

CRITERION IV: INFRASTRUCTURE AND LEARNING RESOURCES

4.1 Physical Facilities

4.1.1 How does the university plan and ensure adequate availability of physical infrastructure and ensure its optimal utilization?

With the growth of the University, it is imperative to develop the infrastructure. It is not only important to build new infrastructure it is also essential to maintain, renovate and augment the existing ones. Any new construction has to be according to the overall plan of the University. Therefore, the 2027 Campus Redevelopment Plan has been followed. The Plan is in consonance with the vision of the University. The Redevelopment would require relocation or augmentation of several existing facilities. Thus a phasing plan for five-year periods has been developed. This effort has brought in a structured vision of the future works on campus.

The University has already initiated growth that will have a ripple effect for another couple of years. In many cases it is not possible to wait for the construction of new facilities. Therefore, a combination of augmentation of existing facilities and construction of new structures has been adopted. The immediate requirement of faculty offices due to increase in numbers has been met by converting the old library into faculty office complex. It provides a comfortable and creative environment to faculty in addition to interdisciplinary interactions.

Large construction works has been completed in the last five to seven years. It includes the following facilities :

- Lecture Hall Complexes
- Boys and Girls Hostels
- Renovation of Hostels
- Renovation of Laboratories
- Creating new Laboratory space.
- COS complex

The class rooms with their seating capacity are as under:

Room description	Usage	Shared/ Exclusive	Capacity	Rooms Equipped with PC, Internet, Book rack, meeting space etc
E101-E108	Lecture	Shared	80 each room	Board, LCD Projector, internet connection
E201, E203 -E207 E209--E212	Lecture	shared	60 each	Board, internet connection
F101	Lecture	shared	80	Board, , internet connection
F102 & F108	Lecture	shared	120 each	Board, LCD Projector, internet connection
F103 -F106	Lecture	shared	80 each	Board, LCD Projector, internet connection

Room description	Usage	Shared/ Exclusive	Capacity	Rooms Equipped with PC, Internet, Book rack, meeting space etc
F107	Lecture	shared	80 each	Board, , internet connection
F201 -F205	Lecture	shared	80 each	Board, LCD Projector, , internet connection
F 206-208	Drawing Hall	shared	36 each	Board, LCD Projector
B106	Drawing Hall	shared	60 each	Board, LCD Projector, internet connection
B107	Lecture	shared	84 each	Board, LCD Projector, internet connection
B109	Lecture	shared	72 each	Board, LCD Projector, internet connection
B208	Lecture	shared	120 each	Board, LCD Projector, internet connection
B209	Lecture	shared	84 each	Board, LCD Projector, internet connection
B301	Lecture	shared	60 each	Board, LCD Projector, internet connection
B302	Lecture	shared	60 each	Board, LCD Projector, internet connection
B303	Lecture	shared	60 each	Board, LCD Projector, internet connection
B304	Drawing hall	shared	55 each	Board, internet connection
B307	Lecture	shared	60 each	Board, LCD Projector, internet connection
B308	Lecture	shared	60 each	Board, LCD Projector, internet connection
B309	Lecture	shared	60 each	Board, LCD Projector, internet connection
D115 & D116	lecture	shared	100 each	Board, LCD Projector, internet connection
D 201-207	lecture	shared	100 each	Board, LCD Projector, internet connection
T101-104	lecture	shared	80 each	Board, LCD Projector, internet connection
T105-106	lecture	shared	80 each	Board
T201-204	lecture	shared	80 each	Board, LCD Projector, internet connection
T205	lecture	shared	80 each	Board
T301-303	lecture	shared	80 each	Board, LCD Projector, internet connection
T304	lecture	shared	80 each	Board
Seminar rooms	C Hall, CILP Hall	shared	-	Board, LCD Projector, internet connection
Faculty rooms (18 No.)	Department faculty	Exclusive-12 Shared-06	02 in each	Internet/ Wi-Fi connection

4.1.2 Does the university have a policy for the creation and enhancement of infrastructure in order to promote a good teaching-learning environment? If yes, mention a few recent initiatives.

The University has developed a master plan for creation and enhancement of infrastructure in order to promote a good teaching-learning environment. With the increase in intake the University undertook several steps to meet the infrastructure and lab requirements. The University formed a formal space committee which worked out the additional requirements of various academic units and hostels. The old polytechnic building has been acquired after the polytechnic shifted to a new campus. An additional floor has been built and after renovation the old polytechnic building will house all the schools including their labs and class rooms. This will free up a lot of space in the existing academic blocks which will be allotted to various departments as per the recommendations of the space committee. Additionally, new blocks and additional floor on the existing blocks have been added to increase the lab space and infrastructure.

