KTH course FCK111

Fibre–Water Interactions

Course responsible: Per Larsson

Dates for lectures: November 16–19, 2026

Place: KTH, Teknikringen 56 (2nd floor)

Lecturers involved:

Per Larsson	perl5@kth.se	(PL)
Tomas Larsson	tomasla@kth.se	(TL)
Igor Zozoulenko	igor.zozoulenko@liu.se	(IZ)
Lennart Salmén	lennart.salmen@gmail.com	(LS)
Tobias Benselfelt	bense@kth.se	(TB)
Lars Wågberg	wagberg@kth.se	(LW)
Sören Östlund	soren@kth.se	(SÖ)
Mikael Nygårds	mikael.nygards@billerud.com	(MN)
Gustav Marin	gustav.marin@ri.se	(GM)
Torbjörn Pettersson	torbj@kth.se	(TP)
Jakob Wohlert	jacke@kth.se	(JW)
Charlotta Hansson	charlotta.hanson@essity.com	(CH)

Monday, November 16, WWSC meeting room

1. Information about and introduction to the course (PL) 9:15–9:30
2. Thermodynamics of water vapour sorption in cellulose fibres (TL) 9:45–11:30
3. Molecular dynamics as a tool to understand fundamental moisture and water interactions with cellulose (IZ) 12:30–14:15
4. Influence of fibre composition on moisture sorption (LS) 14:30–16:15

Tuesday, November 17, WWSC meeting room

5. Swelling theory: a polyelectrolyte perspective (TB) 9:00–10:45
6. Swelling of cellulose fibres (LW) 11:00–11:45
7. Swelling of cellulose nanofibril sheets (TB) 13:00–13:45
8. Influence of moisture on the mechanical properties of paper – Fibre and joint properties (SÖ) 14:00–15:45
9. Adhesion between cellulose surfaces and cellulose fibres (TP) 16:00–16:45

Wednesday, November 18, Rånby room

10. Influence of moisture on the mechanical properties of paper – Paperboard and converting properties (MN/GM) 8:30–9:45
11. Dimensional stability of paper (PL) 10:00–11:45
12. Mechanosorptive creep in fibres and papers (SÖ) 13:00–13:45
13. Impact of moisture on cellulose films, barriers and composites (PL) 14:00–14:45
14. Wetting of cellulose and paper (LW) 15:00–15:45
15. Group exercise: Have fun and network! 16:00–??:??
16.

Thursday, November 19, Rånby room

17. Molecular dynamics as a tool to fundamentally understand the wetting behaviour of cellulose (JW) 8:15–10:00
18. Capillary transport in paper and cellulose networks (LW) 10:15–12:00
19. Liquid absorption in hygiene products (CH) 13:15-15:00

Exam: TBD, tentatively the week of December 14