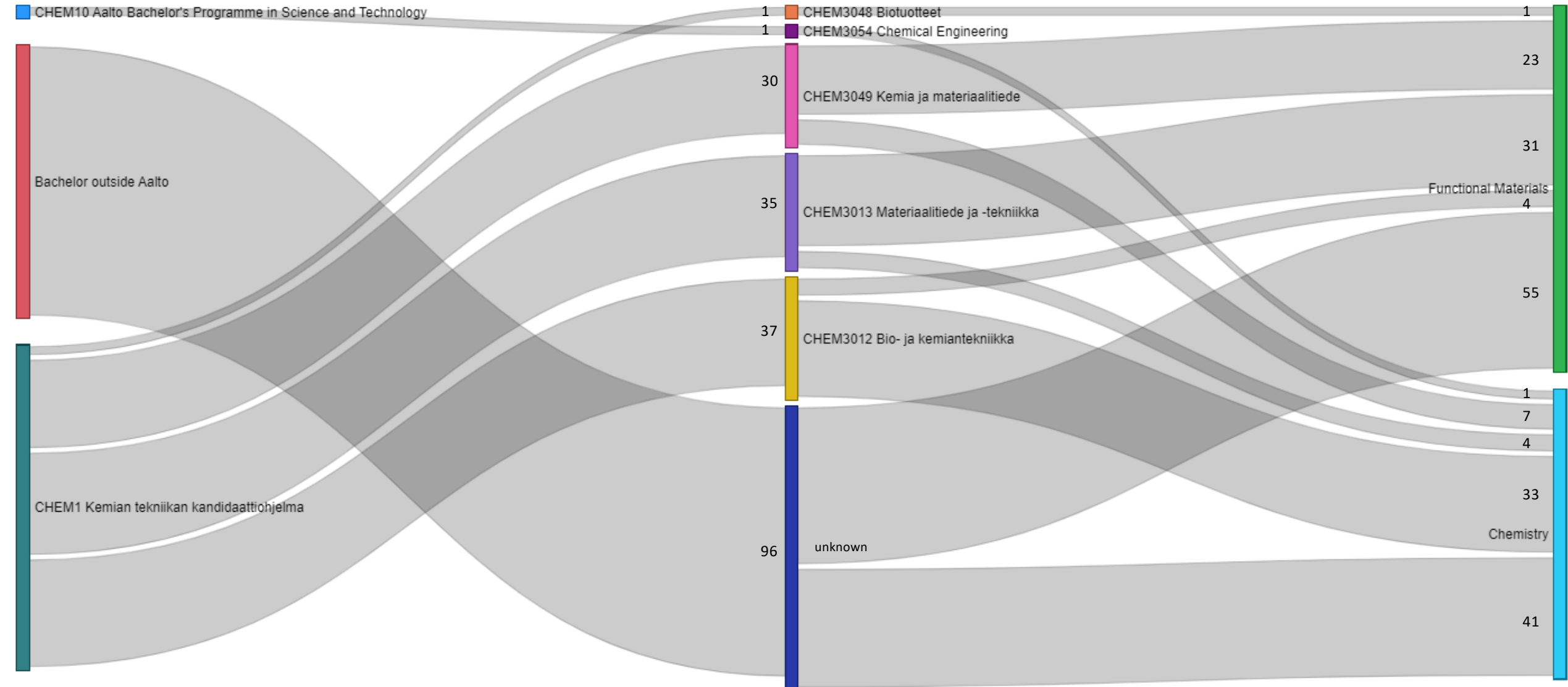
Bioproducts engineering



Chemical and metallurgical engineering



Chemistry and materials science



Working with our programme portfolio



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Recap of progress so far

- Mapping requirements of future working life
- Developing new programmes in 'clusters'; work led by cluster leaders
- Mapping programme-level & major-level ILOs for each programme
- Decision: Programme (and not major) = application target
- Decision: School-level programme structure
- Admission requirements & evaluation criteria for programmes agreed
- Programme descriptions, i.e. marketing material, created
- President's decision on establishing new programmes signed in June 2023