All the class rooms and several laboratories have been equipped with multi-media facilities and mikes. Plans are in place to establish smart class rooms which are expected by this year end. The University has been generously funding the lab equipment and funds to the tune of 700 lakh are spent every year on lab equipment only. This is over and above the project funding sanctioned to various departments.

4.1.3 How does the university create a conducive physical ambience for the faculty in terms of adequate research laboratories, computing facilities and allied services?

The Planning and Monitoring Board of the University plans for all the necessary infrastructure for the University and has laid procedures for establishing research laboratories, computing facilities and allied services in consultation with the faculty of that department. Accordingly, infrastructure has been created to meet and exceed the expectations of the students. The laboratories are well equipped and are at par with the best in the country. All faculty members have been issued laptops and computational labs have been set up by all departments for use o the research students. The same will be shown to the expert committee during their visit to the University for accreditation.

4.1.4 Has the university provided all departments with facilities like office room, common room and separate rest rooms for women students and staff?

Yes, the university has provided all departments with facilities like office room, common room and separate rest rooms for women students and staff.

4.1.5 How does the university ensure that the infrastructure facilities are disabled-friendly?

The University has ensured that all infrastructures is disabled friendly. The University has installed lift and ramp in the academic area for moving to different floors. In case this facility is not available in some block, it is ensured that the classes are adjusted in such a way that it is conveniently located on the ground floor for any differently-abled person. In the student residences, lifts have been installed.

4.1.6 How does the university cater to the requirements of residential students? Give details of

- * Capacity of the hostels and occupancy (to be given separately for men and women)
- * Recreational facilities in hostel/s like gymnasium, yoga centre, etc.
- * Broadband connectivity / wi-fi facility in hostels.

The capacity of the various hostels for both boys and girls is given as under. All the rooms are 100% occupied.

<u>S.No</u>	<u>Name of Hostel</u>	<u>Type of Hostel</u>	<u>Intake Capacity</u>	<u>No. of Students Residing</u>
1	A	BOYS	252	249
2	B	BOYS	282	259
3	C	BOYS	390	374
4	H	BOYS	480	424
5	J	BOYS	962	905
6	FRC	BOYS	108	81
7	PG	GIRLS	288	282
8	E	GIRLS	237	219
9	G	GIRLS	234	210
10	I	GIRLS	407	253
Total			3640	3256

All the hostels have high-end gymnasium, mess, Broadband connectivity / wi-fi facility.

4.1.7 Does the university offer medical facilities for its students and teaching and non-teaching staff living on campus?

Yes, the University has a functional Health Centre for all its students and teaching and non-teaching staff living on the campus. The Health Centre is equipped to handle emergencies and routine medical needs of the residents.

4.1.8 What special facilities are available on campus to promote students' interest in sports and cultural events/activities?

Thapar Institute of Engineering & Technology University has multiple facilities on campus to promote sports activities. Some of the major facilities are as under:

- International standard 400m synthetic athletic track (AIFF approved) along with the field to take care of both track and Field events
- International standard synthetic lawn tennis court (4 nos.)
- Indoor synthetic Badminton court (STAG)
- Swimming pool (25m)
- Lawn tennis cemented court (2 nos.) for beginners
- Lawn tennis practice wall for beginners
- Basketball cemented court (2 nos.)
- Volleyball grounds (3 nos.)
- Cricket ground
- Hockey Field
- Handball ground
- Football Ground
- Football six-a-side grounds (2 nos.)
- Gymnasium facilities in every hostel

4.2 Library as a Learning Resource

4.2.1 Does the library have an Advisory Committee? Specify the composition of the committee. What significant initiatives have been taken by the committee to render the library student/user friendly?

Nava Nalanda Central Library has the Library Committee and it has 21 members including Chairman, Members and Member Secretary (Librarian). Director is Chairman of the committee. Feedback of the users is being taken regularly. All initiatives are discussed in this committee before these are implemented. The meetings of the library committee are minuted and list the various activities that have been undertaken and the proposed action plans. Some significant initiatives during the past 5 years are summarized as under:

- Library remains open 24X7 throughout the year, even on gazetted holidays. Most of the library operations are automated.
- Library catalogue (OPAC) can be searched from anywhere and subscribed e-resources can be searched from the Campus only.
- Digital Resource Centre: Digitization project of Library is in progress. All the previous masters and doctoral theses submitted to Thapar Institute of Engineering & Technology University have been digitized and albums' scanning is going on. This Centre provides

place for faculty and group of students for working on their library learning based assignments.

