

Code	ENVM1961D
Course Title	Wood Technology ad Utilisation
Program(s) offered in	Diploma of Applied Science (Forestry)
Unit Points	2
Hours per week	12
Semester of offer	Semester 2
Mode	Multiple
Campus	Gatton
Coordinator	Jack Baynes Phone:(07) 54830044 Fax: (07) 54827827 E-mail: jack.baynes@dpi.qld.gov.au
Assessment	Practical Assignment and a criterion based written test.
Subject Description	An understanding of wood technology and utilisation is a prerequisite for any understanding of the future commercial direction of forestry. The course introduces the student to the growth and anatomy of wood cells and the effect of age on wood properties such as heartwood, reaction wood knots and growth stresses. The subject is presented as 26 lectures and powerpoint presentations which were developed by Dr Phillip Evans of the Australian National University. These are supported by a textbook which will be supplied to you. A major emphasis is placed on the effect of water in wood and the technology of managing the its moisture content to control shrinkage, collapse and dimensional stability. The other major emphasis is on wood deterioration and preservation. The effect of fungi, termites and borers are examined, together with techniques for their treatment. Students will be taken to several sawmills.

Subject Details:

a) Purpose (Aims)

- On completion of the course, you will have attained a knowledge and understanding of the way in which wood grows and how it is prepared and treated for commercial use.
- You will be able to analyse the botanical structure, durability, water content and condition of wood and be able to recommend appropriate uses for it as well as ways of protecting it.
- You will be able to describe how wood is processed into sawn timber, paper or re constituted products.

b) Goals (Instructional Objectives)

1. Describe the development and growth of wood in commercial softwoods and hardwoods;
2. Differentiate between the different types of cells (and their function) in wood samples;
3. Describe the effects of tree age on wood properties;

4. Understand the importance of moisture content on the performance of wood in structures;
5. Select wood species appropriate to various commercial uses;
6. Describe the way in which wood deteriorates and ways to preserve it;
7. Apply simple measures to recognise and prevent wood attack by fungi and insects.

Subject Content:

MODULE 1 Lectures 1 to 5 Growth and development of wood in softwoods and hardwoods.

Development of woody stems. Formation of new wood tissues. Growth of wood cells. Development of wood cells. Wood anatomy of softwood. Wood anatomy of hardwood.

MODULE 2 Lectures 7 to 12. Effect of tree age on wood properties.

Juvenile and mature wood. Formation of heartwood. Reaction wood. Spiral grain. Knots and other defects. Growth stresses and strains.

MODULE 3 Lectures 14 to 18. Water in wood Fertilising.

Form and location. EMC. Air drying of wood. Shrinkage of wood and drying effects. Kiln drying of wood and variables affecting drying. Collapse and dimensional stability.

MODULE 4 Lectures 19 to 26. Wood deterioration and preservation.

Organisms attacking wood. Degradation by basidiomycetes. Soft rot, fungi and blue stain. Attack of timber in the sea. Insect attack. Termite attack. Preservative types. Simple methods of treatment.

MODULE 5 Wood processing. Structural uses.

Sawn timber, pulp and re constituted products. Factors to consider in using wood in structures. This module will be undertaken at the residential school.

Text/ References:

A compact disc and a text book which contains the course notes will be supplied.

Teaching/ Educational Methods:

The subject is presented as 26 lectures and powerpoint presentations which were developed by Dr Phillip Evans of the Australian National University. These are supported by a text book from either the Timber Research and Development Advisory Council or the Australian Training Council.

Assessment:

There will be two assessment items for the course. These are:

1. An analysis of the layout of a sawmill or pulpmill, detailing how wood is processed, how it is prepared for sale and how the waste is managed. (40%of the total mark);
2. A criterion based assessment of aspects of factors affecting the growth, preparation, degrade and protection of wood (60% of the final mark).

The criterion based test will be held during the residential school, as will the field work for the first assessment item.