

Minimum Requirements for Establishment of New College in Agriculture and Allied Disciplines



Agricultural Education Division
Indian Council of Agricultural Research
Krishi Anusandhan Bhawan-II, Pusa
New Delhi-110 012

Minimum Requirements for Establishment of New College in Agriculture and Allied Disciplines



Agricultural Education Division
Indian Council of Agricultural Research
Krishi Anusandhan Bhawan-II, Pusa
New Delhi-110 012

Printed : August 2016

Compiled by:

AGRICULTURAL EDUCATION DIVISION

Indian Council of Agricultural Research

Krishi Anusandhan Bhawan

Pusa, New Delhi - 110012

© 2016, *Indian Council of Agriculture Research, New Delhi*

Lasertypeset at Print-O-World, 2568, Mandir Wali Gali, Shadipur, New Delhi-110 008 and
Printed at M/s Royal Offset Press, A-89/1, Naraina Industrial Area, Phase-I, New Delhi-110 028.

PREFACE


Development of human resources in agricultural sciences is carried out by the National Agricultural Education system comprising State Agricultural Universities (SAUs), Deemed to be Universities (DUs) & Central Agricultural Universities (CAU) and Central Universities having agricultural faculties (CUs), which has played a pivotal role in transforming agricultural situation of the country. It is expected that SAUs and others are working for basic science research for knowledge generation and development of skilled human resources through education. The Indian Council of Agricultural Research (ICAR) has been taking care of maintaining the quality of agricultural education in the country for the last more than 60 years. In this endeavour, ICAR contributed scientifically by way of planning, coordinating, undertaking, supporting and guiding various aspects of agricultural education and by providing funds for critical areas of its development and strengthening.

ICAR through its Education Division has been laying emphasis on performance enhancement of NARES through support for development of research, education, planning and management policies and accreditation for assurance of quality and relevance of higher agricultural education. Queries are received, in the Council, from time to time regarding minimum requirements for opening of new colleges in the field of agricultural sciences.

The Council constituted committees to formulate Minimum Standards for Higher Community Science Agricultural Education for the disciplines of Agriculture, Agriculture Engineering, Biotechnology, Home Sciences, Horticulture, Dairy Technology, Food Technology, Fisheries, Forestry and Sericulture. The reports submitted by these Committees were placed before the National Accreditation Board of ICAR. The Board suggested that the Fifth Deans Committee may consider the above reports & suitably modify the reports in accordance with its recommendations particularly with respect to names/number of the departments and degree nomenclature. Further, under graduate courses in Agriculture and allied disciplines have also been declared as Professional Courses. The Fifth Deans Committee after considering its recommendations and reports of all Committees have made recommendations for the Minimum Standards for Higher Agricultural Education, which is approved by the Competent Authority for implementation.

The reports thus, finalized by the Fifth Deans Committee are compiled at one place in order to facilitate the interested persons/ organizations/ universities for establishment of new college in Agriculture and its allied disciplines.

Date: 25.7.2016
Place: New Delhi


(Narendra Singh Rathore)
DDG (Agri. Edn.)

CONTENTS

Agriculture	1
Agricultural Engineering	14
Biotechnology	28
Dairy Technology	34
Fisheries	48
Food Technology	55
Forestry	65
Community Science (Home Science)	75
Horticulture	83
Sericulture	96

AGRICULTURE

1. **Degree Nomenclature:** B.Sc. (Hons.) Agriculture
2. **Eligibility Criteria:** Intermediate /10+2 with PCM/PCB/PCMB/ Agriculture (P- Physics, C-Chemistry, M-Mathematics, B-Biology) from a recognized Board/ University.
3. **Medium of Instruction:** English
4. **Minimum Intake:** 60 students per year
5. **Divisions/Departments/Sections**
 - 1) Agronomy
 - 2) Agricultural Economics
 - 3) Agricultural Extension & Communication
 - 4) Entomology
 - 5) Genetics and Plant Breeding
 - 6) Horticulture
 - 7) Food Science and Technology
 - 8) Soil Science and Agricultural Chemistry
 - 9) Plant Pathology
 - 10) Animal Sciences
 - 11) Fisheries
 - 12) Biochemistry
 - 13) Crop Physiology
 - 14) Agricultural Engineering
 - 15) Agro-forestry
 - 16) Seed Science and Technology
 - 17) Agro-meteorology
 - 18) Environmental Sciences
 - 19) Microbiology
 - 20) Basic Sciences and Humanities
 - a) Basic Economics
 - b) Sociology and Psychology
 - c) English
 - d) Mathematics
 - e) Computer Sciences
 - f) Statistics

Note: To reduce the number, the subjects which have only one or two courses may be merged with major Division/Department. Colleges/Universities have liberty to do this at their level. However, for practical purposes following model has been proposed giving minimum teaching staff required for each Division/Department taking into account the merger of related subjects.

6. Divisions/Departments/Sections proposed along with Cadre-wise teaching staff required.

Sl. No.	Divisions/Departments/Sections including mergers shown in bracket	Minimum Requirement	Teaching Staff required			
			Professor	Assoc. Prof.	Asstt. Prof.	Total
A. Divisions/Departments						
1.	Agronomy + (Agro-forestry)	5	1	1	4+1	7
2.	Agricultural Economics + (Basic Economics, Maths & Computer Science and Statistics)	5	0	1	2+3	6
3.	Agriculture Extension & Communication + (Sociology and Psychology, English)	3	0	1	1+2	4
4.	Entomology	2	0	1	2+0	3
5.	Genetics & Plant Breeding + (Seed Science & Technology)	3	1	1	2+1	5
6.	Horticulture + (Food Science & Technology)	4	1	1	2+1	5
7.	Soil Science and Agricultural Chemistry + (Microbiology, Agro-meteorology, Environmental Sciences)	4	0	1	2+3	6
8.	Plant Pathology	2	0	1	2+0	3
Total		28	3	8	17+11	39

B. Sections

9.	Animal Sciences including Fisheries, Dairy Sciences & Poultry units	1	0	0	1+1	2
10.	Agriculture Engineering + (Farm Management)	1	0	0	1+1	2
11.	Biochemistry and Crop Physiology	1	0	0	1+1	2
Total		31	3	8	20+14	45

Note: Total strength after four years should have 45 teachers as faculty. However, in extreme cases, it can be 31 and few courses viz. Basic Sciences and Humanities, Maths and Computer Sciences, etc. can be completed by hiring the teachers.

7. Administrative Staff requirement for Divisions/Departments/Sections

Sl. No.	Divisions/Departments/Sections	Assistant *	Lab Asstt.	Field Asstt.	Attendant/Messenger	Total
1.	Agronomy + (Agro-forestry)	1	2	3	- **	6
2.	Agricultural Economics + (Basic Economics, Maths & Computer Science and Statistics)	1	3	-	-	4
3.	Agriculture Extension & Communication + (Sociology and Psychology, English)	1	1	-	-	2
4.	Entomology	1	1	1	-	3
5.	Genetics & Plant Breeding + (Seed Science & Technology)	1	2	2		5

Table Contd.

Table Concluded

Sl. No.	Divisions/Departments/Sections	Assistant *	Lab Asstt.	Field Asstt.	Attendant/Messenger	Total
6.	Horticulture + (Food Science & Technology)	1	2	2		5
7.	Soil Science and Agricultural Chemistry + (Microbiology, Agro-meteorology, Environmental Sciences)	1	3	1		5
8.	Plant Pathology	1	2	1		4
9.	Animal Sciences including Fisheries, Dairy Science & Poultry units)	1	1	1		3
10.	Agriculture Engineering + (Farm Management)	1	1	2		4
11.	Biochemistry and Crop Physiology	1	1	-		2
Total		11	19	13		43

*Assistant should have computer literacy, accounts and store handling training

**Attendant/Messenger/Janitor/Security/watch and ward to be outsourced.

8. Manpower Requirement of Dean s Office

Sl. No.	Name of the Post	No. of Posts
1.	Dean	01
A. Establishment		
1.	P.A./P.S. to Dean	01
2.	Asstt. Administrative Officer	01
3.	Asstt. Academic Officer	01
4.	Assistant Accounts Officer	01
5.	Assistants (one for each AAO)	03
6.	Steno/Computer Operators	01
7.	Driver	01
8.	Farm Manager (Asstt. Prof.)	01*
9.	Store Keeper	01

* Will be with Engineering/Agronomy.

Utility services like Wireman/Plumber/Janitors/ Attendants/Messengers, Landscaping and Mechanic, etc. to be outsourced.

B. Central Instrumentation Laboratory

1.	Instrumentation Asstt. Engineer	01
2.	Instrumentation Technician/Lab Asstt.	01

C. Library Staff

1.	Asstt. Librarian (Asstt. Prof. cadre)	01
2.	Library Asstt./Clerk	01
3.	Shelf Asstt.	01

Table Contd.

Table Concluded

Sl. No.	Name of the Post	No. of Posts
D. Students Welfare		
1.	Physical Education (Asstt. Prof.)	01
2.	Attendant	01
E. Hostel Staff		
1.	Warden	01+01
2.	Care taker/Asstt.	01+01
F. Estate Branch		
1.	Junior Engineer	01
2.	Security Asstt.	01

9. Land Required

(A)	1) Plain Regions	:	30 ha
	2) Hill, islands and coastal regions	:	16 ha

(B) Land Utilization Pattern

	Plain	Hill/Coastal Region
1. Main Building/Hostels/Residential Quarters (Including roads)	7 ha	3.2 ha
2. Playground & other amenities	3 ha	2 ha
3. Farm Area, including godown/ stores	20 ha	10.8 ha

Note: If land is not in one stretch, it should be atleast within a radius of 5 kms

(C) Division/Department/Section-wise land allocations (hectares)

1.	Agronomy & Farm Forestry	6.0	3.2
2.	Entomology	0.4	0.2
3.	Genetics & Plant Breeding + (Seed Science & Technology)	3.2	1.6
4.	Horticulture	6.0	3.6
5.	Soil Science and Associated Departments	0.8	0.2
6.	Plant Pathology	0.4	0.2
7.	Animal Sciences	2.0	1.2
8.	Biochemistry and Physiology	0.4	0.2
9.	Agricultural Engineering	0.8	0.4
Total		20	10.8

10. Infrastructure facilities (Floor space required)

A. Central Facilities

Sl.No.	Details	No. of Rooms	Dimensions (ft)
1.	Dean Office	1	20×24
2.	P.A. Room	1	10×12
3.	Committee Room with video conferencing facility	1	20×30
4.	Assistant Administrative Officer including staff	1	20×12
5.	Assistant Accounts Officer including staff	1	20×12
6.	Assistant Academic Officer including staff	1	20×12
7.	Exam Cell (300 capacity)	1	20×12
8.	Evaluation Room	1	20×36
9.	Faculty Room (Ladies)	1	10×12
10.	Faculty Room (Gents)	1	20×12
11.	Placement Cell	1	20×12
12.	Smart Lecture Halls	5	40×30 (60 capacity)
13.	Exam Hall Cum Auditorium	1	100×50
14.	Library/Book Bank	1	30×72
15.	Common Utility Room	1	20×36
16.	Central Laboratory	1	50×36
17.	Hostels including Mess, Gym/Indoor, Reading Room, Warden Room, Store etc.	1 (boys)	150
		1 (girls)	150
18.	Canteen	1	20×12 (kitchen with store) 20×36 Seating
19.	Wash room (with toilet & urinary facilities)	10	20×12 (keeping ladies requirements)
20.	Parking space		As per requirement
21.	Farm stores, threshing yards including implements and tractor sheds		One core complex
22.	Vehicles		
	i. Car	1	
	ii. Jeep/Car staff	2	
	iii. Bus	1	
	iv. Pickup van	1	
	v. Motor Bikes	2	
	vi. Minibus (30 capacity)	1	
	vii. Tractors	2	
23.	Drinking water and irrigation facilities		As per requirements
24.	Vehicles shed	1	10×80

B. Divisions/Departments/Sections ~ Requirements

Sl.No.	Details	No. of Rooms	Dimensions(in ft)
1.	Office of Head	12	24 × 12 with wash room facility
2.	Faculty Rooms 1+1	12	12 × 10 + 18 × 1224 × 10 depending on the strength of each deptt.
3.	Clerical/technical staff	12	12×10 to 24×10 depending on the strength of each deptt.
5.	Laboratories	12	30× 60 Larger department will have two
6.	Field/Lab Stores	5	1. Agronomy 2. Gen. & Pl. Breeding 3. Soil Sci. 4. Horticulture 5. Pests & Chemicals
7.	Green house/poly house/Nursery facilities (Hort. Deptt.)	½ acre	

11. Requirements of Lab/field equipment for each Division/Department/Section)

1. Agronomy + (Agroforestry)

- | | |
|--|---|
| 1. Crop Cafeteria | <ul style="list-style-type: none">• ½ acre land• small implements like spade, hoe, khurpi, darati etc. |
| 2. Museum for identification of seeds, fertilizer, weeds, commonly used agro-chemical and medicinal and aromatic plants etc. | <ul style="list-style-type: none">• Storage bottle• Herbarium posting material |
| 3. Field of sowing method, fertilizer application, irrigation and soil productivity and yield estimation | <ul style="list-style-type: none">• Small equipment/ implement |
| 4. Irrigation water measurement, bulk density etc. | |

Equipment

	Number
i. Hot air oven	02
ii. Moisture box	30
iii. Moisture meter	05
iv. Tube Auger	10
v. Bucket auger	10
vi. Weighing Balance	01
vii. Seed Germinator	02
viii. Conductivity Meter	01
ix. pH Meter	02
x. Water Bath	01
xi. Shaker	01
xii. Chlorophyl Meter	01

xiii. Drip and Sprinkler System	03
xiv. Sprayer	03
xv. Spring Balance 50 Kg	05
xvi. Spring Balance 10 Kg	05
xvii. Top Pan Balance 1 kg capacity	05
xviii. Top Pan Balance 2 kg capacity	05
xix. Meter Scale	10
xx. Tape	05
xxi. Brix meter	02

2. Agricultural Economics + (Basic Economics, Maths & Computer Science and Statistics)

Items	Nos.
1. Computers	15
2. Camera	01
3. Software	As per requirement

3. Agriculture Extension & Communication + (Sociology and Psychology, English) Audio-visual Lab

Items	Nos.
1. LCD projector	1
2. Camera (SLR) with zoom, wide-angle, tele-photo lens	1
3. Video camera with tripod, lighting accessories and editing facility	1
4. Computers (workstation) with editing softwares	1
5. Digital voice recorders	5
6. Audio recording-mixing consoles	1
7. Computation softwares for statistics	1

4. Entomology

Items	Nos.
1. Binocular Microscope	20
2. Insect Box	60
3. Insect Collection Nets	60
4. Collection Bottles	60
5. Insect Collection Big Boxes for Museum (1 for each order)	29
6. Insecticides for showing students/Representative for each group	As per requirement
7. Stereomicroscope	01
8. Electronic Balance	01
9. Soxhlet Extraction Apparatus	01
10. Bee keeping equipment	01 Set
11. Oven	01

Table Contd.

Table Concluded

	Items	Nos.
12.	Patters Tower	01
13.	Sprayers	01 of each type
14.	Light traps	01 set
15.	Fumigation Chamber	01
16.	Sides/cover slips	as per requirement
17.	pH meter	01
18.	Computer with printer	01 set

5. Genetics & Plant Breeding + (Seed Science & Technology)

Genetics

	Items	Nos.
1.	Microscope	10
2.	Binocular microscope	10
3.	Electronic Moisture Meter	02
4.	Electronic Balance	02
5.	Seed Germinator	02
6.	Automatic seed/grain counter	01

Biotechnology

	Items	Nos.
10.	Hot Air Oven	01
11.	BOD Incubator	01
12.	Fluorescence microscope	01
11.	Centrifuge	01
12.	Growth Chamber	01
13.	Distillation Assembly	01

6. Horticulture + (Food Science & Technology)

a. Labs (Post Harvest)

	Items	Nos.
1.	Hand Refractometer	05
2.	Digital Refractometer	02
3.	Oven	01
4.	Refrigerator	01
5.	Electronic Weighing Balance	02
6.	Pan Balance (1 kg & 10 kg. capacity each)	02

Table Contd.

Table Concluded

	Items	Nos.
7.	Deep Freezer	01
8.	pH Meter	01
9.	Fruit crusher	01
10.	Grinding and Mixing Machine	01
11.	Distillation Assembly	01

b. Lab (UG Lab)

	Items	Nos.
1.	Seed Germinator	02
2.	Grafting and budding knife	60
3.	Secateur	60
4.	Saw	05
5.	Loppers	05
6.	Mist Chamber	01
7.	Poly house with drip irrigation system	02
8.	Microscope	02

c. Food Science & Technology

	Items	Nos.
1.	Refrigerator	1
2.	Muffle furnace	1
3.	Weighing balance	2
4.	Water bath	2
5.	Hot air oven	2
6.	Fruit penetrometer	2
7.	Pulper	1
8.	Juice extractor	1
9.	Crown corking machine	1
10.	Spectrophotometer	1
12.	Microwave oven	1
13.	Baking oven	1
14.	Sieve shaker	1
15.	Poly pouch sealer	1
16.	Crusher	1
17.	Masala grinder	1
18.	Dehydrator	1
19.	Cold room	1
20.	Vacuum pump	1

7. Soil Science and Agricultural Chemistry + (Microbiology, Agro-meteorology, Environmental Sciences)

Items	Nos.
1. Electronic Top pan balance (0.1 g capacity)	02
2. Electronic Top pan balance (1 mg capacity)	02
3. Hot air oven	02
4. pH Meter	05
5. EC Meter	05
6. Flame Photometer	01
7. Visible spectrophotometer	01
8. Hot Plate	02
9. Distilled water unit	02
10. Water Bath	01
11. Rotary Shaker	02
12. Binocular Microscope	20
13. BOD Incubator	02
14. Autoclave	02
15. Laminar Air Flow	01
16. Microwave oven	01
17. Digestion block	02
18. Hydrometer	05
19. Infiltrometer	02
20. Hydraulic conductivity meter	01
21. Atterberg's limitsmeter	05
22. Nitrogen Analyser	02

8. Agrometeorology

Items	Nos.
1. Thermometer Max	05
2. Thermometer Min	05
3. Digital Anemometer	02
4. Cup Anemometer	02
5. Pan Evaporimeter	01
6. Soil thermometer	
05 cm.	05
10 cm.	05
15 cm.	05
7. Rain gauge	01
8. Self-recording Rain gauge	01

Table Contd.

Table Concluded

	Items	Nos.
9.	Sunshine Recorder	01
10.	Stevenson's Screen	01
11.	Thermograph	01
12.	Hydrograph	01
13.	Soil Heat Flux Plate	01
14.	GPS	10
15.	AWS (optional)	01
16.	Lysimeter (optional)	01
17.	Luxmeter	02
18.	Solar Pyranometer	01

9. Plant Pathology

	Items	Nos.
1.	Microscope compound with photo display arrangement	03
2.	Sterobinocular	05
3.	Sample processing Board (Dry preservation of samples)	04
4.	Wet preservation Jars	50
5.	Autoclave	02
6.	Oven	01
7.	Deep Freeze	01
8.	Centrifuge (3000 rpm)	01
9.	Refrigerator	01
10.	Water bath	02
11.	Electronic balance	02
12.	Weighing machine	01
13.	Incubator	02
14.	Occular meter	05
15.	Stage Micrometer	05
16.	Camera Lucida	05

10. Animal Sciences including Fisheries

	Items	Nos.
1.	5000/6500 Feed and Forage Analyzer	01
2.	Hand and electric centrifuge	01
3.	Analytical balance	01
4.	Hot air oven	01
5.	Micro kjeldahl N digestion & distillation apparatus	01

Table Contd.

Table Concluded

	Items	Nos.
6.	Soxhlet unit for fat estimation	01
7.	Hot plate, Fiber Tech.	01
8.	Vacuum pump	01
9.	Willy mill grinder	01
10.	Platform balance (100 kg cap)	01
11.	Gerber centrifuge unit (for milk fat testing)	01
12.	Milk analyzer (automatic)	01
13.	Crude fiber estimation unit	01
14.	Distilled water unit	01

11. Dairy & Poultry

	Items	Nos.
1.	Incubator cum hatcher	01
2.	Brooder machine	01
3.	Feeder	01
4.	Waterer	01
5.	Egg candling machine	01
6.	Debeaker	01
7.	Vaccinator	01
8.	Milking machine	As per requirements
9.	Milking bucket	As per requirement
10.	Milking can	As per requirements
11.	Animal and bird identification tools	As per requirement
12.	Chaff cutter	01
13.	Lactometer	01
14.	Castrator	01
15.	Shearer	01
16.	Electric dehorner	01
17.	Artificial vagina	01
18.	Common medication demvice	01
19.	Cattle crate	01

12. Agriculture Engineering + (Farm Management)

	Items	Nos.
1.	Working models of MB plough, Disk plough and indigenous plough	2 sets each
2.	Working model of different harrows	Actual
3.	Seed drill	01

Table Contd.

