

6.4 Self-Study Report for the Undergraduate Programme

Faculty of Agricultural Engineering, Mohanpur, BCKV

Name of the Programme: B. Tech in Agricultural Engineering

6.4.1 Brief History of the Programme:

The degree programme of B. Tech. (Agricultural Engineering) started in the year 1996 with four Departments, namely Farm Machinery and Power, Soil and Water Engineering, Post Harvest Engineering and Food Engineering under the Faculty of Agricultural Engineering. The degree programme integrates engineering and agricultural science knowledge and skill to develop technology and/or processes to raise production and productivity of agriculture and other farm produce through efficient and sustainable utilization of natural resources. The specific activities include, efficient utilization of agricultural inputs through improved implements and machinery ensuring timeliness in farming operations (mechanization), reducing drudgery in agriculture and improving the quality of farm produce (processing and value addition). The agricultural engineering education addresses issues relevant to social and technological development of the farmers. The goal of the faculty of Agricultural Engineering is to educate students in the field of engineering so as to prepare them for careers in agricultural engineering in which they will become leaders in industry, the profession and to conduct quality research by applying engineering principles to solve problems of agricultural system.

Objectives:

- To impart education, and entrepreneurial skills in engineering and design, development, manufacturing and operation of equipment and technologies for farm operations for crop production, processing and value addition and efficient use of agricultural inputs and natural resources, including different forms of energy in agriculture.
- To conduct research on development of machines/technologies with an aim to mechanize various farm operations as well as post harvest/ product processing operations.

The Faculty of Agricultural Engineering deals with mechanization of various crops grown in the region by efficient utilization of various power sources needed to operate the



efficient machineries in order to increase the profitability of local farming community. Environment friendly practices and new development in farm mechanization are being popularized through different training programmes organized by the KVKs and Department of Agriculture, Govt. of West Bengal. Teaching and research work are also carried out on efficient utilization of renewable energy sources for sustainable agricultural development.

Teaching, research and extension work on Irrigation, drainage, water resource management etc. are being carried out in order to optimize the water use efficiency for various crops grown in this region. Besides offering core courses, surface water and groundwater hydrology and irrigation engineering are taught along with some other important courses related to remote sensing and GIS, Building materials and structural designs. The faculty is also engaged in conducting research on efficient and low-cost irrigation techniques and demonstrating the same for productive management of water resources. The research and extension activities related to soil and water conservation practices for sustainable management of these vulnerable natural resources are also being carried out.

Under Post Harvest Engineering, Teaching, research and extension work are carried out on proper storage of cereal, pulses, oilseeds and other crops in order to minimize the post harvest losses. Work is also done to design and develop different grain storage structures. In Food Engineering, teaching and research work are carried out on different processing operations applied to all kinds of food items. Various aspects of food preservation, refrigeration, cold storage etc. are also covered and well equipped laboratory facilities have been developed for quality analysis of various food materials.

Accomplishment:

- In last 5 years 136 students completed B.Tech. (Agricultural Engg.) Degree successfully.
- 27 students qualified GATE in last 5 years and pursued their higher studies at various IITs, IISc, NIT etc.
- 3 (Three) students qualified CAT examination and pursuing their Management Course at various IIMs.
- 4 (Four) students qualified JRF and pursued their Master Degree in various SAUs.
- 3 (Three) students qualified ICAR NET in last 5 years.
- About 42 students qualified various State Level and National Level Examinations and joined in various Services.



6.4.2 Faculty Strength:

Sl. No.	Faculty Designation	Sanctioned posts	Faculty in Place	Vacant Position	Faculty recommended by the ICAR
1	Professor	4	1	3	7
2	Associate Professor	4	1	3	13
3	Assistant Professor	9	8	1	24
Total		17	10	7	44

At present Faculty in Place are 10 compared to the requirement of 44 as per ICAR guidelines. Hence, B.Tech. (Agricultural Engineering) course is being catered with employing some Guest/ Contractual Teachers. The details of Guest/Contractual Teachers are given below:

