

Criterion IV

Infrastructure and Learning Resources

Physical Facilities

The institution has adequate facilities for teaching - learning. viz., classrooms, laboratories, computing equipment, etc

In order to implement the plans and achieve desired goal, the Department of Pharmaceutical Sciences has created adequate infrastructure in terms of class rooms, laboratories, computer lab, departmental library, machine room, animal house, faculty rooms, girls common room, medicinal plants garden and Seminar Halls with audio visual facility. The whole premises of the department has Internet connectivity with dedicated MHRD wifi. The department is provided with various university sharing physical facilities including a well-equipped playground, gymnasium, girls & boys hostels.

The department ensures adequate availability and optimal utilization of physical infrastructure as it is critically linked to the vision of the institute to create an environment of excellence in education' through technologically advanced pedagogical tools.

At the beginning of the academic year need-assessment for replacement / up-gradation / addition of the existing infrastructure is carried out based on the suggestions from faculty members, BOS members, Heads of the departments, lab technicians and students of B. Pharm, M. Pharm and Research Scholars.

The department has adopted the strategies towards optimum and effective use of academic infrastructure for the benefit of stakeholders as per below;

- Optimal deployment of infrastructure is ensured through conducting workshops/awareness programs/training programs for faculty on the use of new technology.
- Effective utilization of infrastructure is ensured through appointment of adequate and well qualified lab technicians/system administrator.
- The optimal utilization is ensured through encouraging innovative teaching – learning practices.
- The available physical infrastructure is optimally utilized beyond regular academic hours, to conduct certificate courses, co-curricular activities/extra - curricular activities, skill development sessions, meetings, seminars, conferences, extra and curricular activities etc.

Total Built-Up Area available

Programmes/Courses offered	Built-Up Area
B. Pharm. M. Pharm. & Ph.D.	20375 Square meter

Physical Infrastructure

Particulars	Description	Available/provided for UG/PG/PhD		
		Size (Sq M)	Number	Total area (SqM)
Class Room	Class rooms are well-furnished, well ventilated, spacious classrooms for conducting theory classes.	75	5	495
	E-classrooms are equipped with LCD Projector, audio system and internet.	60	2	
Laboratory	Laboratories are well equipped and well maintained not only for carrying out curriculum/syllabus-oriented lab practicals but also to carry out research activities. All the laboratories are established as per regulatory authorities.	75	12	900

Seminar Hall	In addition to the University Auditorium (750 capacity), the department has a seminar hall (Prof. M.L. Schroff Memorial Hall) to conduct conferences, seminars and workshops for students and faculty members with 120 seating capacity. Seminar hall is completely air conditioned and equipped with LCD Projectors and public addressing system with internet connectivity.	85	1	85
Departmental Library	Departmental library is maintained with view to cater the reference needs of students, research scholars and faculty members. Adequate number of reference books and dissertations are available in this library. Library is segmented in Reference Books, Journals, Periodicals and Dissertations.	80	1	80
Machine Room	Equipped with various machines used for Pharmaceutical Engineering practicals.	108	1	108
Computer Lab	The computer lab has adequate computer facilities as per standard norms of regulatory bodies.	90	1	90
Sophisticated Instruments Lab	Sophisticated instruments lab is maintained with modern analytical instruments including UV spectrophotometers, FTIR, HPLC, Particle size analyser, Blood analyser etc.	60	1	60
Animal House	The animal house is maintained as per the norms of CPSEA	85	1	85
Medicinal Plants Garden	Two dedicated medicinal plants gardens are maintained to provide routine learning needs of medicinal flora as per academic programs offered by the department.	600 200	1 1	800

Instructional Area

Room No.	Room Type (mention class room/ laboratory/toilet etc.)	Carpet Area (Sq. M.)
1	Laboratory	71.625
10	Tutorial Room	45.9
101	Laboratory	107.98
102	Laboratory	70.52
103	Laboratory	19.83
104	Laboratory	69.23
106	Laboratory	71.62
107	Laboratory	63.91

