

**3.0 EQUIPMENTS (ACADEMIC AND NON-ACADEMIC)
APPENDIX 1**

**LIST OF IMPORTANT EQUIPMENT (MINIMUM) REQUIRED FOR TEACHING IN A
BIOCHEMISTRY DEPARTMENT**

S/NO.	DESCRIPTION	QTY. REQD.
1.	Water Bath (Thermostatic)	4
2.	Drying Oven (Thermostatic)	1
3.	Spectrophotometers and Colorimeters	6
4.	pH Meters with Electrodes	4
5.	Electrophoretic Units (Shandon) (Tanks and Power Packs)	4
6.	Centrifuges with Buckets (1000 – 6000 RPM)	4
7.	Incubators	12
8.	Hot Plates and Heaters	12
9.	Test-Tube Mixers	12
10.	Gas Cylinders and Valves and Tubings	6
11.	Distillers (All Glass)	2
12.	Deionizers	2
13.	Gas Chromatography Equipment	1
14.	Fraction Collector	1
15.	Micro-Keldjhal Apparatus	2
16.	High Speed Refrigerated Centrifuge	1
17.	Column Chromatography Equipment	1
18.	Rotary Evaporator	2

APPENDIX 2

**LIST OF IMPORTANT EQUIPMENT (MINIMUM) REQUIRED FOR
TEACHING IN BIOLOGY, BOTANY AND ZOOLOGY DEPTS.**

S/NO.	DESCRIPTION	QTY. REQD.
1.	pH Meter Model 7020	2
2.	Water Bath	1
3.	Skeletal System	1
4.	Muscular System	1
5.	Brain and Nervous System	1
6.	Circulatory System	1
7.	Digestive System	1
8.	Eye and Vision	1
9.	Ear	1
10.	Skin and Excretory Organs	1
11.	GB 28 Concealing and Warning Adaptations	1
12.	Microscopes Swift	16
13.	Olympus Microscope Binocular	5
14.	Nikon Microscope	22
15.	Shermond Microscope	2
16.	Olympus Microscope Monocular	1
17.	Swift Microscope Monocular	1
18.	Wild Microscope Binocular (Heerbrugg)	1
19.	Ice Cube Maker (OSBORNE)	1
20.	Incubator/Sterilizer	1
21.	Embedding Bath	1
22.	Autoclave Portable	1

23.	Chemical Balance (Top-Loading)	1
24.	Dial-B-Gram (2kg. capacity)	1
25.	Tripe Beam Balance	1
26.	Hot Plates (S. No. 72525/19)	1
27.	Hot Plates (S. No. 72431/9)	1
28.	Water Bath No. A08382	1
29.	Incubator Model 516	1
30.	Manesty Still No. 725503	1
31.	Stereoscopic Microscopes (OSM)	20
32.	Refrigerator (Algor)	1
33.	Water Filter	1
34.	R. Humidity with Thermometer	1
35.	Embedding Oven	1
36.	Drying Oven (30° – 120°C)	1
37.	Thermostatic Incubator Model 85164	1
38.	Oven (Gallenkamp) 40o – 60oC	1
39.	Anhydric Incubator	1
40.	Microtome Leiz/Knife	1
41.	Automatic Tissue Processor	1
42.	Water Bath 45300	1
43.	Hot Plate	1
44.	Water Bath 45300	1
45.	Centrifuge	1
46.	Herbarium Index Boxes (Bio. Quip with glass)	9
47.	Herbarium Cabinet (Big Size)	4
48.	Micro-haematocrit Centrifuge	4
49.	Chemical Balance (Analytical)	3
50.	Tissue Embedding Centre	1
51.	Air Pumps (Diaphragm)	9
52.	Tissue Grinder Glass	8
53.	Potometer and Atometer	10
54.	Shadon Unit Kit No. 1	4
55.	Barothermograph	4
56.	Kymograph Muscle	2
57.	Nikon Phase Contrast	18
58.	Dissecting Microscope (Bech Type)	50
59.	Dissecting Microscope (b)	24
60.	Dissecting Microscope Prior	21
61.	Dissecting Microscope Osk	25
62.	Micro-projector Microscope	3
63.	Spirometer (Students' Type)	9
64.	Photoelectric Colorimeter Model	2
65.	Insect Light Traps	1
66.	Insect Box (Large) 61 x 46 x 8 cm	4
67.	Slide Projector (35mm)	1
68.	Over-head Projector	2
69.	Bench Centrifuge	1
70.	Steel Frame Aquaria (Model 5600)	2
71.	Auxanometer Electric	9
72.	PH Meter Model 7020	2
73.	Oxygen Meter (Completer)	1
74.	SHALI Meamoglobinometer	6