Table Concluded

Items	Nos.
4. Different types of threshing drums	As per requirement
5. Working models of reaper and mowers	02
6. Different types of sprayers and dusters	As per requirement
7. Cut model of CI & SI engine	01
8. Cut model of Tractor	01

13. Central Library and Information System

1. Internet Server	01
2. Intranet Server	01
3. Computers for Reading Hall	20
4. Heavy Duty Photocopiers	02
5. Computerized Issue and Catalogue Systems	02
6. Wi-Fi facility in college/library/hostels	As per requirement
7. CCTV monitoring system for library	01
8. RFID and Access Control System (Optional)	01
9. Broadband Internet Connectivity with minimum speed of 1Gbps	



AGRICULTURAL ENGINEERING

1. **Degree Nomenclature :** B. Tech. (Agricultural Engineering)
2. **Eligibility Criteria:** Intermediate / 10+2 with PCM (Physics, Chemistry, Maths) from a recognized Board/ University.
3. **Medium of Instruction:** English
4. **Minimum Intake:** 40 students per year
5. **Departments**
 - 1) Department of Farm Machinery and Power Engineering (FMPE)
 - 2) Department of Processing and Food Engineering (PFE)
 - 3) Department of Soil and Water Conservation Engineering (SWCE)
 - 4) Department of Irrigation and Drainage Engineering (IDE)
 - 5) Department of Renewable Energy Engineering (REE)
 - 6) Department of Basic Engineering and Applied Science (BEAS)
6. **Human Resource Requirement of College of Agricultural Engineering**

	Dean Office	SWCE	IDE	FMPE	PFE	REE	BEAS	Total
Faculty								45
Professor	1	1	1	1	1	1	1	7
Associate Professors	-	2	2	2	2	2	3	13
Assistant Professors	-	3	3	3	3	3	9	24
Placement Officer	1	-	-	-	-	-	-	1
Office Staff								29
AO/Suptd.	1	-	-	-	-	-	-	1
Clerk	6	1	1	1	1	1	1	12
PA/Steno	2	1	1	1	1	1	1	8
Messenger/Peon	2	1	1	1	1	1	1	8
Laboratory staff								41
Laboratory Assistant	-	2	2	2	2	2	4	14
Workshop Staff/ Computer operator/ Driver/Technicians	3	3	3	6	3	3	6	27
Total	16	14	14	17	14	14	26	115

Note: Additional Common Staff for Security, Medical, Library, Hostel, Canteen, Common room for girls, Cleaning and General Maintenance.

7. **Land Requirement:** 20 ha

8. Floor Space Requirement

a) Offices

Sl.No.	Office	Number	Dimensions (ft)
1.	Dean/Principal	1	20 × 30
2.	Head of Department	6 (one for each department)	15 × 20 each
3.	Admin. Staff	8 (2 for Dean office and one each for 6 departments)	10 × 15 each
4.	Faculty rooms/chambers	45	10 × 12 each

b) Laboratories

Sl.No.	Department	Number	Dimensions (ft)
1.	SWCE	1+1 Field Lab	20 × 30 + 1 Acre
2.	IDE	1+1 Field Lab	20 × 30 + 1 Acre
3.	FMPE	2	20 × 30 each
4.	PFE	3	20 × 30 each
5.	REE	2	20 × 30 each
6.	BE & AS	8 (1 Physics, 1 Chemistry, 2 Civil, 2 Mechanical, 1 Computer, 1 Electrical & Electronics)	20 × 30 each
		1 Drawing hall	40 × 30
		1 Workshop	60 × 30

9. College Building Requirement (Infrastructure)

Sl.No.	Description	Number	Remarks
1.	Class rooms	8	Seating capacity of 60
2.	Examination Hall	1	Seating capacity of 200
3.	Auditorium	1	Seating capacity of 500
4.	Hostels	2	1 for Boys (100 residents) 1 for Girls (100 residents)
5.	Sports complex	1	Outdoor
		1	Indoor
		1	Gymnasium
6.	Guest house	1	10 rooms
7.	Dispensary	1	
8.	Library	1	
9.	Canteen	1	
10.	Toilets	1 set (1 for Ladies and 1 for Gents)	Every wing of each floor should have 1 set
11.	Parking space	As per requirement	For college and hostels

10. Department wise Laboratories

Sl.No.	Department	Name of the laboratory
1.	Soil & Water Conservation Engineering	<ul style="list-style-type: none"> • Soil and Water Conservation Lab • Field Lab
2.	Irrigation and Drainage Engineering	<ul style="list-style-type: none"> • Irrigation and Drainage Lab • Field Lab
3.	Farm Machinery and Power Engineering	<ul style="list-style-type: none"> • Tractor and Power Lab • Farm Equipment Lab • Field Lab
4.	Processing and Food Engineering	<ul style="list-style-type: none"> • Process Engineering Lab • Food Engineering Lab • Agricultural Structures and Environmental Control Lab
5.	Renewable Energy Engineering	Renewable Energy Lab
6.	Basic Engineering and Applied Sciences	<ul style="list-style-type: none"> • Physics Lab • Chemistry Lab • Civil Engineering Lab (Surveying, Strength of Material, Soil Mechanics) • Mechanical Engineering Lab (Engineering Drawing, CAD/CAM, Refrigeration & Air conditioning, Heat Engines, Fluid Mechanics) • Workshop (Carpentry, welding, Foundry, Machining, Fitting, Sheet metal) • Computer Lab • Electrical Engineering Lab • Electronics Lab

11. Department wise List of Laboratory Equipment

a) Department of Soil and Water Conservation Engineering Lab

Sl.No.	Name of Equipment	Quantity
Soil & Water Conservation Lab		
1.	Rain Gauges	2
2.	50 kg capacity weighing balance	1
3.	1 kg capacity electronic balance	1
4.	Models of Soil Water Conservation Structures (Drop Spillway, Chute Spillway and Drop Inlet Spillway)	1 each
5.	Stage Recorder	1
6.	Coshocton wheel runoff sampler	1
7.	Multi slot runoff sampler	1
8.	H flume, Hydraulic Flume and Parshall Flume	1 each

Field Lab

1.	Runoff plots	-
2.	Runoff harvesting structures	-
3.	Bunds/terraces	-

b) Department of Irrigation and Drainage Engineering Lab

Sl.No.	Name of Equipment	Quantity
1.	Oven	1
2.	Tensiometer	5
3.	Electrical Conductivity Meter	2
4.	Distillation apparatus	1
5.	Double Ring Infiltrometer	
6.	pH Meter	
7.	Water Quality Testing Kit	2
8.	Moisture Boxes	2
9.	Augers	2
10.	Current meter	50
11.	Darcy Apparatus	4
12.	Porous cup & Measuring Flask	1
13.	Sieve shaker	1
14.	Filters & Strainers	5
15.	Cut section of centrifugal pump, submersible pump and Turbine pump	1
16.	Positive displacement pump (Hand Pump)	5
17.	Water level Indicator	1 each
18.	Tachometer	1
19.	Pump Testing Rig	2

Field Lab

1.	Diesel Engine with Centrifugal Pump	1
2.	Sprinkler Irrigation System (for one acre area)	1
3.	Drip Irrigation System (for One acre area)	1
4.	Submersible Pump	1
5.	Weather Station	1
6.	Irrigation Water Measuring Devices (V-Notch, Parshall Flume, H-Flume, Orifice Plate)	1 each
7.	Hydraulic Ram	1
8.	Underground Pipeline system	1

c) Department of Farm Machinery and Power Engineering Lab

Sl.No.	Name of Equipment	Quantity
Tractor and Power lab		
1.	Tractor – 45 hp	1
2.	Power Tiller	1
3.	Work bench	1
4.	Grinder	1
5.	Air compressor	1
6.	Mechanical jacks	2
7.	Tool kits with box (having tools : Ellen key set, Open end spanner set, Pliers, Nose pliers, Circlip pliers)	3 sets
8.	Welding machine	1
9.	<ul style="list-style-type: none"> • Feeler gauges • Piston ring expander • Piston ring compressor • Plastic mallet • Weighing balances (mechanical and digital) • Oil pans • Grease gun • Bearing puller • Nozzle compression tester • Cylinder pressure gauge • Battery charger • Anvil 	1 each
10.	Cut sections of: <ul style="list-style-type: none"> • Tractor • Single cylinder engine • Multi cylinder engine • Air cleaner • Gear box • Differential • Battery • Fuel injection pump 	1 each
11.	Models of: <ul style="list-style-type: none"> • Electrical system • Lubrication system • Cooling system • Tractor hydraulic system 	1 each
12.	Engine for dismantling	1
13.	Display boards: <ul style="list-style-type: none"> • Fuel feed pumps 	1 each

Table Contd.

Table Concluded

Sl.No.	Name of Equipment	Quantity
	<ul style="list-style-type: none"> • Oil pumps • Types of pistons • Fuel injection pumps 	
14.	Models of <ul style="list-style-type: none"> • Mould board • Standard disc plough • One way plough • Different types of disc harrows • Different types of agricultural discs • Furrow openers • Seed metering mechanism • Seed drill calibration set-up • Cutter bar cut section • Tangential flow thresher • Axial flow thresher • Knap sack sprayer • Sprayer nozzles • Set of manually operated sprayer and dusters 	1 each
15.	Hot air oven	1
16.	Mechanical sieve shaker	1
17.	Cone penetrometer	1
18.	Load cells- various capacities	4
Farm Machinery Lab and Field Lab		
1.	Mould board plough	1
2.	Sub soiler	1
3.	Rotary tiller	1
4.	Cultivator	1
5.	Seed-cum fertilizer drill	1
6.	Inclined plate planter	1
7.	Potato planter	1
8.	Sugarcane cutter planter	1
9.	Vertical conveying reaper	1
10.	Wheat thresher	1
11.	Paddy thresher	1
12.	Multi crop thresher	1
13.	Potato digger	1
14.	Laser leveler	1
15.	Hand tools including Khurpis, Sickles, spades, Scythe	As per need
16.	Set of animal drawn implements : disc harrow and cultivator	1 each

d) Department of Processing and Food Engineering Lab

Sl.No.	Name of Equipment	Quantity
Food Engineering Laboratory		
1.	Weighing Balance	3
2.	Texture analyzer	1
3.	Apparatus for angle of repose, coefficient of friction measurement, anemometer, nitrogen analyzer	1
4.	Apparatus for measurement of properties of milk and milk products	1
5.	Bod incubator, ,	1
6.	Seed germinator,	1
7.	Autoclave	1
8.	Mini Oil Expeller	1
9.	Refrigeration and freezing tutor	1
10.	Fruit penetrometer	1
11.	Plate heat exchanger	1
12.	Soxhlet apparatus,	1
13.	Boiler	1
Process Engineering Laboratory		
1.	Moisture meter	3
2.	Hammer Mill	1
3.	Bur Mill (Vertical & Horizontal Plate Type)	1
4.	Aspirator Column	1
5.	Vibratory Screen Cleaner With Aspirator	1
6.	V – Mixer	1
7.	Tyler Sieve Set	3
8.	Manual sieve set	2
9.	Ro – Tap Shaking Machine	2
10.	Indented cylinder grader	1
11.	Pneumatic Grader	1
12.	Illuminated Purity Table	1
Agricultural Structures & Environmental Control Laboratory		
1.	Weighing Balance	2
2.	Digital Thermo-hygrometer with data logger	1
3.	Wet & Dry bulb Thermometer	1
4.	Anemometer	1
5.	Luxmeter	1
6.	Solar power meter	1
7.	Muffle Furnace	1
8.	Hot air Oven	1
9.	Thermal conductivity apparatus	1

e) Department of Renewable Energy Engineering Lab

Sl.No.	Name of Equipment	Quantity
Biomass Energy Lab		
1.	Hot air oven	1
2.	Muffle Furnace	1
3.	pH meter	1
4.	Bacteriological Incubator	1
5.	Autoclave	1
6.	Atomic Absorption Spectrophotometer	1
7.	High Performance Liquid Chromatograph	1
8.	Portable Gas Analyser	1
9.	Glassware and chemicals	1
10.	Models and cut-section of Fixed Dome and floating drum Type Biogas Plants	1
11.	Biomass Gasifier Model	1
12.	Thermo Gravimetric Analyser	1
13.	Bomb Calorimeter	1
14.	Biomass Pyrolyser	1
15.	Moisture analyser	1
16.	Fuel Cell Model and Testing kit	1
17.	MHD Model	1
18.	Biogas Engine Generator set and Testing Rig	1
19.	Bio-diesel based engine Testing Rig	1
20.	Improved Cook stoves Model and Testing set up	1
Solar and Wind Energy Lab		
1.	Solar Cooker - Box Type and Concentrating type	1
2.	Solar Water Heating System 100-125 lpd - Flat Plate Collector and Evacuated Tube Collector Type	1
3.	Natural Convection Solar Dryer - 5 kg capacity	1
4.	Solar Photovoltaic panel	1
5.	Solar PV Testing kit	1
6.	Atomic Absorption Spectrophotometer	1
7.	High Performance Liquid Chromatograph	1
8.	Gas Analyser	1
9.	Glassware and chemicals	1
10.	Solar Data Logger	1
11.	Solar Radiations Measurement Equipments	1
12.	Solar Thermal Testing kit	1
13.	Solar Pump Demonstration Unit	1
14.	Wind Turbine model	1
15.	Cut model of Aero-generator	1
16.	Wind Mapping Software	1
17.	Automatic Weather Station	1

f) Department of Basic Engineering and Applied Sciences Labs

Sl.No.	Name of Equipment	Quantity
Civil Engineering		
Material Testing Lab		
1.	Universal Testing Machine	1
2.	Deflection of Beam Apparatus	1
3.	Torsion Testing Machine	1
4.	Drop Hammer testing apparatus	1
5.	Charpy's Test Apparatus	1
6.	Curing Tank (Temperature controlled)	1
7.	Cement Testing Moulds (70.5mm×70.5mm×70.5mm)	1
8.	Cube Moulds (150 mm×150mm×150mm)	1
9.	Concrete Mixer	1
10.	Vibrating Table	1
11.	Cement storing drums	2
12.	Weighing Balance (5 kg.)	1
13.	Weighing Balance (200 kg.)	1
Soil Mechanics Lab		
1.	Pycnometer	5
2.	Core Cutter Apparatus	5
3.	Sand Replacement Apparatus	5
4.	Sieve Set	2
5.	Liquid Limit Apparatus (Cassagrande)	5
6.	Compaction Test Apparatus	5
7.	Direct Shear Test Apparatus (2' × 2')	1
8.	Unconfined Compression Test	1
9.	Constant Head Permeability Apparatus	1
10.	Variable Head Permeability Apparatus	1
11.	Mercury	200 ml
12.	Weighing Balance (100 g)	1
13.	Sieve shaker	1
14.	Oven	1
15.	Sample Containers for moisture content	25
16.	Auger	2
17.	Hammer	2
18.	Split spoon sampler	2
19.	Desiccators	1
20.	Straight edge	4
21.	Trowel	2
22.	Sieve Brush	2
23.	Hydrometer	2

Table Contd.

Table Concluded

Sl.No.	Name of Equipment	Quantity
24.	Measuring Cylinders (1000 ml)	4
25.	Thermometer	2
26.	Shrinkage limit Test Kit	4
27.	Sample Box	25

Survey Lab

1.	Chain (30 m)	5
2.	Metallic Tape (30 m)	7
3.	Arrow	100
4.	Cross-staff	5
5.	Wooden Pegs	100
6.	Wooden Mallet	5
7.	Ranging Rods	50
8.	Offset Rod	10
9.	Surveyor's Compass with stand	5
10.	Prismatic Compass with stand	5
11.	Plane table with accessories	5
12.	Theodolite with stand	5
13.	Total survey station	2
14.	Planimeter	5
15.	Dumpy Level with stand	5
16.	Levelling Staff	10
17.	Abney Level	2
18.	Hand Level	2
19.	Ceylon Ghat Tracer	2
20.	Plumb Bob	5

g) Mechanical Engineering

Sl.No.	Name of Equipment	Quantity
--------	-------------------	----------

Fluid Mechanics Lab

1.	Venturimeter and an orifice meter setup	1
2.	Bernoulli's Theorem Apparatus	1
3.	Different vanes for measuring impact of water jet	1
4.	Mouthpiece to determine the coefficient of discharge	1
5.	Triangular and rectangular notches arrangement	1
6.	Meta-centric height Apparatus	1
7.	Pipes friction apparatus	1
8.	Current meter	1

Workshops

1.	Wood Working Machine	1
----	----------------------	---

Table Contd.

Table Contd.

Sl.No.	Name of Equipment	Quantity
2.	Bend Saw (Small)	1
3.	Wood Working Lathe	2
4.	Wood Working Bench	5
5.	Black Smith Hearth	3
6.	Power Hammer	1
7.	Work bench	4
8.	Fitter's Table	4
9.	Surface Plate	2
10.	Power Hacksaw	1
11.	Bench Grinder	1
12.	Arc Welding Machines	3
13.	Gas Welding Equipment	1
14.	Resistance Welding Machine	1
15.	Work Table	5
16.	Shear (Manually Operated)	1
17.	Bench Grinder	1
18.	Cupola (Small Size)	1
19.	Crucibles	2
20.	Lathe	2
21.	Shaper	1
22.	Universal Milling Machine	1
23.	Bench Drilling Machine	1
24.	Radial Drilling Machine	1
25.	Bench Grinder	1
26.	Work Bench	1
27.	Surface Plate	1
28.	Power Hacksaw	1
Refrigeration and Air Conditioning Lab		
1.	Set up for determination of the coefficient of performance of vapour compression refrigeration system	1
2.	Set up for determination of the coefficient of performance of vapour absorption (electrolux) refrigeration system	1
3.	Set up for determination of humidifying efficiency	1
4.	Set up for determination of dehumidifying efficiency	1
5.	Set up for determination of the coefficient of performance of a domestic refrigerator	1
6.	Set up for determination of the coefficient of performance of air conditioning system	1
Theory of Machine & Machine Design Lab		
1.	Epicyclic Gear Train	1

Table Contd.

Table Contd.

Sl.No.	Name of Equipment	Quantity
2.	Clutch Models 1) Single Plate Clutch 2) Multi Plate Clutch 3) Cone Clutch	1 each
3.	Models of Knuckle Joint Assembly, Cotter Joint Assembly, Muff Coupling, Flange Coupling, Leaf Spring, Oldham coupling	1 each
4.	Centrifugal and inertia governors working models	1
5.	Model of different types of mechanisms	1 each
6.	Model of different types of key sets	1 each
7.	Different type of gears, pulleys, sprockets, chains, ropes , springs etc	1 each

h) Computer Science and Electrical Engineering

Sl.No.	Name of Equipment	Quantity
Computer Lab		
1.	Computers	15
2.	MFP-Printer	1
3.	Networking equipment – (Like router, LAN card for each computer)	1
4.	Uninterrupted power supplies	15
5.	Integrated projection system	1
CAD Lab		
1.	Computers	16
2.	Server	1
3.	2-D software(AutoCAD)	1
4.	3-D software (Catia/Solid works/Unigraphics/Delcam/ etc)	1
5.	CAM software (Master CAM/Delcam/etc.)	1

i) Electrical and Electronics Engineering Lab

Sl.No.	Name of Equipment	Quantity
1.	Bread Board	10
2.	D.C. Power supply	6
3.	Multi-meters	10
4.	Cathode ray oscilloscopes (Dual Channel)	5
5.	Passive components (Resistors, Inductors, Capacitors)	20 each
6.	Small signal active components	10 each
7.	Various transducers	10 each
8.	Single Phase transformers	Four
9.	DC series motor	One

Table Contd.

Table Concluded

Sl.No.	Name of Equipment	Quantity
10.	Energy meter	2
11.	Resistive load box	2
12.	Micro processor kits – 8085	10
13.	Micro controller kits 8051, 89c52	4
14.	DAC AND ADC	4 each
15.	DC series Generator (with DC drive)	1
16.	DC shunt motor	1
17.	Three phase Induction motor (complete set)	1
18.	Single Phase induction motor	1
19.	Slip Ring Induction motor (Three phase)	1
20.	Tachometer	5
21.	Digital multi-meters	5
22.	Digital Power factor meter	2
23.	Wattmeters of various ratings (5A, 10A, 20A, 40A)	2 each
24.	Ammeter (Analog type) (0-10A)	5
25.	Voltmeter (Analog type) (0-300V)	5
26.	Rheostats of various ratings (2.5A, 5A,10A)	2 each
27.	Variac single phase or Dimmer Set (0-250V)	2
28.	Three phase Dimmer Set	2

j) Physics & Chemistry Labs

Sl.No.	Name of Equipment	Quantity
Physics Lab		
1.	Photocell kit	1
2.	Energy Band Gap kit using PN Junction diode	1
3.	Hysteresis curve (BH curve) set-up including CRO	1
4.	Induced emf study (with simple harmonic motion of magnet fitted on semi-circular arc) as a function of velocity	1
5.	Specific charge (e/m) set-up by Helical method	1
6.	Desauty Bridge set-up including oscillator, diode etc	1
7.	Carey Foster Bridge set-up including resistance boxes, resistance coils, galvanometer, jockey, connecting wires etc.	1
8.	Electrical vibrator apparatus including weight box, pulley etc	1
9.	Magnetometer (Stewart & Gee Tangent galvanometer) set-up with battery, reversing key, rheostat etc.	1
10.	Probe kit	4

Table Contd.