- **Reading Facilities:** Three separate reading halls, including one exclusively for faculty and research scholars are available. In addition to these reading halls, reading space is available in the learner's zone, Community library and Print these sections as well. Library has in all seating capacity for 350 readers.
- **Community library** for the families of staff and faculty members is a part of Library, where books, newspapers and magazines for children, grownups and ladies are available and this section remains open from 08:00 A.M. to 08:30 P.M. on all the working days.
- **Information and communication infrastructure:** The Library is equipped with state of the art facility which includes 200 nodes for Wi-Fi network in addition to wired connectivity. A number of computers are dedicated for library users. Resources like digital scanners, printers, photocopiers and surveillance system for security etc. are available.
- **Online resources and services:** These can be accessed through its website <http://cl.thapar.edu>. the library also manages the University's digital archive Dspace@TU which can be accessed at <http://dsapce.thapar.edu:8080/dspace>. All the dissertations and theses are now submitted to the University on Dspace@TU. During the year 575 submissions were made on DSpace.
- **Membership:** Library caters to faculty, staff and students of all the three institutions on the Campus. Private local resident, professionals and institutions & industries and alumni of the university can also become member of Library on nominal fee.
- **Document Delivery Service:** Research paper/articles which are not available in the subscribed e-journals and print journals are procured by the library on request through Document Delivery Service (DDS). Library interacts with other libraries and agencies as NISCAIR for procuring research articles.
- **Library on Wheels:** To make faculty members and research scholars aware about 'Resources & Services @TU Library' library conducts and organize presentations in different departments from time to time.
- **Collection Development:** This year i.e. during 2014-2015,7256volumes of books have been added to the collection. During 2013-2014, 7149 volumes of books were added. During the financial year 2013-14 Rs.20.27 lakh was spent on the purchase of books and Rs.77.53 lakh on subscription of print and e-journals. During the financial year 2014-15 Rs.70.00lakh has been spent on the purchase of books and Rs.75.71 lakh on subscription of print and e-journals.
- **Library Hours:** Library remains open for 24 hours throughout the week. Library services are provided from 8.00 A.M. to 8.30 P.M. from Monday to Saturday. During the examinations, the library services are also made available on Sundays.
- **Book Loans:** During the reporting year a total of 36640 books were loaned out to the members.

4.2.2 Provide details of the following:

- Total area of the library: 25,000 sq-ft.
- Total seating capacity : 350 Seats
- Working hours (on working days, on holidays, before examination, during examination, during vacation)
 - **On Working Days: 8:00AM to 8:30 PM (Monday to Saturday)**
 - **On Holidays: Circulation Services Closed**
 - **During Examination: : 8:00AM to 8:30 PM (including Sundays)**
 - **Library Reading Halls Open 24 X 7 (i.e. on working days, on holidays, before examination, during examination, during vacation)**
 - **During Vacations: 8:00AM to 8:30 PM**
- Layout of the library (individual reading carrels, lounge area for browsing and relaxed reading, IT zone for accessing e-resources)
 - Ground Floor*
 - **Library Office, Librarian office, Acquisition and Processing Section, Meeting Room, Seminar Room, Book bank Section, Bound Volume Section and Reading Hall having seating capacity of 120 users.**
 - First Floor*
 - **Scholar's Zone (Digital Resource Centre (Lab, Server Room, Training area), Reading Hall, Reference Section, Faculty and Research Scholar's Reading Area, Periodical Section, Standards and Codes, Thesis and Dissertation Collection, Service Desk)**
 - **Circulation Zone-Central Area(Issue/ Return Counter, Reprography Section, Community Library)**
 - **Learner's Zone(Stack Area of Text Books, General Books, Overnight Collection, Light Reading, Career Planning and Conference Proceedings)**
- Clear and prominent display of floor plan; adequate sign boards; fire alarm; access to differently-abled users and mode of access to collection
 - **Adequate sign boards, six notice boards are displayed. Eight Fire Extinguishers are available in the Central Library.**

4.2.3 Give details of the library holdings:

- a) Print (books, back volumes and theses)
 - 87216 books**
 - 78 print journals**
 - 22 popular magazines**
 - 4973 bound volumes**
 - 2532 Print Theses**

- b) Average number of books added during the last three years: **5777**
- c) Non Print (Microfiche, AV):**3000+ (CDs and DVDs)**
- d) Electronic (e-books, e-journals): **2022(e-books) + 6358 (e-journals)**
(All the e-journals can be accessed at 'n' no. except for IEEE which has 50 seat licenses)
- e) Special collections (e.g. text books, reference books, standards, patents):
Included at (a) above
- f) Book Banks **2314**
- g) Question Banks: **Past question papers can be accessed online by the students on the library site on the main web portal of the University www.thapar.edu**

4.2.4 What tools does the library deploy to provide access to the collection?

- OPAC: **Yes**
- Electronic Resource Management package for e-journals: **Yes (Usage Statistics from Publishers)**
- Federated searching tools to search articles in multiple databases: **No**
- Library Website: **Yes**
- In-house/remote access to e-publications: **Yes (In-house access i.e. within Campus Only)**

