

Institution name here

No _____/.....

Place, Date ____/____/____

Course Syllabus

1 Program

Title of the study programme: Wood Processing Technology

2 Course details

Course name: **Wood Characteristics**

Course code: FOA04WCT11108

Number of credits (hours/week): 3(2-2-5)

Course type (tick the appropriate box): Required, Elective, Other, if other please explain:

Prerequisites courses: none

Semester, in which the course is taught: *tick the appropriate box below*

Year 1		Year 2	
Semester 1	Semester 2	Semester 1	Semester 2
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

3 Responsible unit

3.1 Department:

Names and affiliations of lecturer(s): Mr. *Kongchan Doungmala (SKU)*, Phone: +85620 2257 2257, 57356666. Email: kongdml@gmail.com; Office location: Forest Resource Department, Faculty of Agriculture and Environment, Savannakhet University, Savannakhet Province, Lao PDR.

4 Course description

Wood is an important material. It has lots of advantages. It is easy to machine and abundantly available, and best of all, it is the renewable material. However, it has also some disadvantages. To use wood properly, it requires understanding its peculiarities, especially the variability of its properties, its interaction with water and the possibility of biodeterioration.

This course introduces students to wood structure and properties, discusses the deterioration and proper use of wood. An overview of wood products and a guide for students on wood structure systems. Basic laboratory techniques for physical measurement and mechanical testing were guided by conducting and analyzing multiple laboratories.

5 Course objectives

This course describes the composition of wood from a cellular wall to a tree. the material reaction of wood to environmental climate change (moisture and heat) is studied. The course is subdivided into five independent sections, each one tested separately and based on text studies combined with lectures and exercises. The student development is followed up about remember, understand analyzed and evaluation with.

Knowledge: remember and Understanding of all properties that affect the performance of wood.

In particular of the wood-moisture relationship, typical and potential applications of wood.

Skills: apply to solve of structural systems for wood and methods to plan and manufacture these

Application of theories to practice: can be **evaluate** for the qualities of wood as a building material through appraise of its properties, manufacturing techniques and an a esthetic appeal.

Social knowledge and skills: can be **organize** of structural systems for wood and methods to plan and manufacture these for there owner or social

5.1 Learning objectives of particular modules

- *The course is designed to synthesize knowledge in the biological and physical science of wood and its industrial application.*
- *The wood characteristic comprises of basics of wood anatomy, chemistry, physics, mechanics as well as processing knowledge and techniques to manufacture solid and composite wood products.*

- *The course is designed to improve the qualitative, quantitative and futuristic aspects of students. Students are also expected to improve their capacities as leaders and managers through study tour, industrial attachment and other*

6 Course teaching methods

- **Class Meetings:** will provide a platform for introducing and reviewing key concepts, case-studies, and examples as well as for discussion of related current issues.
- **Readings and Quizzes:** Students are expected to have reviewed assigned readings before class and must have completed a short online review quiz (three attempts, highest grade) on the readings.
- **Assignments:** 5 assignments in total will be handed out on a semi-regular basis. These expand on the practiced work.
- **Lab Component (group work):** Throughout the semester, some classes will be devoted to lab work, where students will be required to complete experiments that allow for hands-on experience with the material. These labs must then be documented in a graded lab report.
- **Exams:** Accumulated knowledge is tested in two exams: a midterm and a final exam. Both are closed-book exams and feature multiple-choice, true-false and short essay/illustration questions.