APPENDIX 3

LIST OF IMPORTANT EQUIPMENT (MINIMUM) REQUIRED FOR TEACHING IN A CHEMISTRY DEPARTMENT

S/NO.	DESCRIPTION	QTY. REQD.
1.	Ultraviolet-Visible Spectrophotometer	2
2.	Infra-red Spectrophotometer	2
3.	NMR Spectrometer (Multiprobe)	1
4.	Gas Chromatograph-Mass Spectrometer	1
5.	Atomic Absorption Spectrophotometer	1
6.	Differential Scanning Colorimeter	1
7.	Differential Thermal Analyser	1
8.	Xray Diffraction Machine	11
9.	Electron Microscope	1
10.	Colorimeter	1
11.	Light Fastness Testing Machine	1
12.	Wash Fastness Testing Machine	1
13.	Membrane Osmometer	1
14.	Vapour Phase Osmometer	1
15.	Gel Permeation Chromatograph	1
16.	Light Scattering Photometer	1
17.	Automatic Viscometer	1
18.	Magnetic Susceptibility Balance	2
19.	Elemental Analyser	1
20.	Microanalytical Balance	1
21.	Ice Making Machines	4

APPENDIX 4

LIST OF IMPORTANT EQUIPMENT (MINIMUM) REQUIRED FOR TEACHING IN A COMPUTER SCIENCE DEPARTMENT

S/NO.	DESCRIPTION	QTY. REQD
	HARDWARE	
1.	CPU with minimum of 2 MB of main memory	1
2.	Disk Drive	1
3.	Tape Drive	1
4.	Line Printer (300 LPM)	1
5.	VDU Terminals (Ideally there should be one terminal per every 5 students)	6
	SOFTWARE	
6.	COBOL Compiler	
7.	FORTRAN Compiler	
8.	BASIC Compiler	
9.	PASCAL Compiler	
10.	C Language	
11.	DOMS	
12.	Word Processing	
13.	Time Sharing Operating System	

HARDWARE LABORATORY

14.	Logic Development System with necessary accessories	1
15.	Logic Analyser with Scope	4
16.	Micro Trainer Kits	6
17.	Digital Oscilloscopes	6

