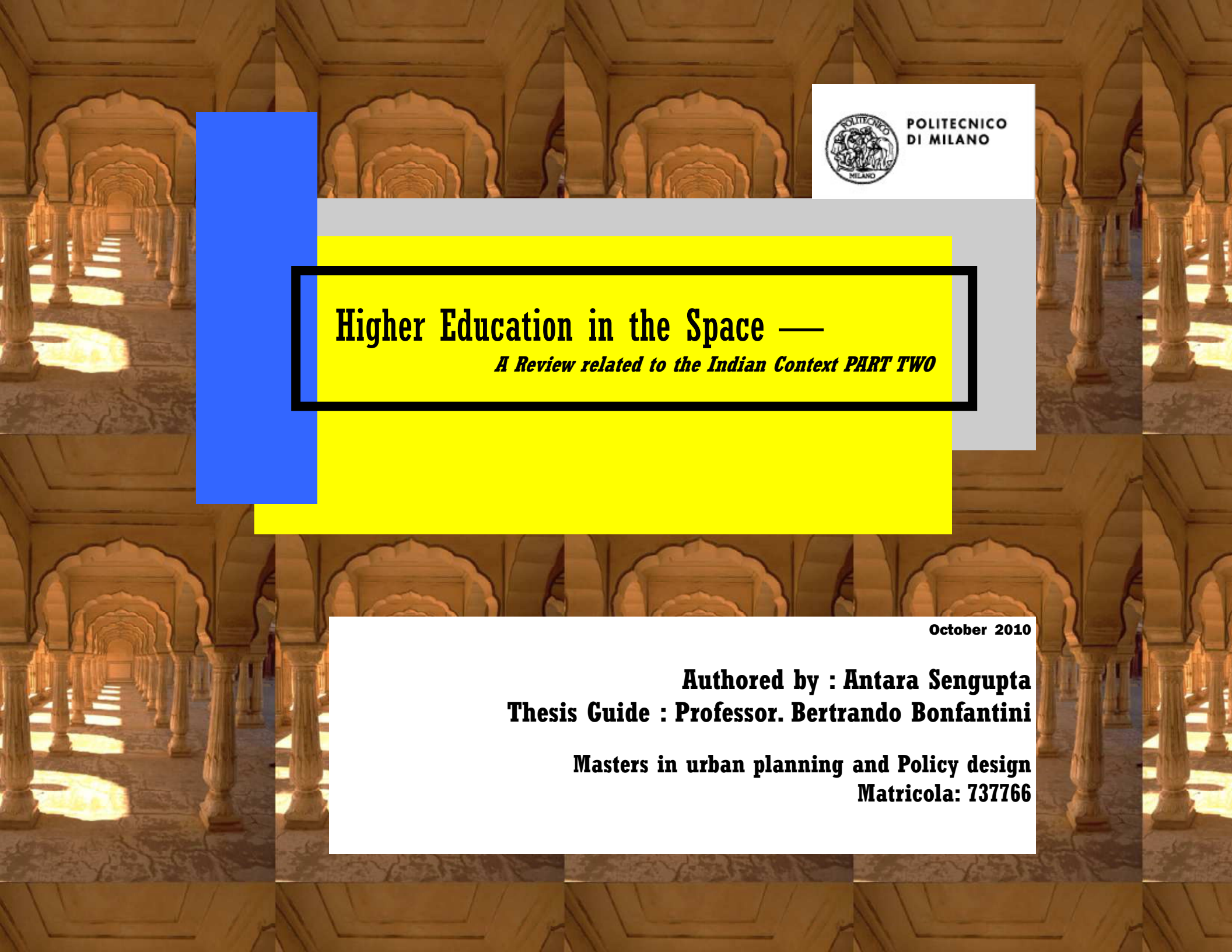

POLITECNICO DI MILANO

# Higher Education in the Space —

***A Review related to the Indian Context PART TWO***

**October 2010**

**Authored by : Antara Sengupta**
**Thesis Guide : Professor. Bertrando Bonfantini**

**Masters in urban planning and Policy design**
**Matricola: 737766**

# Education in the space:

## Related to the Indian Context

## PART TWO

A THESIS REPORT
Submitted by

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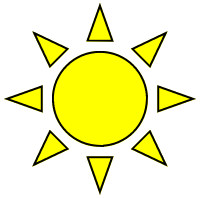
AND POLICY DESIGN

POLITECNICO DI MILANO
MILANO - 20133
ITALIA.

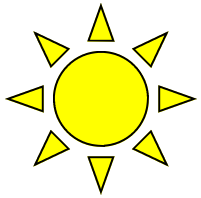
OCTOBER 2010

## INDEX

# PART TWO



# PART TWO



Case Studies of universities across the globe

Italy

India

U.S.A

Comparative analysis

# CASE STUDY 1 – UNIVERSITY OF BOLOGNA, ITALY

**Introduction:**
founded in 1088
oldest existing university in Europe

11th century the city became one of the major economic centres of Europe due to the foundation of the University

**the medieval city plan, which extends like the spokes of a wheel from the heart of the city**

The Studium, as it was originally known, began as a loosely organized teaching system with each master collecting fees from students on an individual basis.

**University was thus spread throughout the city (staggered concept)**

The development of the Studium had a considerable effect on the urban structure, encouraging a series of initiatives which added some splendid features to the University nucleus.

**Facilities:**

**Buildings on campus:** Among these were the students' colleges (for instance the famous **Spanish College** founded in 1367), the seat of the Studium requested by Pope Pius IV (now the Palazzo dell'Archiginnasio, where the magnificent, seventeenth-century Teatro Anatomico is to be found), Cardinal Poggi's Palace (where the Studium was transferred during the time of Napoleon), and the Observatory tower, which was constructed in 1712 as a symbol of the new **scientific culture**.

original role as a centre dedicated to research ,as a forum for organizing encounters and promoting cultural life, and as an initial and further training institution

best university archives in Italy register entries for students who were later to gain fame, eg Nicolaus Copernicus and the future Emperor Ferdinand II.

1960, 16 000 students and 630 teachers, assistants and technical, administrative and auxiliary staff.

current state of the University of Bologna, with is **103 000 students** and about **6 000 staff** working as teachers or in other capacities.

More than 100,000 students are enrolled at the University of Bologna, making one of the largest in Italy.

Between Bologna, Forlì, Cesena, Rimini, Ravenna, Cesenatico, Faenza, Coviolo, Ozzano, and Imola there are over **half a million square metres of floorspace** for teaching and extra-curricular activities.(area measurements)

Recent years have seen a rapid expansion of computing services.

There are 30,000 students linked to the university's e-mail service and 70,000 computers connected to the university network.

The University of Bologna has adopted a **Multicampus structure** in order to permit the diffusion of educational offering and the activation of a stabile research activity on the premises with the intent to better the functionality and quality of university community life

**Departments:**
**23 faculties, 68 departments, and 93 libraries offer 143 first cycle degree courses, 98 specialised degree courses, and 9 European specialisation courses.**are spread across the city and include four subsidiary campuses in nearby Cesena, Forlì, Ravenna, and Rimini.

In 1998 the University also inaugurated a branch in Buenos Aires.

