Molecular Science and Engineering (TMVTM)

Programme webinar

November 25, 2025

Programme director

Markus Kärkäs
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Department of Chemistry
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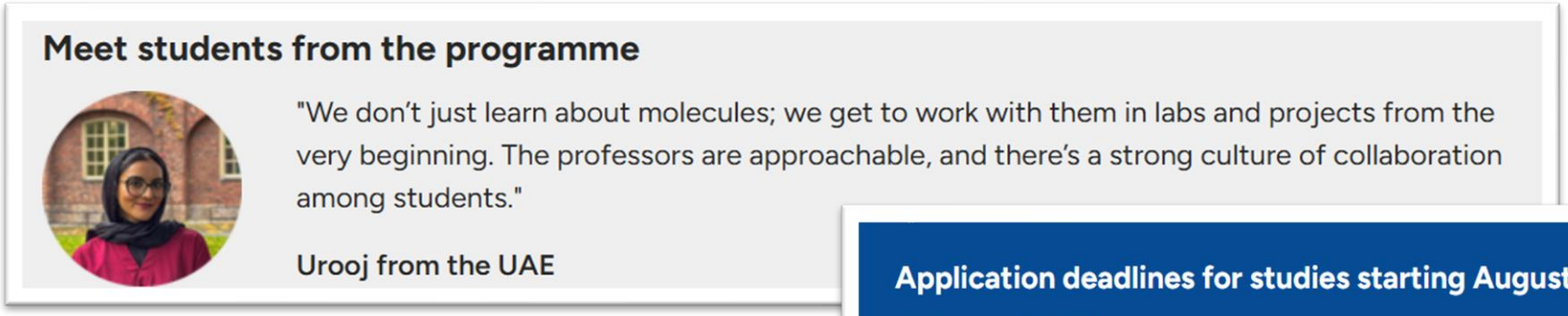
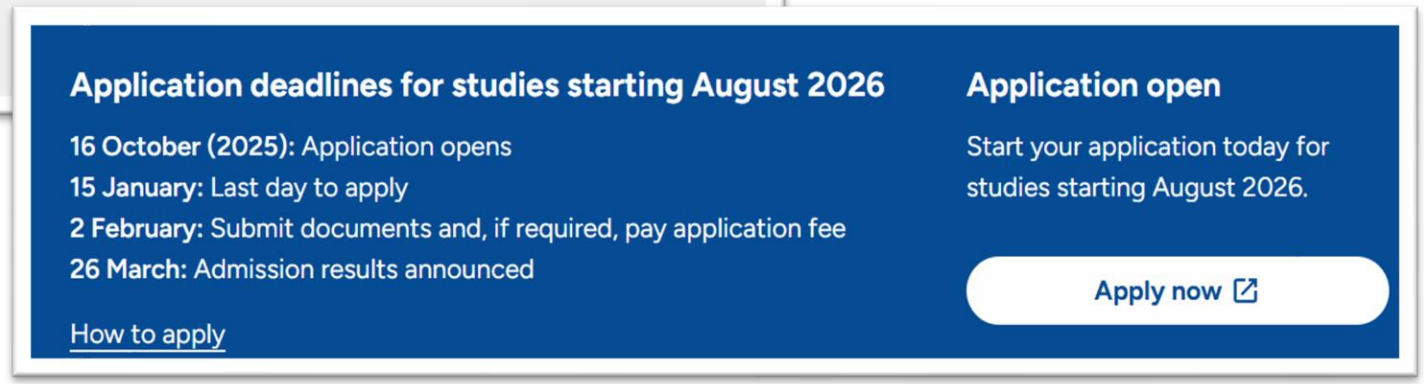
Information & important dates