Sl. No.	Name of the Department	Name of the Course	Name of the Guest/Contractual Teacher
1.	Soil and Water Engineering	Building Construction and Cost Estimation (SWE-241)	Er. Debaditya Gupta (Guest Teacher)
2.	Soil and Water Engineering	Theory of Structures (SWE-121)	Er. Debaditya Gupta (Guest Teacher)
3.	Soil and Water Engineering	Sprinkler and Micro Irrigation Systems (SWE-353)	Er. Uddipta Ghosh (Guest Teacher)
4.	Soil and Water Engineering	Building Construction and Cost Estimation (SWE-241)	Er. Sourav Das (Guest Teacher)
5.	Soil and Water Engineering	Strength of Materials (SWE-122)	Er. Arunava Thakur (Guest Teacher)
6.	Soil and Water Engineering	Theory of Structures (SWE-121)	Er. Arunava Thakur (Guest Teacher)
7.	Soil and Water Engineering	Building Construction and Cost Estimation (SWE-241)	Er. Arunava Thakur (Guest Teacher)



	Engineering	Estimation (SWE-241)	(Guest Teacher)
8.	Soil and Water Engineering	Soil Mechanics (SWE-231)	Er. Arunava Thakur (Guest Teacher)
9.	Soil and Water Engineering	1. Watershed Hydrology (SWE-242) 2. Soil Mechanics (SWE-231) 3. Fluid Mechanics and Open Channel Hydraulics (SWE-232) 4. Strength of Materials (SWE-122)	Er. Subrata Sen, Retired Chief Engineer, GoWB served as (Contractual Teacher) from 21 st September 2015 to November 2019.
10.		Engineering Physics (PHY-111)	Mr. Kushal Chakraborty (Guest Teacher) (from 2019 to till date)
11.	Post Harvest Engineering	Web Designing and Internet Applications (previous title was : Database Management & Internet Application) –(PHE-121)	Er. Nilotpal Halder (Guest Teacher)

The following Courses of B.Tech. (Agricultural Engineering) has also been taken by Er. Prabhat Kumar Dhara, FIE (Mechanical), Secretary, Faculty Council, Faculty of Agril. Engineering, BCKV.

Er. Prabhat Kumar Dhara; FIE (Mechanical); Secretary, Faculty Council, F/Agril. Engineering, BCKV			
Course Nos.	Courses catered in B.Tech (Agril. Engg) Course.	Semester	Credit Hours
FMP-111	Engineering Mechanics	Semester-I	3(3+0)
PHY-111	Engineering Physics	Semester-I	3(2+1)



FAE-121	Environmental Science and Disaster Management	Semester-II	3(2+1)
SWE-232	Fluid Mechanics and Open Channel Hydraulics	Semester-III	3(2+1)
FAE-351	In- Plant Training-I (Student READY)	Semester-V	5(0+5)
FAE-473	In- Plant Training-II (Student READY)	Semester-VI	5(0+5)
FAE-474	10-weeks Experiential Learning on Campus (Student READY)	Semester-VII	10(0+10)

As a reference, some of the appointment orders issued to the faculty members as documentary Evidence on the involvement of guest faculty members for catering different courses at the Faculty is attached as **Annexure- SSR-UG-AgEngg-1**

6.4.3 Technical and Supporting staff (under the programmes):

Units/ Departments	Sanctioned staff	Staff in Place	Vacant Position	Staff strength recommended by the ICAR
Farm Machinery and Power Engineering	7	1	6	5
Soil and Water Conservation Engineering	7	2	5	5
Processing and Food Engineering	2	1	1	5
Workshop	14	4	10	27
Dean's unit	18	8+4*	10	12
Total	48	20	32	54

*Contractual Staff allotted by Registrar vide order no date . The copy of the office order is attached as **Annexure-SSR-UG-AgEngg-II.**

(A) Staff details of Department of Farm Machinery and Power Engineering

Sl. No.	Name of the Post	Number of Sanctioned
1.	Mechanical Overseer	1
2.	Sr. Mechanic Gr- II	1
3.	Mechanic	1
4.	Drafts man (Mechanical) Mechanic cum Operator	1
5.	Tractor Driver	1
6.	Power Tiller Operator	1



7.	Jr. Peon	1
Total		7

(B) Staff details of Department of Soil and Water Conservation Engineering

Sl. No.	Name of the Post	Number of Sanctioned
1.	Civil Overseer	1
2.	Technical Assistant	1
3.	Store Keeper	1
4.	Civil Draftsman	1
5.	Office Attendant	1
6.	Lab Attendant	1
7.	Animal Keeper	1
Total		7