APPENDIX 5

LIST OF IMPORTANT EQUIPMENT (MINIMUM) REQUIRED FOR TEACHING IN A GEOLOGY DEPARTMENT

S/NO.	DESCRIPTION	QTY. REQD
1.	Atomic Absorption Spectrophotometer (Perkin-Elmer) Model 400 (Complete with accessories and spares)	1
2.	Ultra-violet/Visible Spectrophotometer, Cecil CE 505 (complete with accessories)	2
3.	Rock Cutting and Grinding Machine Tyoe Cutrock MK 3	2
4.	Hydraulic Press-Becham P3	1
5.	Rock Cutler-Cutrock GSP 201	1
6.	Lathe Machine Type Vuxford TUD 22	1
7.	Jaw Xrusher – Creston Model 001/A	1
8.	Colorimeter (Gallenkamp) Model COL-400 (complete with accessories)	2
9.	Sieve Shaker – Pas. Model 1972	1
10.	X-Ray Diffractometer (complete with accessories and spares) (Philips Model)	1
11.	X-Ray Fluorescence (complete with accessories and spares (Philips Model)	1
12.	pH Meter (with accessories and spares)	1
13.	Brunten Compasses (Bruntons)	66
14.	Field Hammers (Geological)	60
15.	Rock/Mineral Polishing Machine Model 28W 300	6
16.	Electron Microprobe Analyser (Philips Model)	1
17.	Titration Potentiometer (TLB-200 Gallenkamp) (with accessories and spares)	1
18.	Lloyd Gas Analyser (Gallenkamp) Model GAS-560-A	2
19.	Petrographic polarizing Microscopes (with 4-nose pieces and 19x, 12x eye-pieces)	50
20.	Binocular Microscopes (complete with accessories & spares)	50
21.	Hotspot Furnace (Muffle) 1000°C to 1100°C; Model FSE-250-010F (complete with spares & Accessories)	2
22.	OS Ovens, 250°C (Gallenkamp) Model Oven-230-526D (complete with spares and accessories)	2

Notes: All electrical appliances must be 220-230V AC.

APPENDIX 6

LIST OF IMPORTANT EQUIPMENT (MINIMUM) REQUIRED FOR TEACHING IN A MATHEMATICS DEPARTMENT

S/NO.	DESCRIPTION	QTY. REQD
1.	Computers	6
2.	Computer Softwares	6
3.	CPU with minimum of 2 MB of main memory	1
4.	Disk Drive	1
5.	Lime Printer (300 LPM)	1
6.	VDU Terminals	5

Note: Both University wide computer facility and Departmental Micro-Computer Laboratory are mandatory.

APPENDIX 7

LIST OF IMPORTANT EQUIPMENT (MINIMUM) REQUIRED FOR TEACHING IN A MICROBIOLOGY DEPARTMENT

S/NO.	DESCRIPTION	QTY. REQD
1.	Incubator (Large)	2
2.	Cold Incubator	1
3.	Anerobic Incubator	2
4.	Refrigerator	6
5.	Deep Freezer	2
6.	70°C Freezer (Ultra-low)	1
7.	Freezer-dryer	1
8.	Binocular Light Microscope	60
9.	Phase-Contrast Microscope	2
10.	Fluorescent Microscope with Camera	1
11.	Darkfield Microscope	2
12.	Portable Autoclave	4
13.	Giant Autoclave	2
14.	Water Bath	6
15.	Hot-Air Oven	6
16.	Bacteriological Hood with UV Lamp	2
17.	Safety Cabinet	3
18.	Laminar Flow Unit	1
19.	Portable Centrifuge	5
20.	High-Speed Refrigerator Centrifuge	2
21.	Spectrophotometer	1
22.	Electrophoresis System	2
23.	pH Meter (digital)	5
24.	Inspissator	1
25.	Vacuum Pump	2
26.	Colony Counter	3
27.	Waring Blender	4
28.	Mettler Balance	2
29.	Membrane Filter (Bacteriological)	6
30.	Vacuum Dessicator	1

31.	Anaerobic Jar	4
32.	Seitz Filter	6
33.	Hot Plate/Magnetic Stirrer	6
34.	Slide Projector/Screen	1
35.	Overhead Project	1
36.	Animal Cages	10
37.	Restraining Cages	5
38.	Glassware Washer	3
39.	Glassware Dryer	3
40.	Shaker Incubator	4
41.	Electronic Toploader Balance	4
42.	Triple-Beam Balance	6
43.	Multiple Dialyzer	3
44.	Electric Stirrer	2
45.	Gas Chromatograph/HPLC	1
46.	Digital Colorimeter	6
47.	Rotary Evaporator	2
48.	Test-Tube Shaker	4
49.	Bunsen Burner	80
50.	Ultrasonic Dismembrator	2