- *MSc Molecular Science and Engineering: Link to programme page*



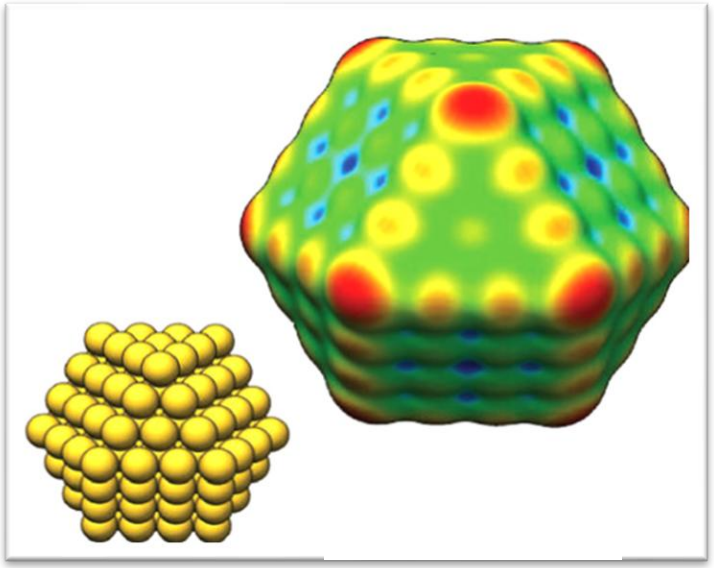


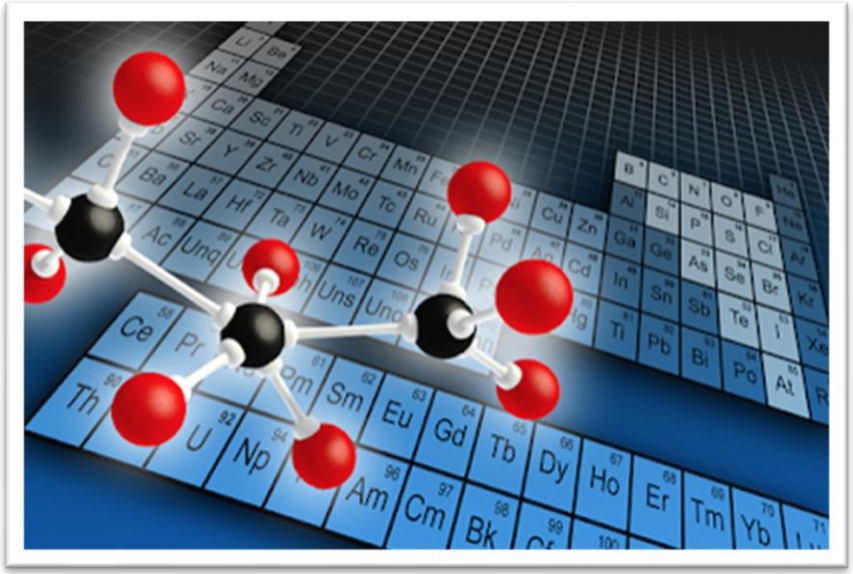
- *Entry requirements for Molecular Science and Engineering: Link*

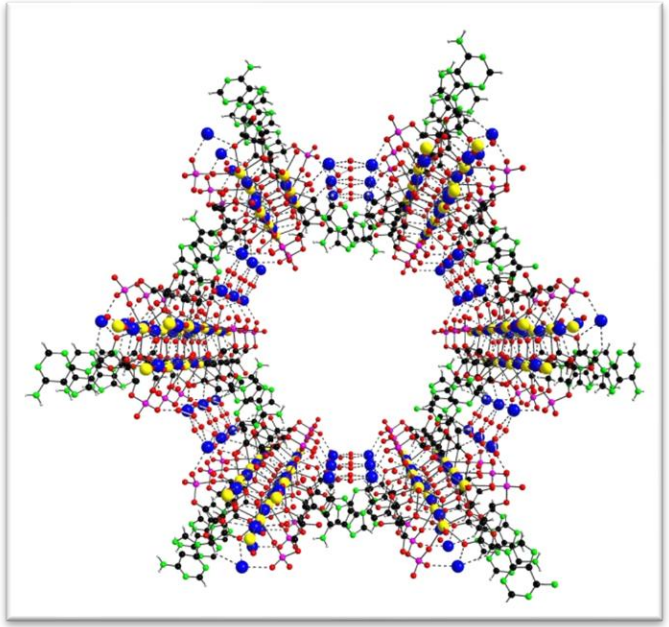
- *Entry requirements for master's studies: Link*

Programme content & objectives

- *Focuses on the **design, synthesis, characterization and applications** of molecules and materials, but also includes aspects of innovation, environmental issues, sustainability and safety*





