Welcome to the pulp and paper undergraduate course MECH 450D (UVIC)/MECH 410A (UBC) – Jan 2020

Instructor:

Barbara Dalpke (located at UBC), dalpke@mech.ubc.ca

TA (located at UVIC): Michael Churchill, mchurchill85@hotmail.com

Meeting times/location:

Mo/Th 11:30 – 12:50

CEME 1203 (UBC) / CLE B019 (UVIC)

Note: Course will be taught by videolink for UVIC students

Grading:

- 2 midterms 40% each. One on pulping, one on papermaking.
- Midterm 1: **Thursday Feb 13**; Midterm 2: **Thursday Mar 19** (tentative dates, to be confirmed)
- Video Project (20%): Upload to youtube and email link to the video to TA by March 23rd.

Video Project:

–Work in a group of 2-3 people
–Choose a new bio-product that can be made from forest materials (example, production of ethanol from biomaterial, bioplastics, carbon fibre car parts …). Please submit your team and your proposed bio-product to our TA by January 26th.
–Develop a short video presentation that covers (5-7 minutes):

- The process of going from tree to bio-product
- The properties of the material
- The estimated environmental impact (benefit).
- An economic review

We will review all projects during class. Marks will be awarded for content as well as presentation.

Due March 23rd

Textbook:

No textbook. Lectures and written notes will be available electronically (http://www.fibrelab.ubc.ca/private/pulp-and-paper-undergraduate-course/ Password: CourseNotes). However, a reference that you may be interested in would be Handbook for Paper and Paper Technologists - Gary Smook (3rd Edition). Note you don't have to buy it. Another good reference series is the Papermaking Science & Technology Series, which is available as reference in the IRC library at UBC.

Lecture Content:

This course gives an overview of pulp and paper operations. Students will gain a basic understanding of the process of converting wood to paper. Included are the conversion of wood to fibre through mechanical or chemical pulping, processing of recycled fibre, the papermaking process and paper converting operations. A short introduction with regards to newer developments such as integration of biorefinery processes is given. Lecture topics are:

Introduction
Natural resources and fibre morphology
Pulp rheology
Mechanical pulping
Screening and cleaning
Chemical pulping and recovery
Recycled fibre
Papermaking introduction (Products, physics, testing, chemistry)
Stock preparation and LC refining
Papermachine

- Approach flow
- Forming
- Pressing
- Drying

Paper finishing and converting
Biorefinery

Learning Objectives:

- Gain a basic understanding of the pulp and papermaking process
- Be familiar with basic concepts and terminology in pulp and paper processing
- Understand the interrelation between wood, pulp and paper properties and quality