

**COURSE TITLE : SPECIAL PURPOSE VEHICLES**  
**COURSE CODE : 5054**  
**COURSE CATEGORY : E**  
**PERIODS/WEEK : 4**  
**PERIODS/SEMESTER : 60**  
**CREDITS : 4**

**TIME SCHEDULE**

Module	Topic	Periods
1	Tractors	15
2	Earth moving machines	15
3	Construction vehicles	15
4	Special purpose vehicles	15
<b>TOTAL</b>		<b>60</b>

**GENERAL COURSE OUTCOME**

SI.No.	Sub	Student will be able to
1	1	Understand the working of different components of tractors
	2	Explain the operation of hydraulic control system
	3	Describe the working of Power take off unit.
	4	Understand the construction and working of bulldozers' dumpers and loaders.
	5	Understand the features of vehicles used for construction purpose, excavators , Road rollers and mobile cranes.

**SPECIFIC COURSE OUTCOME**

**MODULE I**

**1.1.0 Understand the working of different components of tractors**

- 1.1.1 List the classification of tractors
- 1.1.2 Prepare the layout of wheeled tractor
- 1.1.3 Explain the principle of power transmission system
- 1.1.4 Explain the operation of steering system
- 1.1.5 List the accessories of wheeled tractors
- 1.1.6 Explain the operation of hydraulic control system
- 1.1.7 Explain the various agricultural applications of tractor

**MODULE II**

**2.1.0 Understand the construction and working of earth moving machines**

- 2.1.1 List the various earth moving machines
- 2.1.2 Explain with sketches, the working of Bulldozers

- 2.1.3 Explain with sketches, the working of Dumpers
- 2.1.4 Explain with sketches, the working of Loaders
- 2.1.5 List the different types of buckets of loader
- 2.1.6 Explain with sketches, the working of Scrapers & Shovels

### **MODULE III**

#### **3.1.0 Understand the features of vehicles used for construction purpose**

- 3.1.1 List the various construction vehicles
- 3.1.2 Describe the various systems of excavator
- 3.1.3 Describe the various systems of Road rollers
- 3.1.4 Describe the various systems of graders
- 3.1.5 Describe construction and working of mobile crane and truck mounted crane

### **MODULE IV**

#### **4.1.0 Understand the features of special purpose vehicles**

- 4.1.1 Describe the features of Oil tankers
- 4.1.2 Define Articulated vehicles
- 4.1.3 Explain with sketch, the working of Articulated vehicle
- 4.1.4 Explain with sketch the features of Ambulance
- 4.1.5 Explain with sketch the features of fire extinguishing vehicle
- 4.1.6 Explain with sketch the Hover craft
- 4.1.7 Explain with sketch the features of fork lift
- 4.1.8 Explain with sketch the features of campervan

## **CONTENT DETAILS**

### **MODULE I**

Classification of tractors, layout of wheeled tractor, power transmission system, steering system, accessories of wheeled tractors - power take off unit, hitch, winch mechanism, hydraulic control system – lift and draft control of implements, agricultural applications of tractors like sprayer, threshers, seed and fertilizer application, crop cultivation

### **MODULE II**

Various earth moving machines- working of Bulldozers, Dumpers, Loaders, Scrapers & Shovels, methods of loading and unloading operations involved, constructional features of earth moving equipment, actuation of implements using cable control, hydraulic control, different types of buckets involved in loader

### **MODULE III**

Various construction vehicles-systems of road rollers, excavator, grader, road roller classifications, ballasting of road roller wheels, different types of compacting - sheep foot drum, vibrating type,

construction and uses of excavator, applications and classification of grader, mechanism of mobile crane and truck mounted crane

#### **MODULE IV**

Features of Oil tankers, Articulated vehicles-working, features of Ambulance, features of fire extinguishing vehicle, working of Hover craft, working of fork lift, features of campervan

#### **TEXT BOOKS**

1. C.P.Nakra –Tractors - Dhanpat Rai Publishers
2. S.C.Sharma - Construction equipment - Khanna publishers

#### **REFERENCE BOOKS**

1. Donnell hunt and L .W.garver - Farm machinery and mechanism - Iowa state university press
2. J.Y Wong - Theory of Ground vehicles - John Wiley and Sons