Bologna is still very much a **university town**

The university's botanical garden, the Orto Botanico dell'Università di Bologna, was established in 1568; it is the fourth-oldest in Europe.

other prominent universities such as the Bologna Center of the Johns Hopkins University,included . (SAIS Bologna Center)

**Libraries and Museums, University of Bologna**
CIB - Interlibrary Centre
The Museums of Palazzo Poggi
Zeri foundation
SMA - University Museum System

**Fig.1.1 Bologna City centre**

**Fig.1.2 Bologna central tower**


**Fig.1.3 Bologna City map**

area : 0.5 million SQ.M
students : 103000

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# CASE STUDY 1 – UNIVERSITY OF BOLOGNA, ITALY

wide range of study and reading rooms located around the city

**no specific hostel or student centres**

Through the **automised library service** users can access a catalogue of 2,000,000 books and 5,239 periodicals which garner 64 million contacts and offers 36 million pages of responses each year. The oldest Italian university is also one of the most technologically advanced.
Each month there are 3,000,000 accesses to the
U**niversity's Web Portal** which makes it the most visited university site in Italy

**University Campus Branches**
Cesena
Forlì
Ravenna
Rimini

**Cesena Campus**
The University Campus of Cesena is characterised by an orientation which is predominately scientific and by the correspondence of the active courses with regional vocation.

**Forlì Campus**
The University Campus of Forlì, activated 1 October 2001, is the point of arrival for a course initiated with the desire to create a new model of university development based on the branches of a University and the decongestion of their central locations.

**Ravenna Campus**

The Ravenna Campus represents a point of excellence in the studies of preservation, tutelage and appreciation of cultural heritage, Archeology, restoration, awareness of the environment and the promotion of environmental quality, law, relations with eastern European and Mediterranean nations, regional planning, and of urban design and health.

**Rimini Campus**

The university campus branch of Rimini was instituted in November 2001 in the process of decentralising the University of Bologna and was given partial financial administrative, teaching and scientific autonomy

The teaching and scientific activities take place inside a "cittadella", situated in the city centre: one that allows for a synergetic exchange with the environment, favoured by excellent relations existing with the local authorities and the economic and social dynamic of Rimini.


**Number of departments help Identify the number and type of buildings required (helps in assessing the number of buildings required for making a comprehensive spatial plan):**
**University**
Administration Areas
Alma Mater Foundation
Buenos Aires Campus
Service Structures
**Academic Structures**
Faculties and Departments
Interdepartmental Research Centres
**Associations, cultural activities and sport**
Academy of Sciences
Student Associations
Collegium Musicum
Unibo Sport Centre - CUSB
Unibocultura Initiatives
**Libraries and Museums**
Zeri Foundation
Library and Documental Services
SBA - University Library System
The Museums of Palazzo Poggi
SMA – University Museum System
**Colleges and Advanced Schools**
Collegio Superiore
Institute of Advanced Studies
Advanced School for Health Policy
Advanced School of Humanistic Studies
Advanced School of Modern Languages for Interpreters and Translators - SSLMIT
Advanced School of Tourism Sciences
Advanced School of studies on the city and region
**Language learning**
Altair Cilta Cliro

**Fig.1.4 Bologna central church**

**Fig.1.5 Bologna district lanes**

**Fig.1.6 Bologna spatial plan**

area : 0.5 million SQ.M
students : 103000

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# CASE STUDY 2 – UNIVERSITY OF BICOCCA, ITALY

**Introduction:**
instituted on June 10, 1998,
**number of students-30000**

**Area of campus 300000 SQM**

to serve students from Northern Italy and take some pressure off the over-crowded original University of Milan

The University stands in an area on the northern outskirts of Milan which, until the late 'Eighties, was occupied by the **Pirelli** tyre industrial complex.

**biggest urban renewal project** ever carried out in Milan

**Gregotti Associati International'**
design and architecture firm
ex-industrial area and its warehouses were quickly converted into a new district

**Buildings on Campus**:
includes our Athenaeum, research laboratories and student residence halls, the **Arcimboldi Theatre**, the temporary location of the **La Scala** theatre during its renewal tenure, the state **National Research Council** (CNR), multinational company offices and the new headquarters of the Pirelli Group, as well as new homes and sports centres, shops, a large multi-screen cinema, and a park with the 'Collina dei ciliegi' (cherry-tree hill).
Special note:
eco-friendly bus service for students free of charge

**Facilities:**
University buildings are characterized by red walls and white window shutters: the main complex facing the squares Piazza dell'Ateneo Nuovo and Piazza della Scienza is made of two pre-existing Pirelli warehouses.
The library is a unified structure housed in three different buildings on campus:
**Central Library** (Biblioteca Centrale): Building U6
**Science Library** (Biblioteca di Scienze): Building U2
**Medical Library** (Biblioteca di Medicina): Building U8
Students can obtain all bibliographic resources necessary for their studies and research and for all other faculties in the university.

The campus is made of different multi-storeyed buildings linked by streets and squares. (away from the city) – secluded campus planning Surface and underground parking areas
Innovations- "Eco-Bus Bicocca" service as part of a project to encourage environmentally-friendly transit services propelled by hybrid-fuel vehicles
**new university residence hall with accommodation for 104** people will be built on the University of Milano-Bicocca campus. The 7.8 million euro project will be **co-financed by the Region of Lombardy.(3,000 square meters** large)
The construction of the new residence hall will complete the transformation of the once-industrial zone to a university campus and cultural district

**Departments:**
**Building U1**: Environmental Sciences
**Building U2**: Physics, Science Library
**Building U3**: Biotechnology and Biosciences, Bar
**Building U4**: Geology
**Building U5**: Materials Science, Mathematics and Applications, Systems and Communications
**Building U6**: University Chancellor, Economics, Law, Psychology, Education, Library, C.U.S., Bank, Office for differently–abled students, Internship Office, Aula Magna, Bar, Refectory
**Building U7**: Economics, Statistics, Sociology, Bar
**Building U9**: Psychology, Laboratories, ACS (Sports and culture and leisure association), Multimedia Production
**Building U11**: R.I.S., Security and Prevention Service
**Building U12**: Student Residence Halls, C.I.Di.S. (ex I.S.U.) Office, Auditorium, Refectory, Mediatheque, Gym
**Building U13**: Orientation Office, Roman Catholic Carmelite Centre, Pastoral Centre, Bookshop, Internet Café
**Building U14:** Computer Sciences, Systems and Communications
**Building U16**: Education, Kindergarten, Refectory
**Building U21**: Students' service Office, Research Area and International Office
**Building U22**: Student Residence Halls


