KZ8022 Chemistry of Renewable Materials (7.5 ECTS)

Course outline and schedule – HT25

day Week	Monday	Tuesday	Wednesday	Thursday	Friday
45 03/11–07/11	**L1-Intro (MS)**	**Safety lecture for labs (90 min)**	**L2-Lignochem (MS)** **Poster topics**	**L3-polyphenols (JS)**	**L4-polysacch (MX)**
46 10/11–14/11	**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 17/11–21/11	**L9- biochem transf (MS)** **Lab 4** **Antiox.**	**Lab 4** **Antiox.** **L10-circularity (MS)**	**Lab 5** **AFM**	**Lab 6** **Enz. hydrol.** **L11-summary (MS)**	**Lab 7** **Sugar anal.**
48 24/11–28/11	**poster DL 14:00**	Prep for lab reports & exam	Prep for lab reports & exam	**Lab reports due Poster pres.** Prep for exam	Prep for exam
49 01/12–05/12	**Written exam** 04/12 at **9-14**	**-- -- --**	**-- -- --**	**-- -- --**	**-- -- --**

L = lectures, Lab = laboratory exercises

Teachers:

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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)
Mon	Nov-3	C516	L1: Introduction to Chemistry of Renewable Materials (MS)		
Tue	Nov-4	C516	Safety lecture		
Wed	Nov-5	C516	L2: Lignocellulose structure and chemistry (MS)		
Thu	Nov-6	C516	L3: Chemistry of polyphenols (JS)		
Fri	Nov-7	Online	L4: Chemistry and applications of polysaccharides (MX)		
Mon	Nov-10	C516	L5: Characterization techniques for renewable materials (MS)	C459	Lab 1: Preparation of colloidal lignin particles (group A) Lab 1: Preparation of colloidal lignin particles (group B)
Tue	Nov-11	C459	Lab 2: Characterization of colloidal lignin particles: DLS and zeta potential (group A)	C459	Lab 2: Characterization of colloidal lignin particles: DLS and zeta potential (group B)
Wed	Nov-12	C516	L6: Lipids (MS)		
Thu	Nov-13	C516	L7: Proteins (MS)		
Fri	Nov-14	C459	L8: Thermochemical biomass transformations (MS)	C459	Lab 3: Preparation of nanocomposite films (groups A&B)
Mon	Nov-17	C516	L9: Biochemical transformations (MS)	C459	Lab 4: Characterization of the nanocomposite films: Antioxidant activity (group A)
Tue	Nov-18	C459	Lab 4: Characterization of the nanocomposite films: Antioxidant activity (group B)	C516	L10: Recycling, degradation and biodegradation (MS)
Wed	Nov-19	C268	Lab 5: Characterization of the nanocomposite films by AFM	C268	Lab 5: Characterization of the nanocomposite films by AFM
Thu	Nov-20	C459	Lab 6: Enzymatic hydrolysis (groups A&B)	C516	L11: Summary
Fri	Nov-21	C459	Lab 7: Sugar analysis from enzymatic hydrolysis of nanocomposite films (group A)	C459	Lab 7: Sugar analysis from enzymatic hydrolysis of nanocomposite films (group B)
Mon	Nov-24		Last day to hand in posters (in PDF format) at 14:00		
Tue	Nov-25		Lab reports and exam prep.		Lab reports and exam prep.
Wed	Nov-26		Lab reports and exam prep.		Lab reports and exam prep.
Thu	Nov-27		Lab reports due Poster presentations (14:00-15:00)	Outside of Magneli	Exam prep.
Fri	Nov-28		Exam prep.		Exam prep.
Mon	Dec-01	C516	**Written exam** (9:00-14:00)		

Lectures
L1: Introduction (MS)
L2: Lignocellulose chemistry (MS)
L3: Polyphenols (JS)
L4: Polysaccharides (MX)
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