ACKNOWLEDGEMENT

UBC's Point Grey Campus is located on the traditional, ancestral, and unceded territory of the xwməθkwəy̓əm (Musqueam) people. The land it is situated on has always been a place of learning for the Musqueam people, who for millennia have passed on in their culture, history, and traditions from one generation to the next on this site.

COURSE INFORMATION

Course Title	Course Code Number	Credit Value
Environmental Facility Design	WOOD 491	3 credits

Lecture time and venue
Monday & Wednesday: 12:00 – 1:30 PM
Friday: 12:00 – 2:00 PM
FSC-2965 (**on Zoom: January 10-24, 2022**)

Prerequisites
[Is there a course that students must have passed before taking this course?]

All of WOOD 225, WOOD 464

Corequisites
[Is there a course that students must take concurrently (if not before)?]

WOOD 499

Other requirements
- A labtop/desktop computer: for software training sessions
  - Please contact the instructor **by the end of the 1st week** if you don't have one, there may be a limited quantity of laptops available on loan from the department
- ~~Hard-toe shoes (safety boots): for lab session at CAWP~~ (in-person lab session at CAWP is cancelled due to COVID-19)

CONTACTS

Course Instructor(s)	**Dr. Qingshi Tu** Email: Qingshi.tu@ubc.ca Office: 4040 Forest Science Center Office Hours: 4-5 pm PST (**via Zoom**), Thursday (15-min block by appointment via Canvas calendar)
Course TA(s)	**Bonnie Gan, MSc student at Department of Wood Science** Email: jgan03@student.ubc.ca Office: 4041 Forest Science Center Office Hours: 4-5 pm PST (**via Zoom**), Monday (15-min block by appointment via Canvas calendar)

COMMUNICATIONS

The instructors and TA will take an extra effort to ensure that students have sufficient opprotuniteis to communicate their questions and conerns throughout the course. In order to maintain an efficient way of communication, we ask the students to kindly follow the procedure below when seeking answers to their questions.

When you look for information related to the course, before contacting the Instructor or TA, please make sure to: 1) check the syllabus; 2) check the website (announcements are regularly posted, and all deadlines are included there).

If you still need to contact the Instructor or TA, please follow this hierarchical procedure: 1) ask questions directly during live lectures; 2) post the question in Discussion board on Canvas; 3) book a one-on-one appointment with the TA or one of the instructors via Canvas Calendar; 4) email the instructor (Qingshi Tu) if the issue still remains unsolved.

Also, please make sure you know **who to contact regarding specific matters**:

- Contact the **TA** regarding: lecture attendance issues, assignment grade inquiries, penalties, medical notes and concessions, etc.; the TA has full authority regarding all the aspects of the assignments.
- Contact the **instructor** regarding: lecture material and theory, tutorials, and exams.

COURSE DESCRIPTION

Life cycle assessment (LCA) is a data-driven method used to evaluate the environmental impacts of products and organizations from a life cycle perspective. Popularized as carbon footprinting, LCA is designed to go beyond climate change and include a much broader scope of environmental impacts.

This course will enable students to use the LCA method to evaluate the environmental impact of products and organizations from a life cycle perspective (i.e. from cradle-to-grave). Students will develop a ground-up understanding of LCA based on the International Organization for Standardization (ISO) 14000 series of environmental management standards and the UNEP/SETAC Guidance on Organizational Life Cycle Assessment, and how they are applied in different sectors of the economy, including for corporate social responsibility and green building programs.

The course will also prepare the students towards working as technical professionals or managers in wood products processing plants. Students will understand major hazards in the wood industry and learn the technological solutions to protect themselves and colleagues. Students are expected to grow big-picture environmental awareness, of the wood products sector in particular.

COURSE STRUCTURE

There are **three synchronous lectures/lab each week**. The Instructor and TA will strive to offer a high level of presence both during and outside these synchronos sessions.

Lecture slides and vidoes cover the key concepts, theory and engineering principles. Learning activities, such as polling, in-class discussions and investigative case studies, encourage the active participation of students during the synchronous sessions. The assignments and exams will enable students to gauge their learning progress. The content of assignment and exams will be closely aligned with the learning objectives, materials and activities covered during the lectures.

