Faculty of Civil Engineering

B. E. AGRICULTURE ENGINEERING

(R 2017) Semester – II

AI8211 CROP HUSBANDRY LABORATORY

Requirements for a batch of 30 students

Sl. No.	Description of Equipment	Quantity required (R)	Quantity available (A)	Deficiency (R - A)
1.	A wet land / garden land for a minimum of 5 cents area for each / group of students	1		
2.	An open / borewell as water source to support cultivation	1		

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B. E. AGRICULTURE ENGINEERING

(R 2017) Semester – III

CE8312 SURVEYING AND LEVELLING LABORATORY

Requirements for a batch of 30 students

Sl. No.	Description of Equipment	Quantity required (R)	Quantity available (A)	Deficiency (R - A)
1.	Total Station	3		
2.	Theodolites	6		
3.	Dumpy level / Filling level	6		
4.	Pocket stereoscope	1		
5.	Ranging rods	6		
6.	Levelling staff	6		
7.	Cross staff	6		
8.	Chains	6		
9.	Tapes	6		
10.	Arrows	6		
11.	Prismatic Compass	10		
12.	Surveyor Compass	2		
13.	Survey grade or Hand held GPS	3		

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B. E. AGRICULTURE ENGINEERING

(R 2017) Semester – III

AI8311 FLUID MECHANICS LABORATORY

Requirements for a batch of 30 students

Sl. No.	Description of Equipment	Quantity required (R)	Quantity available (A)	Deficiency (R - A)
1.	Rotameter	1		
2.	Venturimeter	1		
3.	Orificemeter	1		
4.	Pitot tube	1		
5.	Bernoullis therorem apparatus	1		
6.	Triangular notch	1		
7.	Rectangular notch	1		
8.	Coefficient of friction apparatus	1		
9.	Pipe setup with bends, fittings and elbows for estimating minor losses	1		
10.	Fittings and elbows for estimating minor losses	1		
11.	Centrifugal pump	1		
12.	Reciprocating pump	1		
13.	Submersible pump	1		
14.	Jet pump	1		
15.	Collecting tank	1		
16.	Stop watch	1		

Faculty of Civil Engineering

B. E. AGRICULTURE ENGINEERING

(R 2017) Semester – IV

CE8481 STRENGTH OF MATERIALS LABORATORY

Requirements for a batch of 30 students

Sl. No.	Description of Equipment	Quantity required (R)	Quantity available (A)	Deficiency (R - A)
1.	UTM of minimum 400 kN capacity	1		
2.	Torsion testing machine for steel rods	1		
3.	Izod impact testing machine	1		
4.	Hardness testing machine	1		
5.	Rockwell	1		
6.	Vickers / Brinnel	1		
7.	Beam deflection test apparatus	1		
8.	Extensometer	1		
9.	Compressometer	1		
10.	Dial gauges	1		
11.	Le Chateliers apparatus	2		
12.	Vicats apparatus	2		
13.	Mortar cube moulds	10		

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B. E. AGRICULTURE ENGINEERING

(R 2017) Semester – IV

AI8411 SOIL SCIENCE LABORATORY

Requirements for a batch of 30 students

Sl. No.	Description of Equipment	Quantity required (R)	Quantity available (A)	Deficiency (R - A)
1.	IgneousRock- (Any 4) Horneblende pegmatite, Horneblende granite, Serpentinite, Pink microceline granite, etc	1		
2.	Sedimentary Rock- (Any 4) Miocene limestone, Traverine, Sandstone, Shale, Limestone, etc	1		
3.	Metamorphic Rock-(Any 4) Calc silicate granulite, Marble, Garnet granulite, Garnet biotite gneiss, etc , Charnockite acidic with basic layering ,Hornblende biotite gneiss, Charnokite	1		
4.	Minerals-(Any 4) Talc, Gypsum, Calcite. Fluorite, Apatite, Feldspar, Quartz, Topaz, Corundum, Pyrite, Asbestos, Chalk, Feldspar, Mica, Hornblende, etc	1		
5.	Khurpi, Spade or Augers , Plastic bowl , Scale, Wooden roller, Mortar and pestle Polythene/paper/cloth bags , Labels , Aluminum tray	1		
6.	Sampling tube/auger, Moisture cans , Balance with weights , oven or Desicator	1		
7.	EC meter, potassium chloride, 100 ml beaker	1		
8.	pH meter, buffer tablet pH 4.0, 7.0 or 9.2, 100 ml beaker	1		
9.	Core sampler, aluminum tray, oven, balance upto 5 Kg, knife, spatula	1		