4.2.5 To what extent is ICT deployed in the library? Give details with regard to

- Library automation: **Yes**
- Total number of computers for general access: **20 for general access+ 24 for staff + 5 dedicated servers**
- Total numbers of printers for general access: **03**
- Internet band width speed: **1Gbps + 310 Mbps**
- Institutional Repository: **Yes, for Thesis & Dissertations**
- Content management system for e-learning: **No**
- Participation in resource sharing networks/consortia (like INFLIBNET) : **Yes, all the PG and PhD thesis are uploaded on Dspace hosted by Thapar Institute of Engineering & Technology University Library and can be accessed from anywhere in the world. (Copy of doctoral thesis notification is being sent to INFLIBNET's ShodhGanga Repository)**

4.2.6 Provide details (per month) with regard to

- Average number of walk-ins: **App. 7000 users**
- Average number of books issued/returned: **3146 / 3034 (approx.)**
- Ratio of library books to students enrolled: **1 : 11**
- Average number of books added during the last four years: **5078**

- Average number of login to OPAC: **Not Available**
- Average number of login to e-resources: **Not Available**
- Average number of e-resources downloaded/printed: **26327 (downloads)**
- Number of IT (Information Technology) literacy trainings organized: - **Yes, Approximate 10 literacy programmes**

4.2.7 Give details of specialized services provided by the library with regard to

- Manuscripts **Yes**
- Reference **Yes**
- Reprography/Scanning **Yes**
- Inter-library Loan Service **Yes**
- Information Deployment and Notification **Yes**
- OPACS **Yes**
- Internet Access **Yes**
- Downloads **Yes**
- Printouts **Yes**
- Reading list/ Bibliography compilation **Yes**
- In-house/remote access to e-resources **Yes (In-house access)**
- User Orientation **Yes**
- Assistance in searching Databases **Yes**
- INFLIBNET/IUC facilities **Yes**

4.2.8 Provide details of the annual library budget and the amount spent for purchasing new books and journals.

Annual Budget (2014-15)

- **Books= Rs. 75 Lakhs**
- **Journals (Print+Electronic)= Rs. 75 Lakhs**
- **Total Annual Budget= Rs. 1, 50, 00,000**

4.2.9 What initiatives has the university taken to make the library a 'happening place' on campus?

The library is equipped with facility of e learning and self study. Library is operational 24X7 with discussion rooms and dedicated seating areas. Further, Orientation Programme, Seminars, information literacy programme for all the users of the Central Library.

4.2.10 What are the strategies used by the library to collect feedback from its users? How is the feedback analysed and used for the improvement of the library services?

Formal and Informal meeting with the users including faculty members, Research Scholars, PG and UG Students and get their feedback. These feedbacks are analysed and decisions are being taken by Central Library.

Prepared list of PG and UG books circulated among faculty member of Thapar Institute of Engineering & Technology University and get their feedback regarding procurement of individual items and copies for its Central Library.

Feedbacks taken from Complaint/Suggestion Box installed in the library.

Student can submit request for procurement of books for library in the format available on counter.

4.2.11 List the efforts made towards the infrastructural development of the library in the last four years.

- **Separate Server Room Established (with dedicated AC and High End Servers)**
- **IT Zone (Digital Resource Centre, Server Room) segregated.**
- **Periodical Section Separated**
- **Wall and Ceiling Fans mounted as building has centralised AC**
- **Reprography Section restructured**
- **Enclosure for Circulation Counter created**
- **Reading Halls service provided 24 X 7**
- **AC plant replaced for whole Library Building**
- **Created Bound Volume Sections**
- **Baggage Counter**
- **Book Bank established for reserved category**
- **Total renovation of Library building with a cost of approx. Rs. 10.0 lac.**
- **Circulation Desk and Help Desk re-formulated**
- **Expanded user seating capacity**
- **No. of Xerox Machine increased**
- **Restructured Community Library**
- **Created Internet Surfing Centre**
- **New CCTV cameras (16 in no.) have been installed.**
- **Discussion Rooms (6-8) are being added in addition to the existing space.**
- **Stacks of reference collection have been extended to house new additions and collections.**

4.3 IT Infrastructure

4.3.1 Does the university have a comprehensive IT policy with regard to

- IT Service Management: **Yes**
- Information Security: **Yes**
- Network Security: **Yes**
- Risk Management: **Yes**
- Software Asset Management: **Yes**
- Open Source Resources: **Yes**
- Green Computing: **Yes**

4.3.2 Give details of the university's computing facilities i.e., hardware and software.

- Number of systems with individual configurations

Each department and school has its dedicated hardware and software computing labs with a total estimated number of 1500 computing machines and related hardware and software. The list of such facilities is available in the department's evaluative report. The central facility of the computer centre has the following computing facilities.