(C) Staff details of Department of Processing and Food Engineering

Sl. No.	Name of Post	Number of Sanctioned
1.	Lab. Attendant	1
2.	Field Worker	1
Total		2

(D) Staff details of Workshop unit

Sl. No.	Name of the Post	Number of Sanctioned
1.	Workshop Supervisor	1
2.	Store Keeper	1
3.	Technical Assistant	1
4.	Turner	1
5.	Welder	1
6.	Jr. Assistant	1
7.	Jr. Electrician	1
8.	Jr. Carpenter	1
9.	Fitter Gr. -II	1
10.	Jr. Fitter	1
11.	Jr. Blacksmith	1
12.	Lab. Attendant	1
13.	Office Attendant	1
14.	Workshop Mate	1
Total		14

(E) Staff details of Dean's unit

Sl. No.	Name of the Post	Number of Sanctioned
1.	Secretary, PG-UG	1
2.	P. A. to Dean	1
3.	Sr. Superintendent (Store)	1



4.	Office Superintendent	1
5.	Jr. Superintendent	1
6.	Sr. Assistant	1
7.	Jr. Assistant	2
8.	Store Keeper	2
9.	Jr. Cashier	1
10.	Jr. Cyclostyle Operator	1
11.	Skilled Labour, Gr. - II	1
12.	Office Attendant	1
13.	Jr. Peon	2
14.	Cleaner	1
15.	Sweeper	1
Total		18

6.4.4 Classrooms and Laboratories:

6.4.4.1 Number of Classrooms for BTech (Agricultural Engineering) Programme:

Class room for	No. of class rooms	Area (sq.metre)	Sitting capacity
1 st Year B.Tech.	1	69.03	40
2 nd Year B.Tech.	1	69.03	40
3 rd Year B.Tech.	1	69.03	40
4 th Year B.Tech.	1	69.03	40

The Faculty of Agricultural Engineering has been equipped with 4 (Four) numbers of class rooms having 40 sitting capacity each for conducting UG classes. One class room is in the process of up gradation to a smart class room through the ICAR Development grant.

6.4.4.2 Number of Functional Laboratories:

Sl No.	Name of Laboratory/ Facility	Area (m ²)	No. of Supporting Staff Attached
1.	Farm Machinery Lab	282.0	1 (Contractual)
2.	Farm Power Lab	243.6	1(Regular)
3.	Farm Machinery and Power Testing Lab	243.6	1 (Contractual)
4.	Soil and Water Engineering Lab	282.0	1(Regular) + 1 (Contractual)
5.	Food Engineering Lab	282.0	1 (Contractual)
6.	Post Harvest Engineering Lab	45.9	1 (Contractual)
7.	Post Harvest Analytical Lab	45.9	
8.	Electrical, Electronics and Instrumentation Lab	45.9	
9.	Computer Lab	45.9	1 (Regular)
10.	CAD/ CAM Lab	45.9	
11.	Workshop	282.0	4 (Regular) +



			1(Contractual)
12.	Instructional Farm	17500.0 (1.75 ha)	1(Contractual)

6.4.4.3 List of major equipments, laboratories, farm facilities, workshops and other instructional units

SL. No.	Name of Laboratory/ Facility	List of major equipments and facilities
1.	Farm Machinery Laboratory	1. Slasher/ Rotary harvester (1 Nos.) 2. Cultivator (1 Nos.) 3. Disc Plough (1 Nos.) 4. Mold board plough(1 Nos.) 5. Disc Harrow (2 Nos.) 6. Hydraluic Harrow(1 Nos.) 7. Zero Till Seed Drill (5 Nos.) 8. Power Chaff Cutter (1 Nos.) 9. Multi crop Thresher (3 Nos.) 10. Drum Seeder (1 Nos.) 11. Paddy Transplanter (1 Nos.) 12. Power Reaper (V.C.R.) (1 Nos.) 13. Pedal operated Thresher (4 Nos.) 14. Potato Planter (2 Nos.) 15. Potato Digger (1 Nos.) 16. Universal Testing Machine (UTM) (1 Nos.) 17. Air Compressor (1 Nos.) 18. Rotavator (1 Nos.) 19. Pneumatic Planter (One) (1 Nos.)
2.	Farm Power Laboratory	1. 35 hp Tractor, International make, B275 (1 Nos.) 2. Mahindra (Sarpanch) Tractor, 585 DI , 50 hp (One) 3. Two wheel Trailer (3 Ton Capacity) (1 Nos.) 4. John Deere Tractor, 65hp (1 Nos.) 5. Mistubishi Shakti Mini Tractor, MT-180D, 18hp (1) 6. Kubota Power Tiller 12hp (1 Nos.) 7. VST Shakti Power Tiller, 130 Di, 13hp (1 Nos.) 8. Power Tiller Operated Trailer (1.5 Ton Capacity) 9. Power tiller Operated Cultivator (1 Nos.) 10. Power tiller Operated Mould board plough (One) 11. Water Pump (1 Nos.) 12. Mini Combine Harvester (1 Nos.)