**Fig.2.1 Pirelli buildings redone**


**Fig.2.2 Bicocca spatial plan**

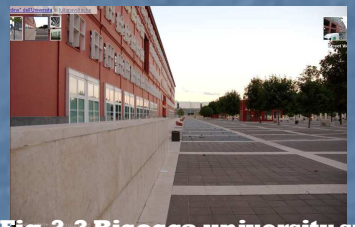
**Fig.2.3 Bicocca university space**

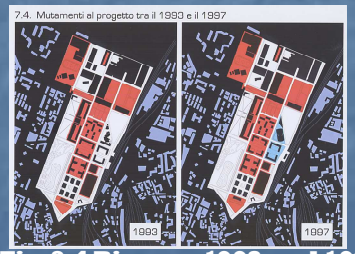

**Fig.2.4 Bicocca 1993 and 1997**

area : 300,000 SQ.M
students : 30,000

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# A SPATIAL PLANNING COMPARISON OF BOLOGNA AND BICOCCA

**Fig.2.7 Bicocca project 2006**


**architect designed campus**

**Fig.2.5 Spatial plan Bologna**

**bologna**

0.5 million SQ.M
103,000 students

**university town**


**bicocca**

**Fig.2.8 Bicocca spatial plan**

300,000 SQ.M
30,000 students

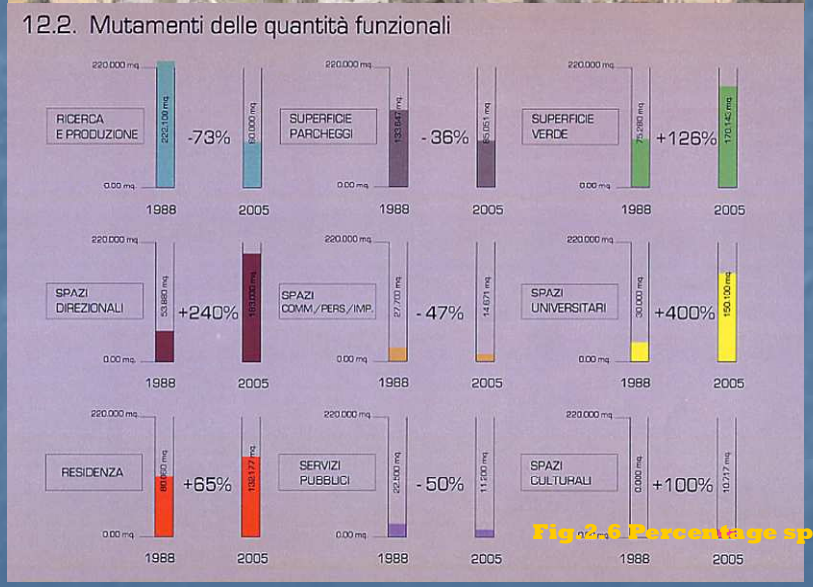


**Fig.2.6 Percentage spatial use**

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# CASE STUDY 3 – PUNJAB UNIVERSITY,INDIA

**Introduction:**

**Mission of the University:**
"The University has been incorporated for the purposes, among others, of making provision for imparting education in Arts, Letters, Science and the learned professions and of furthering advancement of learning, the prosecution of original research, with power to appoint University Professors, Readers and Lecturers, to hold and manage educational endowments, to erect, equiv and maintain University colleges, libraries, laboratories and museums, to make regulations relating to the residence and conduct of students and to do all such acts as tend to promote study and research".

inception in 1882

**number of students 25000**

After the partition in 1947, the University was constrained to function for almost a decade without having a campus of its own..1956 that the University relocated at Chandigarh.

Its red sand stone campus, designed by renowned French architects, came up with in a few years.

University campus was designed by Pierre Jeanerette under the general guidance of the **legendary Le Corbusier. (integrated campus design),** manmade, having specified boundaries

**46 teaching and research departments besides 10 Centres/Chairs for teaching and research on the main campus located at Chandigarh, has 172 affiliated colleges** spread over Punjab and Chandigarh, a Regional Centre at Muktsar, an extension library at Ludhiana and VVBIS&IS (Vishweshavaranand Vishva Bandhu Institute of Sanskrit and Indological Studies) at Hoshiarpur.

**Facilities:**

The main campus at Chandigarh is spread over **550 acres (2.2 km2)** in two sectors
One having the main academic and administrative buildings, besides a health centre, a sports complex, hostels and residential area.

essentially a **residential campus**

The Gandhi Bhawan on the university campus attracts scholar as well as tourists from all over the world for its wonderful architectural form, its library and auditorium.

The Punjab University has four museums and the department of Indian theatre has its own theatre lab which is unique in the country.

The university has a Botanical Garden and a Garden of Medicinal Plants on the campus.

The office of the Punjab University Students' Council is located in the Student Centre.

The student centre is the hub of students' activities—academic, cultural, social and political. favorite eating and hanging out zone for students.
The University has excellent playgrounds, a gymnasium and a swimming pool of international standard for its sports activities.
set up super-computing facilities to meet the needs of the laboratories and industry in the north-west India.

Energy Research Centre was established in 1983 at Punjab University to promote R&D and Extension activities in the emerging fields of Renewable Energy.

**Halls of Residence: 7 hostels for 2,000 men students and five women's hostels accommodating 1500 students.**
(Number of students accommodated)

**Health Services:** The university has on the campus a health centre.
It has six full time Medical Officers comprising of General Practioners; a medical specialist, a surgeon, a dentist and an Ayurvedic Physician. Besides these there are four part time specialists in the areas of Gynaecology, Paediatrics, Opthalmology and radiology & three part time General Practioners.


Fig.3.1 Distance 3D View


Fig.3.2 Entrance gate view


Fig.3.3 Artificial lake view


Fig.3.4 Library building 3D

area : 2,200,000 SQ.M
inhabitants : 15,000

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# CASE STUDY 3 – PUNJAB UNIVERSITY,INDIA

three schools, i.e. **School of Natural Sciences, School of Applied Sciences & Technology, School of Humanities, Social Sciences and Performing Arts. Being brought together.**

Landmarks: National Centre for Human Genome Studies and Research,

Library- over 650,000 books and 150,000 periodicals some of which are rare collections from the 19th century. has a reading hall which is open 24 hours and attracts major portion of students. Books and journal collection is augmented by a variety of online sources.
ICSSR- center runs a library, a seminar complex and a guest house for visiting scholars

Faculty of Law- have separate academic blocks
Gandhi Bhawan- has a specialised library on Gandhian Studies and

National Freedom Movement

Laboratories of the Centre are equipped with the state- of -the- art equipment. The entire complex is worth seeing because not only the architectural lay out but also the buildings are designed to reflect the soul of the architectural aesthetics of the pioneer designers and visionary of this city beautiful.
both spacious and tranquil
Gandhi bhawan and Student's Centre while a trip on the spacious roads of whole of the campus

**Departments:**
Panjab University has several departments, grouped as under:

Arts Ancient Indian History, Culture and Archeology Indian Theater Economics
Gandhian Studies
Geography
Guru Nanak Sikh Studies
History
Library and Information Science
Mass Communication
Philosophy
Political Science
Psychology
Public Administration
Sociology
Statistics
Population Res. Center
Business and Management Commerce
University Business School
University Institute of Applied Management Sciences
Dairying, Animal Husbandry and Agriculture
Design and Fine Arts
Fine Arts
Music
Education
Education
Physical Education
Engineering and Technology
Chandigarh College of Engineering & Technology (CCET)
Evening Studies
University School of Open Learning ( formerly Dept. of Correspondence Studies)
University Institute for Chemical Engineering and Technology (UICET)
University Institute of Engineering and Technology (UIET)
RSIC/SAIF/USIC/UCIM/CIL
Swami Saravanand Giri Panjab University Regional Centre Languages
Chinese and Tibetan Languages Dayanand Chair for Vedic Studies
Guru Ravidas Chair for Sant Sahitya Studies
English
Hndi,German,French,Russia n Punjabi
tudies,Urdu,,sanskrit
Law University Institute of Legal Studies Department of Laws
Center for Advanced Studies-
University Institute of Pharmaceutical Science Medical Science
Science University institute of fashion technology (UIFT)
Anthropology Biochemistry
Biophysics Biotechnology
Botany
Center for Environment and Vocational Studies
Chemistry Computer Science and Applications
Geology National Center for Human Genome Studies and Research
Mathematics
Microbiology
PhysicsStatistics
Zoology and few other ancilliary departments