109	Laboratory	50.59
11	Laboratory	63.911
110	Class Room	103.85
111	Research Laboratory	31.95
112	Class Room	31.95
113	Tutorial Room	60
13	Machine Room	93.11
17	Laboratory	33.14
19	Laboratory	34.89
2	Laboratory	21.487
200	Seminar Hall	2172
204	Laboratory	19.28
205	Laboratory	26.44
206	Classroom	44.07
207	Instrument Room	88.15
23	Laboratory	47.75
24	Laboratory	47.75
25	Laboratory	69.78
26	Tutorial Room	20
27	Animal House	75
3	Laboratory	71.625
4	Laboratory	17.63
5	Laboratory	88.154
6	Laboratory	88.154
7	Laboratory	66.115
8	Workshop	17.63
9	Tutorial Room	20.56
F3	Class Room	71.18
F4	Class Room	79.33

F5	Class Room	76.27
F6	Class Room	77.38
F7	Class Room	66.00

Instructional Area Common facilities

Room No.	Room Type (mention class room/ laboratory / toilet etc.)	Carpet Area (Sq. mts.)
102	Computer Centre	170.52
300	Library and Reading Room	2523.31

Administrative Area

Room No.	Room Type (mention class room/ laboratory/toilet etc.)	Carpet Area (Sq. mts)
105	Faculty Room	23.87
108	Faculty Room	18.18
114	Faculty Room	18.36
115	Faculty Room	18.36
116	Faculty Room	34.89
117	Principal Director office	34.89
118	Office All Inclusive	4860.88
15	Central Store	11.01
16	Central Store	17.63
18	Faculty Room	17.44
20	Faculty Room	17.44
201	Other	22.03
202	Other	11.01
203	Other	63.91
208	Central Store	110.192
209	Other	5.5
21	Central Store	34.89

210	Housekeeping	10
211	Other	41.32
212	Security	20
213	Maintenance	20
214	Exam Control Office	927
216	Reception Area	10
217	Placement Office	30
218	Central Store	15
22	Faculty Room	14.69
301	Faculty Room	9.18
312	Board Room	30
317	Cabin for Head of Dept	34.89
318	Pantry for Staff/Teaching	20.00

Amenities Area

Room No.	Room Type (mention class room/ laboratory/toilet etc.)	Carpet Area (Sq. M)
10	Toilet	14.32
111	Girls Common Room	131.95
1110	Boys Common Room	220
1111	Stationary Store	15
1112	Student Activity/ GCR	100
1113	First Aid Cum Stick Room	15
1114	Auditorium `	200
1115	Guest House	1430.64
949	Others	30
993	Girls' Hostel	639
994	Boys' Hostel	636
995	Cafeteria	390.73

996	Sports Club	100
998	Guest House	200
999	Principal's Quarter	110

Circulation Area

Room No.	Room Type (mention class room/ laboratory/toilet etc.)	Carpet Area (Sq. M)
1	Corridors	1550.05
2	Other Common Area (in Sq m)	1000

Research and Practical Laboratories



Biotechnology Lab.



Pharm. Engineering Lab.



Pharmaceutics Lab.



Pharm. Analysis Lab.



Pharmacognosy Lab.



Microbiology Lab.

Major Research Equipment Available in the Department

S.No	Name of Equipment	Model/Make
1	Shimadzu UV 150 02 Spectrophotometer	Shimadzu
2	H.P.L.C.	Pharmacia L.K.B. Sweden
3	G.L.C.	Hewlett Pack.
4	Shimadzu IR-470 Spectrophotometer	Shimadzu Ir-470
5	Ultra Sonicator	Shimadzu
6	Lyophilizer (2 No)	Helto
7	Ultra Centrifuge Hitachi. Max-100	Hitachi 9order Placed)
8	Flash Chromatography	Yamazen
9	Auto Blood Analyzer	Aims India
11	Electronic Balance – 3 No's	Dona
12	Shimadzu UV 160 Spectrophotometer (Japan)	Shimadzu Uv 160
13	Systronic 119 UV Spectrophotometer	Systronic 119 Uv

