



**COURSE INSTRUCTOR:** Vincent Leung, CAWP 2937B, Tel: 604-827-2661, E-mail: [Vincent.leung@ubc.ca](mailto:Vincent.leung@ubc.ca)

**TEACHING ASSISTANT:** Joseph Kim, Forestry 4618, E-mail: [joseph.dw.kim@alumni.ubc.ca](mailto:joseph.dw.kim@alumni.ubc.ca)  
Vigoss Zhang, E-mail: [vigoss.fzhang@gmail.com](mailto:vigoss.fzhang@gmail.com)

**OVERVIEW:**

This course in CAD/CAM is directed towards students preparing to work as technical professionals and managers of wood product processing operations. The course will cover:

- How CNC machines function, including the major mechanical and control components.
- The development and future of CNC machining.
- How CNC machines are operated and used.

Much of the learning will result from “hands-on” experience operating and programming CNC controlled routers using commercially available CAD and CAM software. An emphasis will be placed on the synthesis of the skills, information, and ideas required for managerial decision making.

**LEARNING OBJECTIVES:**

Upon successful completion of the course, the student will be able to:

- Summarize the history of CNC machining
- Describe the major mechanical and control components of a CNC machine and their functions.
- Describe the design and function of common CNC routers
- Safely operate a CNC router
- Program a CNC router machine and edit programs
- Create a CNC routing program from an AutoCAD drawing using a CAM program
- Choose and design an appropriate clamping mechanism for CNC routing
- Create a machining program using several typical commercially available programs
- Choose appropriate cutting tools
- Define and manage the operational changes needed to integrate a CNC into a manufacturing operation
- Create a budget for the purchase, operation, and maintenance of a CNC machine and calculate financial feasibility.

**CLASS LOCATION:**

<b>Lectures</b>	Monday, Wednesday, Friday	15:00 to 16:00	Rm: (CAWP Classroom FSC 2916)
<b>Labs</b>	Section 1 - Tuesday	11:00 to 14:00	Rm: (CAWP Comp. Lab FSC 2942)
	Section 2 - Thursday	11:00 to 14:00	Rm: (CAWP Comp. Lab FSC 2942)



**GRADING POLICY:**

• Labs Assignments	12.5%
• Term Project Part 1 (Individual)	12.5%
• Term Project Part 2 (Group)	10%
• Mid Term Exam	25%
• Final Exam	35%
• Participation	5%

An average grade of at least 50% must be obtained on the examination component (total percentage of mid-term exam + final exam) in order to pass the course. All labs must be attended and successfully completed to pass this course.

**TEXTBOOK:**

No text assigned.

**ADDITIONAL MATERIAL**

Class notes and additional supporting material, including announcements, will be available on:

Class Website: [wood482.forestry.ubc.ca](http://wood482.forestry.ubc.ca)

Password: wood4822017

**LABS:**

Labs will be conducted using the CNC routers in the machine shop at the Centre for Advanced Wood Processing as well as 2D and 3D CAD programs, and AutoCAD. Students who miss more than one lab or are late more than three times (by more than 10 minutes) will fail the course automatically (**no exceptions will be made**).

For the Term Project Part 2, groups might need to work and machine their projects outside of lab and lecture time. Students are required to show up outside of the class time according to the assigned schedule.

**ASSIGNMENTS:**

Assignments will be given to reinforce lecture topics and promote classroom discussion.

10 PERCENT PER DAY WILL BE DEDUCTED FOR LATE ASSIGNMENTS. No assignment will be accepted more than one week after the due date.

**STUDY GROUPS:**

Some labs will be done in assigned study groups. Students will be strongly encouraged to setup and participate in informal study groups to complete other assignments. Unless otherwise specified, one lab report will be submitted per group. All group members attending the lab will receive the same grade for the report. Students not attending the lab will not receive credit for the report. All students will be expected to master the learning objectives of each lab and all labs must be completed to pass the course.

**SAFETY:**

Students shall learn and demonstrate knowledge of safe and proficient machine operation before they operate any of the CNC machines. A policy of zero tolerance for safety infractions will be strictly enforced and students found operating the machines in an unsafe manner will be denied operating privileges which will automatically mean failing the course. If any issues of safety arise students will be able to ask for clarification or further instruction without penalty.