7 Teaching plan

Specify the teaching plan for each week of the course, including the methods used to relay information to the students and the number of hours spent on the subjects

Week	Content	Method/activity	Hours
1	Welcome and introduction to the Wood Characteristics course	✓ Lecturer provides instruction on lesson plan, course description, expected learning outcomes	(Lecture: 2 h)
	Chapter 1 The Material Wood		
2	1. wood 1) What is wood? (Structure of wood, Hardwoods and softwoods' Chemical composition)	✓ Lecturers give suggestions on the lesson ✓ Give homework, ✓ group discussions	Lecture: 2 h; Lab: 2 h)



	<p>2) What's wood like? (Strength, Durability, Wood and water, Wood and energy, Environmentally friendly)</p> <p>3) Using wood (Harvesting, Seasoning, Preserving and other treatment, Cutting)</p> <p>4) Other wood products</p>		
3	<p>Chapter 1 (Cont.)</p> <p>2. wood anatomy (cell structures and differences between deciduous trees and conifers; water and nutrient transport in the living tree)</p> <p>3. wood defects (Natural Defects, Biological Defects, Seasoning Defects)</p>	<p>✓ Lecturers give suggestions on the lesson</p> <p>✓ Give homework</p> <p>✓ project reports</p> <p>✓ group discussions</p>	<p>Lecture: 2 h;</p> <p>Lab. 2 h)</p>
	Chater 2 Physical Properties		
4	<p>1. water in wood,</p> <p>2. shrinkage/swelling,</p>	<p>✓ Lecturers give suggestions on the lesson</p> <p>✓ Provide student with individual consult on assignment projects</p>	<p>Lecture: 2 h;</p> <p>Lab. 2 h)</p>
5	<p>Chater 2 Physical Properties (Cont.)</p> <p>3. specific gravity,</p> <p>4. other properties</p>	<p>✓ Lecturers give suggestions on the lesson</p> <p>✓ Provide student with individual consult on assignment projects</p>	<p>Lecture: 2 h;</p> <p>Lab. 2 h)</p>
	Practice		
6-7	Physical Properties of wood	Laborlabtory	4
	Chapter 3 Mechanical Properties		
8	<p>1. anisotropy,</p> <p>2. wood strengths,</p>	<p>✓ Lecturers give suggestions on the lesson</p> <p>✓ Give homework, project reports, group discussions</p>	<p>Lecture: 2 h;</p> <p>Lab. 2 h)</p>



		✓ Provide student with individual consult on assignment projects	
9	Chapter 3 (Cont.) 3. effects on mechanical properties)	✓ Lecturers give suggestions on the lesson ✓ group discussions ✓ watch some video	Lecture: 2 h; Lab. 2 h)
10	Midterm-Examination	Writing exam	2
	Chapter 4 Protection and Modification		
11	1. fungi, 2. decay, 3. insects,	✓ Lecturers give suggestions on the lesson ✓ discussion ✓ Laboratory (to watch the sample)	Lecture: 2 h; Lab. 2 h)
12	Chapter 4 (Cont.) 4. fire, 5. wood protection	✓ Lecturers give suggestions on the lesson ✓ discussion ✓ watch some video	Lecture: 2 h; Lab. 2 h)
	Chapter 5 Wood-Based Products		
13	1. primary/secondary products, 2. sawing process,	✓ Lecturers give suggestions on the lesson ✓ discussion ✓ group work on Wood-Based Products	Lecture: 2 h; Lab. 2 h)
14	Chapter 5 (cont.) 3. engineered products,	✓ Lecturers give suggestions on the lesson ✓ discussion ✓ group work on the Wood-Based Products	Lecture: 2 h; Lab. 2 h)
15	Chapter 5 (cont.) 4. adhesives	✓ Lecturers give suggestions on the lesson ✓ discussion ✓ group work on the Wood-Based Products	Lecture: 2 h; Lab. 2 h)
16	Structural Systems overview	✓ Lecturers give suggestions on the lesson	4



17	Field trip	✓ Go to Field trip	16
	Presentation the assignment	Group report on project assignment of student works (group working) on wood characteristic	8
18	Final examination		2

8 Material needs

8.1 Course equipment: *link to equipment needs/purchases as part of the project*

- **Digital weighing scale FC-si/FC-i:** To measure the wood weight for laboratory
- **Computer Control Wood Testing Machine+Static Bending Test:** Adjustable test space, The most popular choice for static tension and compression tests. These dual column testers are available in both tabletop and floor standing models
- **MOISTURE METER:** A moisture meter is an essential instrument used in many industries to detect moisture content in materials. Home and building inspectors rely on moisture meters to identify potential problems and damage to structures from moisture build up
- **Polarizing Compound Microscope:** A **microscope** is a laboratory instrument used to examine objects (wood Texture) that are too small to be seen by the naked eye.
- **Electric Kilns:** It is used for moisture content evaluation.