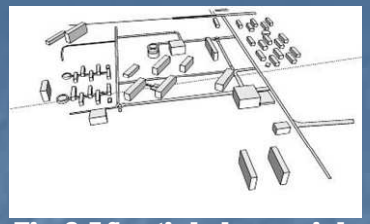

Fig.3.5 Spatial plan aerial

Fig.3.6 Library at Night

Fig.3.7 Canteen and club

Fig.3.8 Canteen aerial 3D

area : 2,200,000 SQ.M
inhabitants : 15,000

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# CASE STUDY 4 – INDIAN INSTITUTE OF MANAGEMENT, AHMEDABAD, INDIA

**Introduction:**
established in 1961
formative years, it collaborated with the Harvard Business School

**Designed by Louis Kahn, a well known American architect**

present campus, spread over 67 acres **(271140 SQM)** with a lush green cover, is being extended by a further 39 acres.
**Number of students 12000**
DESIGN PRINCIPLE: spaces for casual interaction; frequently changing perspectives; and a balance between modernity and tradition that captures the spirit of contemporary India.

It stimulates the imagination and creativity of the students, who are clearly the best in the country, coming as they do after one of the most rigorous selection process."
simple, platonic forms and compositions.
characterized by powerful, massive forms, use of brick and poured-in place concrete masonry, he developed a contemporary and monumental architecture maintained sympathy for the site. blend of his Beaux Arts education and a personal aesthetic impulse stark and majestic buildings in brick have simple forms and bold openings, creating monumental spaces with minimal décor

**(BLEND OF SECLUDED CAMPUS AND STAGGERED DESIGN )**

**Facilities:**
Powerful beams of light and strong shadows create a dramatic and serene ambience
ARRANGEM,ENT: The Louis Kahn Plaza, the main complex named after the architect, is where most major interactions and celebrations take place. The faculty wing, the library, and the classrooms surround it on three sides.
The broad, airy corridors, the amphitheatre classrooms, and transition spaces in the complex further enhance interaction among the faculty, students, and visitors.
extended campus will feature a state-of-the-art international management and convention centre along with further classrooms, dormitories, and ancillary facilities.
atmosphere of community living **student housing is divided into 20 dormitories, each capable of accommodating 25-40 students in independent rooms.**
located in close proximity to each other and the classrooms for convenient access and easy interaction.
plenty of open space
excellent sports and fitness facilities on the campus

**Departments:**
**Vikram Sarabhai Library**
The Institute's library is an invaluable resource with close to 180,000 volumes, 600 current periodicals, 700 CDs and more than 2000 working papers and dissertations. area of the library Is 20,120 sq ft (1,869 SQM)
**Information Technology Infrastructure** A state-of-the-art network with almost 1600 nodes connects every corner of the Institute. Every student and faculty member has a networked personal computer at his or her disposal.
Development centre is a completely self-sufficient, stand-alone unit, a short walk from the main buildings. It has 64 well-furnished centrally air-conditioned double rooms, a dining hall, a reading lounge, badminton and table tennis courts, a computer laboratory, classrooms, and seminar rooms all equipped with presentation and teaching aids. The Institute's Management development programmes as well as seminars and conferences are held here.

The city is also home to a number of unusual and world-renowned museums: the Calico Museum of Textiles, the Kite Museum, and Utensil Museum.

**Fig.4.1 Inside the Library**

**Fig.4.2 Department buildings and park**

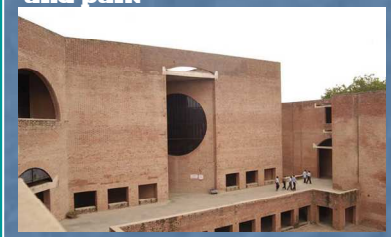

**Fig.4.3 Open spaces integrated**

**Fig.4.4 Open air staircases**

area : 271,140 SQ.M
inhabitants : 15,000

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# CASE STUDY 4 – INDIAN INSTITUTE OF MANAGEMENT, AHMEDABAD, INDIA

There are six classrooms and five seminar rooms in the teaching wing. This is in addition to the seminar and conference rooms in the faculty wings

The old campus was designed by Louis Kahn, who was an exponent of exposed-brick architecture.

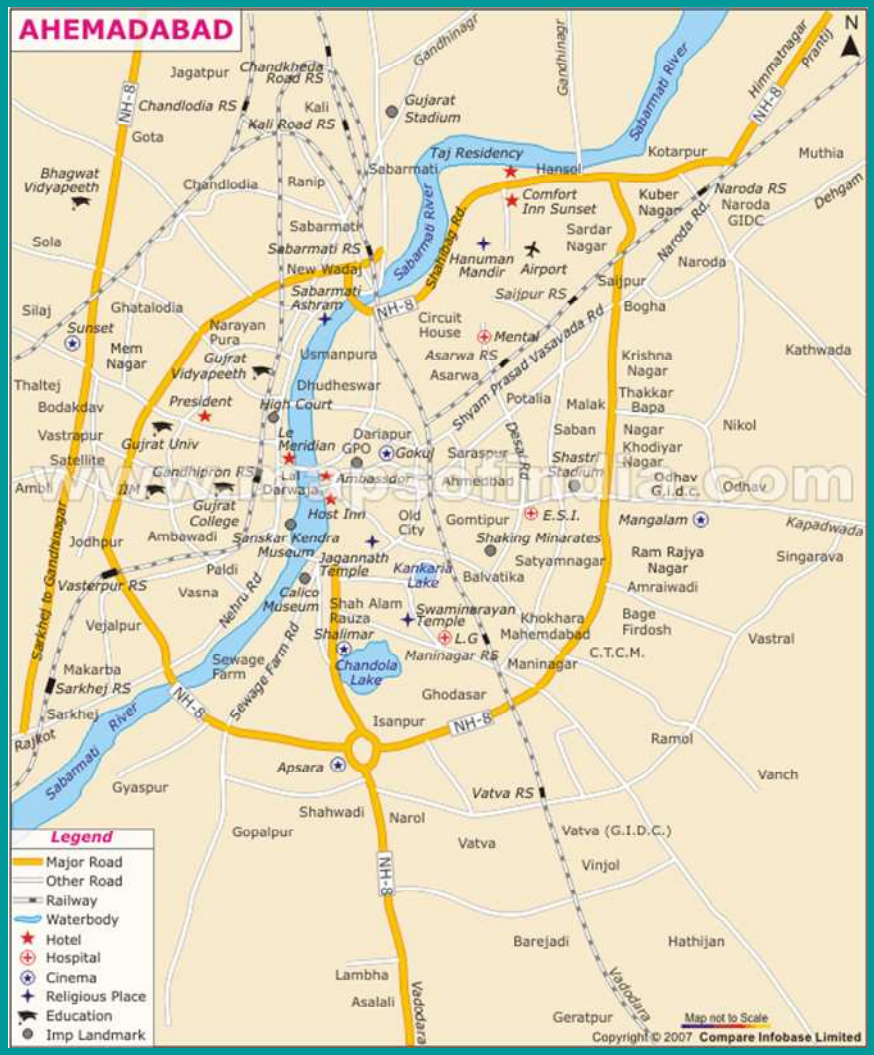
The most distinctive features of the plan are the numerous arches and square brick structures with circles carved out in the facade.