APPENDIX 8

LIST OF IMPORTANT EQUIPMENT (MINIMUM) REQUIRED FOR TEACHING IN A PHYSICS DEPARTMENT

S/NO.	DESCRIPTION	QTY. REQD
1.	Meter rule	40
2.	½ Meter rule	40
3.	Venier Callipers	10
4.	Screw Gauge	10
5.	Beaker-various sizes	10 each
6.	Chemical Balance	5
7.	Travelling Microscope	15
8.	Spring Balance (various)	5 each
9.	Stop Watch	20
10.	Retort Stand	20
11.	Slotted Weights	
12.	Spiral Spring	
13.	Knife Edge	
14.	Inclined Plane	10
15.	Prisms (various)	
16.	Optical Pins (boxes)	15
17.	Drawing Board	15
18.	Optical Benches	10
19.	Converging lens (Various Focal lengths)	10 each
20.	Ray box	10
21.	Diverging lens (various focal lengths)	10 each
22.	Ammeter (various types and ranges)	10 each
23.	Voltmeter (various types and ranges)	10 each
24.	Rheostat (various ranges)	10 each
25.	Resistors (various ranges)	20 each
26.	Resistance box (various ranges)	5 each

27.	Key	20
28.	Potentiometer	10
29.	Metre bidge	10
30.	Galvanometers (various types and ranges)	10 each
31.	Daniel Cell	10
32.	Leclanche Cell	10
33.	Calorimeter	10
34.	Thermometer (various types and ranges)	100
35.	Battery (various ranges)	10
36.	Lee's conductivity apparatus	5
37.	Connecting wires (various Lengths)	20 each
38.	Boyle's Law apparatus	5
39.	Linear expansion apparatus	5
40.	Equation of State of Ideal gas apparatus	5
41.	Maxwellian velocity distribution apparatus	5 each
42.	Tuning fork (various)	10
43.	Resonance tube	10
44.	Ripple tank	10
45.	Air Track	10
46.	Specific gravity bottle	10
47.	Glass Capillary tubes	100
48.	Young's Modulus apparatus	5
49.	Rectangular glass block	20
50.	Moment of inertia and angular momentum apparatus	5
51.	Free fall apparatus	5
52.	Phite Screen	10
53.	Lens Holder	100
54.	Sonometer box	10
55.	Concave mirror (various radii)	20 each
56.	Convex Mirror (various radii)	20 each
57.	Bunsen Burner	10
58.	Spectrometer	5
59.	Mercury Lamps	5
60.	Sodium Lamps	5
61.	Water Distillation apparatus	2
62.	Battery Charger and accessories	2
63.	Wall Clock	2
64.	Refrigerator	2
65.	Centre-zero (universal moving coil) Galvanometer	5
66.	Thermal Conductivity apparatus	5
67.	Vapour Pressure apparatus	20
68.	Oscilloscope (various types)	10
69.	Dry Batteries	20

2. INTERMEDIATE AND ADVANCED PHYSICS

As in the case of General Physics, the list below is not exhaustive. Some of the equipment listed under General Physics are also used in this level and so need not be listed here.

1.	Signal generator (various types)	10
2.	Low voltage power supply	10
3.	H.T. Power Supply	5
4.	Transformers (various grades)	5
5.	Avometers	5

6.	Refractometers	5
7.	Polarimeter	5
8.	Leser spectral unit with power supplies	5
9.	Michelson interferometer	5
10.	Digital Meters	5
11.	Plotters	10
12.	Capacitance meter	10
13.	Recorder	10
14.	Video Monitor	5
15.	Stabilizers	10
16.	Pulse generators	5
17.	Microscope	5
18.	Amplifier	10
19.	Multivibrator	5
20.	Transistor (various types)	
21.	Radioactive Source	2
22.	Ionization Chamber	5
23.	Ratemeter	5
24.	Digital Counter	5
25.	Diffraction grating	5
26.	X-ray tube	5
27.	Cathode ray tube	5
28.	Helmholtz Coils	
29.	Electric oven	
30.	Thermocouple	5
31.	Filters	
32.	Electromagnet	
33.	GM - Counter	
34.	Atomizer	
35.	Frank Hertz Tube	5
36.	Cadmium Lamp and accessories	5
37.	Lummer-Gehrcke Plate	5
38.	Coils	
39.	Inductors	
40.	Capacitors	
41.	Thermistor	5
42.	Photocell	
43.	Diodes	
44.	Loudspeaker	
45.	Digital Multimeter	5
46.	Function generator (various ranges)	5
47.	Biprisms	
48.	Simpson meter	5
49.	Noise generator	5
50.	Flux Meter	5
51.	Microphones	
52.	Coaxial cable	
53.	Electrostatic voltmeter	5
54.	Van de graaf Generator	2
55.	Luminescence tube	5
56.	Immersion heater	5
57.	Diesel engine model four stroke	2
58.	Model of four stroke engine	2
59.	Micro-computers	20
60.	Soft wares	Several