8.2 Information sources

- From FRAME project

9 References

9.1 Compulsory reading list

- Forest Products Laboratory. 1999. Wood handbook—Wood as an engineering material. Gen. Tech. Rep. FPL–GTR–113. Madison, WI: U.S. Department of Agriculture, Forest Service, Forest Products Laboratory. 463 p.
- Gilbert Gedeon, P.E. 1999' Mechanical Properties of Wood
- Haynes, R.W. tech. coord. 2003. An analysis of the timber situation in the United States: 1952 to 2050. Gen. Tech. Rep. PNW–GTR–560. Portland, OR. U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station. 253 p.



- Haynes, R.W.; Adams, D.M.; Alig, R.J.; Ince, P.J.; Mills, J.R.; Zhou, X. 2007. The 2005 RPA timber assessment update. Gen. Tech. Rep. PNW–GTR–699. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station. 212 p.
- Howard, J.L. 2007. U.S. timber production, trade, consumption, and price statistics, 1965–2005. Res. Pap. FPL–RP– 637. Madison, WI: U.S. Department of Agriculture, Forest Service, Forest Products Laboratory. 91 p
- Regis B. Miller. 1999, Characteristics and Availability of Commercially Important Woods

9.2 Suggested reading list

- Bowyer, Shmulsky, Haygreen, “[Forest Products and Wood Science: An Introduction](#)”. Blackwell Publishing.
- Herzog, Natterer, Schweitzer, Volz, Winter, “[Timber Construction Manual](#)”. Birkhaeuser/Springer.
- Forest Products Society, “[Wood Handbook – Wood as an Engineering Material](#)”. The **2010 (“centennial”) edition** is required – don’t get any older editions
- R. Bruce Hoadley, “[Understanding Wood. A Craftsman’s Guide to Wood Technology](#)”. Taunton Press.

10 Assessment of students

10.1 Description of assessment

1. Learning will be calculated the percentage score as follows:

- Class attending 10%
- Report submission / assignment 20%
- Mid-term exam 30%
- Final exam 40%
- Other

2. The calculation of the grade level shall be based on the evaluation criteria of the course in the National Curriculum Standards.

10.2 Grade distribution and student assessment

- Excellent (A)
Project surpasses expectations in terms of inventiveness, appropriateness, verbal and visual ability, conceptual rigor, craft, and personal development. Student pursues content or techniques beyond what is discussed in class.



- Above average (B+/B/)

Project is thorough, well-researched, diligently pursued, and successfully executed. Student pursues ideas and suggestions presented in class and puts in effort to resolve required projects.
- Average (C+/C)

Project meets minimum requirements. Suggestions made in class are not pursued with dedication and rigor. C- does not meet the minimum grade to be counted toward student's degree.
- Below average (D+/D)

Basic skills including graphics, model-making, verbal clarity or logic of presentation are not levelappropriate. Student does not demonstrate required design skill and knowledge base.
- Failure (F)

Minimum objectives are not met. Performance is not acceptable\
- Excused incomplete (I)

Given only for legitimate reasons of illness or family emergency, assigned after consultation with Associate Dean's office. A schedule for completion must be agreed upon with Build Lab staff.

Grading scale

Grade		Total score	Scale
Symbol	Verbal grade		
A	(Excellent)	80-100	4,00
B+	(Very Good)	75-79	3,50
B	(Good)	70-74	3,00
C+	(Fairly Good)	65-69	2,50
C	(Fair)	60-64	2,00
D+	(Poor)	55-59	1,50
D	(Very Poor)	50-54	1,00
F	(Fail)	0-49	0,00
I	(Incomplete)		

Place, Date/...../.....