14	Spectrophotometer G.B.C.	Shimadzu
15	Leica Research Microscope	Leica
16	Shimadzu HPLC Adv. Vp Series(2 No) (Japan)	Shimadzu
17	Shimadzu HPLC Adv. Vp Series(2 No)	Shimadzu
18	High Resolution Based Particle Size Analyser	Scigenetics
19	Elisa Plate Reader	Bioered
20	Electrophoresis Unit X 2 No.	Bio Digital
21	Fermenter	Scigenetics
22	CO ₂ Incubator, Cell House 154	Heto Helton, Denmark
23	Freeze Dryer Make Drywinner	Microfluidies (Usa)
24	Microfluidiger	Panasonic/Minolta
25	Photo Copying Machine	Panasonic
26	Microwell Strip Reader	Bio Rod
27	Auto Clavabie Fermo2 Lit.	
28	Laminar Air Flow Cabinet	
29	Ibm Netvis-P-Iv/1.5mhz/20gb/Spks/Misc/15" Col Mon. (8 No.)	Ibm
30	Imco Ultrosonic Hom./Disintegration Model-Isn-2-300	
31	Leitz Phase Control Res.Microscope	Leitz Germany
32	Sartorius Electronic Balance Bp-2105	Saritorious Usa
33	Uv-160-1 Spectrophotometer	Shimadzu
34	Gel Documentation System	
35	Buchi Model & Flash Evaporator X 2 No.	Steroglass Itly
36	Spectrophotometer Schimadzu	Japan
37	Microplate Fluro Spectrophotometer	Molecular Device Usa
38	F.T.I.R.	Shimadzu
39	Flurospectrophotometer	Shimadzu
40	Spectrophotometer 2450	Shimadzu
41	Water Purifier Osmosis Type	Shimadzu

42	Nikon Trinocular Res. Microscope	Major Proj
43	Hitachi Preparative Ultracentrifuge	Fist (Dst
44	Malvern Zeta Sizer Nano Zs 90	Malvern/Dbt Proj (Spv)
45	Scigenics Biotech Hybridization Chamber	Aicte Proj (Spv)
46	Biometragmbh Thermal Cycl.(Primus 96)	Aicte Proj (Spv)
47	Gel Fractionating Columns	Aicte-Modrobs (P'col)
48	Tinocular Inverted Phase Contrast Microscope	Self Finance Nikon Japan
49	Esco Lab Cultur Cytot. Safety Cabinet	Self Finance
50	Micropro. Contr. Esco Air Str. Class Iib2 Saf. Cabinet	Aicte Modrobs- P'col
51	Microplate Elisa Washer Mod.Lisawash	Aicte-Modrobs (P'cology)
52	Rota Rod For Mice & Rats	Iitc Usa(P'cology)
53	Non Invasive Blood Pressure Monitor	Biopac (P'cology)
54	Iitc Plathysmometer (Paw Vol. Meter)	Iitc Usa (P'cology)
55	Electrolab Tablet Diss. / Lcd Display Tdl-08l (X 3 No.)	Elico India/ Fist (Dst)
56	Whatman Biometra Gmbh DNA Sequencer	Gmbh-Germany/ SelfFinance
57	Femtojet (Eppendorf India)	Dbt Proj
58	B.O.D. Incubator	Remi
59	Cilas Particle Size Analyzer	Cilas
60	HPTLC	Camag
61	Gel Documentation Bio Rod	Bio Rod
62	Nikon Florescent Microscope	Nikon
63	Bio Safety Cabinet X 2	Esco Singapore
64	Gas Liquid Chromatography	Hewlett Pack
65	Fermenter	Scigenetics
66	Water Purification System	Younglin
67	High Speed Table Top Centrifuge	Model No. Z-36 Hk
68	Prominence HPLC System	Shimadzu
69	Fermenter Model Bio – Spin-01	Bio-Age Equipment

