

Program : <b>Diploma in Automobile Engineering</b>	
Course Code : <b>5053B</b>	Course Title: <b>Farm Machinery and Construction Equipment</b>
Semester : <b>5</b>	Credits: <b>4</b>
Course Category: <b>Program Elective</b>	
Periods per week: <b>4 (L:4, T:0, P:0)</b>	Periods per semester: <b>60</b>

### Course Objectives:

- To know the scope of farm mechanization in the country
- To identify various farm machineries, earth moving machineries and construction equipment.
- To understand the construction and working of various farm machinery, earth moving machinery and construction equipment

### Course Prerequisites:

Topic	Course code	Course name	Semester
Basics of Automobile Engineering		Basic Automobile Engineering	2

### Course Outcomes:

On completion of the course, the student will be able to:

CO n	Description	Duration (Hours)	Cognitive Level
CO1	Identify constructional features and operation of Agriculture tractors	15	Applying
CO2	Illustrate the construction and working of various farming implements	14	Understanding
CO3	Explain the construction and working of earth moving machinery	14	Understanding
CO4	Illustrate the construction and working of construction equipment	15	Understanding
	Series Test	2	

**CO – PO Mapping:**

Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1	3				2		
CO2	3				2		
CO3	3				2		
CO4	3				2		

3-Strongly mapped, 2-Moderately mapped, 1-Weakly mapped

**Course Outline:**

Module Outcomes	Description	Duration (Hours)	Cognitive Level
CO1	<b>Identify constructional features and operation of Agriculture tractors.</b>		
M1.01	Know the scope of Farm mechanization in the country	1	Understanding
M1.02	Choose various farm machines based on operation, power source, in relation to power unit etc.	2	Applying
M1.03	Identify different types of tractors and their applications.	4	Applying
M1.04	Illustrate general layout, power train and transmission layout of tractor	4	Understanding
M1.05	Explain the working of hydraulic system in tractors	4	Understanding
<b>Contents:</b>			
Introduction to farm mechanization - Scope, Merits, Limitations, Status of Farm mechanization in the country. Classification of farm machines based on operation, power source, in relation to power unit etc. selection of farm implements and machinery.			
Agriculture Tractors - Classification, types of tractors with their application. General Layout of wheeled and crawler tractor, power train and transmission layout of tractor. Power take off shaft - purpose and application, types. Hydraulic system in tractors - necessity, depth & draft control - types.			
CO2	<b>Illustrate the construction and working of various farming implements</b>		
M2.01	Classify primary and secondary tillage equipment	4	Understanding
M2.02	Illustrate the constructional details of Mould board plough, disc plough, Chisel plough and sub soiler plough	4	Understanding

M2.03	Explain the working of rotary tillers, leveling and puddling implements	4	Understanding
M2.04	List out the use of cage wheels	2	Understanding
	Series Test – I	1	Understanding

**Contents:**

Tillage: objectives, methods and terminology, introduction and classification of primary & secondary tillage equipment. Mould board plough and disc plough: Functional components, type, constructional details, accessories and attachments. Chisel plough and sub - soiler plough: Functional components, type, constructional details, accessories and attachments. Study of rotary tillers, leveling and puddling implements. Cage Wheel and its uses.

<b>CO3</b>	<b>Explain the construction and working of earth moving machinery</b>		
M3.01	Compare various earth moving machinery and justify their application	2	Understanding
M3.02	Explain the construction and working of Bulldozers	4	Understanding
M3.03	Explain the construction and working of Dumpers, Loaders, Scrapers & Shovel	4	Understanding
M3.04	Summarize the methods of loading and unloading operations involved in earth moving machinery	4	Understanding

**Contents:**

Various earth moving machines - (Bulldozer, Dumper, Loader, Scraper and Shovel)  
General layout, Construction and working of Bulldozers, Dumpers, Loaders, Scrapers & Shovels. Methods of loading and unloading operations involved. Study of hydraulic control of earth moving machinery.

<b>CO4</b>	<b>Illustrate the construction and working of construction equipment</b>		
M4.01	Summarize various construction equipment and their applications	4	Understanding
M4.02	Illustrate the construction and working of different Road roller, Excavator	6	Understanding
M4.03	Illustrate the construction and working of motor grader, Crane and Fork lift	5	Understanding
	Series Test – II	1	

**Contents:**

Various construction vehicles - (Road roller, Excavator, Grader, Crane and Tipper)  
Road roller : Layout, Construction working, and application

Excavator : Layout, Construction working, and application  
 Grader : Block diagram, Construction working, and application  
 Crane : Layout, Construction working, and application  
 Tipper : Types, construction and working of tipping mechanism

**Text /Reference:**

T/R	BookTitle/Author
T1	Smith H. P. and L. H. Wilkes, Farm Machinery and Equipment, TATA McGraw Hill publication, New Delhi.
R1	Srivastava, A.C. Elements of Farm Machinery. Oxford and IBH Publication Company, New Delhi
R2	B Satyanarayana, Subhash Chandra Sexena, Construction planning and equipment standard publishers and distributors, New Delhi
R3	S.C.Jain, C.T.Raj, Farm Tractor Maintenance and Repair, TATA MC Graw Hill.
R4	J.Y Wong, Theory of Ground vehicles, John Wiley and Sons
R5	Nakra C.P, Farm machines and equipment, Dhanparai Publishing company

**Online Resources:**

Sl.No	Website Link
1	<a href="http://ecoursesonline.iasri.res.in/course/view.php?id=12">http://ecoursesonline.iasri.res.in/course/view.php?id=12</a>
2	<a href="https://www.youtube.com/watch?v=eYQV5GOPQPw">https://www.youtube.com/watch?v=eYQV5GOPQPw</a>
3	<a href="https://www.youtube.com/watch?v=9cWdiNFEa7w">https://www.youtube.com/watch?v=9cWdiNFEa7w</a>