

20FM012 ADVANCES IN FARM MACHINERY AND POWER ENGINEERING

Hours Per Week :

L	T	P	C
3	1	-	4

Total Hours :

L	T	P	WA/RA	SSH/HSB	CS	SA	S	BS
45	-	-	-	-	-	-	-	-

Course Description and objectives:

This course deals with the design of tillage and traction devices used in farm machinery. The course aims to present fundamental concepts describing dynamic soil behaviour in response to mechanical elements with methods for designing traction/transport systems.

Course outcomes:

To identify the need of comparative analysis of human, bullock, IC engine and other sources of farm power, analysis of force in tractor implement combination under two dimensional condition, principle of design and development of agricultural machines and wear in agricultural machines.

SKILLS:

Performance evaluation of cultivator.
Draft measurements of implements.
Usage of GIS software.
Selection of optimum tyre for traction.

UNIT – 1 Comparative analysis of human, bullock, IC engine and other sources of farm power. Modern transmission system on farm tractor	L-10
UNIT – 2 Power losses in tractor , analysis of forces in tractor implement combination under two dimensional conditions, tractor test codes.	L-10
UNIT – 3 Mechanics of Animal Traction. Introduction to biofuels for farm engines	L-10
UNIT – 4 Principles of design and development of agricultural machines	L-08
UNIT – 5 Design of seed drills , threshing cylinder, reel and cutter bar, root harvesting machines and graders.Wear in agricultural machines	L-07

TEXT BOOKS :

1. Bosoi, E.S. Vermiaev, OV, Smirnov, I-I and Sultan Shakh, E.G. Theory, Construction and Calculation of Agricultural Machines, A.A. BalkemaPub. Rotterdam, 1988.
2. Gyachev, L.V., Theory of surface of plow bottoms, A.A. Balkema Pub., Rotterdam, 1987.

REFERENCE BOOKS :

1. Kanafozski, O and T. Karwowski, Agricultural Machines: Theory and Construction. Vol. I & II, Translated and published by US Deptt. of Agriculture, 1976.
2. Kepner, R.A. Bainer, R, and Barger E.L. Principles of Farm Machinery, AVI Pub., 1978.
Kolchin, A. and Dominov, V., Design of Automotive Engines, Mir Publication, Moscow, 1984
3. Liljedahl, B.J., Turnquist, P.K, Smith, W.D. and HokiVaketo. Tractor and Their Power units, Fourth Edition, Avi Publications, New York, 1989.
4. Obert F. Edward, Internal Combustion Engines and Air Pollution. Published by Harper & Row Publishers. London, 1973.