70	Ph Control D.O. Probe Chiler Autoclave	
71	Flourescence Microscope	Magnus
72	Mini Press II Multi Tooling (6d+6b) Tablet Compression Machine	Karnavati Eng. Ltd.
73	Ultra Sonicator Advanced With Acoustic Chamber Model-PKS-750 F	Sonar
74	Microprocessor Dissolution Test Apparatus (Model No. 1918)	Electronics (India) Pvt. Ltd.



Instrument Laboratory



CAMAG-HPTLC (sample applicator)



Rota Evaporator

Major equipments available under SIC (shared facility)

1. High performance liquid chromatography (HPLC) mass spectrometer
2. Gas chromatography mass spectrometer (GC-TOF)
3. Bet surface area analyser
4. Electrochemical work station
5. Ultracentrifuge
6. Rheometer
7. Single crystal XRD
8. Induction couple plasma MS
9. Atomic force microscope
10. Scanning electron microscope
11. Simulation thermal analyser (STR)
12. Laser Raman spectrometer (LRS)
13. Spectroscopic ellipsometer
14. Nuclear magnetic resonance spectrometer (NMR)
15. Powder X-ray diffractometer
16. Transmission electron microscope (TEM)
17. DNA sequencer
18. Flow cytometer/cell sorter flow cytometer
19. Confocal laser scanning microscope
20. High performance thin layer chromatography (HPTLC)
21. Fourier transform infrared spectrophotometer (FTIR)
22. Nano spray dryer (NSD)
23. Real time PCR (RTPCR)
24. PCS based particle size analysis

Information Technology and Computer Facilities

S.No	Particulars	Availability			
1.	No of Computer terminals	45			
2.	Hardware Specification	Server (2), P-IV (42), P-II (02), P-I (2), PC-XT/AT (05)			
3.	No of terminals of LAN/WAN	40 (LAN + ISDN / Broad Internet)			
4.	Relevant Legal Software	Application	System	Norton 2002, Pharm. Software	
				Win XP Licensed & Preloaded	
5.	Peripheral(s)/ Printers			Printers (8),	Web Camera, CD Writer, Scanner etc.
6.	Internet Accessibility (in kbps & hrs)	Up to 2 MBPS		ISDN / Broad Band Internet Facility over LAN	



Computer Command Centre



Broadband Internet Server Chamber



Computer Lab.

Library as a Learning Resource

Departmental Library

Average carpet area for Departmental Library: 45.9 Sq.M.

(+5000 Sqr.M. Central Library Additional as shared library facility of the University)



Library



Library

1	Total number of Books as per accession register	5205 (Dept. + Central Lib.) 687 Titles,
2	Available in Department	962 (379 Titles; Issued from Central Library)
3	Subject wise classification	
	Pharmaceutics	1210
	Pharm. Chemistry	1090
	Pharmacognosy	880
	Pharm. Biotechnology	836
	Pharmacology	889
4	Total number of journals subscribed	34 National + 37 International