3.	Farm Machinery and Power Testing Laboratory	<ol style="list-style-type: none"> 1. Mechanized Soil Bin (1 Nos.) 2. Diesel Engine Test Rig, Single Cylinder, 5hp (One) 3. Direct Shear Testing Machine(1 Nos.) 4. Blow Machine (1 Nos.) 5. Sprayer (2 Nos.) 6. Power Reaper (1 Nos.) 7. IC Engine, Cut Model (1 Nos.)
4.	Soil and Water Engineering Laboratory	<ol style="list-style-type: none"> 1. Centrifugal Pump test Rig (1 Nos.) 2. Reynolds Apparatus (1 Nos.) 3. Venturi meter and Orifice meter (1 Nos.) 4. Apparatus for measuring pipe friction (1 Nos.) 5. Current meter (1 Nos.) 6. Shear test Apparatus(1 Nos.) 7. Metacentric height apparatus (1 Nos.) 8. Casagrande Apparatus (1 Nos.) 9. Cone Penetrometer for determination of Liquid limit (1 Nos.) 10. Sieve apparatus/sieve shaker (1 Nos.) 11. Auto level (1 Nos.) 12. Theodolite (1 Nos.) 13. Bernoulli Theorem Apparatus (1 Nos.) 14. Compass (1 Nos.) 15. Hydrometer (1 Nos.) 16. Electronic Weighing balance (1 Nos.) 17. Chains (4 Nos.) 18. Tensiometer (1 Nos.) 19. Moisture meter (1 Nos.) 20. Specific gravity bottle (1 Nos.)
5.	Food Engineering Laboratory	<ol style="list-style-type: none"> 1. Texture Analyzer (1 Nos.) 2. Water Activity Meter (1 Nos.) 3. Portable Moisture Analyzer (1 Nos.) 4. Heat Pump Dryer (1 Nos.) 5. Fluidized Bed Dryer (1 Nos.) 6. Vacuum Dryer (1 Nos.) 7. Hot air oven(2 Nos.) 8. Solar Assisted Vapour Absorption Refrigeration System(1 set-up) 9. Vapour Compression Refrigeration Model(1 Nos.) 10. Shell and Tube Heat Exchanger Cut Model(1 Nos.) 11. Digital balance(1 Nos.)



