KZ8022 Chemistry of Renewable Materials (7.5 ECTS)

Course outline and schedule – HT26

day Week	Monday	Tuesday	Wednesday	Thursday	Friday
45 02/11–06/11	**-- -- --**	**L1-Intro (MS)** **Safety lecture for labs**	**L2-Lignochem (MS)** **Poster topics**	**L3- polysacch (MX)**	**L4- polyphenols (JS)** **Lab 1** **LNPs**
46 9/11–14/10	**L5-charact (MS)** **Lab 2** **nanocomp**	Prep for posters and lab reports	**L6-Lipids (MS)** **Lab 3** **DLS-group A**	**L7- Proteins (MS)** **Lab 3** **DLS-group B**	**L8- thermochem transform. (MS)** **Lab 4** **Antiox.**
47 16/11–20/11	**L9- biochem transf (MS)** **Lab 5** **AFM-group A**	**Lab 5** **AFM-group B** **Lab 6** **Enz. hydrol.**	**L10- Degradation and end-of-life (MS)** **Lab 7** **Sugar anal.**	Prep for posters and lab reports	**poster DL 14:00**
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:

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TA:s

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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)	Group A: C455 Group B: C459	Lab 1: Preparation of colloidal lignin particles
Mon	Nov-9	C516	L5: Characterization techniques (MS)	Group A: C455 Group B: C459	Lab 2: Preparation of nanocomposite films
Tue	Nov-10	C459	Reading, lab reports, posters		Reading, lab reports, posters
Wed	Nov-11	C516	L6: Lipid chemistry (MS)	C419 (Lab3) -	Group A: Lab 3: Characterization of colloidal lignin particles: DLS and zeta potential Group B: Reading, lab reports, posters
Thu	Nov-12	C516	L7: Protein chemistry (MS)	- C419 (Lab3)	Group A: Reading, lab reports, posters Group B: Lab 3: Characterization of colloidal lignin particles: DLS and zeta potential
Fri	Nov-13	C459	L8: Thermochemical biomass transformations (MS)	Group A: C455 Group B: C459	Lab 4: Characterization of the nanocomposite films: Antioxidant activity
Mon	Nov-16	C516	L9: Biochemical transformations (MS)	C268 -	Group A: Lab 5: Characterization of the nanocomposite films by AFM Group B: Reading, lab reports, posters
Tue	Nov-17	- C268	Group A: Reading, lab reports, posters Group B: Lab 5: Characterization of the nanocomposite films by AFM	Group A: C455 Group B: C459	Lab 6: Enzymatic hydrolysis

Wed	Nov-18	C516	L10: Recycling, degradation and biodegradation (MS)	Group A: C455 Group B: C459	Lab 7: Sugar analysis from enzymatic hydrolysis of nanocomposite films
Thu	Nov-19		Reading, lab reports, posters		Reading, lab reports, posters
Fri	Nov-20		Reading, lab reports, posters		Last day to hand in posters (in **PDF** format) at 14:00
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: Preparation of nanocomposite films
Lab 3: Characterization of colloidal lignin particles: DLS and zeta potential
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