CHEM Curriculum design August 2023 onwards & autumn deadlines

Document/other outcome	Deadline	Next steps (for your information)
Potential changes to programme-level or major-level ILO's ready	25.9.2023	<ul style="list-style-type: none"> Discussed at Oct DPC & KTAK Curriculum Planner opens 1.12.2023 Publication of course offering (incl. significant changes) and summary of offered majors and minors at Aalto.fi for internal use and discussion at Aalto-level 15.12.2023 Discussed at Jan 2024 DPC & Feb KTAK Decision item at Mar 2024 DPC & KTAK Curriculum published at Aalto.fi and Sisu 1.4.2024 Timetables published in Sisu 1.6.2024
<i>First draft</i> of MSc study module offering ready, incl. majors and minors to be offered or discontinued and any significant changes* to them	25.9.2023	
<i>First draft</i> of MSc degree requirements: structure and content of programmes, majors and minors (all courses included in them); developing curriculum alignment	25.9.2023	
<i>First draft</i> of MSc course portfolio ready, incl. new and discontinued courses and significant changes** to courses	25.9.2023	
Meetings with current MSc students for feedback on first MSc drafts	31.10.2023	
Teachers enter course descriptions and schedule proposals in Curriculum Planner, which opens on 1.12.2023	10.1.2024	
Degree requirements, i.e. study module offering, structure and content of programmes, majors and minors and all courses included in them, ready	10.1.2024	
<i>First draft of</i> rules and regulations for new MSc programme transition period; incl. how students can switch from current to new programmes; and course substitutions (length of transition period and incentives to encourage transfer to new MSc programmes decided at Oct DPC & KTAK)	10.1.2024	<ul style="list-style-type: none"> Discussed at Jan 2024 DPC & Feb KTAK Decision item at Mar 2024 DPC & KTAK

* Significant changes to study modules are language, target groups, scope and level.

** Significant changes to courses are teaching language, teaching period, target groups, prerequisites and core content.

Considerations for curriculum development

Based on:

Quality system audit + ISB + AllWell? + Course Feedback + TEE

Jukka Välimäki



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Quality system audit

2022/2023

The Finnish Education Evaluation Centre (FINEEC, Karvi)

Excerpts from Key strengths and recommendations & Evaluation area I: HEI creates competence

More information:

[Quality system audit 2022/2023 | aalto.fi](https://aalto.fi/quality-system-audit-2022-2023)

Keep:

- 1. An ethos of**
 - usefulness-driven questions
 - entrepreneurial mindset
 - cross-cutting approaches
- 2. Equality, diversity and inclusion (EDI) initiatives integrated into processes**
- 3. Learning outcomes at the centre of education planning**

Room for development:

- 1. Systematic feedback should be strengthened**
 - Formative (continuous) feedback so that students can take action to improve their learning.
 - Informing students of changes introduced based on their feedback (feedback-on-feedback).
- 2. Consider ways to improve work-life balance for staff and study workload for students.**
- 3. Continue to assess and balance workload related to studies -- risk of student burnout due to excessive total workload**

ISB

International Student Barometer
Aalto-level feedback

Contact:

Toni Kaila (toni.kaila@aalto.fi)

Eeva Liinamo-Liukku (eeva.liinamo-liukku@aalto.fi)

More information:

[International students express top-level overall satisfaction with Aalto \(aalto.fi\)](#)



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Keep:

1. High quality study experience

- As many as 93% of Aalto University's international students said they were satisfied with all aspects of their study experience (#1 globally)
- 89% of them would also recommend Aalto to their friends and family.

2. Importance of employability

- Employability, Opportunities for Work Experience and Careers Advice coming from academics is important

Room for development:

1. Better student workload estimation

- Coordination of assignments and deadlines between courses.

2. More personal feedback

- The quantity and quality of personal feedback are important

AllWell?

More information:

[How to Develop Teaching? Guide for Academic Staff and Teachers \(aalto.fi\)](#)

Contact:

Study psychologist Henna Niiva, henna.niiva@aalto.fi
Anna Mäkilä, anna.makila@aalto.fi
Jukka Välimäki, jukka.valimaki@aalto.fi

If you want to discuss about AllWell? results and wonder together how to take your major specific results into account in planning your new programme.

Keep:

1. Feedback for students

➤ Great improvement in experience of feedback - Share good practices! Remember to give students also positive feedback.

2. Peer support

➤ Peer support has improved after COVID and was very good – Which of your practices helped students to experience peer support?

Room for development:

1. Workload

➤ Check workload within and between periods. Many students feel that the workload is too big to internalize learned.
➤ How to make students' entire workload visible? Mark down assignments and deadlines in shared excel and discuss together.

2. Unreflective approach to learning

➤ Students struggle managing their studies. Consider e.g. how to support students to get an overall picture of the programme content as a whole? How to ensure that students learn generic academic and worklife skills in your programme?