List of Foreign Journals in Departmental Library		List of Indian Journals in Departmental Library	
1	Pharmaceutical Research 2002	1	Drugs & Pharma. Industry- Highlights
2	Journal of Pharmacy & Pharmacology 2002	2	Drugs & Pharma.:Current R & D Highlights
3	Journal of Pharmacautical Sciences 2002	3	Indian Journal of Hospital Pharmacy
4	International Journal of Pharmacautics 2004	4	Indian Journal of Pharm. Scs.
5	Journal of Natural Products 2005, 2006 Ordered	5	Indian Drugs
6	Journal of Drug Targeting 2005 Ordered	6	Indian Pharmacist
7	Journal of Pharmacy & Pharmacology 2005, 2006 Ordered	7	Indian Journal of Pharm. Education
8	Journal of Micro encapsulation 2005 Ordered	8	Indian Journal of Biotech
9	Journal of Pharmaceutical Sciences 2006 Ordered	9	Indian Journal of Biochemistry and Biophsics
10	Journal of Pharmaceutical Research 2005 Ordered	10	Indian Journal of Phy. and Pharmacology
11	The Journal of Med. Research, 2006 (Gifted)	11	Indian Journal of Pharmacology
12	Pharmaceutical Journals, 2006 (Gifted)	12	Indian Journal of Netural Product
Journals in Central Library		Journals in Central Library	
13	Analytical Abstract, 1988	13	Indian Journal of Chem. Sec. A.
14	Phytochemistry 1985	14	Indian Journal of Chem. Sec. B.
15	Planta medical 1988	15	Indian Journal of Exp. Biology
16	Natural Products, 1987	16	Medicinal and Aromatic Plansts Abstracts
17	Journal of Oil Chemist Soc., 1983	17	Copsat Service Literature
18	Journal of Medicinal Chemistry, 1986	18	Current Science
19	Journal of Pharm. & Biopharm., 1984	19	Pharma Busness and Technology (Gifted)
20	Am. Pharmacy, 1984	20	Pharma Times (Gifted)
21	Internation Pharmacy Abstract , 1987	21	PharmaBuzz (Gifted)
22	Am. Journal of Pharm. Education, 1988	22	Phytopharma. (Gifted)
23	Journal of Pharm. Sci., 1987	23	House Cells (Gifted)
24	Brit. J. Pharm. And Pharmacology, 1988	24	The Pharma Review (Gifted)

25	Drugs made in Germany, 1987	25	Pharma Express (Gifted)
26	Pharm. Internation, 1985	26	Chronicle Pharmabiz (Gifted)
27	Drug Delivery and Ind. Pharm. 1988	27	Biospectrum (Gifted)
28	Int. Journal of Pharmacology, 1988	28	WHO Drug Information. (Gifted)
29	Chem. And Pharm. Bulletin, 1988	29	Journal of Planar Chromatography (Gifted)
30	Int. J. of Crude Drug res., 1988	30	JAMA India (Gifted)
31	Am. J. of Hos. Pharm., 1988	31	Madhya Bharti (Gifted)
32	Aust. J. of Pharm., 1988	32	Journal of Pharmaceutical Resurch (Gifted)
33	Advanced Drug Del. Review	33	Pharma Pulse
34	Current Contents (Central Library)	34	Express Pharma Pulse
35	Journal of Controlled Release		
36	The Pharmaceutical Sciences – 2005		
37	Lancet		

Other features of the Departmental Library (DOPS-LIBRARY)

- The Department has subscription for e-Library resources through centralized library facility extended by the University.
- Library has regular relevant subscription for the following:
 - ✓ e – journals
 - ✓ e-books
 - ✓ e-ShodhSindhu
 - ✓ Shodhganga
 - ✓ Academic databases
- Percentage per day usage of library by teachers and students (foot falls and login data for online access)

The Library in an integral part of any educational and research Institution. A good and vibrant Library can keep the spirit of education alive. DOPS-LIBRARY facilitates to increase the usage of library resources for the faculty and students in order to update their knowledge with the latest in the field of education and research.

Percentage per day usage of the DOPS-Library by the teacher and students					
Academic Year	Total No of Teacher and Students using Library per	Total number of Teacher	Total number of students	Total number of Teacher and Students	Percentage per day usage of library by Teacher and

	day				Students
	(a)	(b)	(c)	d=b+c	e= a/d
2018-19	85	18	312	330	25.75%

Due to COVID-19 Pandemic in the academic year 2019-20, one full semester (March to July 2020) was under complete lockdown in Sagar. In this regard we have considered 2018-19 data for computing usage report.

