Syllabus for B.Sc. (Hons) Agriculture Year – II (Sem. IV)

Subject Code: 16AS0415

Subject Short Name: Ag. Engg. 4.1

Subject Name: Farm Machinery and Power

Objective:

1. To understand the use of farm machinery in saving labour
2. To understand about the machine with wide range of complexity
3. To understand about farm equipment
4. To understand about tillage implement

Credits Earned: 2 Credits (1+1)

Course Outcomes: After completion of this course, Students will be able to

- Understand about implement of farming.
- Understand about farm machinery.
- Understand about ic engine for farm machinery.
- Understand about the labour reduction for farm.

Teaching Scheme (Hours)			Credits	Theory Marks			Tutorial/ Practical Marks		Total Marks
Theory	Tutorial	Practical		ESE (E)	Mid Sem (M)	Progressive Assessment (PA)	Viva (V)	Term work (TW)	
1	0	1	2	40	20	20	10	10	100

Theory Content:

Unit	Topics	Contact Hours
1	Status of Farm Power in India and sources of Farm Power.	**2**
2	I.C. engines, working principles of I C engines, comparison of two stroke and four stroke cycle engines, Study of different components of I.C. engine, I.C. engine terminology and solved problems.	**2**

3	Familiarization with different systems of I.C. engines: Air cleaning, cooling, lubrication, fuel supply and hydraulic control system of a tractor.	**2**
4	Familiarization with Power transmission system: clutch, gear box, differential and final drive of a tractor.	**2**
5	Tractor types, Cost analysis of tractor power and attached implement, Criteria for write selection of tractor and machine implements.	**2**
6	Familiarization with Primary and Secondary Tillage implement, implement for hill agriculture, implement for intercultural operations, Familiarization with sowing and planting equipment, calibration of a seed drill and solved examples, Familiarization with Plant Protection equipment, Familiarization with harvesting and threshing equipment.	**4**
	Total	**14**

Practical Content:

Unit	**Topics**	**Contact Hours**
1	Study of different components of I.C. engine	**2**
2	To study air cleaning and cooling system of engine	**2**
3	Familiarization with clutch, transmission, differential and final drive of a tractor and Familiarization with lubrication and fuel supply system of engine	**2**
4	Familiarization with operation of power tiller, implements for hill agriculture and Familiarization with different types of primary and secondary tillage implements: mould plough, disc plough and disc harrow	**2**
5	Familiarization with seed-cum-fertilizer drills their seed metering mechanism and calibration, planters and transplanter and Familiarization with different types of sprayers and dusters	**2**
6	Familiarization with different inter-cultivation equipment and Familiarization with harvesting and threshing machinery	**2**

7	Calculation of power requirement for different implements	**2**
	Total	**14**

Reference Books:

- Elements of Agricultural Engineering, Elements of Agricultural Engineering, Jagadishwar Sahay, Standard Publishers, 2006
- Farm Machinery - Principles and Applications, Farm Machinery - Principles and Applications, Surendra Singh, ICAR Publications, 2007
- Principles of Agricultural Engineering - Vol. I, Principles of Agricultural Engineering - Vol. I, Ojha, T. P. and Michael, A.M., Jain Brothers, 2018

Suggested Theory distribution:

The suggested theory distribution as per Bloom's taxonomy is as per follows. This distribution serves as guidelines for teachers and students to achieve effective teaching-learning process.

Distribution of Theory for course delivery and evaluation					
Remember	Understand	Apply	Analyze	Evaluate	Create
25%	25%	20%	10%	10%	10%

Instructional Method:

1. The course delivery method will depend upon the requirement of content and need of students. The teacher in addition to conventional teaching method by black board may also use any of tools such as demonstration, role play, quiz, brain storming, MOOCs etc.
2. The internal evaluation will be done on the basis of continuous evaluation of students in the laboratory and class-room.
3. Practical examination will be conducted at the end of semester for evaluation of performance of students in laboratory.
4. Students will use supplementary resources such as online videos, NPTEL videos, e-courses, Virtual Laboratory.