		<p>12. Digital Refractometer(1 Nos.) 13. Ultrasonicator(1 Nos.) 14. Temperature controlled hot water bath(1 Nos.) 15. Digital anemometer(1 Nos.) 16. Pyranometer cum datalogger(1 Nos.)</p>
6.	Post Harvest Engineering Laboratory	<p>1. Dryers (4 Nos.) 2. Size Distribution Apparatus (1 Nos.) 3. Lab dehusker(1 Nos.) 4. Lab polisher (1 Nos.) 5. Dehumidifier (1 Nos.) 6. Vacuum Packaging Machine(1 Nos.) 7. Hot air oven(1 Nos.) 8. Vegetable peeler (1 Nos.) 9. Grinder (1 Nos.) 10. Vegetable slicer (1 Nos.)</p>
7.	Post Harvest Analytical Laboratory	<p>1. Distillation unit (1 Nos.) 2. Titration unit (1 Nos.) 3. KjeldahlApparatus(1 Nos.) 4. Soxhlet Apparatus (1 Nos.) 5. Water bath (Circulating type) (1 Nos.) 6. Centrifuge (1 Nos.) 7. Magnetic stirrer (1 Nos.) 8. Physical balance (3 Nos.) 9. Hunter Lab colorimeter (1 Nos.)</p>
8.	Electrical, Electronics and Instrumentation Laboratory	<p>1. Digital Storage Oscilloscope (2 Nos.) 2. National Instruments: NI myRIO & NI Elvis II+ (1 Nos.) 3. LabView (National Instruments, License No.M83X78684)(1 Nos.) 4. Fluke true RMS multimeter(2 Nos.) 5. Keithley, DMM6500(1 Nos.) 6. MetraviMultimeter(4 Nos.) 7. Function Generator(2 Nos.) 8. DC regulated Power Supply (2 Nos.) 9. UV Chamber (1 Nos.) 10. PCB Fabrication Facility (1 Nos.) 11. Different types of Sensors (RTD, Thermocouple, Strain gauge, LM35, Encoder, position sensor, optical sensor etc.) (1 Nos.) 12. Testing of DC motor (1 Nos.) 13. Testing of single phase, 3 phase induction motor (1 Nos.) 14. Testing of DC Generator (1 Nos.)</p>

		15. Open circuit and short circuit testing of transformer (1 Nos.)
9.	Computer Laboratory	1. Desktop computers (27 Nos.) 2. Printer cum scanner (2 Nos.) 3. MatLab software
10.	CAD/ CAM Laboratory	1. Work stations (14 Nos.) 2. Plotter (1 Nos.)
11.	Workshop	1. Shaper Machine (1 Nos.) 2. Milling Machine (1 Nos.) 3. Radial Drilling Machine (1 Nos.) 4. Pillar Drilling Machine (1 Nos.) 5. Lath Machine (3 Nos.) 6. CNC Lath Machine (1 Nos.) 7. Wood Working Lath Machine (1 Nos.) 8. Welding Machine (Electric) (2 Nos.) 9. Gas Welding Equipments (1 Nos.) 10. Grinding Machines (2 Nos.) 11. Wood Working Circular Saw (1 Nos.) 12. Wood Working Combination Machine (1 Nos.) 13. Power Hacksaw (1 Nos.) 14. Bending Machine (1 Nos.)
12.	Instructional Farm	1. Drip Irrigation system 2. 5 HP submersible pump set-up 3. Solar water pumping system

6.4.4.4 Justify whether these facilities are sufficient to meet the course curricula requirement

Yes, the available facilities are sufficient to meet the course curricula requirement of B Tech (Agricultural Engineering).

6.4.4.5 Number of theory batches for the Degree Programme

At present total capacity of students in B.Tech. (Agricultural Engineering) degree programme is 38. The theory classes are being conducted in one batch with maximum 38 students.

6.4.4.6 Number of Practical Batches for the Degree Programme

The practical classes are being conducted in one batch with maximum 38 students.

6.4.5 Conduct of Practical and Hands-on-Training:

The practical classes are being conducted in the functional laboratories of the Faculty of Agricultural Engineering as per the syllabus of B.Tech. (Agricultural Engineering) recommended by 5th Dean's committee of ICAR.

Details of Student READY program for Agricultural Engineering with duration

1. Student READY Skill Development Training -I for five weeks in the summer break after IV semester with a credit load of **0+5** credit hours.
2. Student READY Skill Development Training -II for five weeks in the summer break after VI semester with a credit load of **0+5** credit hours.
3. Industrial attachment of 10 weeks in VII semester with a credit load of **0+10** credit hours.
4. On campus Experiential Learning Program of 12 weeks in VII semester with a credit load of **0+10** credit hours.
5. Project Planning and Report Writing of 12 weeks during VIII semester with a weightage of **0+10** credit hours.

EVALUATION OF STUDENT READY PROGRAM

- Students shall be evaluated component-wise under hands on training/skill development training/experiential learning/student projects.
- Each College of the University will designate a Student READY Program Coordinator and component wise evaluation committees. These committees will evolve a method of evaluation depending upon the component undertaken giving due weightage to the observations made by the Scientists/Agro-industrial Officer and the Program Coordinator with whom they are attached.
- Since the Credit Hours allotted to the Student READY program are gradial, the minimum condition of attendance and grading system will apply for the program as will be applicable to other courses.
- It is expected that at the end of Student READY program, the students should gain competency for entrepreneurship, which should be innovative and creative in nature. The evaluation committee must ensure percentage increase in this competency at the end & successful organization of all Student READY programs.