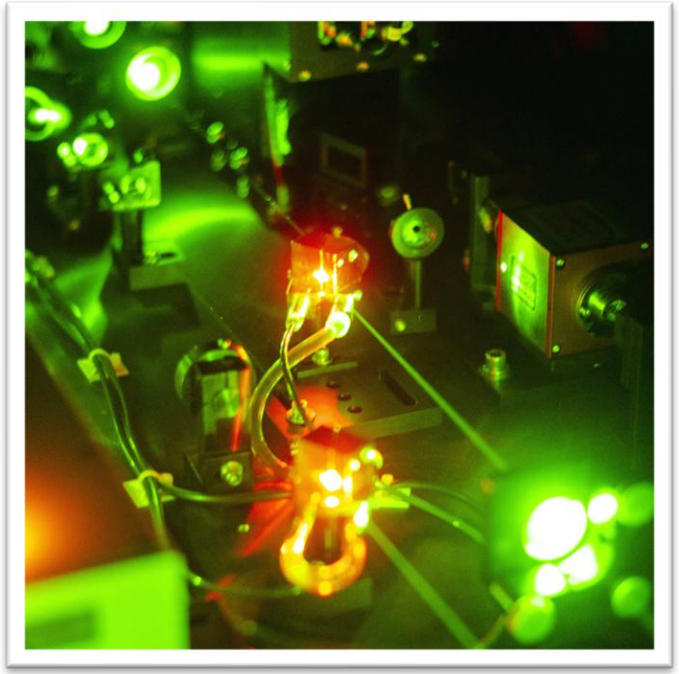


- *For programme objectives, please see the programme syllabus:*

  https://www.kth.se/student/kurser/program/TMVTM-20262.pdf?l=en

Programme content

- *Involves training in a wide range of **advanced techniques***



- *Preparative for **advanced research** in different areas of chemistry and materials science*

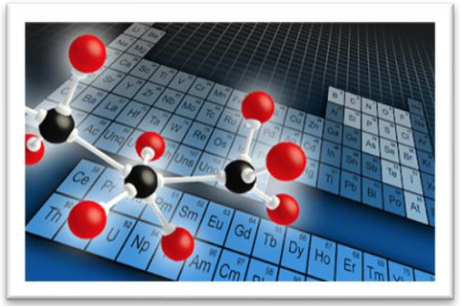
Department of Chemistry — Our Divisions

Surface and corrosion science

Corrosion, friction, cellulose, nanoparticles, laser spectroscopy, cosmetics etc

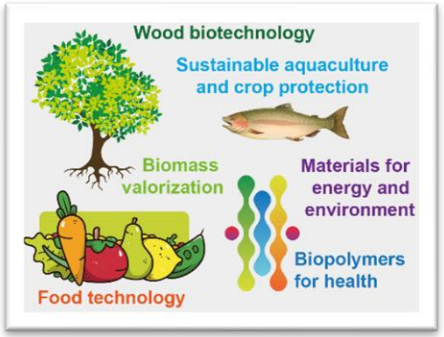
Theoretical chemistry and biology

Development of software, theory for light–matter interactions etc



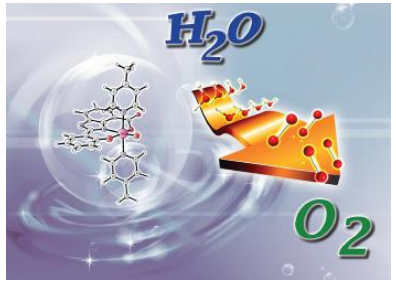
Glycoscience

Plants, microorganisms, carbohydrate-based products etc.



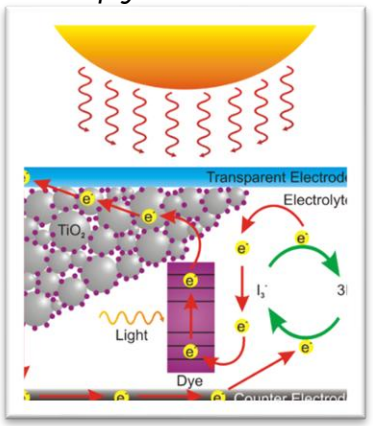
Organic chemistry

Synthesis, photocatalysis, electrosynthesis, metal catalysis, artificial photosynthesis, solar cells etc