Table Concluded

Sl.No.	Name of Equipment	Quantity
Chemistry Lab		
1.	Viscometer	1
2.	Stalagometer	1
3.	Refractometer	1
4.	Spectrophotometer	1
5.	Polarimeter	1
6.	FT-IR Spectrometer	1
7.	Fuel properties measuring apparatus : bomb calorimeter, gas calorimeter, flash and fire point apparatus, cloud point apparatus, etc	1 each



BIOTECHNOLOGY

1. Degree Nomenclature: B. Tech. (Biotechnology)

The UG degree will have four areas of choice for elective viz. Plant Biotechnology, Animal Biotechnology, Microbial & Environmental Biotechnology, and Bioinformatics.

2. Eligibility Criteria: Intermediate / 10+2 with PCM/PCMB/PCB/Inter (P, C, M and B are Physics, Chemistry, Mathematics and Biology, respectively) from a recognized Board/ University.

3. Medium of Instruction: English

4. Minimum Intake: 50 students per year

**Maximum number of students in any practical group: 25*

5. Divisions/Departments /Section: Three Divisions and One Section

- 1) Division of Plant Biotechnology (PB)
- 2) Division of Animal Biotechnology (AB)
- 3) Division of Microbial and Environmental Biotechnology (MEB)
- 4) Bioinformatics Section

6. Faculty Requirements for Divisions/Section

Division/Section	Faculty			Total
	Professor	Associate Professor	Assistant Professor	
Division of Plant Biotechnology	1	2	6	9
Division of Animal Biotechnology	1	2	6	9
Division of Microbial and Environmental Biotechnology	1	2	6	9
Bioinformatics Section	1	2	4	7
Total	4	8	22	34

Note: Services of the existing faculty will be utilised for teaching the supporting courses

7. Administrative and Supporting Staff for Divisions/Section

Division/Section	Steno/PA/ Computer Operator	Assistant	Attendant/ Messenger	Clerk	Laboratory Assistant/Attendant	Field Staff
Plant Biotechnology	2	1	2	1	6	3
Animal Biotechnology	2	1	2	1	6	3
Microbial and Environmental Biotechnology	2	1	2	1	6	3
Bioinformatics Section	5	1	2	1	1	-
Total	11	4	8	4	19	9

Note: Security services to be outsourced

8. Faculty Expertise

Division/Section	Faculty Expertise	
	Core	Associated
Plant Biotechnology	Plant Molecular Biology, Tissue culture and Genetic Transformation, Genetics, Microbiology, Plant Biochemistry	Plant Breeding, Plant Protection, Plant Physiology, Agronomy, Horticulture, Forestry
Animal Biotechnology	Cell Culture and Genetic Transformation, Molecular Biology, Animal Genetics, Animal Biochemistry, Animal Microbiology, Immunology	Animal Breeding, Animal Physiology, Live Stock Production and Management
Microbial and Environmental Biotechnology	Microbiology, Microbial Genetics, Microbial Engineering, Biochemistry	Plant Physiology, Water and Soil Sciences, Analytical Chemistry, Agrometeorology, Food Science and Technology
Bioinformatics Section	Bioinformatics, Information Technology	Plant and Animal Biotechnology, Statistics/ Biostatistics

9. Central/Division/Section Laboratories (as per requirements of the teaching and research work of the college)

Division/Section	Laboratory
Central Research and Teaching Laboratories	- DNA sequencing, SNP Genotyping and Proteomics Laboratory - High Performance Computing Facility - Cold Rooms: -20°C, 4°C - Liquid Nitrogen Plant - Computer Lab
Plant Biotechnology	- Plant Genomics Laboratory - Functional Genomics Laboratory - Genetic Transformation Laboratory - Molecular Breeding Laboratory - Proteomics and Metabolomics Laboratory
Animal Biotechnology	- Animal Genomics Laboratory - Functional Genomics Laboratory - Arthropod Molecular Biology Laboratory - Animal Cell culture Laboratory - Immunology Laboratory
Microbial and Environmental Biotechnology	- Microbial Genetics and Genomics Laboratory - Environmental and Soil Microbiotechnology Laboratory - Bioremediation Laboratory
Bioinformatics Section	- Sequence Analysis Laboratory - Computational Biology Laboratory

10. Manpower Requirements of Dean s Office

Manpower	Number
Dean	1
A. Establishment	
PA to Dean	1
Administrative Officer	1
Superintendent	1
Steno/Computer operator	4
Assistant	2
Operator (Audio Visual)	1
Attendants/Messengers	4
Clerk (LDC)	4
Electrician	1
Store Keeper	1
Driver	6
Security, Sanitation and Landscaping	To be outsourced
B. Central Research and Teaching Laboratories (Four Laboratories)	
Assistant Professor (Genomics)	1
Assistant Professor (Computer Engineering)	1
Computer Assistant	1
Laboratory Technicians	2
Laboratory Assistant	1
Laboratory Attendant	3
C. Library Staff	
Assistant Librarian	1
Library Assistant	1
Clerk	1
Shelf Assistant	2
D. Students Welfare	
To be provided by the Institute as the Central Facility	
E. Hostel Staff for two Hostels	
Wardens	1+1
Assistant Wardens	1+1
Clerk (LDC)	2
Attendants	8
Security, Sanitation and Landscaping	To be outsourced

11. Land Requirements

Main building and hostels:	4 ha
Field area:	10 ha
Play grounds: from common facility of the institute	
Total:	14 ha

12. Floor Space Requirement

A) Central Facilities

Sl.No.	Details	Number of Rooms	Dimensions (ft)
1.	Dean office	1	20 × 24
2.	PA room	1	20 × 12
3.	Committee room with video conferencing facility	1	20 × 48
4.	Administrative officer room	1	20 × 12
5.	Admin. staff rooms	3	20 × 36 each
6.	Examination cell	1	20 × 12
7.	Evaluation room	1	20 × 36
8.	Faculty room	1	20 × 12 each
9.	Placement cell	1	20 × 48
10.	Smart Lecture rooms	5	Seating capacity - 70
11.	Auditorium (optional)	1	Seating capacity - 300
12.	Library/Book bank	1	30 × 72
13.	Examination hall (optional)	1	Seating capacity - 300
14.	Multipurpose room	1	20 × 36
15.	Laboratories	4	30 × 48 each
16.	Hostels	2	One each for Boys & Girls
17.	Generator shed	1	20 × 36
18.	Liquid Nitrogen plant	1	20 × 24
19.	Toxic chemical waste storage/disposal Unit	1	20 × 24
20.	Canteen	1	20 × 12 (Kitchen) and 20 × 36 (Seating)
21.	Toilets	-	2 sets for each floor
22.	Parking space		As per requirement (APR) For college and hostels
23.	Vehicles:		
	Office car	1	
	Staff car/Jeep	3	
	Bus	1	
	Pick-up van	1	

B) Division/Section

Sl.No.	Detail	Number of rooms	Dimensions (ft)
1.	Office of Head of the Division	3 (one for each Division)	20 × 24 each
2.	Administrative Staff	4 (one for each Division)	20 × 36 each
3.	Faculty room	21 (as per faculty strength)	20 × 24 (3 rooms) 20 × 12 (18 rooms)
4.	Rooms for Research Scholars	4 (one for each Division)	20 × 24 each
5.	Committee room cum library	4 (one for each Division)	20 × 36 each
6.	Smart Lecture cum seminar room	4 (one for each Division)	Seating capacity - 50 each

Table Contd.

Table Concluded

Sl.No.	Detail	Number of rooms	Dimensions (ft)
7.	Laboratories (no. of laboratories as per requirement and include UG and PG teaching laboratories)		
	Plant Biotechnology	5	20 × 60 (one); 20 × 36 (four)
	Animal Biotechnology	5	20 × 60 (one); 20 × 36 (four)
	Microbial and Environmental Biotechnology	4	20 × 60 (one); 20 × 36 (three)
	Bioinformatics Section	2	20 × 48 each
8.	Screen houses, glass houses, transgenic green house		APR

13. Equipment Required

(A) Central Teaching and Research Laboratories

Sl.No.	Name of the Equipment	Number
1.	Sequencer - ABI 3730xl	1
2.	Illumina Sequencing Platform	1
3.	Cold room -20°C	1
4.	Cold room 4°C	1
4.	SNP Genotyping Platform	1
5.	HPTLC	1
6	High Performance Computing Grid	1
7.	Liquid Nitrogen Plant	1
8.	Inductively Coupled Plasma (ICP-OES)Central laboratory	1
9.	High Speed Centrifuge	4
10.	Water Purification Unit	As per requirement

(B) Equipment in the Divisional Laboratories (additional specialized equipment may be required depending on the mandate of the institute)

Sl.No.	Name of the Equipment	Number of units Divisions	Total number	Divisions [#]
1.	-20°C Freezer	2×3	6	PB, AB, MEB
2.	-80°C Freezer	1×3	3	PB, AB, MEB
3.	Autoclaves	2×3	6	PB, AB, MEB
4.	Automated Capillary Electrophoresis System	1×3	3	PB, AB, MEB
5.	Auto pipetting System	1×2	2	PB, AB
6.	Biolistic Particle Gun	1×1	1	PB, AB
7.	Bio photometer	1×3	3	PB, AB, MEB
8.	Biosafety Cabinet	4×3	12	PB, AB, MEB
9.	Centrifuge	8×3	24	PB, AB, MEB
10.	Cryo-cans	5×3	15	PB, AB, MEB
11.	Dry Baths	APR	-	PB, AB, MEB
12.	Electrophoresis Systems and Power Packs	10×3	30	PB, AB, MEB
13.	Electroporator	1×3	3	PB, AB, MEB

Table Contd.

Table Concluded

Sl.No.	Name of the Equipment	Number of units Divisions	Total number	Divisions#
14.	Environmental Chamber	1×3	3	PB, MEB
15.	Fermenter	2×1	2	MEB
16.	Fluorescent Microscope	1×2	2	PB, AB
17.	Gel Documentation System	2×3	6	PB, AB, MEB
18.	Gel Dryers	1×3	3	PB, AB, MEB
19.	Growth Rooms	2×1	2	PB
20.	Hot Plates, Magnetic stirrers, Vortex etc.	APR	-	PB, AB, MEB
21.	Hybridization Ovens	1×2	2	PB, AB
22.	Ice Making Machines	1×3	3	PB, AB, MEB
23.	Incubator Shakers	4×3	12	PB, AB, MEB
24.	Incubator	APR	-	PB, AB, MEB
25.	Laminar Flow	3×3	9	PB, AB, MEB
26.	Lypholyser	1×3	3	PB, AB, MEB
27.	Microcentrifuge	10×3	30	PB, AB, MEB
28.	Microplate Washer	1×2	2	PB, AB
29.	Microscope	1×3	3	PB, AB, MEB
30.	Microscopes (for teaching)	10×2	20	PB, AB
31.	Microplate Readers	1×2	2	PB, AB
32.	Microwave Digestion Oven	1×1	1	MEB
33.	Multiflow Dispenser	2×3	6	PB, AB, MEB
34.	Nanodrop for DNA Quantification	1×3	3	PB, AB, MEB
35.	Precision Ovens	APR	-	PB, AB, MEB
36.	Plant Imager	1×2	2	PB, MEB
37.	Plate Centrifuges	2×3	6	PB, AB, MEB
38.	Real Time PCR	2×3	6	PB, AB, MEB
39.	Refrigerator 4°C	4×3	12	PB, AB, MEB
40.	Semi Dry Blotter	1×3	3	PB, AB, MEB
41.	Shakers (Table Top)	3×3	9	PB, AB, MEB
42.	Spectrophotometer	1×3	3	PB, AB, MEB
43.	Thermocycler	10×3	30	PB, AB, MEB
44.	Thermomixer	4×3	12	PB, AB, MEB
45.	Tissue lyser	2×3	6	PB, AB, MEB
46.	Ultracentrifuge	1×3	3	PB, AB, MEB
47.	Ultrasound Sonicator	2×3	6	PB, AB, MEB
48.	UV Transilluminator	2×3	6	PB, AB, MEB
49.	UV Stratalinker	1×2	2	PB, AB
50.	Vacuum Concentrator	1×3	3	PB, AB, MEB
51.	Water Bath - Shaking	2×3	6	PB, AB, MEB
52.	Computers	-	50	PB, AB, MEB
53.	Computer for Bioinformatics Section	40	40	Bioinformatics
54.	Major Softwares-CLC Genomics and other relevant softwares	APR	APR	Bioinformatics
55.	Internet Facility	-	-	Central facility

DAIRY TECHNOLOGY

1. **Degree nomenclature:** B.Tech (Dairy Technology)
2. **Eligibility Criteria:** Intermediate / 10+2 or its equivalent examination with PCM (Physics, Chemistry, Maths) from a recognized Board/ University.
3. **Medium of Instruction:** English
4. **Minimum Intake:** 40 students per year
5. **Divisions/Section:** Five Divisions and One Section
 - 1) Dairy Technology
 - 2) Dairy Engineering
 - 3) Dairy Chemistry
 - 4) Dairy Microbiology
 - 5) Dairy Trade and Dairy Business Management
 - 6) Pilot Dairy Unit cum Business Process Development Centre

6. Faculty Requirements for the Departments

Division/Section	Professor	Assoc. Prof	Asst. Prof.	Total
Dairy Technology	1	2	6	9
Dairy Engineering	1	2	6	9
Dairy Chemistry	1	2	3	6
Dairy Microbiology	1	2	3	6
Dairy Business Management	1	2	2*	5
Total	5	10	20	35

*One each in Dairy Economics and Dairy extension, supporting subjects will be taught by other faculty in the university

7. Faculty Expertise

Division/Section	Faculty	Associated
Dairy Technology	Dairy Processing	Cheese and Fermented Dairy Products
	Food Technology	Traditional Dairy Products Packaging Sensory Science Rheology
Dairy Engineering	Dairy Engineering	Food Process Engineering Thermodynamics Civil Engineering Mechanical Engineering
		Dairy Chemistry
Dairy Microbiology	Dairy Microbiology	Microbial Techniques
Dairy Business Management	Dairy Economics	Business Management
	Dairy Extension	

8. Administrative and Supporting Staff for Divisions/Section

Sl. No	Division/Section	Steno/PA/ Computer Operator (9300-34800+ GP 4200)	Assistant (5200- 20200+ GP 2800)	Attendant/ Messenger (5200-20200+ GP 4200)	Clerk (9300-34800+ GP 4200)	Laboratory Assistant/ Attendant (5200-20200 +GP 2800)
1	Dairy Technology	2	1	2	1	2
2	Dairy Engineering	2	1	2	1	2
3	Dairy Chemistry	2	1	2	1	2
4	Dairy Microbiology	2	1	2	1	2
5	Dairy Business Management	2	1	2	1	2
Total		10	5	10	5	10

9. Manpower Requirements of Dean s Office

Designation	No. of Position
Dean	1
A. Establishment	
PA to Dean	1
Administrative Officer	1
Administrative Comptroller/Assistant Accounts Officer	1
Superintendent	1
Steno/Computer operator	4
Assistant Operator (Audio Visual)	1
Attendants/Messengers	4
Clerk (LDC)	4
Electrician	1
Store Keeper	1
Driver	4
B. Dairy Plant and Business Incubation Centre, Laboratories,	
Manager, Pilot plant/Business Incubation Centre	01
Laboratory Technician for the college	06
Plant Supervisors/ Technical Assistants (Dairy Processing-10, Refrigeration-2, Electrical-2)	14
Plant Operators (Processing-6, Boiler-2 Refrigeration-2)	10
Mechanical Draftsman	01
Jr. Mechanic/wireman	01
Fitter	01
Steno/PA	01
Assistant	01

Table Contd.

Table Concluded

Designation	No. of Position
Computer operator	02
LDC	01
Attendants	02
C. Library	
Assistant Librarian	01
Library Assistants	01
Clerks	01
Shelf Assistants	01
D. Students Welfare	To be provided by the University as Central Facility
E. Hostel Staff for Two Hostels	
Warden	1+1
Hostel Superintendents	2
Clerks	2
Attendants	8
Security, Sanitation and Landscaping	To be outsourced
10. Central/Division/Section Laboratories (as per requirements of the teaching and research work of the college)	
Division/Section	Laboratory
Dairy Technology	Product Development Laboratory Product Characterization and Rheology Packaging Laboratory Sensory Evaluation Laboratory Central Instruments Laboratory Food Technology Laboratory
Dairy Engineering	Bioprocess Engineering Laboratory Fluid Mechanics Laboratory Heat Transfer Laboratory Refrigeration and Air Conditioning Food Engineering Laboratory Thermodynamics Laboratory Electrical Laboratory Instrumentation and Control Laboratory Dairy Engineering Workshop
Dairy Chemistry	Dairy Food Analysis Laboratory
Dairy Microbiology	Dairy Food Quality and Safety Laboratory
Dairy Business Management	Computer Laboratory Audio-Visual Laboratory Language Laboratory

11. Land Requirements

- Main building and hostels: 4 ha
- Field area: 10 ha
- Play grounds: From common facility of the institute
- **Total: 14 ha**

12. Floor Space Requirements

A) Central Facilities

Sl.No.	Details	Number of Rooms	Dimensions (ft)
1.	Dean office	1	20 × 24
2.	PA room	1	20 × 12
3.	Committee room with video conferencing facility	1	20 × 48
4.	Administrative officer room	1	20 × 12
5.	Admin. Staff rooms	3	20 × 36 each
6.	Examination hall	1	20 × 12
7.	Evaluation room	1	20 × 36
8.	Faculty room	1	20 × 12 each
9.	Placement cell	1	20 × 48
10.	Smart Lecture rooms	5	Seating capacity - 50
11.	Auditorium (Optional)	1	Seating capacity-300
12.	Library/Book bank	1	30 × 72
13.	Examination hall (optional)	1	Seating capacity - 300
14.	Multipurpose room	1	20 × 36
15.	Laboratories	4	30 × 48 each
16.	Hostels	2	Boys and Girls
17.	Generator Shed	1	20 × 36
18.	Toxic chemical storage and waste unit	1	20 × 24
19.	Canteen	1	20 × 12 (kitchen) & 20 × 36 (Seating)
20.	Toilets	-	2 sets for each floor
21.	Parking Space	As per requirement	Office and Hostels
22.	Vehicles:		
	Officer car	1	-
	Staff car/Jeep	3	
	Bus	1	
	Pick-up van	1	

B) Division/ Section

Sl.No.	Details	No. of Rooms	Dimensions (ft)
1.	Office of the Head of Division (05)	05 (One for each division)	20 × 24 each
2.	Administrative staff	05 (One for each division)	20 × 36 each

Table Contd.

Table Concluded

Sl.No.	Details	No. of Rooms	Dimensions (ft)
3.	Faculty room	26	20 × 24 (05 rooms) 20 × 12 (21 rooms)
4.	Room for research scholar	04 (one for every Division)	20 × 24 each
5.	Committee room cum library	05 (One for each division)	20 × 36 each
6.	Smart lecture cum seminar room	05 (One for each division)	Seating capacity - 50 Each

C) Laboratories (UG & PG teaching)

Sl.No.	Details	No. of Laboratories	Dimensions (ft)
1.	Dairy Technology	05	20 × 60 (one) 20 × 36 (four)
2.	Dairy Engineering	09	20 × 60 (two) 20 × 36 (seven)
3.	Dairy Chemistry	04	20 × 60 (one) 20 × 36 (three)
4.	Dairy Microbiology	03	20 × 60 (one) 20 × 36 (two)
5.	Dairy Business Management	04	20 × 60 (two) 20 × 36 (two)

D) Dairy Plant and Business Incubation Centre

Details	Dimensions (ft)
Raw Milk receiving Dock, Milk storage tank room, Milk Processing Hall, Cheese Room, Milk Condensing & Drying Plant room, Cheese Drying & Curing room, Milk Cold Store, Ice Cream Hardening Room, Dispatch Dock, Milk Bottling / Pouch Filling Room, Food processing section (Vegetable/cereal/meat processing) Boiler House, Refrigeration & Ice Bank, System room, Store room – Products, Store room, chemicals & accessories, Sales Counter, Office of the Head of the Department, Offices for the Teaching Staff - Assistant professor, Associate Professor, Offices for the Technical Staff – Boiler Attendant, Refrigeration Attendant, Fitter, Office for the Ministerial Staff & Driver, Wash rooms– Staff & Students (both for Male & Female)	200 × 72

13. Equipment required

A) Central Instrument Facility:

Sl.No.	Name	Number
1.	High pressure Liquid Chromatography	01
2.	Atomic absorption spectrophotometer	01
3.	Hunter LAB Colorimeter	01
4.	Instron Texture Analyzer	01
5.	IR Moisture analyser	01
6.	Water activity meter	01

Table Contd.