All learning materials (except the textbook) will be made available through UBC Canvas learning management system. The course will be delivered in modules and students will be able to track their progress in Canvas as coursework is being completed, mark them as done for a visual illustration of progress, and make sure they meet deadlines. Canvas will allow students to navigate through the course progressively and smoothly. Deadlines for the completion of assignments and quizzes will be established, but there will be flexibility for students to work on the materials on their own time.

There will be **one midterm exam** and **one final <u>group</u> project** (see details in "ASSESSMENT OF LEARNING" section below) to be completed by all students during the designated time periods. Both the exam and final project will be **open-book**, with no remote invigilation.

LEARNING OUTCOMES

Upon successful completion, the student will be able to:

- Know air pollution controls, including: pollutants of concern, health consequences, fluid and particle dynamics, ducting systems, emission control devices.
- Know noise measurement and control, including: fundamentals of sound and hearing mechanism, measurement of noise, control measures, hearing protection devices.
- Know ISO requirements and guidelines for conducting a product and organizational LCA (O-LCA) study.
- Operate a whole building LCA software (Environmental Impact Estimator for Buildings).
- Operate a product LCA software (openLCA)
- Apply a critical review framework to analyze O-LCA studies.

LEARNING MATERIALS

Required Textbooks
None

Other Course Materials
- Access to additional learning materials, such as videos, reading materials and tools, will be provided by the instructors

LEARNING ACTIVITIES

Before each lecture

- Lecture topics may be supported by pre-lecture quizzes and suveys to gauge student's knowledge of topics to be discussed. Correct and incorrect answers will be identified during the lecture, but students will get full marks just for participating.

During each lecture

- Slides presentation: to cover the key concepts, theory and examples; serves as the basis for other learning activities
- In-class discussions: to create a group environment for students to share thoughts and work collectively on a given problem
- Polling (e.g., Sildo®, Padlet®): another activity to encourage the participation of students

After each lecture

- Extended learning materials: these *optional* learning materials include vidoes, short articles and exercises, which are intended for students to explore additional topics and gain knowledge beyond the content covered by the lecture.
- Assignments: for students to reinforce their learning outcomes and gauge their progresses.

SCHEDULE OF LEARNING TOPICS

Note that all deadlines, dates and times are given in Pacific Standard Time (PST). Contact your instructors to discussion any adjustment needed to accommodate your time zone.

Please refer to the separate Excel spreadsheet titled "*WOOD 491_2021 W2_Schedule.xlsx*" for detailed schedule of this course

ASSESSMENTS OF LEARNING

The course is evaluated through the **participations (e.g. surveys, attendance), post-lecture assignments, one midterm exam (two parts) and one final group project (two parts)**. The requirements of midterm exam and the final project are at the same level of easiness as the examples shown in lectures and assignments. Both the exam and final project are open book and each is expected **to be completed by the respective deadline**.

Assignments will be due at specific dates specified in Canvas. Late assignments will be penalized 10% of the total possible points for each day past the due date. Once the assignments are returned graded to the students, late assignments will automatically receive a grade of 10% but they still need to be handed in to pass the course. Students can not pass the course unless all assignments are submitted for grading, no matter how late they are. Grades will be allocated following the distribution below:

Assessments to student learning include the following components in this course. Each component must be passed to successfully complete the course and receive credits. The passing grade is 50%.

Components	Weight
Assignments	30%
Course participation	10%
Mid-term (individual written exam & group lab report)	30%
Final group project (report & presentation)	30%

Mid-term exam
- Individual written exam: multiple choice questions, calculations, short answer questions
- Group lab report: answer questions based on the WB-LCA (Athena IE4B) lab

Final group project
- Report: summarize the improvement and recommendations of an existing O-LCA study
- Presentation: present the original O-LCA study and describe the improvement and recommendations

Student final letter grade will be given based on the following:

Letter Grade	Percentage
A+	90% - 100%
A	85% - 89%
A-	80% - 84%
B+	76% - 79%
B	72% - 75%
B-	68% - 71%
C+	64% - 67%
C	60% - 63%
C-	55% - 59%
D	50% - 54%
F (Fail)	0% - 49%

Policies on Late Submissions and Re-grading

As per UBC policies, make-up tests, quizzes, or assignments will **only** be permitted in the case of extreme illness, which requires a doctor's note pertaining to that day, or death in the family, which also requires appropriate documentation.