The hands-on-trainings and Student READY programmes are being conducted for the degree programme with the following Experiential Learning modules.

Experiential Learning Module - 1

Project Title: Experiential teaching and learning under Hands on Training on “Maintenance and Custom hiring of Farm Machinery and equipments”

Funded by : ICAR, New Delhi (2006-07)

Mode of operation : Skill mode

Fund utilized : Rs. 18.0 Lakhs

Training imparted:

Training on repair and maintenance of the following machinery are being given to the B Tech students which are needed to run a Repair and Maintenance Workshop which are very much useful at the village level.

1. Tractor, 70 hp with turbo charged engine
2. Tractor, 18 hp, 4-wheel drive
3. Power tiller with trolley, pump and matching equipments
4. Disc harrow, heavy duty, hydraulic type
5. Disc type bund former
6. Land leveler, heavy duty
7. Post hole digger with auger
8. Rotary mower/slasher
9. Solar pump with solar module
10. Solar water heater, 100 lit capacity

They are also being taught regarding calculation of operational cost of tractors and other machinery considering fixed cost, variable cost and expected operational life of the machinery. This ultimately helps in determination of effective cost including profit margin needed for the business of custom hiring of tractors and other machinery.



Year wise data for last five years:

Year	No. of students trained	Major skills imparted
2020-21	7	1. Maintenance of Farm Machinery and tractors. 2. Calculation of operational cost of tractors and other machinery and determination of effective cost for rental purpose.
2019-20	8	-Do-
2018-19	8	-Do-
2017-18	5	-Do-
2016-17	7	-Do-

Experiential Learning Module - 2

Project Title: Experiential teaching and learning under Hands on Training on “Design, Fabrication and Testing of Farm Machinery”

Funded by : ICAR, New Delhi (2008-09)

Mode of operation : Skill mode

Fund utilized : Rs. 180.0 Lakhs

Training imparted:

Practical trainings are imparted to B. Tech. students of the faculty on various aspects of design, fabrication and testing of farm machinery following standard procedure and methods. CAD/CAM facility created under the ELP helps the students to learn various aspects computer aided design and fabrication of the machine components using CNC Lathe which has been installed under at our Engineering Workshop under the ELP.

Research works are also conducted to improve the performance of various agricultural equipments using the developed facilities by simulating actual field conditions in the Mechanized Soil Bin under controlled laboratory conditions. This facility created under the same ELP facilitates the research work in Post Graduate level.



Year wise data for last five years:

Year	No. of students trained	Major skills imparted
2020-21	7	1. Maintenance of Farm Machinery and tractors. 2. Calculation of operational cost of tractors and other machinery and determination of effective cost for rental purpose.
2019-20	8	-Do-
2018-19	8	-Do-
2017-18	5	-Do-
2016-17	7	-Do-

Experiential Learning Module - 3

Project Title: Establishment of a Paddy Based Model Agro Processing Centre

Funded by : ICAR, New Delhi (2006-07)

Mode of operation: Skill mode

Fund utilized : Rs. 68.0 Lakhs

Training imparted:

An automatic and fully modernized rice mill of capacity 0.5 tons/h, procured from Satake Corporation, Japan, has been established under the Experiential Learning Programme (Hands on Training). The machines were installed in a shed of size 90ftx30ft constructed from the allocated fund. The main purpose for its establishment is providing in-plant training of one semester for the final year students of B.Tech.(Agril. Engg.). Besides this, it also aims at providing training and demonstrations to the farmers and rice millers and commercial milling activities for propagation of modern rice milling technology.

Presently, regular practical classes are being conducted for the under graduate students regarding various aspects of rice milling. Regular demonstrations are also conducted for the visiting groups of farmers and rice millers. Commercial milling activities have been started with milling of organically produced Bengal Aromatic Rice of mainly *Gobindobhog* variety produced by the farmers of Nadia district under the RKVY Project on “Promotion of Bengal Aromatic Rice through Improved Production and Processing System. More than 200 students of B Tech (Agril. Engg.) have been imparted training till date on the operation and maintenance of modern rice mill. At least, 26 batches including farmers, rural entrepreneurs



and government employees involved in extension and inspection were given thorough demonstration and short term training on the details of modern rice milling technology.