Applied physical chemistry

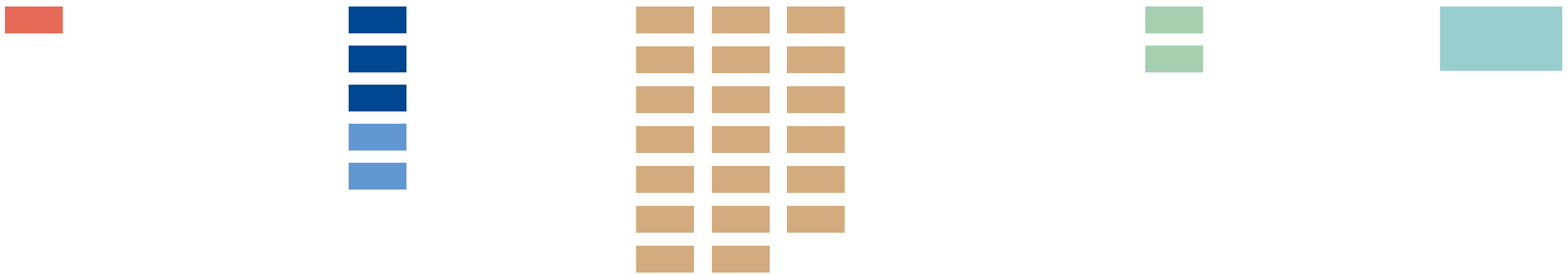
Quantum chemistry, spectroscopy, materials science, nuclear waste etc



Structure of the programme

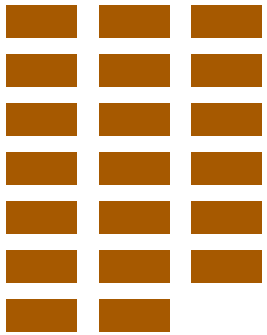
- *The **programme (120 credits)** consists of **courses (90 credits)** followed by a degree project (30 credits) at advanced level*
- *The programme courses are mandatory, **conditionally elective**, recommended or freely elective*

Structure of the programme



- *Mandatory course: CK2030 Scientific Methodology and Research Horizons (7.5 credits)*
- *Conditionally elective courses (at least 3 of 5 courses): 1) CK2310 Advanced Organic Chemistry, 2) KD2360 Quantum Chemistry, 3) KD2320 Spectroscopic Tools for Chemistry, 4) KD2330 Analytical Separations, 5) KD2350 Surfaces, Colloids, and Soft Matter*

Structure of the programme

Mandatory course	Conditionally elective courses	Recommended courses	Freely elective courses	Degree project
				
7.5 credits	22.5-25.5 credits	42-45 credits	15 credits	30 credits

- *Recommended courses:*

Students choose ca 6 recommended courses for their personal curriculum (42–45 credits)

Structure of the programme

- *Recommended courses*

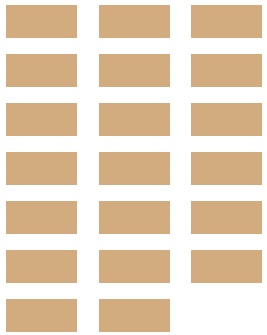
• BB2020 Molecular Enzymology	7.5 credits	P2
• BB2460 Biocatalysis	7.5 credits	P3
• KD2340 Molecular Thermodynamics	7.5 credits	P3
• ME2814 Ideation - Creating Your Own Company	7.5 credits	P3
• KD2155 Solid State Chemistry: Structures and Methods	7.5 credits	P4
• KD2370 Photo, Radiation and Radical Chemistry	7.5 credits	P4
• KD2170 Nanostructured Materials	7.5 credits	P4
• CE2020 Chemical Sensing	7.5 credits	P1
• KD2300 Biomedical Materials	7.5 credits	P1
• KD2380 Corrosion and Surface Protection	7.5 credits	P1
• CK2000 Food Chemistry and Technology	7.5 credits	P1

Structure of the programme

- *Recommended courses (continued)*

• KE2110 Applied Electrochemistry	7.5 credits	P1
• KF2140 Polymer Physics	7.5 credits	P1
• BB2280 Molecular Modeling	7.5 credits	P2
• CK2390 Modern Organic Chemistry	7.5 credits	P2
• CK2385 Modern Organic Chemistry, Theory	7.5 credits	P2
• CK2020 Advanced Inorganic Chemistry	7.5 credits	P2
• CK2300 Batteries	7.5 credits	P2
• KE2351 Risk Analysis and Management for Chemical Engineers	7.5 credits	P2
• KF2130 Polymer Chemistry	7.5 credits	P2
• CK2320 Hydrogen	7.5 credits	P3

Structure of the programme

Mandatory course	*Conditionally elective courses*	*Recommended courses*	*Freely elective courses*	*Degree project*
				
