- Citizenship, constitution, and human rights. Basic features of constitution of India, fundamental rights and duties, human rights, consumer awareness and rights and rights to information. Family and society. Concept of family, community (PRIs and other community-based organizations) and society.

Semester II

Skill Enhancement **8 (0+8)**

Objective

To enable the students to acquire basic skills in agricultural engineering so that in case they exit with UG-certificate, they can work as operators and technicians in the fields of farm machinery, micro-irrigation, solar and wind energy or food processing, etc. or can go for self-employment or start their own agro-service centre, agro-processing centre or similar activities. Thus the broad objective of this course is Skill for Employment and Entrepreneurship Development.

Indicative Modules

i. Operation and maintenance of farm machinery
ii. Repair and maintenance of tractors and power tillers
iii. Management of agricultural machinery custom hiring and maintenance facilities
iv. Fabrication, operation and maintenance of renewable energy devices
v. Operation and maintenance of drones used for agricultural applications
vi. Machine vision, sensors and sensors architecture
vii. Design of solar PV system using softwares
viii. Installation and maintenance of on-grid and off-grid solar systems
ix. Design and maintenance of agri-voltaic systems
x. Valorization of agri-biomass and organic waste
xi. Energy audit, energy conservation and energy efficiency
xii. Repair and maintenance of pumps and irrigation systems
xiii. Installation and maintenance of micro-irrigation systems
xiv. Application of remote sensing and GIS for agricultural water management
xv. Operation and maintenance of hydro-meteorological instruments
xvi. Geophysical survey and investigations for groundwater exploration and installation of tube well/ bore well
xvii. Installation and maintenance of roof top rain water harvesting systems
xviii. Operation and maintenance of soil conservation structures
xix. Construction, management and maintenance of protected cultivation structures
xx. Agro processing methods, equipment operation and maintenance
xxi. Operation and management of multi-commodity agro-processing centre
xxii. Primary processing and value addition and cold chain logistics

xxiii. Food grain godown and warehouse management

xxiv. Post-harvest value chain management including logistics

After two to three days common orientation on different skill enhancement modules, students will take up either two or more modules (maximum four modules recommended) as per the local needs and gain complete hands-on experience on these skill areas. The selection of the module(s) will be entirely on the student's choice.

Indicative details of the skill enhancement modules are given at the end of this section. The credit hours for each module have been kept as 0+4. However, the institution is at liberty to modify the credit hours/ contents for the skill enhancement modules depending on the level of skill to be imparted to the students. For example, if a student wishes to take up three or four skill modules, the contents and credits can be modified for those skill modules, making the total 8 credits However, in no case, more than four modules are recommended for offering to a student.

It is emphasized that the purpose is to impart practical knowledge/ skill for operating the system and none of the course should be taken in theoretical mode. In specific cases, the skill enhancement in the specific area can be further continued during the 10 weeks' internship in case of exits for UG-certificate and UG-Diploma for further strengthening of the skill.

The above modules and details are indicative only and the institutions have the liberty to formulate new modules and modify the content of the modules relevant to the respective regions or even modify the titles of the above modules. It is advised that the institutions should define the detailed breakup of the skill areas depending on the facilities/ expertise available.

The course can also be offered in partnership with capable organizations/ companies/ NGOs/ progressive entrepreneurs. In such cases, a detailed content should be prepared in consultation with the industry/ organization and the institution should have a regular monitoring for the learning process. The evaluation can be done jointly by the institute and collaborating partners. The timetable for the remaining part of the semester will be adjusted accordingly as mentioned earlier.

Engineering Drawing 2 (0+2)

Objective

To enable the students to draw engineering drawings for some simple machines/ equipment

Practical

Introduction to engineering drawing, practice of different layout drawings; Drawing instruments and their use; Introduction to lines, letterings, single stroke letters and gothic letters; Dimensioning, dimension line, extension line, arrow head, continuous and progressive dimensioning; Introduction of drawing scales, representative fraction; Practice on orthographic projections, references planes, points and lines in space; Drawing for orthographic projection of points by first angle projection method; Third angle methods of projection; Projection of planes; Projections of solids: polyhedra, cylinder, cone; Projections of solids: prisms and pyramids; Development of surfaces of geometrical solids; Drawing the section of solids: cylinder, cone and sphere; Introduction to isometric scale, isometric view and isometric drawing; Isometric projection of geometrical solids; Preparation of working drawing from models and isometric views; Sectional drawing of simple machine parts; Nomenclature, thread profiles, multi start threads, left and right hand threads; Conventional