- Average annual expenditure for purchase of books/ e-books and subscription to journals/e-journals.

Heads	2015-16	2016-17	2017-18	2018-19	2019-20
Books	300000	200000	400000	700000	100000
E-resources	200000	100000	-	-	200000
Other Library enrichment facilities	200000	200000	200000	100000	150000
Total	700000	500000	600000	800000	450000

- **ESTABLISHED 1975**

[One acre (at the Department) and Five acres (at *Patharia* village)]

- **TOTAL AREA: 6 ACRE**
- **PURPOSE: Practical and Experimental Cultivation of Medicinal Plants**

Other features of Medicinal Plant Garden

- Irrigation and green house
- Total number of medicinal and aromatic plants: 100+ species
- Some plants brought from outside and acclimatized
- Plants grown (experimental) in the department
- Guggul, Sarpagandha, Ashwagandha, Brahmi, Kalmegh, Tylophora, Licorice, Costus, Guduchi, Lemon grass, Sankhpushpi, Vasaka, Aloes, Chandan, Nai, Piper longum, Vinca rosea, Stramonium, Hyoscyamus, Isapgol etc.

IT Infrastructure

Fifty Percent of classrooms and all the seminar halls are well equipped with ICT - enabled facilities such as LCD, smart board, Wi-Fi/LAN, audio video recording facilities. Other features of IT infrastructure are as below;

- The University makes appropriate budgetary provision and updates its IT facilities including Wi-Fi facility.
- Like previous years, the department has maintained student-computer ratio of 1 : 12 during past 5 years also.
- Adequate and effective internet connectivity is provided under monitored manner with 1 KBPS bandwidth in the department through MHRD wifi facility.
- The Department avails following sharing facilities for e-content development through EMMRC, Dr. Harisingh Gour Vishwavidyalaya, Sagar
 - ✓ Media centre
 - ✓ Audio visual centre

- ✓ Lecture Capturing System(LCS)surve
- ✓ Mixing equipments and softwares for editing

Maintenance of Campus Infrastructure

Expenditure for Maintenance of Academic Support Facilities

Heads	2015-16	2016-17	2017-18	2018-19	2019-20
Books/Journal	-	200000	400000	700000	100000
Laboratory	-	-	-	-	-
Conference/Seminars	1500000	100000	500000	100000	150000
Other academic facilities including instrumnets	-	-	-	-	-
Total	1500000	300000	900000	800000	250000

Expenditure for Maintenance of Physical Facilities

Heads	2015-16	2016-17	2017-18	2018-19	2019-20
Construction	500000	500000	500000	1500000	500000
Other Library enrichment facilities	200000	200000	200000	200000	200000
Total	700000	700000	700000	1700000	700000

The university has a established systems and procedures for maintaining and utilizing physical, academic and support facilities - laboratory, library, sports complex, computers, classrooms etc.

Other Facilities and Features

S. No.	Facilities and Features in the University campus
1	All Weather Approach Road (Pakka road)
2	Potable Water Supply System (own bore well / municipal corporation)
3	Electrical Generator (5kv, 5-10 kv, 10-15 kv, more than 20 kv)
4	Students' Canteen
5	Students' Common Room (Boys / Girls)
6	Hostel
7	Digital Library
8	Quarters for Faculty
9	Visitor's Hostel
10	Sufficient Parking space
11	University hospital (full time / part time doctor / dispensary)
12	Insurance for students
13	Waste treatment plant
14	Gymnasium /indoor / outdoor stadium
15	Rainwater-harvesting facilities are available
16	University post office
17	Bank SBI/CBI
18	Transport facility for day scholars
19	Reprographic facilities in the Institutions
20	Barrier free environment for physically challenged.
21	Centrally available viz. Gym., Play Grounds (3), Tennis Court, Badmint on Court, Table Tennis Court, Volley ball Court etc.
22	Department shares all sports facilities with Physical Education department