Sr. No.	Item	Qty.	Configuration
1	IBM Pentium-IV	6	Desktop PC, Intel Pentium dual core 2.8GHz, 2x1MB L2 Cache and 800MHz FSB 945G, 512 MB RAM, 160GB HDD, 15" color monitor, Optical mouse, DVD Combo, 1.44 FDD, 1000 LAN Card
2	Dell Optiplex 160nL	30	Small Micro Tower 2.4 GHz, 1 GB RAM, 40 GB HDD, 15" Color Monitor
3	Dell Optiplex 330	20	PIV Dual Core 1.6GHz, 1GB RAM, 120GB HDD, Gigabit NIC, Combo Drive, Color 17" TFT
4	Dell Optiplex 360	18	PIV Core 2 Duo E-7400 @2.80 GHz, 2GB RAM, 160GB HDD, Gigabit NIC, DVD-RW, Color 19" TFT
5	Dell Optiplex 380	55	Intel Core 2 Duo 2.93GHz, 3MB L2 Cache, 1066FSB, Intel G-31 Chipset SAS/SATA 160 GB @7200rpm, 2GB DDR-II RAM, 19" TFT Monitor, DVD R/W
6	Dell optiplex 9010 all in one	30	Intel Core i-5 3450, 6 GB RAM SATA HDD 500GB, 23" TFT DVD RW/ Ethernet Card, WiFi enabled, 3 Year OSW non Touch.
TOTAL		159	

- Computer-student ratio –

The computer to student ratio during engagement of classes is 1: 1

- Dedicated computing facilities

Each department and school had dedicated computing labs and the details are available in the evaluative report of the departments. The central facility CITM has high end servers and their details are as under

Sr. No.	Item	Qty.	Configuration
1	Dell Power Edge 1600 SC Server	4	Dual Intel Xeon 2.4 GHz/512K, DDR 266 MHz RAM 4.0 GB, 2 x 73 GB ultra 320 SCSI HDD. Color CRT 17", PS/2 Mouse, PS/2 Keyboard 104 key
2	Dell Power Edge 1800 Server	1	Xeon 3.0 GHz (Dual) 4 GB RAM, 2 x 73 GB 10K HDD CD ROM DVD Writer
3	Dell Power Edge 2900 SC Server	1	Intel 2x2.0 GHz/1333MHz FSB, 4MB Cache of higher Chipset, Intel 5000 x 1468 GB SAS HS x 3 nos 15 K RPM, Dual Gigabit, 8 GB RAM 17" TFT RPS
4	Dell Power Edge R710 Rack Server	4	1/2U Rack Server, Two Quad-Core Intel Xeon 5520, 16 GB DDR3 1333 Mhz, Support 3.5 inch SAS hot pluggable hard driver, 3.5 inch 3x450 GB (1500 RPM SAS Driver) RAID Controller Support for RAID levels 0,1,10,5 & 6 Support for External Storage like Disk Storage Array through HBA Dual Gigabit NIC, Redundant Power Supply
5	HP SAN P4300 G2	1	HP SAN P4300 G2 6TB, Dual controller
6	HP Proliant ML 350P Storage Server	1	Two 6 Core Intel Xeon E52600 Series Processor, 15 MB L3 Cache per Processor, Intel C600 Series Chipset, 64 GB RAM, 32 TB NL-SAS, DVD-RW, Dual RAID Controller with 512 MB cache, 4 Gigabit NIC
		12	

- LAN facility

University has its managed LAN switching and is maintained by University itself. The LAN has WiFi and wired nodes. We have 2000 wired and 3000 WiFi nodes. University has very high end core switching and routing capabilities. University provides access to different services like E-governance, WebKiosk, Websites and access to various servers (Windows/Linux/Sun based) for computing and storage purposes. LAN Hardware and Software is as under :