The student dormitories are connected to the main complex by a series of arched corridors and landscaped courts. An extension to the old campus built across the 132 feet (40 m) ring road was commissioned in 2003 with student dorms and classrooms built in a contemporary concrete design which strives to retain some elements of the old campus' architecture such as the arches and exposed brick facades.

The two campuses are connected with an underpass (tunnel-walkway).While the new campus does offer some contrast to the old campus, the design seems to retain some elements such as the aches/circles and some exposed brick facades.

biggest auditorium in the campus with a capacity of 500

Right: Map of Ahmedabad City, Source:www.mapsofindia.com



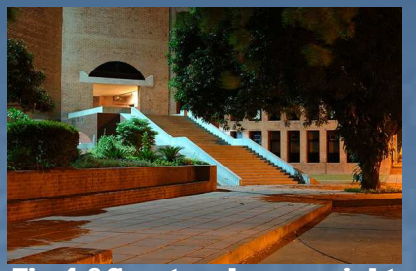



Fig.4.6 Courtyard space night

Fig.4.7 Departments and garden

Fig.4.8 Louis Kahn design

Fig.4.9 Ancient Mughal JALLI

area : 271,140 SQ.M
inhabitants : 15,000

**THESIS 2010 - EDUCATION IN THE SPACE**

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# CASE STUDY 5 – INDIAN INSTITUTE OF TECHNOLOGY MADRAS

**introduction:**
**IIT Madras is located in the city of Chennai which is also the state capital of Tamilnadu, a southern state in India. Chennai is the fourth largest city in India and comparatively a new city, about 350 years old (1639). The city was formerly known as Madras and was renamed Chennai, which evolved from old name 'Chennapatnam'.**

**Chennai is a coastal city with the second largest beach in the world known as 'Marina' beach. The climate is generally hot and humid. In summer (May - July) the temperature reaches up to 42° C (107° F) while in winter (Dec. - Feb.) it is slightly less hot, 18° C (64° F). The Monsoon season starts in September and lasts till November**
**IIT Madras is situated on Sardar Patel Road and is flanked by Adyar, Taramani and Velachery.**

**The campus is opposite to the Central Leather Research Institute and Anna University. The campus is spread over 250 hectares of lush green forest, which is midway between the Chennai Airport and Central Railway station, and is well connected by buses and local trains. The campus is around 14 km from the Central Railway station. Adyar is the nearest bus terminus to the campus. The Institute in itself is located around 2.5 km inside the campus.**

Two parallel roads, Bonn Avenue and Delhi avenue, lead you through the residential zone, under a canopy of green, to Gajendra Circle (otherwise called GC) and the administrative block. Buses ply between the gate and other locations on campus at regular intervals. Named after mountains, the IITM buses take you to the GC, academic zone and hostels (named after rivers) for a nominal fare.
(This has infact led to the joke that IIT is the land of moving mountains and stationary rivers!)

Biodiversity:
Following the recommendations presented in the Campus Biodiversity Report, the Campus Environment Management Commitee (CEMC) has approved the removal of some of the most invasive vegetation on campus, which have been a threat to its wildlife and biodiversity.
These are
**Antigonon Leptopus (creeper bearing pink flowers)**
**Croton Bonplandianus (small plants with tiny white inflorescence)**
**Prosopis Juliflorathrony (plants and full grown trees)**
**Cassia Siamea (tree with yellow flowers)**
**Cereus Peruvianus (cactus)**
**Prakriti (Wildlife Club)**
Prakriti, the Wildlife Club of IIT Madras, Was founded in April 2002 by a group of wildlife enthusiasts comprising of students, faculty, staff, residents and alumni of IIT Madras.

The formation of the club was spurred by a growing recognition of the need to protect the unique biodiversity of the IIT Madras campus.
The IIT Madras Campus was carved out of a natural forest that formed part of the Guindy National Park. The Guindy National Park and IIT Campus come under Tropical Dry Evergreen Forest type - the least common vegetation type seen in India. The campus can be considered as an ideal example for the co-existence various types of mini-ecosystems.
The main inhabitants of these ecosystems are the blackbuck, spotted deer, jackals, mongooses, monkeys, squirrels, toddy cats, wild cats, various types of reptiles, a plethora of insects including about 40 different species of butterflies and about 100 species of birds. IITM campus also hosts large groups of migratory birds and butterflies every year.
**Facilities:**
Canteen:
The campus has a couple of food joints, frequented more perhaps by hostelites looking for a change from hostel grub than the occasional visitor. The Campus Cafe is open from 8.00 A.M. to 8.00 P.M. on all working days including Saturdays. A wide variety of South Indian and North Indian dishes are available. During lunch time Meals are available at very nominal rates.
"Basera" located between Godavari and Saraswati hostels is open from 6.00 P.M. to 2.00 A.M. A variety of North Indian dishes are available here.


**Fig.5.1 Entrance green ambience**


**Fig.5.2 Deer park biodiversity**

**Fig.5.3 Patisserie and cafeteria**

**Fig.5.4 Bank facilities on-campus**

area : 250 HECTARES
students : 8,000

# CASE STUDY 5 – INDIAN INSTITUTE OF TECHNOLOGY MADRAS

Transport::
The Institute provides Bus transport to facilitate commuting within the campus. There are four regular buses and 10 battery-powered vehicles.
These buses are named after mountain ranges & peaks in India. These Buses ply to and fro, every 20-30 minutes between the IN-Gate and Gajendra Circle (GC), Hostel Zone and Department Zone. The Bus-Shed is located near the Staff Canteen.

Guest houses:
The Institute has two guest houses within the campus. The guest house near the Admin Building is called the Bose-Einstein Guest House and the guest house in the hostel zone is called the **Taramani Guest House**.
The **Bose-Einstein Guest House** has altogether 18 A/c Suites with a telephone and a TV in each room. VIPs, Institute guests and invited guests are usually accommodated here.
The Taramani Guest House has 83 rooms in total. Out of which 18 are Suites and 65 Air-conditioned rooms, Housed in an imposing double storeyed building and located at a central place, TGH provides boarding and lodging facilities for the Institute guests and Visitors, newly appointed faculty, staff members, delegates and participants attending various Conferences, Seminars, Symposia and Workshops. TGH is operated as a non-profit activity to mainly support the academic and research activity on the campus with a homely atmosphere and ambiance traditionally acclaimed for its environs of hygiene and food of homely relish and richness.

