

FARM MACHINERY AND POWER ENGINEERING
Course Contents

FMPE501 DESIGN OF FARM POWER AND MACHINERY SYSTEMS 3+1

Objective

To acquaint and equip with the latest design procedures of farm power and machinery systems.

Theory

UNIT I

Modern trends, principles, procedures, fundamentals and economic considerations for design and development of farm power and machinery systems. Design considerations, procedure and their applications in agricultural tractors & typical machines. Reliability criteria in design and its application.

UNIT II

Analytical design considerations of linkages/ components in farm machinery and its application.

UNIT III

Design of selected farm equipments: – tillage, seeding, planting, interculture, plant protection, harvesting and threshing. Design of rotary, vibrating and oscillating machines.

UNIT IV

Design and selection of matching power unit.

UNIT V

Safety devices for tractors & farm implements.

Practical

Statement and formulation of design problems. Design of farm power systems.

Design of mechanisms & prototypes in farm machinery.

Suggested Readings

Arther W Judge 1967. *High Speed Diesel Engines*. Chapman & Hall.

Barger EL, Liljedahl JB & McKibben EC 1967. *Tractors and their Power Units*. Wiley Eastern.

Bernacki C, Haman J & Kanafajski CZ. 1972. *Agricultural Machines*. Oxford & IBH.

Bindra OS & Singh Harcharan 1971. *Pesticides Application Equipments*. Oxford & IBH.

Bosoi ES, Verniaev OV & Sultan-Shakh EG. 1990. *Theory, Construction and Calculations of Agricultural Machinery*. Vol. I. Oxonian Press.

Klenin NI, Popov IF & Sakoon VA. 1987. *Agricultural Machines. Theory of Operations, Computing and Controlling Parameters and the Condition of Operation*. Amrind Publ.

Lal R & Dutta PC. 1979. *Agricultural Engineering* (through solved examples). Saroj Parkashan.

Maleev VL. 1945. *Internal Combustion Engines*. McGraw Hill.

Mathur ML & Sharma RP. 1988. *A Course in Internal Combustion Engines*. Dhanpat Rai & Sons.

Ralph Alcock. 1986. *Tractor Implements System*. AVI Publ.

Raymond N, Yong Ezzat A & Nicolas Skiadas 1984. *Vehicle Traction Mechanics*. Elsevier

Sharma PC & Aggarwal DK. 1989. *A Text Book of Machine Design*. Katson Publishing House.

Theory and Construction. Vol. I. U.S. Dept. of Commerce, National Technical Information Service, Springfield, Virginia.

Thornhill EW & Matthews GA. 1995. *Pesticide Application Equipment for Use in Agriculture*. Vol. II. *Mechanically Powered Equipment*. FAORome.

William. R Gill & Glen E Vanden Berg. 1968. *Soil Dynamics in Tillage and Traction*. US Govt. Printing Office, Washington, D.C.