Table Concluded

Sl.No.	Name	Number
7.	Flame photometer	01
8.	Rheomat	01
9.	Viscoamylograph	01
10.	Bench-top Microfluidizer	01
11.	Rotary evaporator	01
12.	Differential Scanning Calorimeter	01
13.	Refrigerator	01
14.	Deep freezer	01
15.	Kjeltec	01
16.	Fibretec unit	01
17.	Rancimat	01
18.	Millipore water purifier	01
19.	Low temperature bath	01

B) Pilot Plant cum Business Incubation Centre for Dairy and Food Processing

Sl.No.	Name	Number
1.	Milk reception section	01
2.	Liquid milk processing unit	01
3.	Cream processing , butter and ghee Section	01
4.	Powder reconstitution & milk poly pack section	01
5.	Paneer section	01
6.	Curd/Lassi/Chhach Section	01
7.	Ice cream section	01

C) Dairy Trade and Business Management Division:

Sl.No.	Name	Number
1.	Desktop computer with LAN facility and Internet connection	20
2.	Photocopier	03
3.	Laser Printer	06
4.	Colour Laser Printer	01
5.	Softwares: SPSS/Metlab/Design expert	01 each with multiuse license
6.	Indian patent database	01

D) UG/PG Laboratories

Sl.No.	Name	Number
1.	UV-Vis Spectrophotometer	02
2.	Analytical balances	04

Table Contd.

Sl.No.	Name	Number
3.	Electronic balances	04
4.	Muffle furnace	02
5.	Automatic titrator	01
6.	Soxhlet instrument	01
7.	Gerber centrifuge	02
8.	pH meter	04
9.	Autoclave	02
10.	Laminar flow/Biosafety cabinet	02
11.	BOD Incubator	02
12.	Simple microscope	01
13.	Simple oil immersion microscope	01
14.	Hot air oven	04
15.	Hot water batch	04
16.	Serological bath	02
17.	Centrifuge	01
18.	Low temperature centrifuge	01
19.	Pipette washer	02
20.	Rotary shaker	01
21.	Gas supply and burners	01
22.	Standard assembly for titrimetric analysis with indicatorsolutions & buffer tablets; Magnetic stirrer; Cyclomix (vortexmixer)	All items: 02each

E) Packaging Laboratory:

Sl.No.	Name	Number
1.	Weighing balance (Accuracy 0.001 g)	02
2.	Micrometre	04
3.	Mullen Bursting strength tester	01
4.	Mechanical drop tester	01
5.	Compression strength tester	01
6.	Smoothness or porosity tester	01
7.	Cobb tester	01
8.	Elmendorf tear tester	01
9.	Water absorption tester	01
10.	Head space analyser	01
11.	Universal testing machine	01
<i>Barrier testing instruments</i>		
12.	Oxygen	01
13.	Carbon dioxide	01
14.	water vapour transmission tester	01

F) Pilot Plant cum Business Incubation Centre for Dairy and Food Processing

Sl.No.	Name	Number
1.	Milk reception section	01
2.	Liquid milk processing unit	01
3.	Cream processing , butter and ghee Section	01
4.	Powder reconstitution & milk poly pack section	01
5.	Paneer section	01
6.	Curd/Lassi/Chhach Section	01
7.	Ice cream section	01

The total production line to be developed for the Dairy Unit (10,000 LPD) is illustrated in the table below:

Sl.No.	Product to be manufactured	Quantity of Milk
1.	Liquid milk (Different qualities) of milk such as full cream, Standardized milk, Toned milk, doubletoned, milk as per the requirement by PDP	2,500 litres
2.	Paneer/Cheese/Shrikhand/Chhana (Production and Chhaina based sweets packaging)	1000 litres
3.	Curd/Lassi/Chhach/Yoghurt	1000 litres
4.	Ice-cream (1000 litres mix)	1000 litres mix
5.	By-Products:casein,caseinates, whey products, etc.	500 litters (only for practical purpose)
6.	Heat desiccated products (Khoa, Khoa based sweetslike Gulabjamun, Peda, Phirni, Rabri, Kurchan,Kheer, etc.)	500 litres (for practical purpose & also for marketing as per demand)
7.	Fat rich products Butter, Ghee, etc	Regular production from cream obtained from market milk industry

G) Major Common Pilot Plant Equipment:

Sl.No.	Item	Numbers	Capacity
1.	Milk Weighing Scale	1	0-100 kg
2.	Bulk Cooling Tank	1	1000 L
3.	Can Washer	1	5 cans/hr
4.	HTST Plate Heat Exchanger	1	500 L/hr
5.	Batch Pasteurizer	1	500 L
6.	Homogenizer	1	500 L/hr
7.	Milk Storage Tank	2	1000 each
8.	Milk Bottling Plant	1	10 bottle/ min
9.	Butter Churn	1	1kg
10.	Ghee Boiling Vat	1	100 kg
11.	Ice cream Freezer - Batch	1	20 kg/batch

Table Contd.

Table Contd.

Sl.No.	Item	Numbers	Capacity
12	Cheese Vat	3	200 L each
13	Cheese Cutting Frame	3	1×3ft size
14	Cheese Press	1	6 block
15	Milk Condensing Unit	1	40 kg water evaporation/hr
16	Spray Drying Unit	1	5-10 kg water evaporation/hr
17	Refrigeration Plant	1	10 ton
18	Portable Weighing Scale	2	5 kg
19	Curd Mill	1	-
20	Cheese Hoop	6	20 kg size
21	Milk Cans	50	40 kg each
22	Autoclave	1	-
23	Ice Water Plant	1	5 ton
24	Cheese Block Cutter	1	-
25	Sieve for Shrikhand	2	-
26	Planetary Mixer	1	10 kg
27	Hand Bottle Filler	1	-
28	Can Scrubber Tank	1	-
29	Pouch Filling Machine	1	100 pouch/hr
30	Cream Separator	1	500 L/hr
31	Butter Trolley	1	50 kg
32	Wet Casein Grinder	1	5 kg
33	Casein Shredder	1	5 kg
34	Casein Dryer	1	5kg /batch
35	Bottle Sterilizer	1	40 bottles/batch
36	Khoa Kettle	1	10 kg/batch
37	Colloidal Mill	1	1 kg/min
38	Crown Capping Machine	1	Manual
39	Sugar Grinder	1	5 kg
40	Tin Seamer	1	Manual
41	UF Cum RO Unit	1	50 kg/hr
42	Crates For Milk Bottles	100	10 kg each
43	Deep Freezer	4	-
44	Gerber Centrifuge	2	24 tubes
45	BOD Incubator	2	-
46	Hot Air Oven	2	-
47	Hot Plate	1	-
48	Magnetic Stirrer	1	-
49	Colony Counter	1	-

Table Contd.

Table Concluded

Sl.No.	Item	Numbers	Capacity
50	Weight Box	1 set	100 gm
51	Paraffin Bath	1	50kg
52	Vacuum Packaging Machine	1	5kg/batch
53	Milk Analyser	1	-
54	Ice Cream Freezer - Continuous Type	1	50 L/hr
55	Cooling Unit For Cheese Curing Room	1	2 tonnes
56	Candy Making Machine	1	50 candy/batch
57	Candy Moulds	10	24×100 ml
58	Vacuum Tray Dryer	1	-
59	Extruder	1	-
60	Ice Cream Cup Filling Machine	1	100 cups/hr
61	UHT Milk Sterilization Unit with Aseptic Packaging	1	100 L/hr
62	Tray sealing machine	1	-
63	Colloid Mill	1	-
64	Hammer mill	1	-
65	Planetary mixer	1	-
66	Pin mill	1	-
67	Homogenizer	1	-
68	Steam Jacketed Kettle	3	-
69	Refrigeration System For Ice Cream Hardening Room	1	2 tonnes
70	Processed Cheese Kettle	1	5kg
71	Steam Boiler	2	500-1000 kg steam/hr
72	Diesel power generator	1	125 KWA
73	Effluent Treatment Plant	1	-

H) Equipment for Fruit and Vegetable Processing

Sl.No.	Name	Number
1.	Fruit pulper	01
2.	Screw juice extractor	01
3.	Bottle filling machine	01
4.	Mechanical peeler	01
5.	Peeling knives	Complete set
6.	Slicing knives	Complete set
7.	Mechanical slicer	01
8.	Basket press	01
9.	Plunger press	01
10.	Autoclave	01
11.	Can sealer	01

I) Equipment for Processing of Cereals, Pulses and Oilseeds:

Sl.No.	Name	Number
1.	Dehuller	01
2.	Screw expeller	01
3.	Paddy sheller	01
4.	Corn degermer	01
5.	Popping unit	01
6.	Flaking roller	01
7.	Mini flour mill	01
8.	Pasta making machine	01
9.	Deep fat fryer	01

J) Equipment for Bakery and Confectionary Products:

Sl.No.	Name	Number
1.	Moulding unit	01
2.	Baking oven	01
3.	Sugar grinder	01
4.	Biscuit baking unit	01
5.	Proofing unit	01
6.	Slicing unit	01
7.	Chocolate moulder	01

K) Equipment for Meat and Fish processing (Optional):

Sl.No.	Name	Number
1.	Bowl chopper	01
2.	Meat mincer	01
3.	Sausage filler	01
4.	Ice flaking machine	01
5.	Chopping table	01
6.	Combo microwave	01
7.	Tumblers	01
8.	Molds for hams	01
9.	Heating kettle	01

L) Equipment for Dairy Engineering Division:

Sl.No.	Name	Number
1.	Orifice and Mouthpiece apparatus	02

Table Contd.

Table Contd.

Sl.No.	Name	Number
2.	Pipe friction apparatus	01
3.	Minor head loss apparatus	01
4.	Flow through channel apparatus	01
5.	Computerized centrifugal pump test rig	01
6.	Rotameter	02
7.	Water flow meters	02
8.	Reynolds apparatus	01
9.	Bernoulli's apparatus	01
10.	Various types of pipe fittings and valves	02 set
11.	Self priming pump	02
12.	Monoblock pump set	02
13.	Submersible pump	01
14.	Powder conductivity meter	01
15.	Computerized counter and parallel flow apparatus	01
16.	Plate Heat Exchanger	01
17.	Steam Jacketed kettle	01
18.	Stefan Boltzmann Apparatus	01
19.	Jacketed vats	02
20.	Heat Transfer through composite wall	01
21.	Heat Transfer through Natural Convection	01
22.	Critical Heat Flux Apparatus	01
23.	Heat Transfer through lagged pipe	01
24.	Digital temperature indicators with probes	05 set
25.	Multi-channel temperature indicator	02
26.	Solar water heating system	01
27.	Computerized refrigeration tutor	01
28.	Computerized air conditioning tutor	01
29.	Water cooler	01
30.	Window AC	02
31.	Split AC	02
32.	Refrigerator	01
33.	Models of sealed and open type compressor	01 set
34.	Refrigeration plant controls such as thermostat, pressure switches, solenoid valves, expansion valves	01 set
35.	Dessert cooler	02
36.	Dehumidifier	01
37.	Food Processor	01
38.	Texture Analyzer	01
39.	Laboratory scale freeze dryer	01

Table Contd.

Table Contd.

Sl.No.	Name	Number
40.	Try dryer	01
41.	Texturometer	01
42.	Juice extractors	01
43.	Extruders	01
44.	Sulfuring chamber	01
45.	Blanching equipment	01
46.	Clinching equipments	01
47.	Jacketed kettle	01
48.	Bomb calorimeter	01
49.	Flue gas analyzer	01
50.	Bucket calorimeter	01
51.	Baby boiler	01
52.	Models of boiler mountings and accessories.	01 set
53.	IC Engine test rig	01
54.	Steam flow meter	02
55.	Water flow meter	02
56.	Models of two stroke and four stroke engine	01 each
57.	Different types of steam traps	02 set
58.	Pipes and pipe fittings	As per the requirements
59.	Oil and gas burners	01 each
60.	Water softening plant	01
61.	Boiler feed water pump	01
62.	Digital clip-on-meters	02
63.	Digital Energy analyzer	01
64.	Power measuring instruments such as volt meter, ampere meter, energy meter, meger	05 set
65.	Inverter	01
66.	Induction Motors with starters	02
67.	Variable Frequency Drive	02
68.	Single phase Transformer, 2 kVA	02
69.	Digital three phase Energy meter	02
70.	Different types of starters such as direct on line starter, Star delta starter, Auto- transformer starter ect.	02 set
71.	Experimental set up for experiment in parallel & series connection, stair case wiring, tube light wiring, motor connection, speed measurement, demonstration of winding etc with necessary power, voltage, and current measuring devices.	02 set
72.	Hand tachometer	02
73.	Non contact type tachometer	02

Table Contd.

Table Concluded

Sl.No.	Name	Number
74.	Soft starter	02
75.	Air anemometer	01
76.	Magnetic flow meter	02
77.	Digital pocket type thermometers with different types of probes	05
78.	Multi channel data logger	01
79.	Various tutors/transducers such as Strain gauge, pressure, LVDT, Inductive, Photo cell, piezometer, etc.	01 set
80.	Water Level controller	01
81.	Pneumatic controller	01
82.	PID controller temperature controller system	01
83.	Digital Tachometer	01
84.	Lux meter	01
85.	Solar lighting system	02
86.	Lathe Machine	01
87.	CNC lathe	01
88.	Grinding machine	01
89.	Power saw	01
90.	Drilling machine	01
91.	Pipe bending machine	01
92.	Electric welding machine	01
93.	Portable welding machine	01
94.	Gas welding set	01
95.	Shear cutting machine	01
96.	Threading machine	01
97.	Universal wood working machine	01
98.	Bench vice	20
99.	Portable grinding machine	02
100.	Shaping machine	01

M) Dairy Trade and Business Management Division:

Sl.No.	Name	Number
1.	Desk top computers with LAN facility and Internet connection	20
2.	Photocopier	03
3.	Laser Printer	06
4.	Colour Laser Printer	01
5.	Softwares: SPSS/Metlab/Design expert	01 each with multiuse license
6.	Indian patent database	01



FISHERIES

1. **Degree Nomenclature:** B.F.Sc (Bachelor of Fisheries Science)
2. **Eligibility Criteria:** Intermediate /10+2 with PCMB/PCB/Inter (Agriculture) (P-Physics, C-Chemistry, M-Mathematics, B-Biology) from a recognized Board/ University.
3. **Medium of Instruction:** English
4. **Minimum Intake:** 40 students per year
5. **Departments**
 - 1) Department of Aquaculture (AQ)
 - 2) Fisheries Resource Management (FRM)
 - 3) Department of Aquatic Animal Health Environment (AAHM)
 - 4) Department of Aquatic Environment Management (AEM)
 - 5) Department of Fish Processing Technology (FPT)
 - 6) Department of Fish Engineering (FE)
 - 7) Department of Fisheries Extension Economics & Statistics (FEES)

6. Faculty Requirements for Departments

Department	Faculty			Total
	Professor	Associate Professor	Assistant Professor	
Aquaculture	1	2	3	6
Fisheries Resource Management	1	2	3	6
Fish Processing, Technology	1	3	5	9
Aquatic Environment Management	1	1	3	5
Fish Engineering	1	1	2	4
Department of Aquatic Animal Health Management	1	1	2	4
Fisheries Extension, Economics, and Statistics	1	1	2	4
Total	7	11	20	38

7. Faculty Expertise

Department	Faculty Expertise
Aquaculture	<ul style="list-style-type: none"> - Inland Aquaculture - Freshwater Aquaculture - Brackish water Aquaculture - Mariculture - Ornamental fish culture - Cage Culture

Table Contd.

Table Contd.

Department	Faculty Expertise
	<ul style="list-style-type: none">- Culture of Fish Food organisms- Aquaponics- Finfish & shellfish breeding and seed production- Brood stock and hatchery management- Aquaculture Engineering- Fish Farm Management
Fisheries Resource Management	<ul style="list-style-type: none">- Anatomy & Biology of Fishes- Population Dynamics- Stock Assessment- Taxonomy of Fishes- Marine, Inland & Brackishwater Fisheries- Fishery Regulations and Laws- Conservation & Biodiversity
Fish Processing, Technology	<ul style="list-style-type: none">- Fishing gear & craft technology- Equipment Engineering & plant maintenance- Refrigeration Engineering- Marine Engines- Navigation & Seamanship- Fishing Technology- Freezing Technology- Thermal processing- Fish Processing, Product Development and waste utilization- Quality Control- Packaging Technology
Aquatic Environment Management	<ul style="list-style-type: none">- Analytical Water & Soil Chemistry- Limnology- Meteorology- Physical, Chemical and Biological Oceanography- Geography- Aquatic Pollution- Aquatic Environment & Biodiversity- Planktonology
Fish Engineering	<ul style="list-style-type: none">- Fish Engineering
Department of Aquatic Animal Health Management	<ul style="list-style-type: none">- Fish Microbiology- Immunology- Parasitology- Pathology- Fish Disease diagnostics and management
Fisheries Extension, Economics,	<ul style="list-style-type: none">- Fisheries Administration

Table Contd.

Table Contd.

Department	Faculty Expertise
and Statistics	<ul style="list-style-type: none"> - Project Formulation & Finance - Extension Programme Planning - Co-operative & Marketing management - Computer Science - Fisheries Statistics - Fisheries Economics - Rural Sociology & Extension education - Communication Skills - Business Organisation & Personnel Management

8. Administrative and Supporting Staff for Departments

Department	Assistant	Attendant/ Messenger	Clerk	Laboratory Assistant/ Attendant
Aquaculture	1	2	1	4
Fisheries Resource Management	1	2	1	2
Fish Processing, Technology	1	1	1	4
Aquatic Environment Management	1	1	1	2
Fish Engineering	1	1	1	2
Department of Aquatic Animal Health Management	1	1	1	2
Fisheries Extension, Economics, and Statistics	1	1	1	2
Total	7	9	7	18

9. Manpower Requirements of Dean's Office

Manpower	Number
Dean	1
A. Establishment	
PA to Dean	1
Administrative Officer	1
Superintendent	3
Steno	1
Assistant	3
Operator (Audio Visual)	1
Attendants/Messengers	4
Clerk (LDC)	4
Electrician	1
Plumber	1
Store Keeper	1
Security, Sanitation, transport and Landscaping	To be outsourced

Table Concluded

Manpower	Number
B. Central Instrumentation Facilities	
Computer Assistant	1
Laboratory Technicians	2
Laboratory Assistant	1
Laboratory Attendant	3
C. Library Staff	
Assistant Librarian	1
Library Assistant	1
Clerk	1
Library attendant	2
D. Instructional Fish Farm & Hatchery	
Farm Manager	1
Field Assistant	1
Laboratory Assistant	1
Field Attendant	2
Field Staff / Fishermen	20
Security	(to be outsourced)
E. Students Welfare	
Assistant Director (Students' Welfare)	1
Medical Officer	1
Assistant Professor (Physical Education for Boys and Girls)	1+1
E. Hostel (Boys and Girls)	
Wardens	1+1
Assistant Wardens	1+1
Clerk (LDC)	2
Attendants	4
Security, Sanitation, Boarding and Landscaping	To be outsourced

10. Land Requirements

Main building and hostels:	4 ha
Instructional Farm Area:	20 ha
Play grounds & other amenities:	2ha
Total:	<u>26 ha</u>

Geographical location:

For Maritime States the most ideal location is near the coast line having access to open sea, estuaries, fishing harbours and fish processing plants with a good water source.

For Inland States, the location needs to be close to water bodies / Farm facilities.