7.5 credits	*22.5-25.5 credits*	*42-45 credits*	*15 credits*	*30 credits*

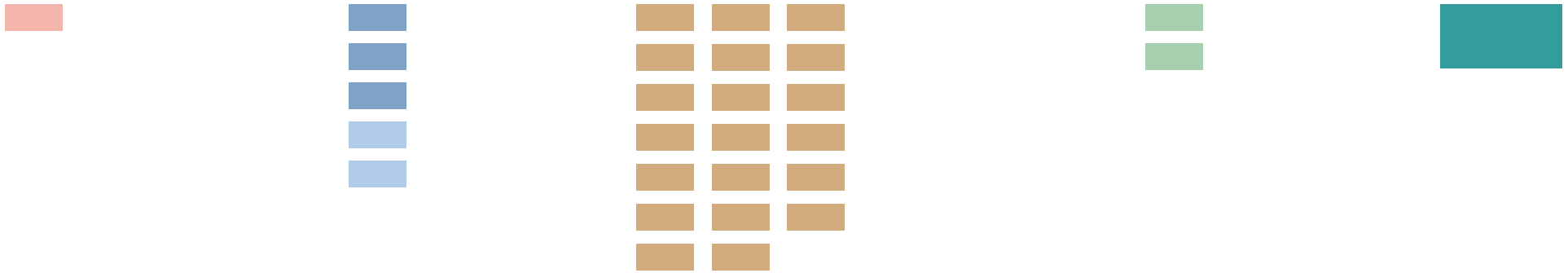
- *Freely elective courses: You can choose 2–3 freely elective courses for your personal curriculum (15 credits)*

*You can choose "freely" upon interest and availability **BUT** the freely elective courses should be of relevance for the future profession*

Project courses

- *Are regarded as freely elective courses*
  - KD2905 Project in Chemistry 7.5 credits P1, P2, P3 or P4 Link
  - KD2910 Project in Chemistry 15.0 credits P1, P2, P3 or P4 Link
- *Project courses are designed as an individual project work*
- *You have a chance of conducting contemporary research in a research group*
- *You have to contact the supervisor to see if it is possible to conduct research in that research group*

Structure of the programme

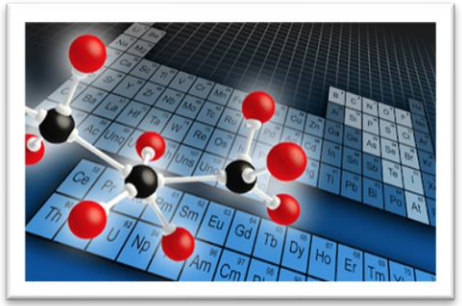


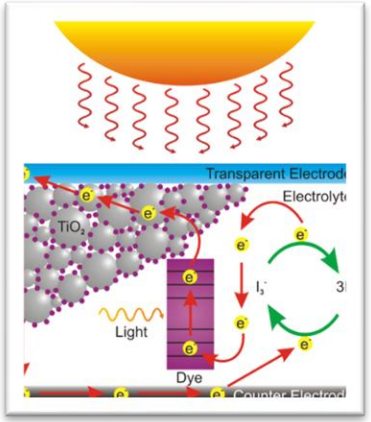
- *Degree project (master's thesis): **Individual project** corresponding to **20 weeks** of full-time studies (30 credits)*

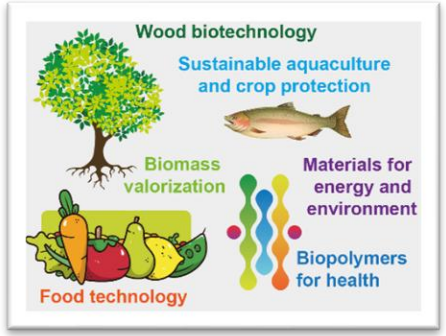
*Enables the student to demonstrate the ability to **perform independent project work/research**, using the skills obtained from the courses in the programme*