Banks:
The institute has two banks situated in the campus, State Bank of India and Canara Bank. Both the banks are regular branches in the campus and are housed in separate buildings.
Application forms for important national level exams such as JEE, GATE and CAT are sold in these banks.
**State Bank of India :** Institute employees have their salaries credited to the State Bank of India. State Bank of India has two ATMs - one located in the bank premises and the other near the Taramani Guest House. In addition there is a ICICI Bank ATM located in the Hostel Management Office for the benefit of students.

Shopping:
The campus has two shopping centres which cater to the needs of the students and residents. The Students' Facility Centre (SFC) located opposite the Narmada hostel has the following:
**Gurunath Departmental Stores , Gurunath Patisserie,Hair Cutting Saloon,Xerox Shop ,Telecom Centre**
The TUCS shop is located in the residential zone and supplies groceries, provisions and other essential items. It also has a book store, xerox shop and a telecom centre.
A separate Telecom Centre with fax and telegram facilities is located near the Central Library.

Security:
For an institution located in a metropolis, in a sprawling campus which also happens to be a reserve forest, security is of paramount importance. It is with this in mind that IIT Madras has developed an efficient security system. The Security Wing of the Institute has laid down a set of rules and regulations which have to be complied with by all residents and visitors on campus. The Security Wing is headed by the Chief Security Officer and has a Duty room functioning round-the-clock to prevent any breach of security.
**Responsibility:**
It is the responsibility of all the residents of the campus that they inform the Chief Security Officer / Duty Officer / Duty Room immediately on noticing any mishap, suspicious movements of persons, any untoward incident happening and/or, information regarding probability of any of these. Timely information is of vital importance.

Post Office:
The campus has a Post Office and a Telecom Centre. The IIT campus comes under a separate postal zone and it is a postal delivery office. There is a separate Telecom Centre meant for sending telegraphs, fax messages and making long distance telephone calls. The telecom centre is located in the Management Science building near the Library.
The post office is located near the State Bank Of India and works on all weekdays as well as Saturdays.


**Fig.5.5 Bus transport facilities**


**Fig.5.6 Workshop mech. engineering**


**Fig.5.7 Hospital facilities on-campus**


**Fig.5.8 Entry from road**

area : 250 HECTARES
students : 8,000

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# CASE STUDY 5 – INDIAN INSTITUTE OF TECHNOLOGY MADRAS

Schools:
There are two schools located inside the campus.
**Kendriya Vidyalaya IIT**
**Vanavani Matriculation Higher Secondary School**

Kendriya Vidyalaya IIT follows the syllabus prescribed by the Central Board of Secondary Education (CBSE) and comes under the purview of the Central Government of India. The school admits students for Std I to XII.
Vanavani Matriculation Higher Secondary School is run by the IIT Campus Educational Trust (CET) and follows the Matriculation syllabus of the Tamil Nadu State Government. The school admits students for Std I to XII. It also has a primary school for LKG & UKG and a newly built 'Creche'.

Temples:
There are three temples on campus - the Sree Durga Peeli Amman Temple, the Jalakanteswarar Temple and Vinayagar temple.
The Sree Durga Peeli Amman Temple, known for its serene atmosphere and picturesque surroundings, has the shrines of Lord Vinayaka, Lord Murugan and the Navagrahas. The presiding deity of the temple is Goddess Peeli Amman.
The temple organizes the 'Aadi Thiruvizha' in the Tamil month of Aadi. Elaborate ceremonies are performed during the Navarathri festival when the Goddesses are taken out in procession. The temple is located on Delhi Avenue.

A stone's throw away from the Adyar In-Gate is the Jalakanteswarar Temple. The temple houses the shrines of Lord Jalakanteswarar and his consort Goddess Kathyayanee, Lord Rama, Lord Hanuman and the Navagrahas. Navarathri, Mahashivarathri and other festivals are celebrated with great splendour at the temple which is also the venue for music concerts by upcoming artistes.The Vinayagar temple is situated behind Taramani House. The temple has the shrine of Lord Vinayaka and a Shiva Lingam.
Catholic Mass is conducted at the NCC Building every Sunday at 8:30 am. All campus residents attend the mass. Priests and students from Satya Nilayam, a seminary located in Tiruvanmiyur, Chennai, assist in conducting the mass. The church has an active youth group called *Genesis* which organizes activities, picnics, get-togethers etc. for its members. Visits to orphanages and old-age homes are arranged by the members of the church on a regular basis. A variety of programmes are organised during the Christmas season and for Easter. The church is affiliated to the Adyar Parish. The House of Prayer is situated on the Sardar Patel Road, just outside the campus. A Protestant Mass is held on Sundays, in different languages, at different times of the day. The House has a choir, which performs carol services during Christmas and Easter. Choirs from other churches are also invited to perform at the House of Prayer.

Hospital:
Pharmacy
Clinical Laboratory
X-ray Unit
UltraSonography
ECG
OperationTtheatre
Dressing Room
Individual Room
IP Ward
Post Operative Ward
Casualty
Injection Room
Labour Room
Newborn Supportive Care
Central Oxygen Supply
Dental Clinic
Optometry Unit
Ophthalmic Unit
Physiotherapy Unit
Ambulance Service
**Hospital Wastes Management**

are the advanced medical facilities available on campus to all the students, staff and residents inside so that they do not have to go out anywhere in case of need for medical attention no matter how small or big the health problem may be.

Indian Institute of Technology Madras, is one among the foremost institutes of national importance in higher technological education, basic and applied research. In 1956, the German Government offered technical assistance for establishing an institute of higher education in engineering in India.

**Fig.5.9 School for children**


**Fig.5.10 Dental clinic facility**


**Fig.5.11 Emergency ambulance facility**


**Fig.5.12 Operation theatre facility**

area : 250 HECTARES
students : 8,000

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# CASE STUDY 5 – INDIAN INSTITUTE OF TECHNOLOGY MADRAS

HISTORY OF IIT MADRAS:
The first Indo-German agreement in Bonn, West Germany for the establishment of the Indian Institute of Technology at Madras was signed in 1959.
The Institute was formally inaugurated in 1959 by Prof. Humayun Kabir, Union Minister for Scientific Research and Cultural Affairs. The IIT system has seven Institutes of Technology located at Kharagpur (estb. 1951), Mumbai (estb. 1958), Chennai (estb. 1959), Kanpur (estb. 1959), Delhi (estb. 1961), Guwahati (estb. 1994) and Roorkee (estb. 1847, joined IITs in 2001).
IIT Madras is a residential institute with nearly 460 faculty, 4500 students and 1250 administrative & supporting staff and is a self-contained campus located in a beautiful wooded land of about 250 hectares. It has established itself as a premier centre for teaching, research and industrial consultancy in the country.
The Institute has fifteen academic departments and a few advanced research centers in various disciplines of engineering and pure sciences, with nearly 100 laboratories organized in a unique pattern of functioning. A faculty of international repute, a brilliant student community, excellent technical & supporting staff and an effective administration have all contributed to the pre-eminent status of IIT Madras.
The campus is located in the city of Chennai, previously known as Madras. Chennai is the state capital of Tamilnadu, a southern state in India.