10.	Sand pouring cylinder, Calibrating can, Metal tray with a central hole, Dry sand (passing through 600 micron sieve), Balance of capacity 15 kg, Moisture content bins, Glass plate, Metal tray, Scraper tool	1		
11.	A pycnometer, an analytical balance, filter paper, clean and dry cloth	1		
12.	ASTM Sieve-230 mm with lid, 2 mm sieve, sodium hexametaphosphate, 100 ml beaker 3nos, 1000 ml measuring cylinder, weighing balance of 0.01 g, glass rod and pipette 20 ml	1		
13.	A sieve shaker, complete set of I.S Sieve sizes generally 4.75 mm, 2.00mm, 1.18 mm, 425microns, 300microns, 150 microns and 75 microns along with a pan and a lid, Balance of 0.01 g sensitivity	1		
14.	500 ml conical flasks, Pipette, Burette, Potassium dichromate ($K_2Cr_2O_7$), Ferrous sulfate heptahydrate ($FeSO_4.7H_2O$), Sulfuric acid (H_2SO_4) concentrated, Diphenylamine indicator	1		
15.	saturated calcum sulphate, Ammonium chloride-Ammonium hydroxide buffer, Erichrome black-T indicator, EDTA, mechanical shaker, whatman No. 3 filter paper,100 ml conical flasks, Pipette, Burette	1		

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B. E. AGRICULTURE ENGINEERING

(R 2017) Semester – V

AI8511 OPERATION AND MAINTENANCE OF FARM MACHINERY LABARATORY

Requirements for a batch of 30 students

Sl. No.	Description of Equipment	Quantity required (R)	Quantity available (A)	Deficiency (R - A)
1.	Tractor	1		
2.	Power tiller	1		
3.	Disc plough	1		
4.	Disc harrow	1		
5.	Multi tyne cultivator	1		
6.	Paddy Transplanter	1		
7.	Seed drill	1		
8.	Spayer	1		
9.	Mower	1		
10.	Weeder	1		
11.	Combine harvester	1		

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B. E. AGRICULTURE ENGINEERING

(R 2017) Semester – V

AI8512 POST HARVEST ENGINEERING LABORATORY

Requirements for a batch of 30 students

Sl. No.	Description of Equipment	Quantity required (R)	Quantity available (A)	Deficiency (R - A)
1.	Hot air oven	1		
2.	Grain moisturemeter	1		
3.	Porosity apparatus	1		
4.	Coefficient of friction apparatus	1		
5.	Angle of repose	1		
6.	Round type and L type	1		
7.	Paddy thresher	1		
8.	Groundnut decorticator sheller	1		
9.	Maize sheller	1		
10.	Thin layer dryer	1		
11.	LSU dryer	1		
12.	Bucket elevator	1		
13.	screw conveyor	1		
14.	Rubber roll sheller	1		
15.	Oil expeller	1		

Faculty of Civil Engineering

B. E. AGRICULTURE ENGINEERING

(R 2017) Semester – V

AI8513 IRRIGATION FIELD LABORATORY

Requirements for a batch of 30 students

Sl. No.	Description of Equipment	Quantity required (R)	Quantity available (A)	Deficiency (R - A)
1.	Meteorological lab with Cup counter anemometer, Sunshine recorder, Open pan vaporimeter, Stevenson's screen - Dry bulb, wet bulb thermometers, recording and non-recording type rain gauge	1		
2.	Double ring infiltrometer	1		
3.	Digital infiltrometer	1		
4.	Parshall flume, cut throat flume	1		
5.	V notch, Rectangular notch and trapezoidal notch	1		
6.	Drip irrigation system with all accessories	1		
7.	Sprinkler irrigation system with all accessories	1		
8.	Required number of stop watches	1		
9.	Weighing balance	1		
10.	Catch cans, measuring jars	1		