Structure of the programme

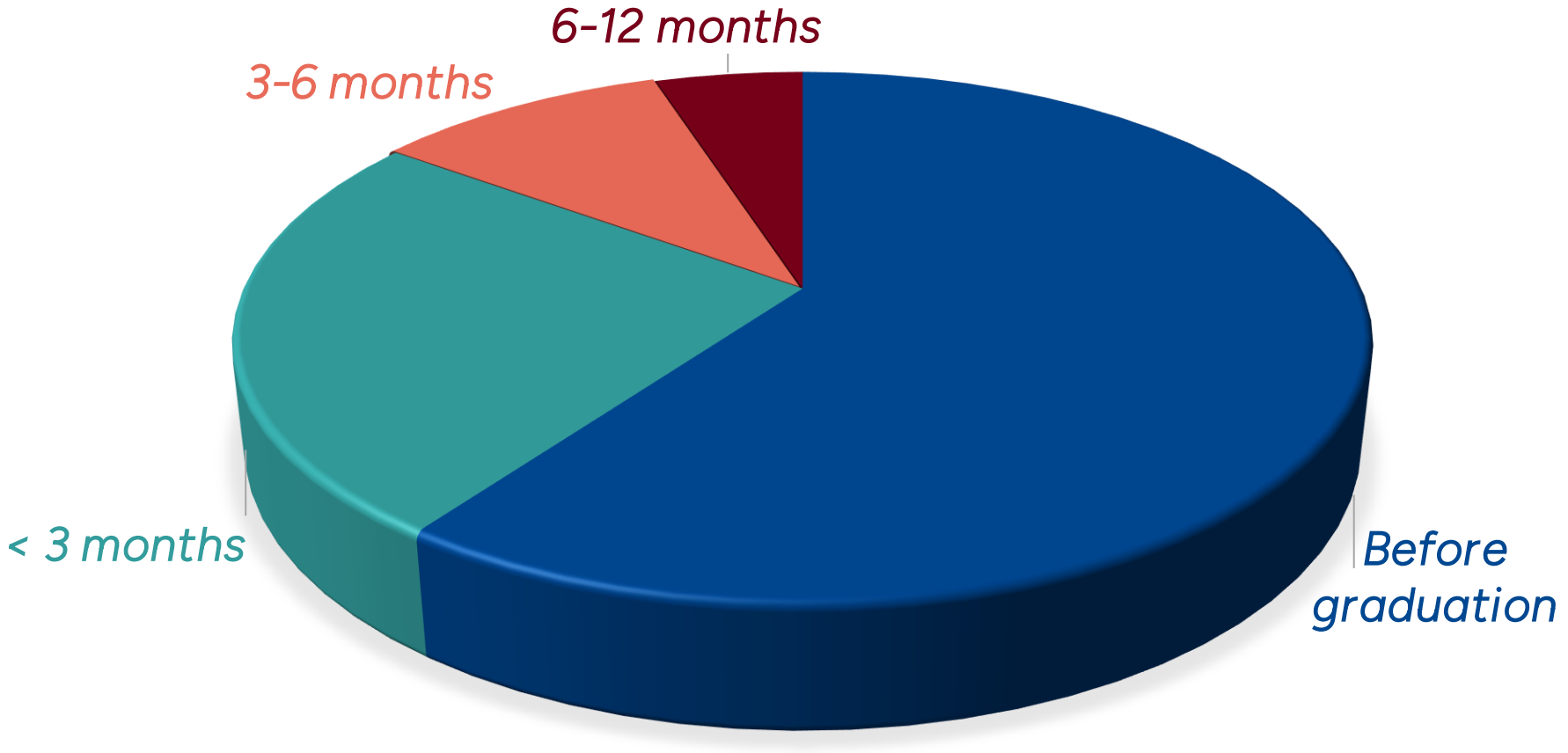
- *Great opportunity to create your own curriculum!*
- *<u>Examples</u> of informal tracks:*
  - *Design and synthesis of molecules/materials*
  - *Chemical analysis and spectroscopy*
  - *Theoretical chemistry and molecular modelling*
  - *Organic chemistry and biochemistry*
  - *Nanomaterials chemistry*
  - *Surface chemistry and surface-active materials*







How long after graduation do students get their first job?



Webinar 2025

Molecular Science and Engineering (TMVTM)