Course feedback

School-wide average

More information:

[Key information of Aalto University](#)

[Degree programme report tool](#) (for programme / major heads, LES personnel with relevant responsibilities)

Contact:

Jiri Lallimo (jiri.lallimo@aalto.fi)

Amanda Sjöblom (Amanda.sjoblom@aalto.fi)

Keep:

- ❖ **The direction of development is consistently positive**
 - “Teaching methods supported my learning” (target: 5) from 3.38 (2016) to 3.78 (2023)
 - Workload: The school-wide average is better than in other schools of technology at Aalto. Average workload is higher in our MSc programme majors

Room for development:

- ❖ **How satisfied students are with their study effort**
 - CHEM average (3.58) clearly less than in other schools of technology, and all schools of technology are behind ARTS and BIZ

TEE

Teaching and learning evaluation exercise
(2020)

From Summary of the key observations,
CHEM

More information:

[Teaching and Learning Evaluation Exercise - TEE 2020:
Project Report \(aalto.fi\)](#)

Keep:

1. **Bachelor's and master's level programs are consistent and interconnected**
2. **Many hands-on activities in teaching, uses of virtual learning**
3. **Tradition of interaction with industry and stakeholders**

Room for development:

1. **Programmes with clear links to global challenges**
2. **Visible multi- and interdisciplinary elements**
3. **Considering an increasing number of students, extended study times, student workload**
 - **Student engagement should be increased**

Summary

Strengths

- 1. Student feedback: great development (AllWell, Course feedback)**
- 2. Students' experience of peer support on a very good level at CHEM (AllWell)**
- 3. Bachelor's and Master's level programs are consistent and interconnected at CHEM (TEE)**
- 4. Learning outcomes at the centre of education planning at Aalto (FINEEC), versatile teaching methods at CHEM (TEE)**
- 5. High quality study experience at Aalto, interaction with industry and stakeholders at CHEM (ISB & TEE)**

To consider

- 1. Student and staff workload**
- 2. How to help students to manage their studies and to feel satisfied with their study effort**
 - Clear overall picture of the programme content as a whole
 - Ensure that students learn generic academic and work life skills
- 3. Clear links to global challenges, visible multi- and interdisciplinary elements**
- 4. Systematic feedback practices**
- 5. Inclusion for international students in the Aalto community**

Work in programmes

**New MSc programmes:
curriculum development**

Link to event Presemo

presemo.aalto.fi/pr23chem

Giving and receiving feedback on course structure

Next,
in four rooms:

- 1. Cluster lead presents course structure / degree requirements to the audience, which consists of another cluster**
 - The audience listens and may ask clarifying questions, and discuss the structure with the cluster lead
- 2. After the presentation: Discuss with your colleagues and provide feedback**
 - Place to note feedback and thoughts down:
premo.aalto.fi/pr23chem
- 3. The cluster leads go to their own cluster: Reflection on the received feedback**
 - Discuss: How the feedback can be taken into account in curriculum planning?



Feedback on course structure



If you are in
Bioproducts Engineering
go to **KE5**
and give feedback to
Biotechnology
(Paula Jouhten)



If you are in
Biotechnology
go to **A303**
and give feedback to
**Chemical and
Metallurgical Engineering**
(Marjatta Louhi-Kultanen)



If you are in
**Chemical and
Metallurgical Engineering**
go to **KE3**
and give feedback to
**Chemistry and Materials
Science**
(Kari Laasonen)



If you are in
**Chemistry and Material
Science**
go to **KE4**
and give feedback to
Bioproducts Engineering
(Eero Kontturi)

Schedule:

Until 14.10 Cluster lead presents course structure/degree requirements & other cluster assesses presented course structure

14.10-14.30 Each cluster reflects on feedback received on their structure and considers how it can be taken into account in curriculum planning

Write your feedback and thoughts down in premo.aalto.fi/pr23chem

Possible aspects to pay attention to:

- 1. Structure:** How structure appears to students, does it support their learning and smooth progression of studies?
 - 2. Programme purpose and ILOs:** Is the curriculum based on them?
 - 3. Teaching methods:** How are different and inclusive teaching and learning methods utilized? What kind of student experience these cater for?
 - 4. Cross-cutting themes:** How are sustainability, radical creativity and entrepreneurial mindset present in the curriculum?
- + Other relevant feedback or ideas?

Cluster feedback and comments from today

Closing words – Jouni Paltakari

Thoughts and conclusions

- 1. Usefulness of curriculum mapping in curriculum design;**
- 2. Timeline of curriculum design from now on until early 2024;**
- 3. Importance of student feedback sessions;**
- 4. Minors: Should current seven MSc minors, that mirror MSc majors,**
 - be continued (with updates); or
 - discontinued; or
 - new minors to be created later, for curriculum period 2026-28?

Feedback

Thoughts / ideas / feelings / other feedback & feedback
on today's event:

presemo.aalto.fi/pr23chem

Thank you very much for your participation today!



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