The IIT campus is located on the Sardar Patel Road, midway between the Raj Bhavan and Adyar bus terminus and is around 12 km from Chennai Central Railway Station.

Other landmarks include the Guindy Snake Park near the IIT main gate and the Central Leather Reasearch Institute (CLRI) campus opposite the IIT campus.

If you have light luggage (a bag or an attache) you could consider taking a bus to IIT. The bus stop is just across the road from the Central Railway Station.

You could use the subway to cross the road which is perpetually busy. There are direct buses to IIT, which start at the Central Station bus stop. If you take any of them, get down at Gandhi Mandapam, which is at walking distance from the IIT main gate. Otherwise, take any bus to Saidapet and from there, any bus heading for Adyar or Besant Nagar which will drop you right in front of the IIT gate.

You could also take any bus to Adyar; there are frequent buses from Adyar Signal to the campus.

Once you reach the In gate, there are buses to Gajendra Circle (near the administrative block and Central Library), the academic zone and the hostels (they are around 3.8 km from the main gate!) almost every 30 minutes.

**Departments:**
The various academic departments in the institute offer course based degree programmes and also degree programmes that are inclined towards research. The following courses based degree programmes are offered by the departments:
Bachelor of Technology (B Tech)
Dual Degree progammes in Engineering leading to B Tech and M Tech degrees
Master of Technology (M Tech)
Master of Science (MSc)
Master of Arts (MA)
Master of Business Administration (MBA)
The following are the Research oriented degrees offered by the departments:
Master of Science by Research (MS)
Doctor of Philosophy (PhD)
There are sixteen academic epartments in the institute. All the departments have the doctoral programme.
The following departments offer B Tech and/or Dual degree programmes.
**Department of AerospaceEngineering**
**Department of Applied Mechanics**
**Department of Biotechnology**
**Department of Chemical Engineering**
**Department of Civil Engineering**
**Department of Computer Science and Engineering**
**Department of Electrical Engineering**
**Department of Engineering Design**
**Department of Mech.engineering**


**Fig.5.13 Solar power generation**


**Fig.5.14 Attractive entrance fountain**


**Fig.5.15 Hostel facilities on-campus**


**Fig.5.16 Grand entrance gate**

area : 250 HECTARES
students : 8,000

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# CASE STUDY 5 – INDIAN INSTITUTE OF TECHNOLOGY MADRAS

**Departments:**
**Department of Metallurgical and Materials Engineering**
**Department of Ocean Engineering**
**Department of Physics**

In addition to these the departments of Mathematics and the Department of Applied Mechanics offer M Tech programmes.

The departments of Mathematics, Physics and Chemistry offer MSc programmes while the Department of Humanities and Social Sciences offers a five- year integrated MA programme.

The following User Oriented programmes leading to M Tech degrees are offered by the various departments.

Port Management (Department of Ocean Engineering)
Building Technology and Construction Management (Department of Civil Engineering)
Computational Mechanics (Department of Civil Engineering)
Automotive Technology (Department of Mechanical Engineering)
Software Engineering (Department of Computer Science and Engineering)
Digital Signal Processing (Department of Electrical Engineering)

The provision of adequate infrastructure in educational technology will enhance the effectiveness of the teaching-learning processes.

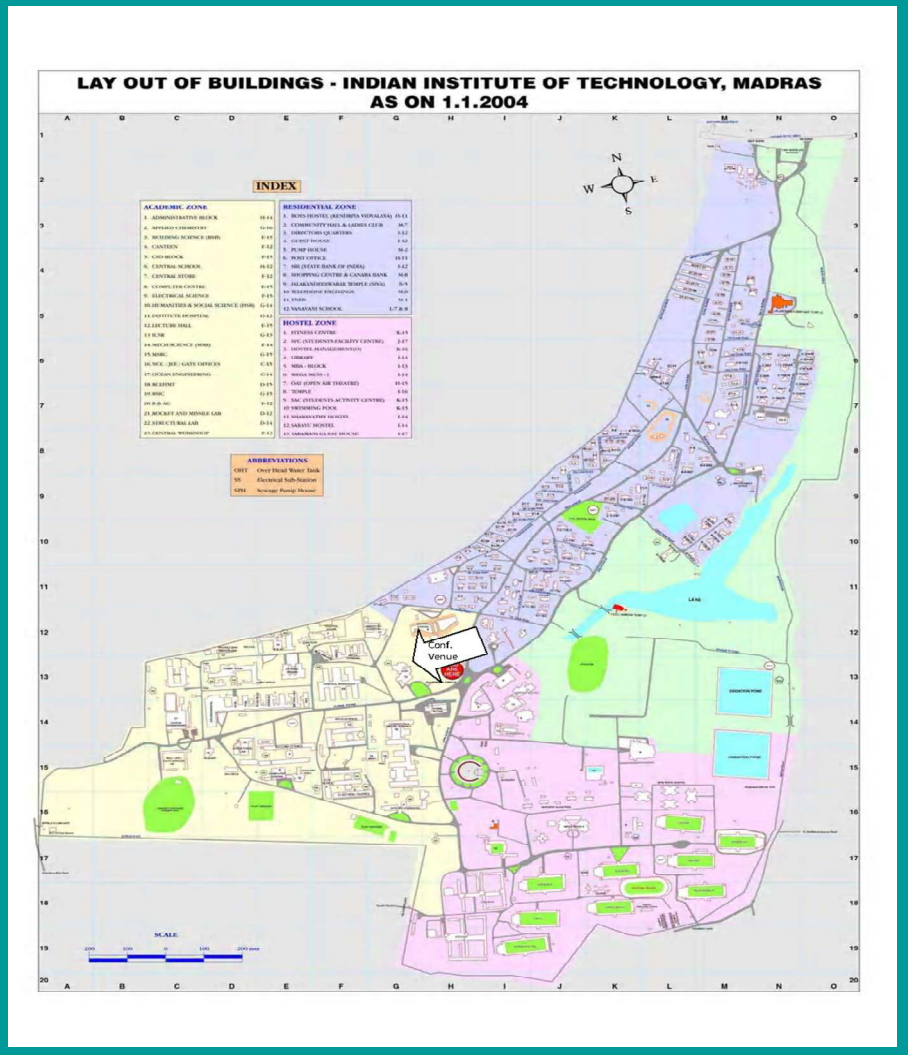



Fig.5.17 Engineering workshop


Fig.5.18 Hostel buildings for women


Fig.5.19 Cricket stadium grounds

Fig.5.20 Open air auditorium

area : 250 HECTARES
students : 8,000

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# CASE STUDY 6 – BIRLA INSTITUTE OF TECHNOLOGY AND SCIENCES

**Introduction:**

**Birla Institute of Technology & Science**, (known as **BITS Pilani**) is a science and technology institute. It is located in Pilani, Rajasthan, India. In addition to Pilani, BITS has campuses in Dubai, United Arab Emirates, Goa, India and Hyderabad and an extension center in Bangalore, India

BITS Pilani enrolls students purely on the basis of merit and not through any kind of reservations. The institute is privately supported and fully residential. BITS Pilani is the first Indian institution to set up a campus outside India.