LAN Hardware

- Core Network Switch BD 8806- 01
- Zone Director Ruckus ZD 3000-01

- Zone Director Ruckus ZD 1000-01
- Cisco Router 3800 -01
- Mail Server -02
- Juniper Network -01
- Cisco Wi-Fi Access Point AIR 1242 AG-N-Ka- 06
- Cisco Core Switch 4500 -01
- 128 K Leased Line Modem -02
- IBM System X3650 -01
- HP Proliant DL360- 01
- Trend Micro 2500 -01
- Cisco Router 1700 -01
- Netgear Access Point Wg302 V2 -140
- 48 Port DSLAM -02
- Ruckus Wireless A.P Indoor ZF2942 -101
- Ruckus Wireless A.P Outdoor ZF2741 -20
- Ruckus Wireless A.P Outdoor (N) ZF7762- 03
- Extreme Summit X-150 24(P) -08
- Extreme Summit X-150 24(T)-15
- Extreme Summit X-350 24(T)-05
- ADSL Modem GLB-502 T -50
- NETGARE FSM 7326 24+2 FAST ETHERNET L3 MANAGE SWITCH WITH POE (24Ports)08
- CISCO SYSTEM CATALYST 2950 SEREIS- 06
- D - LINK DES 3550 (48 Ports)-6
- D- LINK 3526 (24 Ports)-15
- CATALYST SWITCH 3560 G-02
- 3 COM SUPER SWITCH-03
- SMART STACK ELS 100/24 F.E.S (24 Ports)-6
- CATALYST 500 SWITCH (24 Ports)-18
- Ruckus Media Flex MM2211 Access Gateway-90
- Ruckus Media Flex 7211 Access Gateway (N Series)-05
- Extreme Summit X-440 L3 -04
- Extreme Summit ES100 L2 -06
- Ruckus Wireless A.P Indoor ZF 7363 (N Series)-121
- Juniper Network IC 4000- 01
- IP Phone Dlink-85
- Cisco Router 1841-01
- Brocade ICX 6430 24 port -03
- Ruckus Wireless A.P Indoor ZF 7363 (N Series)-26
- Brocade ICX 6610-48 port-PE -02
- Brocade ICX 6610-24F-PE -02
- Brocade ICX 6610-10G LIC-POD-02

- Brocade ICX 6450-24F-PE -01
- Cyberoam Firewall 2500- 02
- DHT Dish Set Top Box with 500 GB HDD- 01
- Ruckus Wireless A.P Indoor 7982 -02
- Ruckus Wireless A.P Indoor 7372 -36
- Brocade ICX 6430 24 port -02
- Brocade ICX6650 L3 Adv Core 24port SFP+10G Ports -01
- Brocade ICX 6450-24F-PE -10
- Brocade ICX 6430-24F-PE -15
- Ruckus Wireless A.P Indoor 7372 -10
- Ruckus Wireless A.P Outdoor 7782-N -10
- Ruckus CPE indoor/outdoor - 50

- Proprietary software

Each department / school has proprietary software used for teaching and research and the list is available in the department's evaluative report.

Details about proprietary software in the central facility CITM are as under:

Software

- MS- Windows Svr Ent 2008
- MS- Windows 7
- MS- Windows Vista Business Upg OLP NL AE-30
- MS - Windows Vista Business media kit - 01
- MS-Windows XP Professional Media SP2 - 01
- MS-Windows 2003 server CAL OLP NL AE - 20
- MS-Windows Terminal servers CAL 2003 OLP NL AE - 20
- 50 CAL and 50 TCAL for Windows 2003
- Sun Ray Thin Client - 20
- Sun Solaris Enterprise System - 01
- Windows 2000 Advance Server
- Windows 2000 Professional
- Windows 98
- Windows NT 4.0
- Red Hat Linux 9.0 Packages:
- Open Office
- Editors: gedit, emacs, vi
- Mozilla Web Browser
- Net Bean 4.1

- xfig
- Pdf Viewer
- Development tools: Ansi C/C++, jdk1.4 etc.
- Redhat Enterprise Linux AS 4.0 standard - 01

Sun Solaris 10

- Mozilla 1.7
- StarOffice
- OpenOffice
- Ansi C/C++
- jdk1.4 etc.

Utility Software

- Campus agreement for Antivirus: Symantec End Point Protection 12.1.4
- Adobe Acrobat Professional 8.00AE - 01
- Web Publishing Tools
- Matlab
- Crystal Reports 9.0 - 01
- Staler 4.0 - 01

Application Software

- SQL Svr Ent 2008
 - Oracle 10g
 - Oracle 9.i (30 User)
 - MS Visual Studio 2010
 - MS Visual Studio 2008
 - MS Visual Studio 6.0
 - MS Office 2007
 - MS Office 2000 Professional
 - MS Office 4.3
 - Nash Pack 3.0
 - VC++ 2.0
 - VB 4.0
 - MS Project 4.0
 - Neural Connection
 - SPSS 20.0
 - Turnitin Anti-Plagiarism web Tool
- Number of nodes/ computers with internet facility

All computer nodes in CITM labs have internet access and CITM provides access to each and every node in university. The bandwidth Management, Web and Application filters, firewall, Gateway level security and quality of service is configured to provide quality and committed internet services.

- Any other (please specify)

University has initiated the consolidation of servers and has implemented XenCloud which is free and open source.

4.3.3 What are the institutional plans and strategies for deploying and upgrading the IT infrastructure and associated facilities?

