

KZ8022 Chemistry of Renewable Materials (7.5 ECTS)

Course outline and schedule – HT26

day	Monday	Tuesday	Wednesday	Thursday	Friday
Week					
45 02/11–06/11	-- -- --	L1-Intro (MS) Safety lecture for labs	L2-Lignochem (MS) Poster topics	L3- polysacch (MX)	L4- polyphenols (JS)
46 9/11–14/10	L5-charact (MS) Lab 1 LNPs	Lab 2 DLS Prep for posters and lab reports	L6-Lipids (MS) Prep for posters and lab reports	L7- Proteins (MS) Prep for posters and lab reports	L8- thermochem transform. (MS) Lab 3 Nanocomp
47 16/11–20/11	L9- biochem transf (MS) Lab 4 Antiox.	Lab 5 AFM	L10- Degradation and end-of-life (MS) poster DL 14:00	Lab 6 Enz. hydrol.	Lab 7 Sugar anal.
48 23/11–27/11		L11-summary (MS) Prep for lab reports & exam	Poster presentations lab reports & exam	Lab reports due Prep for exam	Prep for exam
49 30/11–04/12	Prep for exam	Prep for exam	Written exam 03/12 at 9-14	-- -- --	-- -- --

L = lectures, Lab = laboratory exercises

Teachers:

(MS) Mika Sipponen mika.sipponen@su.se
 (JS) Joseph Samec joseph.samec@su.se
 (MX) Maria Ximena Ruiz Caldas mariaximena.ruizcaldas@su.se

TA:s

(CC) Carla Caponio carla.caponio@su.se
 (YP) Yasmini Portes yasmini.portes@su.se
 (MA) Matilda Andersson matilda.andersson@su.se

L: MS, JS, MX

Lab TAs: UTV, CC, MA

Literature:

Course book: Introduction to Renewable Biomaterials: First Principles and Concepts Ali S. Ayoub (Editor), Lucian A. Lucia (Editor); ISBN: 978-1-119-96229-8; November 2017, 288 Pages, available from Stockholm University library as e-book (PDF)

Additional course material

Lecture slides

Reading material and other resources

Date		Room	AM (9:15-12:00)	Room	PM (13:15-16:00)
Tue	Nov-3	C516	L1: Introduction to Chemistry of Renewable Materials (MS) + safety lecture (TAs)		Reading
Wed	Nov-4	C516	L2: Lignocellulose chemistry (MS)		Reading, posters
Thu	Nov-5	C516	L3: Polysaccharide chemistry (MX)		Reading, posters
Fri	Nov-6	C516	L4: Chemistry of polyphenols (JS)		Reading, posters
Mon	Nov-9	C516	L5: Characterization techniques (MS)	C459	Lab 1: Preparation of colloidal lignin particles
Tue	Nov-10	C459	Lab 2: Characterization of colloidal lignin particles: DLS and zeta potential		Reading, lab reports, posters
Wed	Nov-11	C516	L6: Lipid chemistry (MS)		Reading, lab reports, posters
Thu	Nov-12	C516	L7: Protein chemistry (MS)		Reading, lab reports, posters
Fri	Nov-13	C459	L8: Thermochemical biomass transformations (MS)	C459	Lab 3: Preparation of nanocomposite films
Mon	Nov-16	C516	L9: Biochemical transformations (MS)	C459	Lab 4: Characterization of the nanocomposite films: Antioxidant activity
Tue	Nov-17	C268	Lab 5: Characterization of the nanocomposite films by AFM		Reading, lab reports, posters
Wed	Nov-18	C516	L10: Recycling, degradation and biodegradation (MS)		Last day to hand in posters (in PDF format) at 14:00
Thu	Nov-19	C459	Lab 6: Enzymatic hydrolysis		Reading, lab reports
Fri	Nov-20	C459	Lab 7: Sugar analysis from enzymatic hydrolysis of nanocomposite films		Reading, lab reports
Mon	Nov-23		Reading, lab reports		Reading, lab reports
Tue	Nov-24	C516	L11: Summary lecture (MS)		Lab reports, exam prep.
Wed	Nov-25		Poster presentations (10:00-11:00), place: Front lobby, Svante Arrhenius väg 16 C		Lab reports and exam prep.
Thu	Nov-26		Lab reports due		Exam prep.
Fri	Nov-27		Exam prep.		Exam prep.
Mon	Nov-30		Exam prep.		Exam prep.
Tue	Dec-1		Exam prep.		Exam prep.
Wed	Dec-2	C516	Written exam (9:00-14:00)		Exam prep.

Lectures

- L1: Introduction (MS) + safety lecture (TAs)
- L2: Lignocellulose chemistry (MS)
- L3: Polysaccharides (MX)
- L4: Polyphenols (JS)
- L5: Characterization techniques (MS)
- L6: Lipids (MS)
- L7: Proteins (MS)
- L8: Thermochemical biomass transformations (MS)
- L9: Biochemical biomass transformations (MS)
- L10: Recycling, degradation and biodegradation (MS)
- L11: Summary (MS)

Labs

- Lab 1: Preparation of colloidal lignin particles
- Lab 2: Characterization of colloidal lignin particles: DLS and zeta potential
- Lab 3: Preparation of nanocomposite films
- Lab 4: Characterization of the nanocomposite films: Antioxidant activity
- Lab 5: AFM for characterization of the nanocomposite films
- Lab 6: Enzymatic hydrolysis of the nanocomposite films
- Lab 7: Sugar analysis from enzymatic hydrolysis of nanocomposite films