For Hilly Regions, the land requirement may be less as per availability

11. Floor Space Requirement

A. Central Facilities

Sl.No.	Details	Number of Rooms	Dimensions (ft)
1.	Dean office	1	20 × 24
2.	PA room	1	20 × 12
3.	Committee room with video conferencing facility	1	20 × 48
4.	Administrative officer room	1	20 × 12
5.	Admin. Staff rooms	3	20 × 36 each
6.	Examination cell	1	20 × 12
7.	Evaluation room	1	20 × 36
8.	Faculty room	1	20 × 12 each
9.	Placement cell	1	20 × 48
10.	Smart Lecture rooms	8	Seating capacity –50
11.	Auditorium (optional)	1	Seating capacity – 300
12.	Library/Book bank	1	30 × 72
13.	Examination hall (optional)	1	Seating capacity – 300
14.	Multipurpose room	1	20 × 36
15.	Laboratories	25	30 × 48 each / as per requirement
16.	Hostels	2 hostels	UG and PG Boys, UG and PG Girls
17.	Generator shed	1	20 × 36
19.	Toxic chemical waste storage/disposal Unit	1	20 × 24
20.	Canteen	1	20 × 12 (kitchen) and 20 × 36 (Seating)
21.	Toilets	-	2 sets for each floor
22.	Parking space	As per requirement	For college and hostels
23.	Vehicles:Office car/Staff car/Jeep/Bus/Pick-up van	1311	

B. Departments

Sl.No.	Detail	Number of rooms	Dimensions (ft)
1.	Head of the Department	8 (one for every Department)	20 × 24 each
2.	Administrative Staff	8 (one for every Department)	20 × 36 each
3.	Faculty room	21 (as per faculty strength)	20 × 24 (3 rooms) 20 × 12 (18 rooms)
4.	Rooms for Research Scholars	8(one for every Department)	20 × 24 each
5.	Committee room cum library	8 (one for every Department)	20 × 36 each
6.	Smart Lecture cum seminar room	8 (one for every Department)	Seating capacity–50 each

12. Equipments Requirement

A. Central Instrumentation Facility

Sl.No.	Name of the Equipment	Number
1	Cold room -20°C	1
2	-80°C freezer	1
3	Chill room 4°C	1
4	High Speed Centrifuge	1
5	HPLC	1
6	GCMS	1
7	Gel doc system	1
8	Real time PCR	1
9	Research Vessel	1
10	Ultra Centrifuge	1
11	Programmable Freezer (Cryopreservation)	
12	Water Purification Unit	As per requirement
13	Ice flaker	1
14	Freeze Dryer	1
15	Atomic Absorption Spectrophotometer (AAS)	1
16	Automatic Tissue Processor	1
17	Microtome	1
18	Inverted Microscope	1
19	Generator	1

B. Instructional Farm Facilities

1	Nursery ponds	20
2	Rearing Ponds	8
3	Stocking ponds	4
4	Brood stock ponds	4
5	Chinese Circular hatchery	1
6	Wetlab facilities	As per requirement
7	Re-circulatory Systems	1

C. Departmental Laboratories

Sl.No.	Name of the Equipment	Total number
1.	-20°C Freezer	7
2.	-80°C Freezer	3
3.	Autoclaves	7
4.	Biosafety Cabinet	3

Table Contd.

Table Concluded

Sl.No.	Name of the Equipment	Total number
5.	Centrifuge	7
6.	Refrigerated Centrifuge	7
7.	Cryo-cans	6
8.	Analytical balance	7
9.	Stirrer	7
10.	Spectrophotometer	7
11.	Research Microscope	70
12.	Micropipette set	7
13.	Thermocycler	7
14.	Waterbath (Digital)	7
15.	Salino meter (Refracto meter)	6
16.	Dissolved oxygen analyzer	2
17.	Hot air oven	7
18.	Kjeltec for protein estimation	1
19.	Soxhlet for fat estimation	1
20.	Muffle furnace	2
21.	Microtome	1
22.	Fish deboning machine	1
23.	Fish drying & smoking kiln	1
24.	Vacuum packing machine	1
25.	Modified atmosphere packaging	1
26.	pH meter	7
27.	Computers	7
28.	Incubator	7
29.	Digital colony counter	3
30.	Binocular Microscope	140
31.	Bomb Calorimeter	1
32.	Automatic Water Analyzer	2



FOOD TECHNOLOGY

1. **Degree Nomenclature :** B. Tech. (Food Technology)
2. **Eligibility Criteria:** Intermediate /10+2 with PCMB/PCM (P- Physics, C-Chemistry, M-Mathematics, B-Biology) from a recognized Board/ University.
3. **Medium of Instruction:** English
4. **Minimum Intake:** 40 students per year
5. **Name of Departments**
 - 1) Department of Food Processing Technology
 - 2) Department of Food Safety & Quality Assurance
 - 3) Department of Food Process Engineering
 - 4) Department of Food Business Management
 - 5) Department of Food Plant Operations

6. Faculty and Supporting Staff Requirement

Department	Faculty				Supporting staff		
	Prof & Head	Assoc Prof.	Assist Prof.	Res/Teach Assistant	Office Assistant	Lab Technician	Lab Attendant
Food Process Technology	1	2	4	2	1	6	2
Food Safety and Quality Assurance	1	2	4+3*	2	1	4+2*	2
Food Process Engineering	1	2	4+5**	2	1	4+4**	2
Food Business Management	1	2	4+3*	2	1	2	2
Food Plant Operations	1	2	4	2	1	6***	6
Total	5	10	31	10	5	28	14

* For basic sciences, humanities subjects (One each for English, Chemistry, Microbiology, Mathematics, Statistics, Agriculture)

** For basic engineering subjects (one each for Mechanical, Electrical, Computer, Electronics & Instrumentation, Civil Engineering)

*** Pilot Plant Operators & Mechanics

7. Administrative Staff for College

Office	Position	Number	Remarks
Main	Dean/Assoc. Dean/Principal	1	
College	Administrative cumAccounts Officer or Asstt. Registrar	1	
Office	PS to Dean/Principal	1	
	Senior Clerk	4	1 Admin, 1 Estt., 1 Accounts, 1 Academics

Table Contd.

Table Concluded

Office	Position	Number	Remarks
	Junior Clerk	4	1 Admin, 1 Estt., 1 Accounts, 1 T&P
	Store keeper	1	
	Attendant	3	
	Driver	2	1 each for car & bus
Hostels & Students Welfare	Hostel Assistant Warden	2	1 Male & 1 Female
	Hostel Attendant	2	1 Male & 1 Female
	Physical Instructor	1	Physical Education

8. Staff for College Library

Designation	Number
Assistant Librarian	1
Library Assistant	1
Clerk	1
Shelf Assistant	2

9. Department wise Name of Laboratories

The following can be the nomenclature of the teaching laboratories;

Sl. No.	Name of Department	Name of Laboratory
1.	Food Processing Technology	Food Process Technology Lab, Food Product Development Lab, Dairy Technology Lab, Meat and Fish Processing Lab, Packaging Technology Lab, Food Rheology and Sensory Lab
2.	Food Safety and Quality Assurance	Food Chemistry Lab, Food Microbiology Lab, Food Biotechnology Lab, Food Analytics Lab
3.	Food Process Engineering	Heat and Mass Transfer Lab, Fluid Mechanics Lab, Unit Operations Lab, Mechanical Workshop, Electrical and Electronics Engineering Lab, Instrumentation and Process Control Lab, Drawing Hall
4.	Food Business Management	Language Lab, Computer Lab, Personality Development Lab, Technology Transfer Lab/Prototype Lab
5.	Food Plant Operation	Experiential Learning Units / Pilot plants

10. Land requirement : 4 ha

11. Building Floor Space Requirement:

Sl.No.	Description	Number	Dimension (ft)
1.	Dean/Principal office	01	20 × 40
2.	Main administrative office	01	40 × 60
3.	Head of department	05(one for each department)	15 × 20 each
4.	Dept. Admin. Office	05	15 × 20
5.	Faculty room	-	10 × 12 for each faculty
6.	UG smart class room	04	Seating capacity of 60
7.	PG smart class room	As per requirement	
8.	Examination hall	02	Seating capacity of 120
9.	Laboratories	21	30 × 40 each
10.	Seminar room	01	Seating capacity of 150
11.	Meeting room	01	Seating capacity of 50
12.	Common room for students	02	15 × 20 each
13.	Auditorium	01	As per requirement
14.	NCC/NSS/Student welfare office	01	15 × 20 each
15.	Library	01	-
16.	ELP Building	02	As per the requirement of pilot plants
17.	Gymnasium, indoor games, Outdoor facilities	01	-
18.	Canteen	01	-
19.	Toilets	Sufficient numbers	At every wing/floor
20.	Parking space	As per requirement	For college and hostels
21.	Hostel	2	1 for Boys1 for Girls
22.	DG set shed	As per requirement	

Vehicles -

1. Office car
2. Student Bus
3. Mobile refrigerated vehicle

12. Department wise list of Minimum Equipment/Instruments in Laboratories

1) Department of Food Process Technology

Sl.No.	Name of Equipment
1.	Fruit/ vegetable Blancher
2.	Exhaust Box
3.	Retort system
4.	Kettle (steam jacketed)
5.	Steam generator

Table Contd.

Table Contd.

Sl.No.	Name of Equipment
6.	Fruit/vegetable peelers
7.	Homogenizer
8.	Mixers
9.	Fruit cutting/ slicing machine
10.	Spice mixing machine
11.	Dough Mixer
12.	Dough divider
13.	Table Sheeter
14.	Dough moulds
15.	Baking oven
16.	Bread slicer
17.	Pasta making machine
18.	Laboratory ovens
19.	Cooling chamber
20.	Pouch sealing machine
21.	Lab Roller dryer
22.	Lab Spray dryer
23.	Lab Tray dryer
24.	Lab Fluidized bed dryer
25.	Lab Vacuum dryer
26.	Lab Cabinet dryer
27.	Lab freeze dryer
28.	Foam mat dryer
29.	Grain dryer
30.	Osmotic dryer
31.	Weighing machines
32.	High precision digital balance
33.	Muncell colour chart
34.	Lovibond tintometer
35.	Hunter colour lab meter
36.	Disc colour meter
37.	Portable chromameter
38.	Viscometer
39.	Shrink wrap packaging machine
40.	Form fill and sealing machine
41.	Vacuum packaging machine
42.	Heat sealing machine
43.	Fruit/ vegetable sorter
44.	Fruit/ vegetable Grader

Table Contd.

Table Contd.

Sl.No.	Name of Equipment
45.	Vernier callipers of different sizes
46.	Colour dictionary chart for grain
47.	Angle of repose unit
48.	Hardness tester
49.	Soxhlet apparatus
50.	Kjeldahl apparatus
51.	Muffle furnace
52.	pH meter
53.	Refractometers for different ranges
54.	Incubator
55.	Germinator
56.	Laboratory modern rice mill
57.	Laboratory modern dhal mill
58.	Flaking machine
59.	Popcorn machine
60.	Falling number apparatus
61.	Lab oil expeller
62.	Amylograph
63.	Extensio-graph
64.	Farinograph
65.	Sieve analysis set up
66.	Hammer mill
67.	Modern wheat milling machine
68.	Extruder
69.	Meat mincer
70.	Dumber and slaughtering machine
71.	Defeathering machine
72.	Plate freezer
73.	Meat cutter/ chopper
74.	Conching unit
75.	Cocoa roaster
76.	Cocoa tempering unit
77.	Chocolate moulder
78.	Rolling machine
79.	S.S. utensils (pan/ fry pan/ <i>kadhail</i> / spoon plates/ knife, etc)
80.	Basket press
81.	Screw type juice extractor
82.	Centrifugal Juice extractor
83.	Hydraulic press

Table Contd.

Table Contd.

Sl.No.	Name of Equipment
84.	Fruit Pulper/ Crusher
85.	Juice dispensing machine
86.	Bottle filling machine
87.	Bottle washing machine
88.	Crown corking machine
89.	Texture analyser
90.	Gas chromatography unit
91.	Respirometer
92.	Sensory evaluation set
93.	Milkotester
94.	Gerber butyrometer
95.	Cream separator
96.	Butter making machine
97.	Ice cream machine
98.	Khoa making machine
99.	Multiple effect evaporator
100.	Cryoscope
101.	Melting point apparatus
102.	Double distillation unit
103.	Scavengerapparatus
104.	Polarimeter
105.	Ultrafiltration system
106.	Water analysis unit (kit)
107.	Density meter
108.	TDS meter
109.	Conductivity meter
110.	Nephelometric turbidity unit
111.	Water baths
112.	Autoclave
113.	Carbonation unit
114.	BOD incubators
115.	Bomb calorimeter
116.	Rotary Shaker
117.	Puncture resistance tester
118.	Bursting strength tester
119.	Tearing strength tester
120.	Tensile testing machine
121.	Box compression tester
122.	Drop tester

Table Contd.

Table Contd.

Sl.No.	Name of Equipment
123.	Modified atmospheric storage
124.	Water vapour transmission measuring unit
125.	Oxygen transmission measuring unit
126.	Super critical fluid extraction system
127.	Rotary vacuum evaporator
128.	Lab Aseptic processing system
129.	Lab IQF system
130.	Small Cold storage
131.	Laboratory Fermenter
132.	Microwave ovens
133.	Moisture meters

2) Department of Food Process Engineering

Sl.No.	Name of Equipment
1.	Flow over notches apparatus
2.	Bernoulli's apparatus
3.	Reynolds apparatus
4.	Flow measurement by venturi meter and orifice meter
5.	Centrifugal pump (model)
6.	Reciprocating pump(model)
7.	Gear pump model
8.	Submersible pump
9.	Positive displacement pump
10.	Fluid friction measurement devices
11.	Minor head loss apparatus
12.	Model of Lancashire boiler
13.	Model of Packaged Boiler/ model
14.	Model of Babcock and Wilcox boiler
15.	Vertical water tube boiler
16.	Solar water heater
17.	Steam jet condenser: parallel flow
18.	Steam jet condenser: counter flow
19.	Surface condenser
20.	Evaporative condenser
21.	Shell and tube heat exchanger
22.	Plate Type Heat Exchanger
23.	Double pipe heat exchanger

Table Contd.

Table Contd.

Sl.No.	Name of Equipment
---------------	--------------------------

- | | |
|-----|---|
| 24. | Natural convection apparatus |
| 25. | Forced convection apparatus |
| 26. | Thermal conductivity apparatus for solid and liquid |
| 27. | Working model of belt conveyor |
| 28. | Working model of bucket conveyor |
| 29. | Working model of chain conveyor |
| 30. | Working model of screw conveyor |
| 31. | Universal testing machine |
| 32. | Ball fall viscometer |
| 33. | Capillary tube viscometer |
| 34. | Rotational viscometer |
| 35. | Model of multiple effect evaporator |
| 36. | Rotary vacuum flash evaporator |
| 37. | Cabinet drier |
| 38. | Screw gauges |
| 39. | Vernier calipers |
| 40. | Micrometers |
| 41. | B.O.D. incubators |
| 42. | Desiccators |
| 43. | Refrigerated centrifugal machine |
| 44. | Ultra filtration apparatus |
| 45. | Micro wave oven |
| 46. | Infra red moisture meter |
| 47. | Universal moisture meter |
| 48. | Hammer mill |
| 49. | Magnum mill |
| 50. | Colloid mill |
| 51. | Ball mill |
| 52. | Sieve analyser |
| 53. | Vapour compression refrigeration cycle |
| 54. | Refrigeration tutor |
| 55. | Air-conditioning tutor |
| 56. | Model of ammonia ice plant |
| 57. | Model of cooling tower |
| 58. | Water baths |
| 59. | Ammeters |
| 60. | Voltmeters |
| 61. | Wattmeters |
| 62. | Wet and dry bulb thermometers |
-

Table Contd.

Table Concluded

Sl.No.	Name of Equipment
63.	Hygrometers
64.	Anemometer with digital display
65.	Pressure measurement devices
66.	Different manometers
67.	U tube double column Manometer
68.	Multimeters
69.	Clamp-on meters
70.	Portable energy meters
71.	Pyranometer
72.	Transducers
73.	Flow meters
74.	Particle size analyser
75.	Dielectric Properties Analyzer
76.	Microwave power leakage detector
77.	Industrial PID controller and PLC units
78.	Agitation and mixing system
79.	Crystallizer
80.	CNC lathe machine
81.	Grinding machine
82.	Drilling machines
83.	Welding machines
84.	Student drawing boards
85.	Electronics engineering tutor set
86.	Electrical engineering tutor set
87.	Process control tutor set

3) Departments of Food Safety & Quality

Sl.No.	Name of Equipment
1.	Different Microscopes
2.	Autoclave
3.	Hot Air Ovens
4.	Vacuum ovens
5.	Colony Counter
6.	Rotary Shaker
7.	Lab Centrifuge
8.	Deep Freezers of different temperature ranges
9.	Laminar Flow Unit
10.	Water Baths
11.	Oil baths

Table Contd.

Table Contd.

Sl.No.	Name of Equipment
---------------	--------------------------

- | | |
|-----|---------------------------------|
| 12. | BOD incubators |
| 13. | Ozone washer |
| 14. | Distillation Unit |
| 15. | Lab Scale Fermentor |
| 16. | Serological water bath |
| 17. | Water distillation unit |
| 18. | Digital weighing balances |
| 19. | pH meter |
| 20. | Protein digestion unit |
| 21. | Protein distillation unit |
| 22. | Soxhlet unit |
| 23. | Desiccators |
| 24. | Digital moisture meter |
| 25. | Protein estimation assembly |
| 26. | Digital pH meter |
| 27. | Digital Thermometers |
| 28. | Muffle Furnace |
| 29. | Spectrophotometer |
| 30. | Vortex mixture |
| 31. | Colorimeter |
| 32. | Bomb calorimeter |
| 33. | Vacuum flash evaporator set |
| 34. | Paper Chromatography set |
| 35. | Thin layer Chromatography Set |
| 36. | Paper electrophoresis unit |
| 37. | Magnetic stirrer with hot plate |
| 38. | Roto-viscometer |
| 39. | Flame photometer |
| 40. | Gas chromatography system |
| 41. | HPLC system |
| 42. | Refrigerated centrifuge |
| 43. | Scanning Electrons Microscope |

4) Department of Food Business Management

1. A set of computer server, working nodes, printer for 25 students
2. Language lab set with audio management system for 25 students
3. LCD projectors with screens and other accessories
4. LED display systems
5. Internet connectivity with Wi-Fi component

5) Department of Plant Operations

A set of pilot plants adequately equipped as ELUs

FORESTRY

1. **Degree nomenclature:** B. Sc. (Hons) Forestry
2. **Eligibility Criteria:** Intermediate /10+2 with subjects PCM/PCMB/Agriculture (P- Physics, C-Chemistry, M-Mathematics, B-Biology) from a recognized Board/ University.
3. **Medium of Instruction:** English
4. **Minimum Intake:** 50 students per year
5. **Departments**
 - 1) Silviculture and Agroforestry
 - 2) Forest Biology and Tree Improvement
 - 3) Natural Resource Management
 - 4) Forest Product Utilization
 - 5) Wild Life Sciences
 - 6) Basic and Social Sciences

6. Faculty Requirements for Divisions/Section

Department	Professor	Associate Professor	Assistant Professor	Total
Silviculture and Agroforestry	1	2	4	7
Forest Biology and Tree Improvement	1	2	4	7
Natural Resource Management	1	2	4	7
Forest Products and Utilization	1	2	4	7
Wildlife Sciences	1	2	4	7
Basic and Social Sciences	1	2	6	9
Total	6	12	26	44

7. Administrative and Supporting Staff for Divisions/Section

Department	Steno/PA/ Computer Operator	Attendant/ Messenger	Laboratory Assistant /Attendant	Field Staff
Silviculture and Agroforestry	1	1	1	3
Forest Biology and Tree Improvement	1	1	1	3
Natural Resource Management	1	1	1	3
Forest Products and Utilisation	1	1	1	3
Wildlife Sciences	1	1	1	3
Basic and Social Sciences	1	1	1	3
Total	6	6	6	18

Note: Security services to be outsourced

8. Manpower Requirements

A. Dean's Office

Manpower	Number
Dean	1
A. Establishment	
PA to Dean	1
Assistant Registrar	1
Accounts Officer	1
Superintendent	1
Computer operator	2
Steno/Assistant	2
Operator (Audio visual)	1
Attendants /Messengers	4
Clerk (LDC)	4
Electrician	1
Storekeeper	1
Driver (office vehicle/student buses/tractors)	4
Security, Sanitation and Landscaping and transportation	To be outsourced
B. Central Research and Teaching Laboratories	
Laboratory Technicians	2
Laboratory Assistant	2
Laboratory Attendant	1
C. Library Staff	
Assistant Librarian	1
Library Assistant	1
Clerk	1
Shelf Assistant	2
D. Students Welfare	To be provided by the Institute/ University as the Central Facility
E. Hostel Staff for two Hostels	
Warden	1(UG and PG; Men & Women)
Assistant Wardens	2(UG and PG; Men & Women)
Care Taker/Matron	4(UG and PG; Men & Women, Men & Women)
Attendants	8
Security, Sanitation and Landscaping	To be outsourced

- 9. Land Requirements : 50 ha**
- **Main building and Hostels** : 6 ha
 - **Field area** : 44 ha
 - **Play grounds & indoor stadium** : From common facility of the institute

10. Floor Space Requirement

A. Central Facilities

Sl.No.	Details	Number of Rooms	Dimensions (ft)
1.	Dean office	1	20 × 24
2.	PA room	1	10 × 12
3.	Committee room with video conferencing facility	1	20 × 48
4.	Administrative officer room	1	20 × 12
5.	Admin. staff rooms	2	20 × 12 each
6.	Examination cell	1	20 × 12
7.	Placement cell	1	30 × 18
8.	Smart Lecture rooms	6	Seating capacity -70
9.	Library	1	60 × 140
10.	Examination hall	1	Seating capacity -150
11.	Laboratories	10	30 × 48 each
12.	Hostels	4	UG and PG Boys & UG and PG Girls
13.	Toxic chemical waste storage/disposal Unit	1	20 × 24
14.	Canteen	1	20 × 12 (kitchen) and 20 × 36 (Seating)
15.	Toilets	2 sets for each floor	For college
16.	Parking space	As per requirement (APR)	and hostels
17.	Vehicles –		
	Dean's car	One	
	For Field trips as part of research- Jeep/SUV with four wheel drive	Two	
	For Students Field trip - 30 seat capacity bus	Two	
	Pick up van	One	
18.	Common room for boys and girls	Two	

B. Departments

Sl.No.	Detail	Number of rooms	Dimensions (ft)
1.	Office of Head of the Department	10 (one for each Department)	20 × 12 each
2.	Administrative Staff	10(one for each Department)	12 × 10 each
3.	Faculty Room	10 (one for each Department)	30 × 30 each and to be partitioned
4.	Rooms for Research Scholars	10 (one for each Department)	20 × 24 each
5.	Smart Lecture cum seminar room	10 (one for each Department)	Seating capacity – 40 each
6.	Laboratories	20 - Two laboratories (one each for UG and PG) in each department	20 × 60 (one) 20× 36 (one each for 6 departments)

11. Central/Division/Section Laboratories (as per requirements of the teaching and research work of the college)

12. Common laboratory/facility

- Botanical Garden
- Natural History Museum
- Xylarium
- Tree Nursery
- GIS and Remote sensing Lab
- Computer Lab
- Auditorium (optional)
- Students Activity Centre (optional)

13. Department wise list of Minimum Equipment/ Instruments in Laboratories

Sl. No.	Name of the Equipment	Number	UG	Department
1.	Soil analysis kit	1	UG	Silviculture(SAF)
2.	Portable soil moisture kit	1	UG	(SAF)
3.	Telescopic tree ladder	1	UG	(SAF)
4.	Seed moisture meter	1	UG	(SAF)
5.	Seed/ grain divider	1	UG	(SAF)
6.	Seed precision divider	1	UG	(SAF)
7.	Seed divider	1	UG	(SAF)
8.	Seed grader	1	UG	(SAF)
9.	Seed hand-test sieves	1	UG	(SAF)
10.	Seed sieve shaker	1	UG	(SAF)
11.	Laboratory aspirator	1	UG	(SAF)
12.	Seed blower	1	UG	(SAF)
13.	Illuminated purity work board	1	UG	(SAF)
14.	Hot air seed drier	1	UG	(SAF)
15.	Growth Rooms	3	UG	Forest Biology and Tree Improvement (FBT)
16.	Hot Plates, Magnetic stirrers, Vortex etc.	6	UG	(FBT, WLS)
17.	Laminar Flow	4	UG	(FBT, WLS)
18.	Multiflow Dispenser	2	UG	(FBT, WLS)
19.	Precision Ovens	6	UG	(FBT, WLS)
20.	Plant Imager	2	UG	(FBT)
21.	Shakers (Table Top)	3	UG	(FBT, WLS)
22.	Spectrophotometer	2	UG	(FBT)
23.	Thermocycler	6	UG	(FBT, WLS)
24.	Thermomixer	3	UG	(FBT)

Table Contd.