With the growth of users, IT services and increasing internet bandwidth demand, the university has scaled up the switching capabilities and implemented latest managed wired and Wi-Fi access. The university has very high-end core switches and servers. The university has implemented private Cloud to provide high quality services to end user and for ease of management. University is committed to provide state-of-the-art IT infrastructure and services.

4.3.4 Give details on access to on-line teaching and learning resources and other knowledge and information database/packages provided to the staff and students for quality teaching, learning and research.

The faculty, staff and students have unlimited access to information available on the web and has subscribed to thousands of e- journals and books for use. The faculty, staff and students can download information at high speed 24 hours from anywhere in the vast campus through a very secure network. In some cases, if a particular type of material is not subscribed a request can be made to the Library through the Head of the Department to procure the material. Thapar Institute of Engineering & Technology University uploads all thesis submitted to the University to the online web portal DSpace and these can be downloaded from anywhere in the globe.

Library provides the following e-resources

- 11386 e-journals
- 1351 e-books
- 10 Bibliographic Databases
- Other useful information is gathered and provided time-to time like NPTEL courses.
- Online Catalogue Search
- Online submission and access of Thesis
- MOOC lecture series

In addition to above various training Sessions are held frequently. Some of recently organised are as:

- **KNIMBUS Orientation Programme**
- **Science Direct Training programme for users (Faculty, Research Scholars, PG and UG Students) and Staff.**
- **Mendley Reference Tool orientation programme**
- **Turtin - Anti-Plagiarism Tool orientation programme organised**
- **KOHA Training Programme to Library Staff**

4.3.5 What are the new technologies deployed by the university in enhancing student learning and evaluation during the last four years and how do they meet new / future challenges?

Thapar Institute of Engineering & Technology University, Patiala has implemented e-solutions software for its academic and other related activities including human resource management and financial management. Academic activities, such as, conduct of mid semester test and end semester examination, central repository of marks and grades of the students, assigning the grades to the students by faculty members and students reaction survey have been implemented using this software. Online facility for registration information, date-sheet, seating plan and duty chart has been provided to all the concerned through Web-Kiosk. On-line quizzes have been started for core courses.

The attendance of students can also be uploaded on the webkiosk.

4.3.6 What are the IT facilities available to individual teachers for effective teaching and quality research?

All the teachers are issued a high end laptop at the time of joining the University and are replaced once in 4 to 5 years. Besides these the University has dedicated computing facilities including workstations for advanced research work which are used extensively by the faculty and the research students. The faculty have unlimited access to information available on the web and has subscribed to thousands of e- journals and books for use. The faculty, staff and students can download information at high speed 24 hours from anywhere in the vast campus through a very secure network. In some cases, if a particular type of material is not subscribed a request can be made to the Library through the Head of the Department to procure the material. Thapar Institute of Engineering & Technology University uploads all thesis submitted to the University to the online web portal DSpace and these can be downloaded from anywhere in the globe.

4.3.7 Give details of ICT-enabled classrooms/learning spaces available within the university? How are they utilized for enhancing the quality of teaching and learning?

The list of the IT enabled class rooms at Thapar Institute of Engineering & Technology University are as under:

Room description	Usage	Shared/ Exclusive	Capacity	Rooms Equipped with PC, Internet, Book rack, meeting space etc
E101-E108	Lecture	Shared	80 each room	Board, LCD Projector, internet connection
E201, E203 -E207 E209--E212	Lecture	shared	60 each	Board, internet connection
F101	Lecture	shared	80	Board, , internet connection
F102 & F108	Lecture	shared	120 each	Board, LCD Projector, internet connection

Room description	Usage	Shared/ Exclusive	Capacity	Rooms Equipped with PC, Internet, Book rack, meeting space etc
F103 -F106	Lecture	shared	80 each	Board, LCD Projector, internet connection
F107	Lecture	shared	80 each	Board, , internet connection
F201 -F205	Lecture	shared	80 each	Board, LCD Projector, , internet connection
F 206-208	Drawing Hall	shared	36 each	Board, LCD Projector
B106	Drawing Hall	shared	60 each	Board, LCD Projector, internet connection
B107	Lecture	shared	84 each	Board, LCD Projector, internet connection
B109	Lecture	shared	72 each	Board, LCD Projector, internet connection
B208	Lecture	shared	120 each	Board, LCD Projector, internet connection
B209	Lecture	shared	84 each	Board, LCD Projector, internet connection
B301	Lecture	shared	60 each	Board, LCD Projector, internet connection
B302	Lecture	shared	60 each	Board, LCD Projector, internet connection
B303	Lecture	shared	60 each	Board, LCD Projector, internet connection
B304	Drawing hall	shared	55 each	Board, internet connection
B307	Lecture	shared	60 each	Board, LCD Projector, internet connection
B308	Lecture	shared	60 each	Board, LCD Projector, internet connection
B309	Lecture	shared	60 each	Board, LCD Projector, internet connection
D115 & D116	lecture	shared	100 each	Board, LCD Projector, internet connection
D 201-207	lecture	shared	100 each	Board, LCD Projector, internet connection
T101-104	lecture	shared	80 each	Board, LCD Projector, internet connection
T105-106	lecture	shared	80 each	Board
T201-204	lecture	shared	80 each	Board, LCD Projector, internet connection
T205	lecture	shared	80 each	Board
T301-303	lecture	shared	80 each	Board, LCD Projector, internet connection
T304	lecture	shared	80 each	Board
Seminar rooms	C Hall, CILP Hall	shared	-	Board, LCD Projector, internet connection
Faculty rooms (18 No.)	Department faculty	Exclusive-12 Shared-06	02 in each	Internet/ Wi-Fi connection