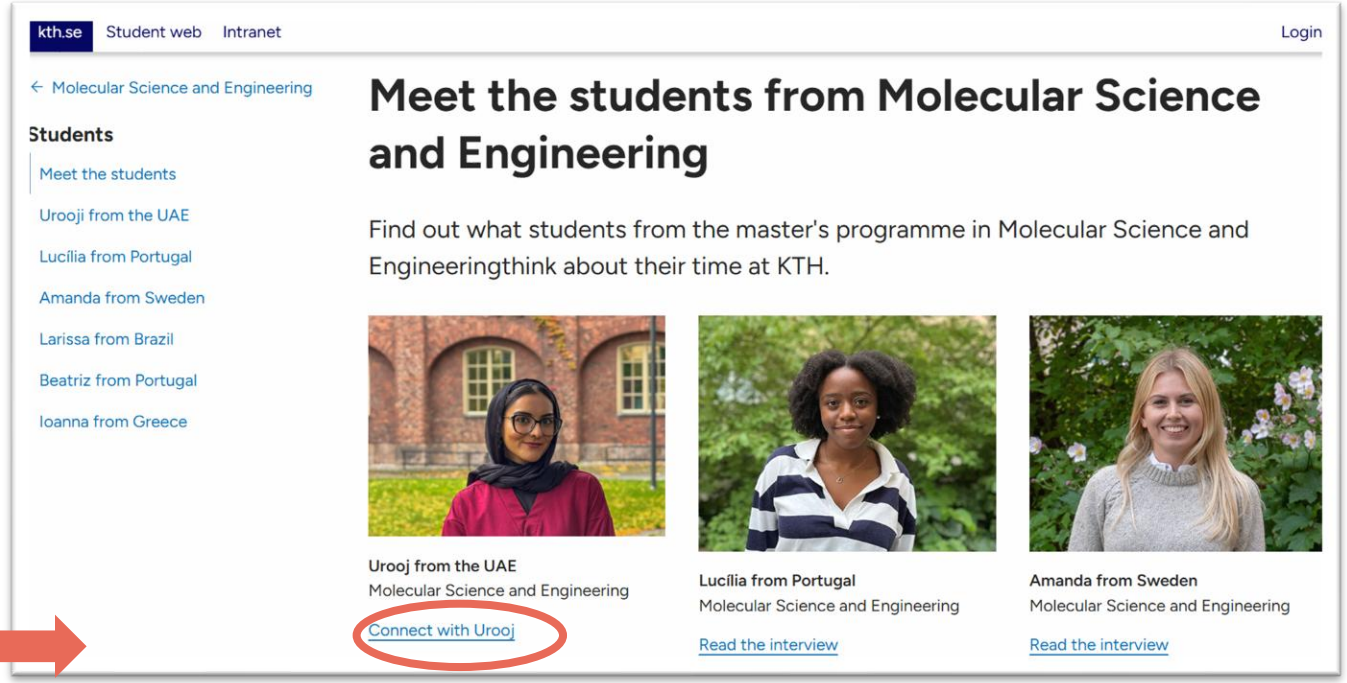
International Student Ambassador

Who am I?

Hej!

- ***Urooj Ilyas***
- *BSc. Chemical Engineering 2017–2021*
- *Worked in the oil and gas consultancy in the UAE for 2 years*
- *MSc. Molecular Science and Engineering 2024–2026*

Connect with me!



Why KTH?

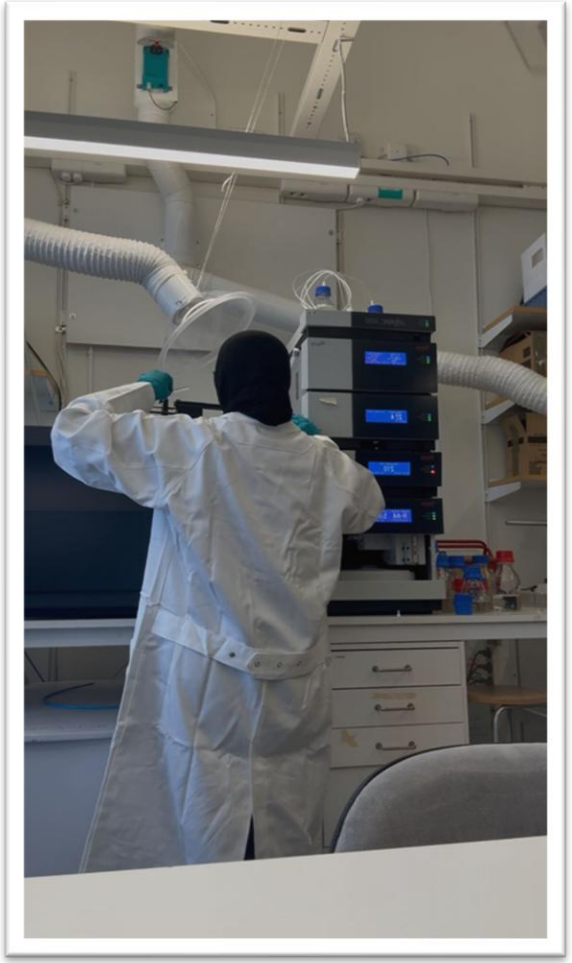
KTH is ranked 78 in the QS World University Rankings 2026