Table Contd.

Sl. No.	Name of the Equipment	Number	UG	Department
25	Tissue Lyser	3	UG	(FBT)
26.	Vacuum Concentrator	2	UG	(FBT)
27.	Computer for Bioinformatics Section	6	UG	(FBT, WLS)
28.	PAR & LAI Ceptometer /Canopy analyzer	1	UG	(FBT)
29.	Leaf area meter	1	UG	(FBT)
30.	Steady state porometer	1	UG	(FBT)
31.	Leaf wetness sensor	1	UG	(FBT)
32.	Scholanders pressure bomb (Plant water console)	1	UG	(FBT)
33.	Osmometer	1	UG	(FBT)
34.	Compound microscope (Students)	30	UG	(FBT)
35.	Stereo microscopes	5	UG	(FBT)
36	Compound microscopes (Research – binocular / trinocular)	3	UG	(FBT, WLS)
37	Wildlife census equipments (compass, GPS, range finder, bat detectors, mist nets, Sherman traps, tapes etc)	100	UG	Wildlife Sciences (WLS)
38.	Wildlife handling equipments	As perrequirement (APR)	UG	(WLS)
39.	Wildlife Field research equipment such as binoculars, telescopes, ultrasonic bat detectors, audio equipments, remote cameras and triggering devises, museum collection equipments, specimen storage cabinets etc.	As perrequirement (APR)	UG	(WLS)
40.	SLR digital camera and accessories	5	UG	(WLS)
41.	Spectrophotometer	1	UG	(NRM)
42.	Flame photometer	1	UG	(NRM)
43.	Conductivity meter	1	UG	(NRM)
44.	Water bath	1	UG	(NRM)
45.	incubator	1	UG	(NRM)
46.	Laminar Air flow	1	UG	(NRM)
47.	Bomb calorimeter	1	UG	(NRM)
48.	Incubator	1	UG	(NRM)
49.	Automatic weather station	4	UG	(SAF, WLS)
50.	Pyranometer	1	UG	(FBT)
51.	Salinity meter	1	UG	(NRM)
52.	Tensiometers	2	UG	(NRM)

Table Contd.

Table Contd.

Sl. No.	Name of the Equipment	Number	UG	Department
53.	Tree telescope	2	UG	(NRM)
54.	Canopy analyzer	1	UG	(NRM)
55.	Laser Digital caliper	3	UG	(NRM)
56.	Moisture meter	1	UG	(NRM)
57.	Viscometer	1	UG	(NRM)
58.	Digital balance	3	UG	(NRM)
59.	prismatic compass	5	UG	(NRM)
60.	Swedish Bark gauge	3	UG	(NRM)
61.	Altimeter	5	UG	(NRM)
62.	Clinometer	5	UG	(NRM)
63.	Hypsometer	APR	UG	(NRM)
64.	Pressler's Increment borers	4	UG	(NRM)
65.	Abney level	10	UG	(NRM)
66.	dummy level	3	UG	(NRM)
67.	Alidade	3	UG	(NRM)
68.	Christen's hypsometer	APR	UG	(NRM)
69.	Smythie's hypsometer	APR	UG	(NRM)
70.	Improvised calipers	APR	UG	(NRM)
71.	Brandis hypsometer	5	UG	(NRM)
72.	Haga altimeter	5	UG	(NRM)
73.	Blume-Leiss hypsometer	4	UG	(NRM)
74.	Spiegel relaskop	5	UG	(NRM)
75.	Global positioning systems	5	UG	(NRM)
76.	Wheeler's pentaprism	4	UG	(NRM)
77.	Chain (20 or 30 m)	4	UG	(NRM)
78.	Offset	APR	UG	(NRM)
79.	Cross Staff	APR	UG	(NRM)
80.	Plump Bob	APR	UG	(NRM)
81.	Ranging rods	APR	UG	(NRM)
82.	Tape (30 m)	5	UG	(NRM)
83.	Plane table	5	UG	(NRM)
84.	Trough compass	5	UG	(NRM)
85.	U fork	5	UG	(NRM)
86.	Spirit level	5	UG	(NRM)
87.	Digital level	2	UG	(NRM)

Table Contd.

Table Contd.

Sl. No.	Name of the Equipment	Number	UG	Department
88.	Laser level	2	UG	(NRM)
89.	Level staff	5	UG	(NRM)
90.	Microscope- simple microscope, compound microscope and stereo microscope	5 each	UG	Forest Protection (FPU, WLS)
91.	Autoclave- vertical and horizontal	1 each	UG	(FPU)
92.	Pressure cooker (20 L)	2	UG	(FPU)
93.	Hot air oven	1	UG	(FPU)
94.	B O D Incubator	1	UG	(FPU)
95.	Temperature and humidity control chamber	1	UG	(FPU)
96.	pH meter	2	UG	(FPU, FRM)
97.	Water bath- rectangular thermostatic	1	UG	(FPU)
98.	Common balance	2	UG	(FPU)
99.	Bunsen burner	2	UG	(FPU)
100.	Herbarium press	15	UG	(FPU)
101.	Workstation for GIS	10	UG	Basic Sciences (BSS)
102.	Scanner cum plotter/Printer	2	UG	(BSS)
103.	Global positioning systems	10	UG	(BSS)
104.	GIS software - ERDAS/Arc GIS/I GIS Ver.1.1 GIS	2	UG	(BSS)
105.	3D Printer	1	UG	(BSS)
106.	Universal testing machine micro-processor based with PC system and printer	1	PG	Forest Products and Utilization(FPU)
107.	Near Infra-Red (NIR) / Fourier Transform Infrared (FT-IR) Spectrophotometers	1	PG	(FPU)
108.	Wiley mill for powdering wood samples (for cellulose and lignin analysis)	1	PG	(FPU)
109.	Nuclear Magnetic Resonance Spectroscopy (NMR)	1	PG	(FPU)
110.	Atomic Absorption Spectrophotometer (AAS)	1	PG	(SAF)
111.	Yoder apparatus	1	PG	(SAF)
112.	Tree radar system	1	PG	(SAF)
113.	CHNS analyzer	1	PG	(SAF)
114.	Mini tractor will tiller/disc facility	1	PG	(SAF)
115.	Radio transmitters and radio telemetry equipment	5	PG	(WLS)
116.	Wildlife marking equipment such as split- rings, bands, tags, ball chain necklace, beta lights, cyalume, punch marking and tattooing equipment, fluorescent powder and hand-held ultra-violet lights	As per requirement (APR)	PG	(WLS)

Table Contd.

Table Contd.

Sl. No.	Name of the Equipment	Number	UG	Department
117.	Sequencer - ABI 3730xl	1	PG	(FBT)
118.	Illumina Sequencing Platform	1	PG	(FBT)
119.	Cold room -20 C	1	PG	(FBT)
120.	Cold room 4 C	1	PG	(FBT)
121.	SNP Genotyping Platform	1	PG	(FBT)
122.	HPTLC	1	PG	(FBT)
123.	High Performance Computing Grid	1	PG	(FBT)
124.	Inductively Coupled Plasma (ICP-OES)	1	PG	(FBT)
125.	High Speed Centrifuge	4	PG	(FBT)
126.	Water Purification Unit	APR	PG	(FBT)
127.	-20 C Freezer	3	PG	(FBT)
128.	-80 C Freezer	3	PG	(FBT)
129.	Autoclaves	5	PG	(FBT)
130.	Automated Capillary Electrophoresis System	3	PG	(FBT)
131.	Autopipetting System	3	PG	(FBT)
132.	Biolytic Particle Gun	3	PG	(FBT)
133.	Biophotometer	2	PG	(FBT)
134.	Biosafety Cabinet	3	PG	(FBT)
135.	Centrifuge	6	PG	(FBT)
136.	Cryo-cans	6	PG	(FBT)
137.	Dry Baths	6	PG	(FBT)
138.	Electrophoresis Systems and Power Packs	3	PG	(FBT)
139.	Electroporator	4	PG	(FBT)
140.	Environmental Chamber	2	PG	(FBT)
141.	Fermenter	3	PG	(FBT)
142.	Fluorescent Microscope	3	PG	(FBT)
143.	Gel Documentation System	4	PG	(FBT)
144.	Gel Dryers	2	PG	(FBT)
145.	Hybridization Ovens	2	PG	(FBT)
146.	Ice Making Machines	2	PG	(FBT)
147.	Incubator Shakers	4	PG	(FBT)
148.	Incubator	5	PG	(FBT)
149.	Lypholyser	1	PG	(FBT)
150.	Microcentrifuge	6	PG	(FBT)
151.	Microplate Washer	2	PG	(FBT)
152.	Microplate Readers	2	PG	(FBT)
153.	Microwave Digestion Oven	2	PG	(FBT)

Table Contd.

Table Contd.

Sl. No.	Name of the Equipment	Number	UG	Department
154.	Nanodrop for DNA Quantification	2	PG	(FBT)
155.	Plate Centrifuges	3	PG	(FBT)
156.	Real Time PCR	4	PG	(FBT)
157.	Refrigerator 4 C	5	PG	(FBT)
158.	Semi Dry Blotter	2	PG	(FBT)
159.	Ultracentrifuge	2	PG	(FBT)
160.	Ultrasound Sonicator	3	PG	(FBT)
161.	UV Transilluminator	3	PG	(FBT)
162.	UV Stratalinker	2	PG	(FBT)
163.	Water Bath - Shaking	3	PG	(FBT)
164.	Major Softwares-CLC Genomics and other relevant softwares	APR	PG	(FBT)
165.	Portable Ethylene Analyzer	1	PG	(FBT)
166.	Programmable LED Experimentation System	1	PG	(FBT)
167.	Leaf Spectrometer	1	PG	(FBT)
168.	Root Image Analysis System	1	PG	(FBT)
169.	In Situ Root Imager	1	PG	(FBT)
170.	UV to Near Infrared Range Spectro-radiometer	1	PG	(FBT)
171.	HemiView - Forest Canopy Image Analysis System	1	PG	(FBT)
172.	IRGA Photosynthesis System	1	PG	(FBT)
173.	Chlorophyll Fluorimeter	1	PG	(FBT)
174.	Sap flow meter	1	PG	(FBT)
175.	Infra red thermometer	1	PG	(FBT)
176.	Eddy covariance CO ₂ /H ₂ O flux measurement system	1	PG	(FBT)
177.	Soil CO ₂ flux system	1	PG	(FBT)
178.	UV-Bio Radiometer with Recorder	1	PG	(FBT)
179.	Florescence microscope	1	PG	(FBT)
180.	Dissection microscopes	20	PG	(FBT)
181.	Microtome	1	PG	(FBT)
182.	Vacuum oven with vacuum pump	1	PG	(NRM)
183.	Microwave oven	2	PG	(NRM)
184.	Melting point apparatus	1	PG	(NRM)
185.	Bark separator	2	PG	(NRM)
186.	Topo Abney	5	PG	(NRM)
187.	CHN Analyzer	1	PG	(NRM)
188.	Ravi multimeter	5	PG	(NRM)
189.	Vertex digital hypsometer (Haglof)	3	PG	(NRM)
190.	Micrometer- stage and ocular	4 each	PG	(FPU)

Table Contd.

Table Contd.

Sl. No.	Name of the Equipment	Number	UG	Department
191.	Colony counter	1	PG	(FPU)
192.	Inoculation chamber (Laminar airflow chamber)	2	PG	(FPU)
193.	Ultra violet lamps	APR	PG	(FPU)
194.	centrifuge	2	PG	(FPU)
195.	Electronic monopan balance	2	PG	(FPU)
196.	Spectrophotometer or colorimeter	1	PG	(FPU)
197.	Haemocytometer/ Petroff-Hausser counting chamber	1	PG	(FPU)
198.	Filters-Seitz filter	1	PG	(FPU)
199.	Orbital incubator / hot palte stirrer	1	PG	(FPU)
200.	Rotary flask shaker	1	PG	(FPU)
201.	Inoculation needle	APR	PG	(FPU)
202.	ICP (OES)	1	PG	(BSS)
203.	Microwave digester	1	PG	(BSS)
204.	Infrared thermometer	1	PG	(BSS)
205.	Air weather monitoring system	1	PG	(BSS)
206.	Manual and automatic agro-meteorology	1	PG	(BSS)
207.	Solar radiation assessment system	1	PG	(BSS)
208.	Soxhlet apparatus	1	PG	(NRM)



COMMUNITY SCIENCE (HOME SCIENCE)

1. Degree Nomenclature:

- B.Sc. (Hons) Community Science
- B.Sc. (Hons) Food Nutrition and Dietetics

2. Eligibility Criteria: Intermediate / 10+2 with PCB/PCM/PCMB (P- Physics, C-Chemistry, M-Mathematics, B-Biology) from a recognized Board/ University.

3. Medium of Instruction: English

4. Minimum Intake: 60 students per year

5. Departments:

- 1) Department of Food Science and Nutrition
- 2) Department of Food Policy and Public Health Nutrition
- 3) Department of Apparel Design
- 4) Department of Family Resource Management and Consumer Science
- 5) Department of Human Development and Family studies
- 6) Department of Textile Science and Design
- 7) Department of Extension and Communication Management

6. Minimum faculty and staff for one degree program:

Department	Asstt. Prof.	Assoc. Prof.	Prof.	Total
Department of Food Science and Nutrition	4	2	1	7
Department of Food Policy and Public Health Nutrition	4	2	1	7
Department of Apparel Design Management	4	2	1	7
Department of Textile Science and Design	4	2	1	7
Deptt. of Family Resource Management and Consumer Science	4	2	1	7
Deptt. of Human Development and Family Studies	4	2	1	7
Deptt. of Extension Education and Communication Management	4	2	1	7
Total	28	14	07	49

Additional Faculty Requirements for New Programs where Home Science program is existing

Professors : 02

Associate Professors : 04

Assistant Professors : 10

7. Administrative setup of the college:

Office space for Dean's office, Dean's committee room, account section, students record section, ministerial staff room, computer cell, academics and controller of exam cell, toilets and conveniences, visitors room and information room shall be required.

Administrative & Technical Staff requirement for divisions/Departments/Sections

Sl. No.	Divisions/Departments/Sections	Assistant / Steno	Clerk	Lab Asstt./ Technician/ Attendants	Attendant/ Messenger	Total
1.	Department of Food Science and Nutrition	1	1	4	1	7
2.	Department of Food Policy and Public Health Nutrition	1	1	4	1	7
3.	Department of Family Resource Management and Consumer Science	1	1	4	1	7
4.	Department of Extension Education & Communication Management	1	1	4	1	7
5.	Department of Apparel Design	1	1	4	1	7
6.	Department of Textile Science and Design	1	1	4	1	7
7.	Department of Human Development and Family Studies	1	1	4	1	7
TOTAL		7	7	28	7	49

8. Manpower Requirement of Dean s Office and other common facilities

Sl. No.	Name of the Post	No. of Posts
1.	Dean	01
A. Establishment		
1.	Assistant Administrative officer	01
2.	P.A./P.S. to Dean	01
3.	Senior Assistants (Academic, budget and establishment)	03
4.	Clerks (one each for Academic, budget and establishment and one for girls hostel)	04
5.	Messengers	03
6.	Asstt. Librarian	01
7.	Shelve Assistants	02
8.	Assistant Professor Physical Education & Sports	01
9.	Steno	02
10.	Computer assistant	01
11.	Driver (one each for light and heavy vehicle)	02
12.	Store Keeper	01
13.	Electrician	01
14.	Medical Officer	01
15.	Compounder	01
16.	Nurse	01
17.	Hostel Warden	Charge with faculty

Table Contd.

Table Concluded

Sl. No.	Name of the Post	No. of Posts
18.	Assistant Warden	02
19.	Cook	01
20.	Assistant Cook	01
21.	Mess Helpers/ waiters (service)	06
23.	Attendants for Deans Office, library, sports, Medical Hospital	08

9. Floor Space (Department wise):

Sl.No.	Details	Number	Dimensions (ft)
1.	Head of the Department's Chamber	5	10 × 15 each
2.	Office Room	5	15 × 20 each
3.	Associate Professors' Rooms	5	10 × 10 each
4.	Faculty Rooms (with individual workstations)	5	20 × 30 each
5.	Laboratories	15	20 × 30 each (3 labs per department)

College Building

1.	Class Rooms	4	Seating capacity of 65 each
2.	Multipurpose Room/Examination Hall	1	Seating capacity of 100
3.	Toilets	9	2 ladies' and 1 gents'/floor (for 3 floors)

Other Infrastructure

1.	Auditorium	1	Seating capacity of 500 persons
2.	Dispensary	1	As per requirement
3.	Sports Complex	1each	Outdoor & Indoor
4.	Multi Gym	1	As per requirement
5.	Faculty Room for sports complex	1	10 × 15
6.	Store Room for sports complex	1	10 × 20
7.	Toilets for sports complex	1 each	For ladies and gents
5.	Hostel	1	To accommodate 200 students and with provision of 3 guest rooms.
6.	Parking facility	As per the requirement	
7.	Library	1	As per the requirement
8.	Production cum Training Centre	1	As per the requirement

3. Laboratory Equipment

Analytical Laboratory		Clinical Investigation Laboratory	
1.	HPLC	1.	Glucometer
2.	Spectrophotometer-2	2.	B. P. Instrument
3.	Kjel plus	3.	Pedometer

Table Contd.

Table Contd.

Analytical Laboratory	Clinical Investigation Laboratory
4. Refrigerated centrifuge	4. Haemoglobin meter
5. Deep freeze	5. Anthropometric rod
6. Moisture estimation equipments	6. Infantometer
7. Vacuum cleaner	7. Skinfold caliper
8. Ultrasonic cleaner	8. Weighing balance
9. Muffle furnace	9. Vernier caliper
10. Autoclave	10. Body composition analyzer
11. Flash evaporator	11. Heart Rate Monitor
12. Laminar flow	12. Blood Analyser
13. Hot air oven	
	Processing Lab and Product Development Laboratory
14. Colony counter	1. Popping machine
15. Incubator	2. Utensil rack
16. Magnetic stirrer with hotplate	3. Potato bin
17. Viscometer	4. OTG
18. Soxplus	5. Fryer
19. Fibreplus	6. Counter refrigerator
20. Viscometer	7. Masala grinder
21. Metabolic shaker	8. Wet grinder
22. Water bath shaker	9. Potato peeler
23. Photo fluorometer	10. Vacuum sealing machine
24. Distillation apparatus	11. Hand refractometer
25. Ion meter	12. Flour mill
26. Centrifuge	13. Baking ovens
27. pH meter	14. Heavy duty
28. BOD incubator	15. Lyophilizer
29. Sieve shaker	16. Vegetable cutter
30. Pipette washer	17. Dough kneader
31. Cyclo mixer	18. Multimill
32. Spectrophotometer	19. Working table
33. Colony counter	20. Vacuum oven
34. Homogenizer	21. Tray dryer
35. Wiley Mill	22. Grinding mill
36. Cabinet refrigerator	23. Canning equipment
	24. Bottling equipment
Catering Laboratory	25. Pouch filling machine
1. Microwave ovens	26. Coffeemaker
2. Hot case cabinet	27. Tea maker
3. Flycatchers	28. Electronic kitchen balance
4. Air curtain	

Table Contd.