4.3.8 How are the faculty assisted in preparing computer- aided teaching-learning materials? What are the facilities available in the university for such initiatives?

TU is in the process of establishing a Centre for Academic Practice and Student Learning (CAPSL) at Patiala in partnership with Trinity College Dublin. CAPSL will work on the presentation and lecturing skills and bring in creativity and imagination in teaching. This centre will be manned by senior TU and TCD academic during the initial period and more senior faculty from TU will be associated who will eventually take over the activities of the centre. All academic staff will take up 3 to 5 certification modules at CAPSL Centre. The certification course is based on the premise that everybody educating our students at Thapar should be committed to and supported in achieving an excellent student learning experience. We will expose our entire faculty to in-house modules during the next 3 to 5 years. E-learning would be introduced through CAPSL.

The University has appointed system analysts and networking staff whose services can be utilized by requesting Head CITM. The nature of help desired is reported to the Head CITM who deposes the necessary manpower to complete all such activities. Most faculties these days especially the younger colleagues in the departments are already familiar/expert in preparing computer- aided teaching-learning materials and may not need any external help. All those who need this help may requisition such help from CITM.

4.3.9 How are the computers and their accessories maintained?

The computers and their accessories are maintained by technical staff in labs. The Systems Analyst takes care of all services with the help of Computer Operator and lab attendants. For repair of hardware, TU has CITM: Repair and maintenance section that is equipped for maintaining computers, their accessories and also other electronic equipment in the system.

4.3.10 Does the university avail of the National Knowledge Network connectivity? If so, what are the services availed of?

Yes, University has 1 Gbps internet connectivity which is used extensively by faculty, researchers, staff and students for teaching, research and collaboration. University is using NPTEL service and is going to start QEEE pilot program for quality improvements.

4.3.11 Does the university avail of web resources such as Wikipedia, dictionary and other education enhancing resources? What are its policies in this regard?

Yes, University provide internet connectivity to access these resources. A controlled access is provided.

4.3.12 Provide details on the provision made in the annual budget for the update, deployment and maintenance of computers in the university.

Detailed Budget for 2014-15

• CITM, TU	500.00 lacs
• Hostels, TU	66.36 lacs
• TEQIP, TU	100.00 lacs
Total	666.36 lacs

4.3.13 What plans have been envisioned for the gradual transfer of teaching and learning from closed university information network to open environment?

Our university has already taken initiative to have Blackboard platform for Course Content management and Conferencing Management system. University has web streaming software ready for broadcasting.

4.4 Maintenance of Campus Facilities

4.4.1 Does the university have an estate office / designated officer for overseeing the maintenance of buildings, class-rooms and laboratories? If yes, mention a few campus specific initiatives undertaken to improve the physical ambience.

Yes, the University has a designated officer and has appointed sufficient support staff for the overseeing the maintenance of buildings, class-rooms and laboratories. Additionally, many departments have Annual Maintenance Contracts with suppliers and companies for the repair and maintenance. To improve the physical ambience of the campus, several initiatives are taken from time to time. Some of these are:

- Periodic painting and white washing of building and labs
- Ground-men for maintaining grounds, lawns and upkeep of plants
- Tree plantation drives every semester
- A meditation park with a walk way in the woods
- Adequate Housekeeping staff for general cleaning
- Rest rooms
- Dustbins at every 100 meters

4.4.2 How are the infrastructure facilities, services and equipments maintained? Give details.

- There is a periodic maintenance plan for each activity such as painting, whitewashing
- Dedicated staff including masons, plumbers, carpenters, electricians for maintenance of infrastructure.
- Workshop technicians for welding, furniture repairs in summer
- AMC's for critical equipment and networking
- Lab equipment is maintained by the dedicated technicians in the labs on a periodic basis during summer / winter vacations.

Any other information regarding Infrastructure and Learning Resources which the university would like to include.