APPENDIX 9

LIST OF IMPORTANT EQUIPMENT (MINIMUM) REQUIRED FOR TEACHING IN A STATISTICS DEPARTMENT

S/NO.	DESCRIPTION	QTY. REQD
1.	Electronic Calculators	200
2.	Programmable Desk Calculators	5
3.	Programmable Pocket Calculators	205
4.	Mini Apple Computers	5

APPENDIX 10

MINIMUM SPACE REQUIREMENTS FOR OFFICE ACCOMMODATION, CLASSROOMS, LABORATORIES, SEMINAR AND CONFERENCE ROOMS

1.	Professor (2)	10.5m ² (x2 – 37.0m ²)
2.	Academic Staff (24)	13.5m ² (x24 – 324m ²)
3.	Faculty Officer (1)	18.5m ² (x1 – 18.5m ²)
4.	Other Senior Staff (10)	13.5m ² (x10 – 135m ²)
5.	Classroom Accommodation	0.7m ² /Student
6.	Departmental Office and storage space	0.7m ² /Student
7.	Seminar Room	0.2m ² /Student
8.	Laboratories	7.5m ² /Student
9.	Conference Room	18.5m ²

APPENDIX 11

LIST OF IMPORTANT EQUIPMENT (MINIMUM) REQUIRED FOR TEACHING IN THE SCIENCE LABORATORY TECHNOLOGY DEPARTMENT

S/No	EQUIPMENT	QTY REQD.
1.	PH Meters Digital	3
2.	Test – Tube Mixers	12
3.	Distillers	2
4.	Deronizers	2
5.	Spectrophotometers (UV/VIS/IR/R)	2
	X-ray Diffractometer (Philips Model with accessories)	2
	Osmometers	
6.	Atomic Absorption Spectrophotometer with accessories	1
7.	Ice making Machine	3
8.	NMR Spectrometer (Multiprobe)	1
9.	Incubator	10
10.	Rotary Evaporator	2
11.	Bunsen Burner	60
12.	Gas Chromatography –Mass Spectrometer	1
13.	Colorimeter (Gallenkamp Col. 400)	1
14.	Light Scattering Photometer	1
15.	Micro-analytical Balance	

Geology/Min.

1.	Rock cutting and Grinding Machine (Tyoe Cutrock Mk3)	1
2.	Hydraulic Press-Becka, P3	1
3.	Lathe Machine (Vuxford Tud 22)	1
4.	Sieve Shaker – Pas Model 1972	1
5.	X-ray Flourescence (Philips Model with Accessories)	1
6.	Brunten Compasses (Bruntons)	60
7.	Field Hammers (Geological)	60
8.	Binocular Microscopes (with accessories)	40
9.	Hotspot Furnace (Muffle) 1000oC – 1100oC (Model FSE – 250 – 010F with Accessories)	2

MCB

1.	Refrigerator	4
2.	Deep Freezer	2
3.	70o Freezer (Ultra Low)	1
4.	Freezer Dryer	1
5.	Binocular Light Microscope	50
6.	Phase-Contrast Microscope	2
7.	Flourescent Microscope with Camera	1
8.	Dark Field Microscope	1
9.	Autoclave (Portable and Giant)	4
10.	Water Bath (Thermostatic)	4

