

# 22FMPE302 TRACTOR AND FARM MACHINERY OPERATION AND MAINTENANCE

Hours Per Week :

L	T	P	C
0	2	2	2

**PREREQUISITE KNOWLEDGE:** Basics of farm machinery implements.

## COURSE DESCRIPTION AND OBJECTIVES:

The goal of this course is to familiarize the students with agricultural tractors and power tillers, its systems, operation, maintenance and safety precaution.

### MODULE-1

0L+16T+16P=32 Hours

#### PRACTICES:

- Familiarization with different makes and models of agricultural tractors.
- Identification of functional systems including fuels system, cooling system, transmission system, steering and hydraulic systems.
- Study of maintenance points to be checked before starting a tractor.
- Familiarization with controls on a tractor.
- Safety rules and precautions to be observed while driving a tractor.
- Driving practice of tractor.
- Practice of operating a tillage tool (mould-board plough/ disc plough) and their adjustment in the field.
- Study of field patterns while operating a tillage implement. Hitching & De-hitching of mounted and trail type implement to the tractor.

### MODULE-2

#### PRACTICES:

0L+16T+16P=32 Hours

- Driving practice with a trail type trolley – forward and in reverse direction.
- Introduction to tractor maintenance – precautionary and break-down maintenance.
- Tractor starting with low battery charge.
- Introduction to trouble shooting in tractors.
- Familiarization with tools for general and special maintenance.
- Introduction to scheduled maintenance after 10, 100, 300, 600, 900 and 1200 hours of operation. Safety hints. Top end overhauling. Fuel saving tips. Preparing the tractor for storage.
- Care and maintenance procedure of agricultural machinery during operation and offseason.
- Repair and maintenance of implements – adjustment of functional parameters in tillage implements.
- Replacement of broken components in tillage implements.
- Replacement of furrow openers and change of blades of rotavators.
- Maintenance of cutter bar in a reaper.
- Adjustments in a thresher for different crops.
- Replacement of V-belts on implements.
- Setting of agricultural machinery workshop.



Source: <https://meratractor.com/blogs/11/How-To-Choose-The-Best-Tractor-For-Your-Farm>

**SKILLS:**

- ✓ Replacement of broken components and furrow opener.
- ✓ Operation and maintenance of tractors.

**COURSE OUTCOMES:**

Upon successful completion of this course, students will have the ability to:

CO No.	Course Outcomes	Blooms Level	Module No.	Mapping with POs
1	Apply the need of different farm machineries for different farming operation.	Apply	1	1, 2, 3, 4, 7
2	Apply to operate tractor and various farm implements	Apply	1	1, 2, 3, 4, 6
3	Analyze the Hitching and De-hitching of implements.	Analyze	2	1, 2, 6, 7, 9
4	Analyzes to understand and analyze care and maintenance of tractor and farm implements	Evaluate	2	1, 2, 3, 4, 6

**TEXT BOOKS:**

1. Ghosh RK and S Swan "Practical Agricultural Engineering" 2015.
2. Black PO and WE Scahill "Diesel Engine Manual" 2009.

**REFERENCE BOOKS:**

1. Southorn N. "Tractor operation and maintenance" 2014.
2. Jain SC and CR Rai "Farm Tractor Maintenance and Repair" 2009.
3. "Operators manuals of tractors" 2007.