Participation Expectations

Participation in the learning activities are required and will be evaluated based on the following:

- Submission of pre-lecture quizzes and surveys. 100% of the points will be awarded to students who complete the quizzes and surveys on time, regardless of how many correct answers. 0% of the points will be awarded for a late or missed submission
- Lecture attendance is required.
- Participation in interactive activities, such as in-class discussions and polling, is strongly encouraged.

DISCLAIMER

This pandemic has greatly altered teaching and studying at UBC, including changes to health and safety considerations. Keep in mind that some UBC courses might cover topics that are censored or considered illegal by non-Canadian governments. This may include, but is not limited to, human rights, representative government, defamation, obscenity, gender or sexuality, and historical or current geopolitical controversies. If you are a student living abroad, you will be subject to the laws of your local jurisdiction, and your local authorities might limit your access to course material or take punitive action against you.

UBC is strongly committed to academic freedom, but has no control over foreign authorities (please visit http://www.calendar.ubc.ca/vancouver/index.cfm?tree=3,33,86,0 for an articulation of the values of the University conveyed in the Senate Statement on Academic Freedom). Thus, we recognize that students will have legitimate reason to exercise caution in studying certain subjects. If you have concerns regarding your personal situation, consider postponing taking a course with manifest risks, until you are back on campus or reach out to your academic advisor to find substitute courses. For further information and support, please visit: https://academic.ubc.ca/support-resources/freedom-expression.

UNIVERSITY POLICIES

UBC provides resources to support student learning and to maintain healthy lifestyles but recognizes that sometimes crises arise and so there are additional resources to access including those for survivors of sexual violence. UBC values respect for the person and ideas of all members of the academic community. Harassment and discrimination are not tolerated nor is suppression of academic freedom. UBC provides appropriate accommodation for students with disabilities and for religious observances. UBC values academic honesty and students are expected to acknowledge the ideas generated by others and to uphold the highest academic standards in all of their actions.

Details of the policies and how to access support are available on the UBC Senate website**.**

Code of conduct

The academic enterprise is founded on honesty, civility, and integrity. As members of this enterprise, all students are expected to know, understand, and follow the codes of conduct regarding academic integrity. At the most basic level, this means submitting only original work done by you and acknowledging all sources of information or ideas and attributing them to others as required. This also means you should not cheat, copy, or mislead others about what is your work. Violations of academic integrity lead to the breakdown of the academic enterprise, and therefore serious consequences arise and harsh sanctions are imposed. For example, incidences of plagiarism or cheating may result in total loss of points in an assignment, exam or entire course, and will be referred to the President's Advisory Committee on Student Discipline. Careful records are kept in order to monitor and prevent recurrences.

To fully understand what plagiarism means and avoid it please visit:

http://learningcommons.ubc.ca/resource-guides/avoid-plagiarism/

For a broader guide on general student conduct, go to:

https://students.ubc.ca/campus-life/student-code-conduct

OTHER COURSE POLICIES

Learning Analytics

Learning analytics includes the collection and analysis of data about learners to improve teaching and learning. This course will be using the following learning technologies: Canvas. Many of these tools capture data about your activity and provide information that can be used to improve the quality of teaching and learning. In this course, I plan to use analytics data to:

- View overall class progress
- Track your progress in order to provide you with personalized feedback
- Review statistics on course content being accessed to support improvements in the course
- Track participation in discussion forums
- Assess your participation in the course

Copyright

All materials of this course (course handouts, lecture slides, assessments, course readings, etc.) are the intellectual property of the Course Instructor or licensed to be used in this course by the copyright owner.

- **Redistribution of these materials by any means without permission of the copyright holder(s) constitutes a breach of copyright and may lead to academic discipline.**
- **Recording the lectures is prohibited**