Year wise data for last five years:

Year.	No. of students trained	Major skills imparted
2020-21	7	1. Design, fabrication and testing of farm Machinery following conventional design procedure. 2. Training on CNC lathe. 3. Computer aided design using Autocad
2019-20	8	-Do-
2018-19	7	-Do-
2017-18	5	-Do-
2016-17	7	-Do-

Experiential Learning Module - 4

Project Title: Drip fertigation to fruit crops for better yield and economy

Funded by: ICAR, New Delhi (2006-07)

Fund utilized: Rs. 15.30 Lakhs

Training imparted:

In this programme, students learn to design the layout of the basic drip fertigation system components, i.e., arrangement of main, sub mains and laterals considering the shape, size and slope of the field, the position of the overhead tank, the position and capacity of the fertilizer tank, selection of the fertilizer mixing system in the irrigation water, determination of the fertilizer application rate. They also learn the installation of the system, system auditing, and fundamentals of hydraulics of the drip system. An appropriate hydraulic design of pipe network, estimation of the operating pressure of emitters, determination of the allowable head losses in lateral and sub mains, estimation of the lateral and sub main discharge, determination of the diameter and length of the lateral are some of the other major things they learn in this ELP. Students learn to estimate the loss of water in the designed system and the water distribution patterns in the soil profile (both horizontal and vertical). The programme helps the students to design an optimum system which will aim to provide the required quantity of water at the desired uniformity in application while keeping the cost of the system to minimum. This experiential learning project allows students to enhance their



comprehension and confidence to perform the skills required during an irrigation system installation.

Year wise data for last five years:

Year	No. of students trained	Training imparted to the students
2020-21	7	1. Design, operation and maintenance of drip irrigation system to fruit crops. 2. Adjustment of different machine settings for optimizing water application in order to maximize yield and profit.
2019-20	7	-Do-
2018-19	7	-Do-
2017-18	5	-Do-
2016-17	6	-Do-

6.4.6 Supervision of students in PG/PhD Programmes:(as per ICAR guidelines)

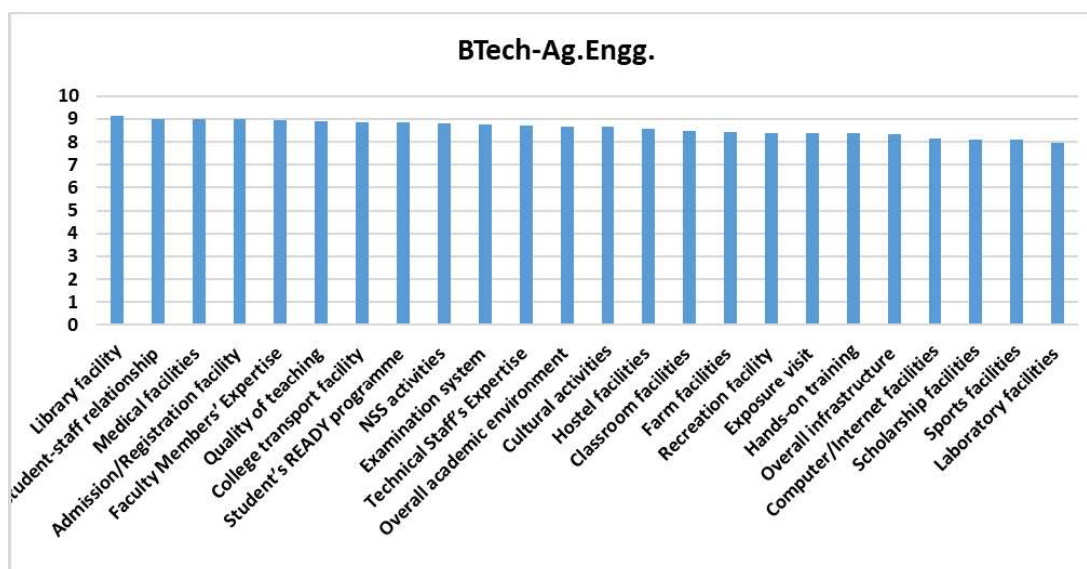
Not applicable for BTech (Agricultural Engineering) degree programme.

