

<u>AGT-851</u>	<u>Farm Machinery and its Management</u>	3(3-0)
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Course Description

Mechanical resources are integrated with agricultural operations to bring more land into production, more water to dry-season production and provide for accommodation of intensively managed crops as well as the improvement of the efficiency of food production. This course introduces the working principles, operation and maintenance of vast array of the farm machines including tractors, cultivation and drilling machinery, crop treatment and harvest machinery.

Educational Objectives

The course will

- a. Provide an overview of essential farm machinery
- b. Impart understanding of how farm machinery leads to more efficient agriculture systems

Course Outcomes

Upon successful completion of this course, the students will be able to

- a. Describe the major mechanical systems employed in agriculture.
- b. Apply knowledge of different discipline to suggest solutions for problems in farm mechanization.

Course Contents

- Farm mechanization
 - Introduction, Advantages & Disadvantages of Farm Mechanization.
- Tractor
 - Traction & Tractor, Purpose and Advantages of Tractor, Makes & models Specification salient features of different Tractors in Pakistan, Structure of Tractor & weight transfer
- Tillage machinery
 - Tillage, Objectives of tillage, primary tillage machinery, Mold board plows, Disk plow, Chisel plows, Sub-soilers, Rotary plows, Hitches of plows, laser land lever.

- Secondary tillage machinery, Harrows, Disk harrows, Spike tooth harrows, Spring tooth harrows, Cultivators, Row crop cultivators, Field cultivator
- Planting and seeding equipment
 - Purpose of planting and seeding equipment, Row-Crop planters, Planter parts, Planting depth, Gram drills, Furrow openers
- Weed insect and soil fertility control equipment
 - Purpose of crop production chemicals, Types of machinery used for weed, insect and fertility control, Liquid application equipment, Dry chemical application equipment
- a. Hay and forage harvesting equipment
 - (1) Purpose of hay and forage harvesting equipment, Working of cutter bar assembly of mower, Parts of cutter bar assembly of mower, Different types of mowers, Hay conditioners, windrowers, rakes, loaders and stakers, hay balers, forage harvesters
- b. Reapers, cutter binders and threshers
 - (1) Reapers -cum -cutter binders, Driving and cutting mechanisms, Plate form and elevator, Binder head and knotter head, stationary threshers
- c. Harvesting equipment
 - (1) Combine harvesters, Types, working and function of combines, Grain losses during harvesting, causes and their remedies
 - (2) Corn pickers, Mechanisms of combine/ corn picker, field losses in corn pickers
 - (3) Cotton strippers and their types, performance of cotton strippers,
 - (4) Cotton pickers and their types, Different mechanisms of cotton pickers
 - (5) Potato diggers and their types, sugar beet harvesters, peanut harvesters
- d. Power and machinery management
 - (1) Purpose of machinery management, Cost analysis of Different Farm machines, operating cost of machinery, selection of farm machinery, Field Capacity calculation for different farm implements, Field Efficiency calculation of Tractor & cultivating Implements

Recommended Books

- a. Farm Machinery and Equipment By: Harris Pearson Smith
- b. Agricultural Power and Machinery By: Jacobs Harrell