Table Contd.

Analytical Laboratory	Clinical Investigation Laboratory
5. Food processor	29. Refrigerator
6. Dosa griddle plate	30. Deep freeze
7. Water purifier	31. Heavy duty Mixer, Juicer, Grinder
8. Refrigerators	32. Stone separator
9. Washing machine	33. Chiller
10. Cooking range and utensils	34. Extruder
11. Juicer and blender	35. Pulper / smoother
12. Utensils for cooking and serving	36. Roti maker
	37. Utensils for cooking and serving
Nutrition Counselling Centre	Weaving Lab
1. Computers	1. Loom (Handloom)
2. Scanners	2. Table loom for sample weaving
3. Video-editing workstation	3. Bobbin winding machine
4. LCD projector	4. Creel board
5. Laptop	5. Wrapping drum
6. Printers	Clothing Lab
7. Photocopiers	1. Foot operated sewing machine
8. Plasma screen	2. Button hole machine
9. Camera	3. Interlock machine
10. Measuring equipment	4. Over lock machine
11. Anthropometric kit	5. Cutting table-individual use (2'×4')
	6. Cutting table (Group- 5'×7')
12. Body Composition Analyser	7. Iron and ironing board
	8. Cutting, measuring (anthropometric kits, marking, pressing, miscellaneous tools)
Computer Lab(Clothing CAD Lab)	9. Embroidery machine (Electric)
1. Textile designing software	10. Embroidery machine (Computerized)
2. Apparel designing software	Flat pattern and Draping Lab
3. Fashion illustration software	1. Industrial sewing machine
4. Weave designing software	2. Dress forms of different sizes
5. Computers with accessories	3. Mannequins' (Male/Female/Children)
6. Digitizer	4. Fashion Illustration boards with stands
7. Plotter	Dyeing and Printing Lab
8. Digital camera	1. Distillation unit
Laundry Lab	2. Hot plates
1. Rack for keeping chemicals	3. Steaming chamber
2. Spirit lamps	4. Screen printing table 4' × 7'
3. Projection microscope	5. Block printing table 4' × 4'
4. Weighing balance	6. Microwave oven
5. Pick glasses	

Table Contd.

Table Contd.

Analytical Laboratory	Clinical Investigation Laboratory
6. Knitting machines (Flat bed and Circular)	7. Water purifier
7. Fully automatic washing machine	Office Requirements
8. Refrigerator	1. LCD projectors and Screen
	2. Printers
List of Furniture	3. Spiral Binding Machine
1. Students chairs	4. Cutting Machine
2. Students stools	5. Lamination machine
3. Book Racks	6. Photocopier
4. Storage cabinets	
Resource Management Equipment Lab	45. Solar Cooker
1. Water Filter	46. Solar Cooker(Parabolic Type)
2. Microwave Oven	47. Solar Lantern
3. Electric Oven	48. Solar Drier
4. Vacuum Cleaner	49. Solar Water Heater
5. Weighing Machine(Personal)	50. Rice Cooker
6. Geyser	51. Water Cooler(Dispenser)
7. Halogen Heater	52. Induction Cooker
8. Emergency Light	53. Air Fryer
9. Refrigerator	54. Gas Connection
10. Cooking Range	55. Food Adulteration Testing Kit
11. Washing Machine	56. Knife Set
12. Hand Mechanical Grinder	57. Dinner Set
13. LPG Stove (4 burner)	58. Tea Set
14. Kitchen Tool Set	59. Cutlery Set
15. Oven Cookery Utensils	60. Table Mats and Table Napkins
16. Surface Cookery Utensils	Ergonomics Lab
17. Coffee Percolator(all three types)	1. Digital Camera
18. Dishwasher	2. Weighing Machine(Electronic)
19. Juicer	3. Stopwatch
20. Hand Mixer	4. Hygrometer
21. Coconut Cutter Grater	5. Lux Mater
22. Chili Cutter	6. Heart Rate Monitor
23. Bar Blender	7. Treadmill
24. Pressure Cooker	8. Hygro thermometer
25. Food Processor	9. Pedometer
26. Thermo Flask	10. Goniometer
27. Electric Tandoor	11. Vibrometer
28. Sandwich Maker	12. B.P. Monitor
29. Bread Toaster	13. Grip Dynamometer

Table Contd.

Table Contd.

Analytical Laboratory	Clinical Investigation Laboratory
30. Potato Chipper	14. Spreading Caliber
31. Electric Kettle	15. Anthropometry Meter
32. Sprout Maker	16. Seating Height Machine
33. Idli Maker	17. Lamination Machine
34. Electric Iron	18. Paper Cutting Machine
35. Ironing Stand	19. Spiral Binder
36. Chopper	20. Laser Printer
37. Cutter	21. Laserjet Colour Printer
38. Citrus Press	22. Scanner Scan jet
39. Tomato Slicer	23. Computer System
40. Squeezer	24. Interior Designer Software (Autocad, Home Architect Deluxe)
41. Salt and Pepper Grinder	25. 3D Max (Software)
42. Grater	26. Advanced 3DMax (Software)
43. Chipser	
44. Solar Educational Kit	
Housing and Space Management lab.	Multimedia Lab
1. Over head Projector +Screen	1. Overhead Projector
2. LED Project + Monitor	2. Public Address System
3. Drawing Board	3. 16 mm film projector
4. Drawing Scale	4. Auto slide projector
5. Engineering Scale	5. Record player
6. T-Set Square Scale	6. Epidiascope
Interior Design and Decoration Lab	7. V.C.R.
1. Flower Press	8. Motorized screen
2. Potter's Wheel	9. Digital Camera
3. Sponge	10. Video Camera
4. Display Board Wall Mounted	11. Computer with accessories
5. Portable Display Boards	12. V.C.D. Player
6. Flower vases	13. Plus Direct Projector
Testing Laboratory	14. Colour T.V.
1. Weighing Machine	15. Digital Camera
2. Speech Audiometer	16. L. C.D.
3. Infanto meter	17. Slide Projector
4. Digital HB Metter	18. Scanner
5. Bathroom scale	19. Microphone
6. Anthropometric Rod	20. Motorize screen
7. Standford Binescale	21. Video Camera
8. Beam Balance	22. Camera

Table Contd.

Table Concluded

Analytical Laboratory	Clinical Investigation Laboratory
10. Stapler big size	23. Computer with accessories
11. Sliding Caliper	24. Director Projector
12. Spreading Caliper	25. Digital Camera
13. Assophemeter Caliper	26. Slide projector
14. Colour mixer	27. Printer
15. Depth Prescription apparatus	28. Scanner
16. Mirror drawing apparatus	29. Overhead Projector
17. Attention board	Laboratory Nursery School
18. Stop Watch	1. Video Camera
19. Lever Actuated Balance	2. V.C.R
20. Bhatia Battery	3. Audio System
21. Scientific Calculator	4. Voltage Stabilizer
22. Top Pan SelfIndicating Balance	5. Projector LCD
23. Metronome	6. Digital Camera
24. Weighing Balance	7. Refrigerator
25. Skin fold Caliper	8. Projector Slide film
26. Developmental Assessment Scale	9. AV folding projector
27. Wechsler Intelligence Scale	10. Radiator
28. Cognitive tests	11. Music system
29. PsychologicalTests	12. Vaccum cleaner
	13. DVD Player
PHOTOGRAPHY LAB	14. VCD Player
1. DigitalCamera	15. Radio Recorder
2. SLR Camera	16. Cooler
3. Colour Photo Printer	17. Slide projector
4. Video Camera	18. Colour T.V.
	19. Washing Machine
	20. Microwave



HORTICULTURE

1. **Degree Nomenclature:** B.Sc. (Hons.) Horticulture
2. **Eligibility Criteria:** Intermediate /10+2 with PCB/PCMB/PCM/PC Forestry/Inter (Agriculture) (P- Physics, C-Chemistry, M-Mathematics, B-Biology) from a recognized Board/ University.
3. **Medium of Instruction:** English
4. **Minimum Intake:** 60 students per year
5. **Departments / Sections**
 - 1) Fruit Science
 - 2) Vegetable Science
 - 3) Floriculture and Landscape Architecture
 - 4) Postharvest Technology
 - 5) Plant protection
 - 6) Basic Sciences
 - 7) Natural Resource Management
 - 8) Social Science

6. Faculty Requirements

Department	Prof.	Assoc. Prof.	Asstt. Prof.	Total
Department of Fruit Science (Breeding + Production)	1	2	3	6
Department of Vegetable Science (Breeding + Production) + Seed Production/Seed Technology	1	1	4	6
Department of Floriculture and Landscape Architecture (Breeding + Production)	1	1	2	4
Department of Post Harvest Technology	1	1	2	4
Department of Plant protection a. Entomology +/Nematology b. Plant pathology+/Nematology	1	2	3	6
Department of Basic Sciences Biochemistry, Crop Physiology, Biotechnology & genetics and plant breeding, Statistics, Computer science	1	2	6	9
Department of Natural Resource Management Soil Science & Agril. Chemistry, Microbiology, Water Tech Centre (WTC), Environmental Science, Agricultural Engineering, Agro Forestry	1	1	6	8

Table Contd.

Table Concluded

Department	Prof.	Assoc. Prof.	Asstt. Prof.	Total
Department of Social Science Agriculture Extension, Agriculture Economics, Agri/ Horticulture Business Management, English, Physical Education, Library Science	1	1	5	7
Total	8	11	31	50

7. Administrative and Technical Requirements

Sl.No.	Non-teaching staff	Required
a)	Assistant Registrar/Administrative Officer	01
b)	Superintendent (Administration)	01
c)	Assistant Comptroller	01
d)	Assistant Engineer (Civil)	01
e)	Assistant Medical Officer	01
f)	Junior Engineer (Electrical)	01
g)	Lab Technician	01
h)	Library Assistant	02
i)	Lab Assistant	08
j)	Field assistant	08
k)	Shelf assistant	02
l)	Assistant-cum-Computer Operator	06
m)	Driver	06
n)	Tractor Driver	02
o)	Cook	04
p)	Care taker	03
q)	Plumber	01
r)	Electrician	01
s)	Bus helper	02
t)	Sports helper	02
u)	Gardener	06
v)	Janitor	02
w)	Office Attender	06
x)	Watchman	06
y)	Nurse (Female + Male)	02
Total		76

8. Land requirement : 40 ha

9. Floor Space Civil Structures
College Main Building

Sl.No.	Details	No. of rooms	Dimensions (ft)
1.	UG Class Rooms	05	70 students seating capacity
2.	PG Class Rooms	12	30 seating capacity
	UG Labs	08	50 capacity with HOD and faculty chambers and store room attached
3.	PG Labs	12	25 capacity/separate lab/department where PG programme offered)
4.	Seminar Hall	01	150 seating capacity
5.	Examination Hall	01	150 seating capacity
6.	Computer Laboratory	02	50 seating capacity (UG) + 25 capacity for (PG)
7.	Central Instrumentation room	01	40 × 40
		(only for PG)	
8.	Dean's Room and Office	02	20 × 24
9.	PA's room		20 × 12
10.	Mini Meeting Room (attached to Dean Chamber)	01	20 × 48
11.	Academic Unit	01	20 × 12
12.	Administration Unit	01	20 × 12
13.	Accounts unit	01	20 × 12
14.	External Examination Unit	01	20 × 12
15.	Student Welfare Unit	01	20 × 12
16.	Days scholar lounge	02	1 for Boys and 1 for Girls
17.	Placement / Counselling cell	01	20 × 12
18.	Language Lab	01	20 × 20
19.	General Store	01	20 × 12
20.	Postharvest Technology Pilot plant	01	separate building shed for processing, value addition, packaging and dispatch

Library

Staff room (Assistant Librarian)	-	01
Stack room (borrowing)	-	01
Reference Hall / Journal section	-	01
Book bank	-	01
E-resource Centre	-	01
Photo-copying room	-	01

Reading Hall for students - 01
Reading Hall for Staff - (Small) - 01

Auditorium - 01(optional 400 - 500 capacity)

Hostels and Guest House

UG Boys Hostel - 01: (150 capacity, 3 students per room) (Min. room size of 5m × 4m)

UG Girls Hostel - 01: (150 capacity, 3 students per room) (Min. room size of 5m × 4m)

PG Boys Hostel - 01: (50 capacity, Single bed) (Min. room size of 3m × 4m)

PG Girls Hostel - 01: (50 capacity, Single bed) (Min. room size of 3m × 4m)

International hostel - 01: (25 capacity, single bed room 25 for Ph.D. with Kitchen and Wash room attached)
(Min. room size of 5m × 4m)

Vehicle parking sheds – 02: (Two wheeler) one each attached to Boys & Girls hostel

Farm / Orchard office

- a. Farm Manager Office
- b. Seed processing + Storage unit
- c. Farm store
- d. Threshing yard
- e. Workers rest shed
- f. Maintenance cell / Estate Branch
- g. Implement Shed
- h. Tractor Shed
- i. Meteorological unit
- j. Farm fencing

Vehicle parking shed (four & two wheeler + 2 buses)

Generator Shed / Battery Room

Guest Houses: 01 (10 VIP Suits + 20 Double bed rooms)

Farmers Training hostel (Men): 20 rooms with five beds each & attached bath room

Farm Women Hostel: 20 rooms with five beds each & attached bath room

Sports & Welfare

1. Four hundred meters track with pavilion & Gallery – 01
2. Courts - Volley ball - 02
Basket ball - 02
Kabbadi - 01
Kho-Kho - 01
Tennis - 01

3. Indoor games facilities
 - Table tennis - 02 (each for boys and girls hostel)
 - Shuttle badminton - 02 (each for boys and girls hostel)
 - Gymnasium - 02 (each for boys and girls hostel)
4. Canteen - 02 (Staff + student)
5. Dispensary (10 beds) - 01
6. Stationery & Xerox point -01
7. Bank & ATM - 01
8. Other utilities unit - 04 to 06

Research-cum-Instructional Farm

(Total area 40 ha/100 acres for UG additional 20 ha/50 acres for PG)

1. Crop Museum - Tech Demo Plot unit
2. Botanical Garden - 04 ha (Germplasm Centre cum Mother plant block)
3. Nursery - Polyhouses (6), shade houses (6), Glass house (2), Potting shed (2), Scion banks of important crops (1), Root stock block (1)
4. Structures of- Naturally ventilated - single span, multi span, medium, cost, various types high cost, and climate control structure with fan and pad system.
5. Bio-agents production units - 02
6. IFS model - 01
7. Experiential Learning Modules - 04
8. Composting unit and vermicomposting - 04

Irrigation, Water harvesting facilities

1. Bore wells / Lift Irrigation / Water treatment plant
2. Farm pond and watershed unit/ Heavy duty system RO & storage units – 02
3. Over head tank
4. Ground water sump
5. Irrigation network to farm
6. Roof water harvesting facility and collection pond/tank
7. Spent water treatment units, incinerator
8. Hydrological field lab
9. Drip/Sprinkler irrigation system

Farm Machinery

1. Tractors - 02
2. Tractor drawn water tank, trailer and other tractor bound land preparation, spraying, harvesting, Equipment, with a workshop - 01 Set
3. Power tiller - 02
4. Mini Tractor - 01
5. Power shears - 02
6. Weed cutter - 01
7. Laser leveler - 01

Mobility

10. Bus (60 seater)	- 01
11. Minibus (40 seater)	- 01
12. Car	- 01
13. Jeep	- 01
14. Multipurpose utility van	- 01
15. Motor Cycle	- 02

10. Laboratory Equipment**a) Equipment for UG laboratory**

Sl.No.	Particulars	Quantity
1.	Weigh balance (0.001g)	8
2.	Weigh balance (0.01g)	8
3.	Weigh balance (0.1g)	8
4.	Weigh balance (60g)	2
5.	Single distillation unit	6
6.	pH meter	8
7.	EC Bridge	8
8.	Digital refractrometer	3
9.	Digital vernier calipers	2
10.	Compound microscope	25
11.	Hot air oven	10
12.	Magnetic stirrer (liter)	8
13.	Micro oven (25 lt)	8
14.	Refrigerator (320 lt)	8
15.	Water bath with shaker (20 lt)	8
16.	Power pack - small	2
17.	Horizontal gel unit – medium	2
18.	Digital thermometer and hygrometer	8
19.	Liquid nitrogen container – 7 lt	4
20.	Air conditioner – 2 tone	8
21.	Online UPS – 10 volts	8
22.	Digital camera – 14m pix	8
23.	vortex	8
24.	Hot plate – 5 lt	8
25.	Seed analyzer	1
26.	Seed coating machine	1
Total		178

Table Contd.

b) Equipments for centralized laboratory

Sl.No.	Particulars	Quantity
1.	Seed germinator	2
2.	Electrical conductivity	1
3.	Double distillation unit	5
4.	Lab microscope	3
5.	Stereo zoom microscope	2
6.	Fluorescent microscope	1
7.	Orbital shatter (8500ml conical flask cap)	4
8.	UV vis spectrophotometer	2
9.	Refrigerated centrifuge	2
10.	Microtome	1
11.	Vertical gel unit (dual unit max)	3
12.	Micro pipette (10 l, 100 l, 1000 l, 5000 l)	3
13.	BOD incubators	4
14.	Laminar air flow chamber	2
15.	Deep freezer vertical (-20°C, 275 lt)	4
16.	Autoclave (vertical) 250 lt	3
17.	Nitrogen distillation unit	2
18.	Fib estimation unit	2
19.	Flame photo meter	2
20.	Ultra pure water purification system	2
21.	Thermocycler unit	2
22.	Gel documentation unit	2
23.	Air conditioner – 2 ton	3
24.	Online UPS – 10 volts	2
25.	Growth chamber	2
26.	SPAD	2
27.	Chromatographic system (TLC HPLC)	1
28.	Colour meter	1
29.	Texture analyzer	1
30.	Company analyzer	1
31.	Leaf area meter	1
32.	AAS	1
33.	Cultured trollies – 4	4

Table Contd.

Table Concluded

Sl.No.	Particulars	Quantity
34.	Visco meter	1
35.	Cold store cum ripening chamber	1
36.	Water activity meter	1
Total		76

c) Laboratory equipment required for PG

Sl.No.	Equipment	Quantity
1.	Magnetic stirrer	9
2.	Vernier caliper (digital)	10
3.	Refractometers (digital)	4
4.	Pressure testers	4
5.	Top pan balance	10
6.	Humidifier	2
7.	Plant press	8
8.	Altimeter	4
9.	Lux meter	4
10.	Thermo hydrographs	8
11.	Seed drier	2
12.	Bee hives	20
13.	Honey extractor with wax meter	2
14.	Microscope with computer attachment	1
15.	Tensio meter with digital sensors	24
16.	Soil thermometers	24
17.	Suction pump	2
18.	Soil testing units	3
19.	Oil extraction operators	2
20.	Leaf scan meter	1
21.	Root length scanner	1
22.	Silva compass	2
23.	Clinometer	2
24.	Range finder	1
25.	fillescope	2.0
26.	Digital planni meters	2

Table Contd.

Table Contd.

Sl.No.	Equipment	Quantity
27.	Increment stem boner – 12", 16", 20" and 25"	24
28.	High limb chain saw	4
29.	Wheeler penda	1
30.	Abney's level	2
31.	Wood moisture meter	1
32.	Hot and cold press	1
33.	Strength testing apparatus	1
34.	Wood working machine	1
35.	Wood grinder	1
36.	Boiler	1
37.	Hedge cutter	4
38.	Gas liquid chrometaography	1
39.	CO ₂ analyzer	1
40.	Canopy analyzer	1
41.	Ultra centrifuge	1
42.	Soil moisture pans	2
43.	Cold rooms	2
44.	Air curtain door	1
45.	Aluminum calipers	10
46.	Brine meter	1
47.	Brine hydrometer	1
48.	Digital seed hunter	2
49.	Digital pycnometer	1
50.	Digital immerse tester/penetrometer	1
51.	Cushocton silt sampler	1
52.	GPS	1
53.	Leet converter	5
54.	Hygrometer	1
55.	Infra red thermometer	1
56.	Moisture meter	1
57.	Ozone generator	1
58.	Psychrometer	1
59.	Soil colour charts	2
60.	Seed combined	5

Table Contd.