11.	Drying Oven (Hot Air Oven)	2
12.	Bacteriological Hood with UV Lamp	2
13.	Mettler Balance	

PHY/ELEC

1.	Meter Rule	50
2.	½ Meter Rule	50
3.	Vernier Callipers	10
4.	Screw Gauge	10
5.	Glass Bearers (Various Sizes)	10 of each
6.	Travelling Microscope	15
7.	Spring Balance	
8.	Stop Watch	25
9.	Retort Stand	25
10.	Slotted Weights	
11.	Spiral Spring	
12.	Knife Edge	
13.	Inclined Plane	
14.	Prisms (Various)	10
15.	Optical Pins (boxes)	20

1.	Drawing Board	20
2.	Optical Benches	10
3.	Converging Lens (Various focal lengths)	10 each
4.	Ray Box	10
5.	Diverging lens (various focal Lengths)	10 each
6.	Ammeter (various types and ranges)	10 each
7.	Voltmeter (Various types and ranges)	10 each
8.	Rheostat (Various ranges)	10 each
9.	Resistors (various ranges)	20 each
10.	Resistance box (various ranges)	5 each
11.	Key	20 each
12.	Potentiometer	5
13.	Metre Bridge	5
14.	Galvanometer	10 each
15.	Calorimeter	10
16.	Thermometer (various types and ranges)	50
17.	Boyle's Law Apparatus	4
18.	Linear Expansion Apparatus	4
19.	Turning Fork	10
20.	Resonance Tube	10
21.	Specific Gravity Bottle	10
22.	Glass Capillary Tubes	100
23.	Young's Modulus Apparatus	5
24.	Rectangular Glass Block	20
25.	Lens Holder	100
26.	Sonometer Box	10
27.	Concave Mirror (various radii)	20 each

28.	Convex Mirror (various radii)	20 each
29.	Mercury Lamps	5
30.	Sodium Lamps	5
31.	Battery Charges and Accessories	2
32.	Wall clock	2
33.	Oscilloscope (various types)	10
34.	Daniel Cell	5
35.	Leclanche Cell	5
36.	Dry Batteries	20
37.	Battery (Various ranges)	10

APPENDIX 12

Equipment for B.Sc. Degree in Environmental Management and Toxicology

1.	Water Distiller
2.	Water Dionizer
3.	Water Bath
4.	Hot plate
5.	Orbital Shaker
6.	Overhead Steerer
7.	Analytical Balance
8.	Top loading Balance
9.	Deep Freezer
10.	Oven
11.	Heating Mantle
12.	Autoclave
13.	Muffle Furnace
14.	Centrifuge
15.	Rotary Vacuum Pump
16.	TLC Kit
17.	pH meter
18.	Conductivity meter
19.	UV - Visible
20.	Spectrophotometer
21.	Infra – Red
22.	spectrophotometer
23.	Atomic Absorption spectrophotometer
24.	Flame Photometer
25.	Gas Chromatograph

APPENDIX 13

Minimum Basic Equipments for Departments offering the B.S.c. Biotechnology Program

2	Sterile work station
1	Ice chip maker
2	Agarose gel electrophoresis units
2	Polyacrilamide gel electrophoresis units
1	U.V.Gel-viewing unit
1	Gel documentation system
1	Electroporator
1	Vortex mixer
1	-80oC freezer
7	Sets micro pipettes (35 pieces
10	Electricity current stabilizers
1	PCR machine
1	Microcentrifuge
3	Microcentrifuge rotors
1	Incubator
1	Hibridisation oven
1	Shaker water bath
1	Autoclave
1	Regular oven
1	Microwave oven
1	Water distilling unit
1	UV – Visible spectrophotometer
4	Quartz cuvettes for 20 – 200 μ
1carton	5ml reaction tubes
1 carton	5ml microcentrifuge tubes
1carton	Micropipettes tips
1 carton	PCR tubes
1 carton	2.5 ml reaction tubes
20	Microcentrifuge tube racks
20	5ml reaction tube racks