6.4.7 Feedback of stakeholders:

6.4.7.1. Mention the feedback mechanism (duly supported by the documents)

Feedback from the students was conducted in Google Forms using standard questionnaire (24 questions) developed on the basis of comprehensive dimension of Agricultural Education in BCKV campus. The dimension covered all the physical and academic facilities provided by the University. The responses were collected on a 10-point scale (1 denotes poorest facility and 10 denotes excellent facility) from the students of this programme. Individual responses were analyzed statistically (by computation of weighted average of every facility as perceived by the students) for the programme and the result was graphically presented in the SSR. As documentary evidence, individual responses collected from the students' email ID through Google Forms have been stored in our computer (Google Drive). On demand, of ICAR Peer Review Team, the link for the individual responses can be shared.





Comment: Undergraduate Students of Agricultural Engineering in the Mohanpur Campus are extremely happy with nearly all the facilities provided by the University. According to them, only Laboratory facility needs improvement.

6.4.7.2. What action the University has taken to address the issues raised in the feedback?

Action taken

The feedback reports were shared with concerned sections of the university. Students responded very positively with regards to majority of the facilities provided by the university. However, with respect to timely publication of results and corporate placement, there are ample scopes of improvement. Considering this feedback, the university has taken administrative actions for publication of results within stipulated period as reflected in the circulars of the concerned authorities. As corporate placement, to a great extent, is beyond the purview of the university itself, the Placement Cell continuously in touch with the potential employers to utilize the vacancies in favour of BCKV

Impact

We are expecting very positive impacts in near future on these issues as some steps have already been taken in recent times as mentioned above.

6.4.8 Student intake and attrition in the programme for last five years:

Academic Year	Sanctioned strength	Actual intake	Attrition (%)*
2016-17	37	37	24.3
2017-18	37	37	13.5
2018-19	37	37	10.8
2019-20	37	37	0
2020-21	38	32	34.4

*The student attrition is high in B.Tech. (Agricultural Engineering), since some students left for joining other branches of Engineering/ Medical Science as per their merit/choice.



6.4.9 Information Communication Technology (ICT) Application in Curricula Delivery:

The systematic use of ICT tools in classroom instruction makes the teaching learning process more effective and highly interactive. Generally, in the pre-pandemic condition the use of ICT in our faculty was limited to classroom lecture through power point presentation using LCD projector. Sometimes demonstration of the machineries has been presented to the students through web link, YouTube or using other web services at the time of classroom and laboratory teaching.

The use of ICT tools became more dominant as the pandemic situation started. The institute has to run the teaching and learning process completely in distance mode via electronic networks. The ICT tools used for the curriculum delivery for different theory and practical classes are tabulated below:

Theory	Practical
<ol style="list-style-type: none"> 1. Google meet, Zoom, Microsoft Team has been used for taking regular classes 2. E-mail, WhatsApp etc. has been used for giving lecture notes. 3. University website is being used for uploading the video lecture 4. Use different free web browser for lecture notes 5. Use of ICAR e-courses (https://ecourses.icar.gov.in) 6. Use of Google Classroom for assessment purpose. 	<ol style="list-style-type: none"> 1. Virtual Lab, launched by Ministry of Education under the National Mission on Education through ICT. 2. Use of YouTube and other web link for demonstrating different practical classes. 3. Use of Google meet, Zoom, Microsoft Team etc. for practical purposes. 4. Use of Internet of Things (IoT) for sensor based experiments under Electrical/Instrumentation Engineering.

The available resources are sufficient for conducting theory classes, but for conducting the practical classes related to few courses of Agricultural Engineering, the available resources are not sufficient under virtual laboratory.



I, the Dean, **Prof. Partha Sarathi Chattopadhyay**, hereby certify that the information contained in the Section 6.4.1 to 6.4.9 are furnished as per the records available in the college and degree awarding university.



Place: Mohanpur

Date: 02-11-2021

Prof. P. S. Chattopadhyay
Dean
Faculty of Agril. Engineering
Bidhan Chandra Krishi Viswavidyalaya
Mohanpur-741252, Nadia, W.B.

(Signature of Dean of the Faculty with Date & Seal)