Table Contd.

Sl.No.	Equipment	Quantity
61.	Soxhlet apparatus	2
62.	Surfuzing equipment	1
63.	Viscosity meter	1
64.	Turbidity meter	1
65.	Water bath	3
66.	Willing mill	2
67.	Wind tunnel	1
68.	Bomb calorimeter	1
69.	Chlorophyll meter	1
70.	Cobous meter	1
71.	Work station	1
Total		263

d) Equipment for postharvest management lab

Sl.No.	Equipment	Quantity
1.	Walk in cool chamber	01
2.	Grading and packaging unit including shrink and vacuum packaging machine	-
3.	Bunch cutting machine / fruit harvesters	-
4.	Hydraulic fruit harvester	1
5.	Bunch tying machine	1
6.	Bundling machine for bunching	1
7.	Heat sealing machine	1
8.	Strapping machine for cartons	1
9.	Turgidity machine	1
10.	Refrigerated van	1
11.	Ripening chamber	1
12.	Conditioning godown	1
13.	Pre cooling chamber	-
14.	Cooling chamber	-
15.	Zero energy cool chamber	-
16.	Seed germinator	-
17.	Freeze drier	1
Total		11

e) Equipment for fruits and vegetables processing and preservation lab

Sl. No.	Equipment	Quantity
A. Measuring instruments		
1.	Weighing scale – platform type	1
2.	Counter weight scale with pan indicator and weights	1
3.	Jam boiling thermometer	2
4.	Gelly thermometer	2
B. Preparation, cutting, slicing, cubing, dicing equipment		
1.	Working table with stainless steel top	2
2.	Stainless steel knives for cutting, coaring, pitting, peeling etc.	2 sets
3.	Fruits / vegetable slicer (1HP)	1
4.	Slicer with circular cutting knife	1
5.	Fruits / vegetable slicer (0.5 HP)	1
6.	Papaya cutter – 1 HP	1
7.	Papaya slicer	1
8.	Carrot slicer	1
9.	Cherry peeler	1
10.	Lemon or orange halving machine	1
11.	Pineapple slicer – 2 HP	1
12.	Pineapple coarer	5
13.	Pineapple cutting knives	10
14.	Dicing and cubing machine	1
15.	Mango cutter	1
16.	Mushroom knives	10
17.	Scooping knife	10
18.	Lemon quartering machine	1
C. Washing equipment		
1.	Fruits and vegetables washer	1
2.	Rotary type fruits/vegetables washing machine	1
3.	Bottle washer	1
4.	Empty can washer and sterilizer (power type)	1
D. Graders		
1.	Fruit grader	1
2.	Pea grader (1.5hp)	1
E. Dryer/Dehydrator		
1.	Tray dryer (40 trays)	1
2.	Cabinet tray dryer (24 trays)	1

Table Contd.

Table Concluded

Sl. No.	Equipment	Quantity
3.	Vegetable dryer	1
4.	Dryer/dehydrator/heater	1
5.	Drying oven	1
F. Blanchers		
1.	Blancher (0.5hp)	1
2.	Steam blancher	1
G. Peelers/sheller		
1.	Potato peeler (0.5hp)01	1
2.	Papaya peeler	1
3.	Lye peeler	1
4.	Pea sheller	1
H. Kettler		
1.	Steam jacketed kettle	1
2.	SS trays	10
I. Grinders/pulverizer		
1.	Mini pulverizer	1
2.	Orange peel shedding machine	1
J. Juice extractor/fruit mills/pulpers		
1.	Mini pulper (1hp)	1
2.	Pulper (twin)/mango pulper	1
3.	Hydro extractor	1
4.	Oil type hydraulic juice press (power operated)	1
5.	Apple/fine apple/carrot juicer	1
6.	Fruit mill/custer	1
7.	Hand basnet press	2
8.	Hammer mill	1
9.	Apple/pear crusher	1
K. Sterilizer/mixture/pasteurizers		
1.	Juice pasteurizer	1
2.	homogenizer	1
3.	Storage and mixing	4
4.	Sterilization tony	1
L.	Canning equipment including canning retort/ pressure boxes, reforming unit, double seaming machine, hand cane seamer, cane opener lid embossing machine, steam checking gauge, vacuum tester, flame rectifier, etc.	Complete set

Table Contd.

Table Concluded

Sl. No.	Equipment	Quantity
M. Filling & packaging equipment		
1.	Vacuum filling machine	1
2.	Crown corking machine	1
3.	Cup filling and reeling machine	1
4.	PP cap sealing machine	1
5.	Pouch filling and sealing machine	1
6.	Shrink packaging machine	1
N. Miscellaneous		
1.	Mixi	2
2.	Filter press (1hp)	1
3.	Steam generator/ mini boiler	1
4.	Pea pricking machine	1
5.	Roasting machine	1
6.	Pickle mixture	1
7.	centrifuge	1
8.	Straight line exhaust box	1
9.	Portable strimer	1
Total		120

Campus shall be properly laid out depending on the location with proper Master plan.

1. With proper approach roads to various structures with street light (solar) facility for important roads.
2. All round the campus there shall be a proper fence or compound with tall growing trees to serve as wind break or shelter belts besides compound wall to ladies hostel.
3. Around main building and hostel building proper landscape gardening shall be established.
4. All along important roads, selected ornamental trees/useful trees shall be planted.
5. Each major department should have Research block of 4 hectare - Germplasm unit, evaluation/trial block, Field laboratory, farm store etc.
6. Intercom network
7. Solar lighting
8. Solar water heating system
9. Underground electricity supply system (24 hrs line)
10. General security system/ office
11. All buildings with fire / electricity alarm and safety systems.
12. Proper storage systems and use of harmful chemicals insecticides and pesticides, etc.



SERICULTURE

1. **Degree Nomenclature :** B.Sc. (Hons) Sericulture
2. **Eligibility Criteria :** Intermediate / 10+2 with PCM/PCB/PCMB (P- Physics, Chemistry, M-Mathematics, B-Biology)
3. **Medium of Instruction:** English
4. **Minimum Intake :** 40 students per year
5. **Departments /Sections**
 - 1) Department of Host Plant Production
 - 2) Department of Sericulture Crop Improvement
 - 3) Department of Cocoon Crop Production
 - 4) Department of Silk Product Science
 - 5) Basic Sciences and Humanities

6. Faculty Requirements For Department/Section

Sl. No.	Department/Section	Faculty			Total
		Professor	Associate Professor	Assistant Professor	
I.	Department of Host Plant Production (A+B)	1	2	13	16
	A. Core Courses:	1	1	2	
	B. Allied Courses:	-	1	11	
	1. Agronomy	-	-	2	
	2. Agricultural Microbiology	-	-	1	
	3. Soil Science and Agril. Chemistry	-	-	1	
	4. Crop Physiology	-	-	1	
	5. Farm Machinery and Engineering	-	-	1	
	6. Horticulture	-	-	1	
	7. Agricultural Entomology	-	1	1	
	8. Plant Pathology	-	-	1	
	9. Seed Science & Technology	-	-	1	
	10. Forestry and Environmental Science	-	-	1	
II.	Department of Sericulture Crop Improvement (C+D)	1	1	4	6
	C. Core Courses:	1	1	2	
	D. Allied Courses:	-	-	2	
	1. Plant Biotechnology	-	-	1	
	2. Genetics and plant breeding	-	-	1	

Table Contd.

Table Concluded

Sl. No.	Department/Section	Faculty			Total
		Professor	Associate Professor	Assistant Professor	
III.	Department of Cocoon Crop Production (E+F)	1	2	5	8
	E. Core Courses:	1	2	5	
	F. Allied Courses:	-	-	-	
IV.	Department of Silk Product Science	1	1	6	8
	G. Core Courses:	1	1	4	
	H. Allied Courses:	-	-	2	
	1. Mechanical Engineering	-	-	1	
	2. Textile Engineering	-	-	1	
V.	Basic Science and Humanities	-	1	9	10
	1. Agricultural Extension	-	1	1	
	2. Agricultural Economics	-	-	1	
	3. Agricultural Statistics	-	-	1	
	4. Animal Science	-	-	1	
	5. Biochemistry	-	-	1	
	6. Computer Education	-	-	1	
	7. English	-	-	1	
	8. Physical Education	-	-	1	
	9. Asst. Librarian	-	-	1	
Grand Total (I to V)		04	07	37	48

7. Administrative and Supporting Staff for Department / Section

Department/Section	Steno/PA/ Computer Operator	Assistant	Attendant / Messenger	Clerk	Laboratory Assistant / Attendant	Field staff (can be outsourced)
Department of Host Plant Production	1	07	07	-	14	10
Department of Sericulture Crop Improvement	1	02	02	-	04	04
Department of Cocoon Crop Production	1	02	02	-	04	08
Department of Silk Product Science	1	02	02	-	04	04
Basic Science and Humanities	1	04	02	-	03	02
Total	05	17	15	-	29	28

8. Faculty Expertise

Department/Section	Faculty Expertise	
	Core	Associated
Department of Host Plant Production	<ul style="list-style-type: none"> • Host plant cultivation, production and management. • Host plant botany, cytology, genetics and breeding • Host plant physiology • Host plant protection 	<ul style="list-style-type: none"> • Agronomy • Plant Biotechnology • Soil Science and Agril. Chemistry • Crop Physiology • Farm Machinery and Engineering • Forestry and Environmental Science • Horticulture • Agri. Entomology • Plant Pathology • Seed Science & Technology • Genetics and plant breeding
Department of Cocoon Crop Production	<ul style="list-style-type: none"> • Silkworm Rearing • Vanya sericulture • Silkworm egg production • Silkworm protection 	<ul style="list-style-type: none"> • Agricultural Microbiology • Animal Science • Plant Biochemistry • Agri. Economics
Department of Sericulture Crop Improvement	<ul style="list-style-type: none"> • Silkworm cytology, genetics and breeding • Silkworm Morphology and Systematic • Silkworm Anatomy and Physiology 	<ul style="list-style-type: none"> • Biotechnology • Applied Microbiology • Seri Biotechnology • Seri Biochemistry • Seri Physiology
Department of Silk Product Science	<ul style="list-style-type: none"> • Silk reeling and post reeling technology • By-products and value addition • Mechanical engineering • Spun silk production • Industrial Machinery 	<ul style="list-style-type: none"> • Business management • Textile engineering • Silk weaving and wet processing
Basic Sciences, Humanities and Social Sciences		<ul style="list-style-type: none"> • Agricultural Extension • Agricultural Economics • Seri. Business Management • Agricultural Statistics • Computer sciences • English • Physical Education

9. Manpower Requirements

Manpower	Number
Dean	01
A. Establishment	
Personal Secretary to Dean	01
Superintendent (Administration)	01

Table Concluded

Manpower	Number
Superintendent (Accounts)	01
Superintendent (Academics)	01
Assistant Examination coordinator	01
Steno / Computer Operator	02
Attendants/Messengers	02
Clerical Staff / (LDC)	03
AE / AEE	02
Electrician	01
Store Keeper	01
Driver (Heavy Vehicle- 2) & (Light Motor vehicle - 4)	06
Security, Sanitation, garden maintenance and Landscaping	04
B. Library	
Shelf Assistants	01
Clerk	01
C. Student Welfare	
Assistant Director of Student Welfare	01
D. Hostel (Boys + Girls)	
Wardens	02
Clerk (LDC)	02
Cooks	02
Asst. cooks	04
Care taker	02
Attendants	10
Security, Sanitation and Landscaping	07
Total	59

10. Central/Department/Section Laboratories (as per requirement of the teaching and research work of the college)

Department/Section	Laboratory
Department of Host Plant Production	1. Host plant Fields
	2. Agronomy Fields
	3. Horticulture Fields
	4. Agril. Microbiology Lab
	5. Plant Pathology lab
	6. Agril. Engineering Lab
	7. Soil Science and Agril. Chemistry lab
	8. Agril. Entomology lab

Table Contd.

Table Concluded

Department/Section	Laboratory
Department of Cocoon Crop Production	9. Plant Physiology lab
	10. Silkworm Pathology lab
	11. Grainage lab
Department of Sericulture Crop Improvement	Field labs
	12. Silkworm rearing house.
	13. Commercial silkworm rearing house
	14. Chawki rearing house
	15. Genetics & breeding lab
	16. Biotechnology lab
	17. Biochemistry lab
Department of Silk Product Science	18. Host plant breeding lab
	19. Silkworm breeding lab
	20. Silk Reeling lab
	21. Raw Silk testing Lab
	22. Silk dyeing & Printing Lab
	23. Silk weaving Lab
	24. By-product value addition Lab
Basic Sciences, Humanities and Social Sciences	25. Audio-Visual Lab
	26. Computer Lab
	27. Sports ground

11. Land Requirements

Main Building and Hostels	- 06 ha
Field Area	- 30 ha
Play ground	- 04 ha
Total	- 40 ha

12. Floor Space Requirement

A. CENTRAL FACILITY

Sl.No.	Details	Number of rooms	Dimensions (ft)
1.	Dean office	1	20 × 24
2.	PA room	1	20 × 12
3.	Committee room with video conferencing facility	1	20 × 48
4.	Admin. Staff rooms	3	20 × 36 each
5.	Examination cell	1	20 × 12
6.	Evaluation room	1	20 × 36
7.	Faculty room	25	20 × 12 each
8.	Placement cell	1	20 × 48
9.	Smart Lecture rooms	4	Seating Capacity - 50

Table Contd.

Table Concluded

Sl.No.	Details	Number of rooms	Dimensions (ft)
10.	Auditorium	1	Seating Capacity – 300
11.	Library/Book bank	1	30 × 72
12.	Examination hall	1	Seating Capacity - 60
13.	AE / AEE	1	20 × 12
14.	Multipurpose room	1	20 × 36
15.	Laboratories	20	30 × 48 each
16.	Hostel	2	UG & PG (Boys& Girls) accommodating 3 students in a room
17.	Generator shed	1	20 × 36
18.	Canteen	1	20 × 12 (Kitchen) & 20 × 36 (Setting room)
19.	Toilets	-	4 sets each (Girls & Boys)
20.	Parking space	As per requirement (APR)	For college & hostels
21.	Vehicles		
	• Officer car	1	
	• Staff car/Jeep	2	
	• Bus	1	
	• Mini bus	1	
	• Ambulance	1	

B. DEPARTMENT / SECTION

Sl.No.	Details	Number of rooms	Dimensions (ft)
1.	Office of the Head of the Department	5 (for 5 departments)	20 × 24 each
3.	Faculty room	25	As specified in Sl. No. 8
4.	Rooms for Research Scholars	4 (for 4 departments)	20 × 24 each
6.	Smart Lecture cum seminar room	2	Seating capacity – 50 each
7.	Laboratories (No. of laboratories & Field labs as per requirement and include UG teaching laboratory		
8.	Department of Host Plant Production	6	30 × 60 (one) 30 × 40 (Five)
9.	Department of Cocoon Crop Production	2	30 × 60 (one) 30 × 40 (one)
10.	Department of Sericulture Crop Improvement	4	30 × 60 (Four)
11.	Department of Silk Product Science	5	30 × 60 (one) 30 × 40 (four)
12.	Basic Sciences, Humanities and Social Sciences	2	30 × 60 (Two)
13.	Field labs for Agronomy, Host plant cultivation, Horticulture, Rearing houses, Chawki rearing house, Sports ground & Green house / poly house / glass house	As Per Requirement	

13. *Equipment Facilities: Central Teaching and Research Laboratories

A) Centralized Instrumentation Laboratories

Sl. No.	Name of Equipment	Number
1.	Laminar air flow chamber	1
2.	Shaker and Incubator	1
3.	Autoclave	1
4.	pH meter	1
5.	Mirco and macro balances	1 each
6.	Agarose Gel electrophoresis unit (Horizontal)	1
7.	PAGE- electrophoresis unit (Vertical)	1
8.	Gel Documentation Unit	1
9.	ELISA reader	1
10.	Microscopes (simple, compound and stereo)	1
11.	BOD incubator	1
12.	Cold room	1
13.	Liquid Nitrogen Plant	1
14.	Liquid Nitrogen Flask	2
15.	Ice maker	1
16.	High Speed Centrifuge	1
17.	High speed cooling centrifuge	1
18.	Double Distillation unit with RO	(As per requirement)
19.	Computers	4
20.	Table top Centrifuge	1
21.	Micropipettes (0.2-5ml)	1
22.	Hot air oven	2
23.	PCR unit	2
24.	Water bath	1
25.	Pestle & Mortar	10
26.	Micro oven	2
27.	Dissection microscope	5
28.	Compound microscope	5
29.	Megaphones	1
30.	Amplifier	1
31.	Handy cam	1
32.	Camera	1

Any other equipment as per requirement

B) Equipment in the Department Laboratories (additional specialized equipment may be required depending on the mandate of the institute).

Sl. No.	Name of the Equipment	Number of units Divisions	Total Number	Departments using
1.	Tractor	1×1	1	HPP
2.	Tiller	1×1	1	HPP
3.	Secateurs	10×1	10	HPP
4.	Looping Shear	2×1	2	HPP
5.	Brush Cutter	1×1	1	HPP
6.	Sprayer	2×1	2	HPP
7.	Battery operated knapsack sprayer	2×1	2	HPP
8.	Sprayers	5×1	5	HPP
9.	Mulberry cutting preparation machine	1×1	1	HPP
10.	Mulberry stem crushing machine	1×1	1	HPP
11.	Screw auger	1×1	1	HPP
12.	Tube auger	1×1	1	HPP
13.	Other farm implements for cultivation	As per requirement		
14.	Laminar flow	1×2	2	HPP+CCP
15.	Autoclave	1×2	2	HPP+CCP
16.	Spectrophotometer	1×2	2	HPP+CCP
17.	Flame photometer	1×2	2	HPP+CCP
18.	Insect collection box	10×2	20	HPP+CCP
19.	Dissection microscopes	5×2	10	HPP+CCP
20.	Compound microscopes	5×3	15	HPP+CCP+SCI
21.	Acid treatment bath	2×1	2	CCP+SCI
22.	Chawki rearing stands	10×2	20	CCP+SCI
23.	Plastic trays	50×2	100	CCP+SCI
24.	Feeding stands	5×2	10	CCP+SCI
25.	Leaf chopping board	2×2	4	CCP+SCI
26.	Knives	2×2	4	CCP+SCI
27.	Leaf chamber	2×2	4	CCP+SCI
28.	Ant wells	50×2	100	CCP+SCI
29.	Room heater	8×2	16	CCP+SCI
30.	Atomizer	2×2	4	CCP+SCI
31.	Humidifier	4×2	8	CCP+SCI
32.	Leaf collecting basket	8×2	16	CCP+SCI
33.	Electrical balance	2×2	4	CCP+SCI
34.	Power sprayer	2×2	4	CCP+SCI
35.	Mask	2×2	4	CCP+SCI

Table Contd.

Table Concluded

Sl. No.	Name of the Equipment	Number of units Divisions	Total Number	Departments using
36.	Rotary mountages	150x2	300	CCP+SCI
37.	Cocoon harvester	10x2	20	CCP+SCI
38.	Cocoon cutting machine	2x2	4	CCP+SCI
39.	Plastic mountages	150x2	300	CCP+SCI
40.	Deflossing machine	1x2	2	CCP+SCI
41.	Plastic incubation frames	20x2	20	CCP+SCI
42.	Mountage deflossing machine	5x2	10	CCP+SCI
43.	Digital hygrometers	4x2	8	CCP+SCI
44.	Cellules	500x2	1000	CCP+SCI
45.	Small rearing cages with trays	25x2	50	CCP+SCI
46.	Cocoon deflossing machine	1x2	2	CCP+SCI
47.	Cocoon drying machine	1x1	1	SPS
48.	Cocoon cooking machine	1x1	1	SPS
49.	Cocoon reeling machine (either multi end reeling machine or Semi- automatic with denier detecting system)	1x1	1	SPS
50.	Silk re-reeling machine	1x1	1	SPS
51.	Vacuum permeation device	1x1	1	SPS
52.	Cocoon assorting machine	1x1	1	SPS
53.	By-product treating machine	1x1	1	SPS
54.	Silk skein twisting machine	2x1	2	SPS
55.	Silk book making machine	2x1	2	SPS
56.	Seri plane winding machine	1x1	1	SPS
57.	Illumination equipment for inspection	1x1	1	SPS
58.	Denier scale	4x1	4	SPS
59.	Rewinding test machine (10 bobbins)	1x1	1	SPS
60.	Boiler	1x1	1	SPS
61.	Mechanical tools	1x1	1	SPS
62.	Water testing kit	1x1	1	SPS
63.	Spinning wheel	1x1	1	SPS
64.	Weaving unit (Hand loom and power loom)	1 each	2	SPS
65.	Serigraph	1x1	1	SPS
66.	Cohesion tester	1x1	1	SPS
67.	Tenacity and elongation testing machine	1x1	1	SPS

NB: HPP - Host Plant Production; CCP- Cocoon Crop Production; SCI- Sericulture Crop Improvement; SPS - Silk Product Science



NOTE

NOTE