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B. E. AGRICULTURE ENGINEERING

(R 2017) Semester – VI

AI8611 CAD FOR AGRICULTURAL ENGINEERING

Requirements for a batch of 30 students

Sl. No.	Description of Equipment	Quantity required (R)	Quantity available (A)	Deficiency (R - A)
1.	AUTOCAD	1		

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B. E. AGRICULTURE ENGINEERING

(R 2017) Semester – VI

AI8612 DRAWING OF FARM STRUCTURES

Requirements for a batch of 30 students

Sl. No.	Description of Equipment	Quantity required (R)	Quantity available (A)	Deficiency (R - A)
1.	AUTOCAD	1		

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B. E. AGRICULTURE ENGINEERING

(R 2017) Semester – VI

AI8614 FOOD PROCESS ENGINEERING LABORATORY

Requirements for a batch of 30 students

Sl. No.	Description of Equipment	Quantity required (R)	Quantity available (A)	Deficiency (R - A)
1.	Extruder	1		
2.	Pasteurizer	1		
3.	Hot air oven	1		
4.	Hand refractometer	1		
5.	Dessicator	1		
6.	Dean and Stark‟ s apparatus	1		
7.	Cabinet dryer	1		
8.	Soxhlet flask	1		
9.	Distillation column	1		
10.	Kjeldahl flask	1		
11.	Distillation apparatus	1		
12.	Microwave oven	1		
13.	Cream separator	1		
14.	Butter churner	1		

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B. E. AGRICULTURE ENGINEERING

(R 2017) Semester – VII

AI8712 RENEWABLE ENERGY LABORATORY

Requirements for a batch of 30 students

Sl. No.	Description of Equipment	Quantity required (R)	Quantity available (A)	Deficiency (R - A)
1.	Hot air oven	1		
2.	Muffle furnace	1		
3.	Junkers gas calorimeter	1		
4.	Bomb calorimeter	1		
5.	Model of Biogas and Deenabandhu biogas plant	1		
6.	Biogas scrubbing unit	1		
7.	Gasifier - Lab Scale	1		
8.	Pyrolysis unit	1		
9.	Biogas/ Producer gas dual fuel Engine	1		
10.	Briquetting Machine - Lab Scale	1		
11.	Automatic weather station	1		
12.	Solar water heater	1		
13.	Solar dryer	1		
14.	Solar PV training kit	1		
15.	Solar PV water pumping system	1		

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B. E. AGRICULTURE ENGINEERING

(R 2017) Semester – VII

AI8713 ICT IN AGRICULTURAL ENGINEERING LAB EXERCISES

Requirements for a batch of 30 students

Sl. No.	Description of Equipment	Quantity required (R)	Quantity available (A)	Deficiency (R - A)
1.	Timing devices and small pumps for simulations	1 set		
2.	Solenoid valves and layout of drip or sprinkler system	1 set		
3.	Time Domain Reflectometer (TDR)	1 No.		
4.	Digital thermometer	1 No.		
5.	Breadboards, relays etc.	4 sets		
6.	MATLAB software	4 nos.		
7.	Open source Crop simulation models - any one for demonstration	1		
8.	Other facilities for cloud resources, agro advisory systems etc.	1 each		

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B. E. AGRICULTURE ENGINEERING

(R 2017) Semester – VII

AI8711- GIS LABORATORY FOR AGRICULTURAL ENGINEERS

Requirements for a batch of 30 students

Sl. No.	Description of Equipment	Quantity required (R)	Quantity available (A)	Deficiency (R - A)
1.	Measurement of relief displacement using parallax bar - parallax bar	10		
2.	Stereoscopic vision test – Pocket mirror Stereoscope	10		
3.	Aerial photo interpretation – visual , Satellite images interpretation – visual - Light table	6		
4.	QGIS, GIS, Geo-referencing of images software	5		
5.	Computer	15		