13,000+ students
2,000 PhD students
840 teaching staff
310 professors

- *You choose your own path*
- *Project-based courses*
- *International community*
- *Strategic geographical location*
- *Strong focus on research and innovation*

Project courses

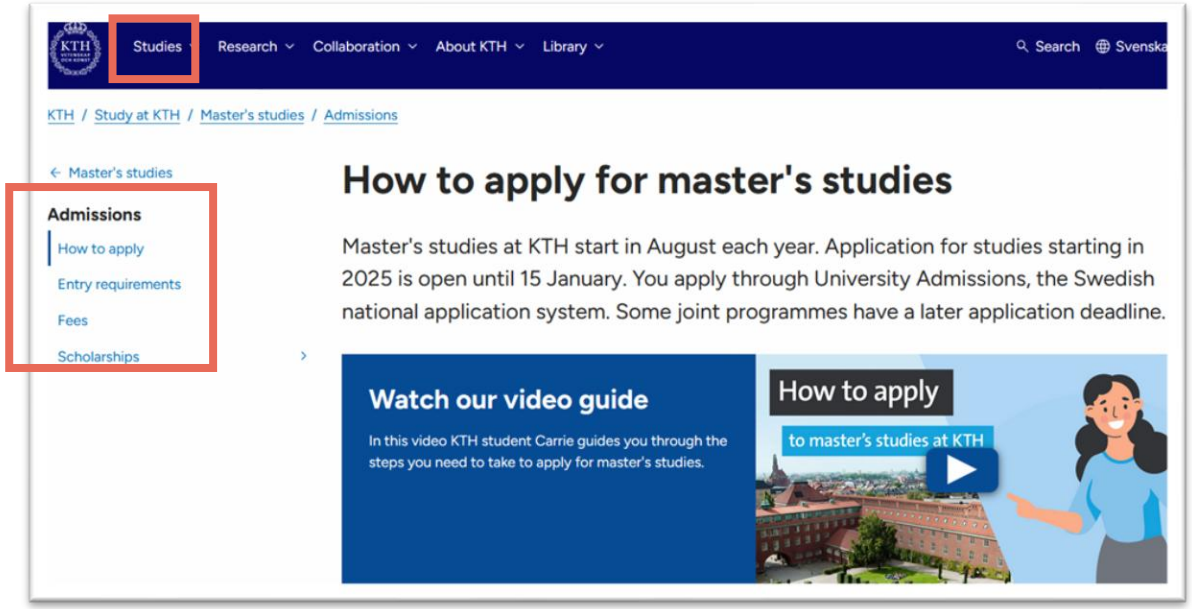
- Can choose 7.5 or 15 ECTS
- My project was at the Department of Chemistry focusing on analytical chemistry
- Investigated solvent interactions of antioxidants used for plastic food packaging
- ESI mass spectrometry



Important dates

- ***October 16, 2025 – January 15, 2026:*** *Application period*
- ***February 2, 2026:*** *Deadline for application documents*
- ***March 26, 2026:*** *Notification of selection results*
- ***Late August 2026:*** *Autumn semester starts*
- ***Application fee:*** *900 SEK*
- ***Tuition fee for the whole programme:*** *360 000 SEK*

  (Citizens of an EU/EEA country or Switzerland are not required to pay application and tuition fees)



Where to find useful information

- *Application and tuition fees for master's studies:* https://www.kth.se/en/studies/master/admissions/application-and-tuition-fees-for-master-s-studies-1.65817
- *Scholarship opportunities for master's studies:* https://www.kth.se/en/studies/master/admissions/scholarships
- *Newly admitted students:* https://www.kth.se/en/student/studier/newatkth/degree-programme-stu/newly-admitted-degree-programme-students-1.703689
- *Accommodation for new students:* https://www.kth.se/en/studies/student-life/accommodation-for-new-students-1.529520
- *Exchange studies:* https://www.kth.se/en/student/studier/utlandsstudier/utbyte/utbytesstudier-1.4396

Follow us on social media!

Thank you for joining this webinar!

The Q&A will remain open until all the questions that you have sent in are answered

Visit www.kth.se/master for more information