The Institute developed and administers the all-India computerized entrance test BITSAT (BITS Admission Test), which is the first of its kind in India. It is also known to be one of the first Indian engineering colleges to require compulsory internship in the industry by both the students and faculty in the form of its "Practice School" program.

History:

**The institute was founded by the late Dr. Ghanshyam Das Birla in 1929 as an intermediate college.**
**During World War II, the Government of India established a technical training center at Pilani to train technicians for defence services and industry. In 1946, it was converted into the Birla Engineering College with degree programmes in electrical and mechanical engineering.**
**The college was set up with very limited infrastructure. Prof. V Lakshminarayan took charge of Vice Principal, Birla College of Engineering in 1946. Masters programme in Electronics began in 1955.**

In the 1950s, the first Indian Institute of Technology's (IIT's) were being set up, to provide world-class engineering education in India and to contribute to its nascent economy. It was then that Dr.Ghanshyam Das Birla *decided that his companies, and his country, needed a private IIT, and that MIT alone should provide the blueprint for the institute and train its faculty*.
Therefore, in 1964, the Birla Colleges of Arts, Commerce, Engineering, Pharmacy and Science were merged to form the Birla Institute of Technology and Science (BITS) with Dr. G.D.Birla as the founder chairman.
It was largely as a result of Dr. Birla's perseverance and contacts that in this period, (especially during 1964–1970) BITS Pilani received support from the Ford Foundation. The Ford Foundation also supported an alliance between BITS and Massachusetts Institute of Technology (During 1964-1970), during which the faculty at BITS were sent abroad to receive training at MIT. The faculty members at MIT also helped to reshape the curriculum at BITS by introducing the semester system, continuous evaluation and world-class textbooks for the courses.

To hasten the pace of reforms, the Ford Foundation and its MIT advisors convinced Birla to hire Prof . C. R. Mitra, former head of a private technical school in Kanpur as the new Director of the Institute. It was Prof. Mitra who pushed for a "practice school" (engineering internship; explained below) program far more ambitious than anything MIT had done, as a requirement for all faculty and students. This highly successful Practice School Program is now a distinct feature of all BITS campuses.

According to Prof. Robert Kargon and Prof. Stuart Leslie, *BITS offered an opportunity* [to the Ford Foundation and MIT] *to build "a leading technological university in India" responsive to India's goals, "to produce practicing engineers who will be in a position to graduate and to build industries in India, under Indian conditions". With its emphasis on the Practice School and ties to Indian industry, it helped educate Indian industrialists along with Indian engineers*.
This is in contrast to other, elite engineering colleges in India, most of whose graduates would leave the country after obtaining their basic engineering education. BITS Pilani became a Deemed University on June 18, 1964.


**Fig.6.1 Panoramic view west**


**Fig.6.2 Panoramic view clock tower**


**Fig.6.3 Panoramic view central**


**Fig.6.4 Panoramic view central with clock torre**

area : 400000 SQ.KM
inhabitants : 18,000

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# CASE STUDY 6 – BIRLA INSTITUTE OF TECHNOLOGY AND SCIENCES

**Facilities:**

**Pilani is located 220 KM West to Delhi and 217 KM North to Jaipur and BITS campus is located to the south of the bus stand of Pilani town. The total area of the campus (which includes land of Birla Education Trust) is over 400000 KM2 (1000 acre), but the BITS campus (also called Vidya Vihar Campus) is spread across 1.327 KM2 (328 acre).**

**The build up area of BITS is 0.2 KM2 (49.421 acre) of which 60769 M2 is used for the BITS University building. The campus has several class rooms (area 11245 M2), laboratories (area 7069 M2).**

BITS has a temple of Goddess Saraswati called Sharda Peeth.
It was built by Dr. G D Birla. The temple is built on a 7 feet high basement, with 70 pillars for support and spread across an area of 25000 square feet is entirely built using white marble. Pilani Campus has India's first technological museum called Birla Museum.
Built in 1954, it exhibits the accomplishments of technology in various sections.
BITS has a well built auditorium of capacity 2000. The walls of the auditorium are decorated by paintings drawn by students.

**Residential facilities:**
The institute has 11 hostels for boys and 1 hostel for girls.

**Departments:**

**Academics**
The Institute has a three-tier academic structure.
**Integrated First Degree**
BITS Pilani offers 4 year Integrated First Degree programmes in Bachelor of Engineering (B.E. (Hons.)), Bachelor of Pharmacy (B.Pharm (Hons.)), Master of Science (M.Sc (Hons.)), Master of Science (M.Sc (Technology)), and Master of Arts (M.A (Hons.)). Various programmes are offered with the degrees and these are classified into 3 groups A, B & C.

*Group A*:
Chemical Engineering
Civil Engineering
Electrical & Electronics Engineering
Electronics and Instrumentation Engineering
Mechanical Engineering
Pharmacy
Computer Science Engineering.
Manufacturing engineering

*Group B*:
Biological Sciences
Chemistry
Economics
Mathematics
Physics.

*Group C*:
Information Systems
General Studies
Engineering Technology
Finance

These courses are called Integrated First Degree courses because several courses such as Mathematics and Sciences are common to each degree. BITS does not offer intermediate degrees like Bachelor of Science (B.Sc), Bachelor of Arts (B.A).
**Higher Degree**
BITS Pilani offers higher degree programmes such as Master of Engineering (M.E.), Master of Pharmacy (M.Pharm), Master of Public Health (M.P.H) Masters in Business Administration (M.B.A).
**Off-Campus Programmes**
BITS Pilani offers various off-campus work integrated learning and collaborative programmes that target the Human Resource Development needs of the industry.
The enrollment has grown over the years from 30 in 1979 to over 10000 students in 2005. More than 19000 students were registered for the various off-campus work-integrated learning programmes during 2008-09. Work related learning programmes also accommodate industry professionals to pursue PhD whilst being employed.
**Student life:**
The institute maintains a strict stand against ragging. Every year, all students have to undertake ( by signing a form) that they will not indulge in any act of ragging.


**Fig.6.5 Aerial view 1978**


**Fig.6.6 Clock tower**

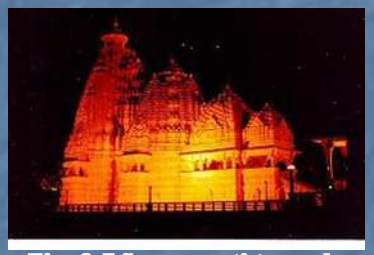
**Fig.6.7 Saraswati temple**


**Fig.6.8 Entrance to admissions**

area : 400000 SQ.KM
inhabitants : 18,000

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# CASE STUDY 6 – BIRLA INSTITUTE OF TECHNOLOGY AND SCIENCES

International projects:

BITS Pilani is a key partner in several international initiatives like the development of JournalServer open-access digital library, the Project IPV6, MIT iCampus initiative and so on.

The primary motive of BITS is to "train young men and women able and eager to create and put into action such ideas, methods, techniques and information".

Centers of advanced learning:
Birla Institute of Technology & Sciences, Pilani-333031

Contact Center for Software Development

Technology Business Incubator

Center for Educational Technology

Centre for Robotics and Intelligent Systems

Centre for Desert Development Technologies

Center for Entrepreneurial Leadership

Professional Development Centre

Center for Women Studies

Rain Water Harvesting

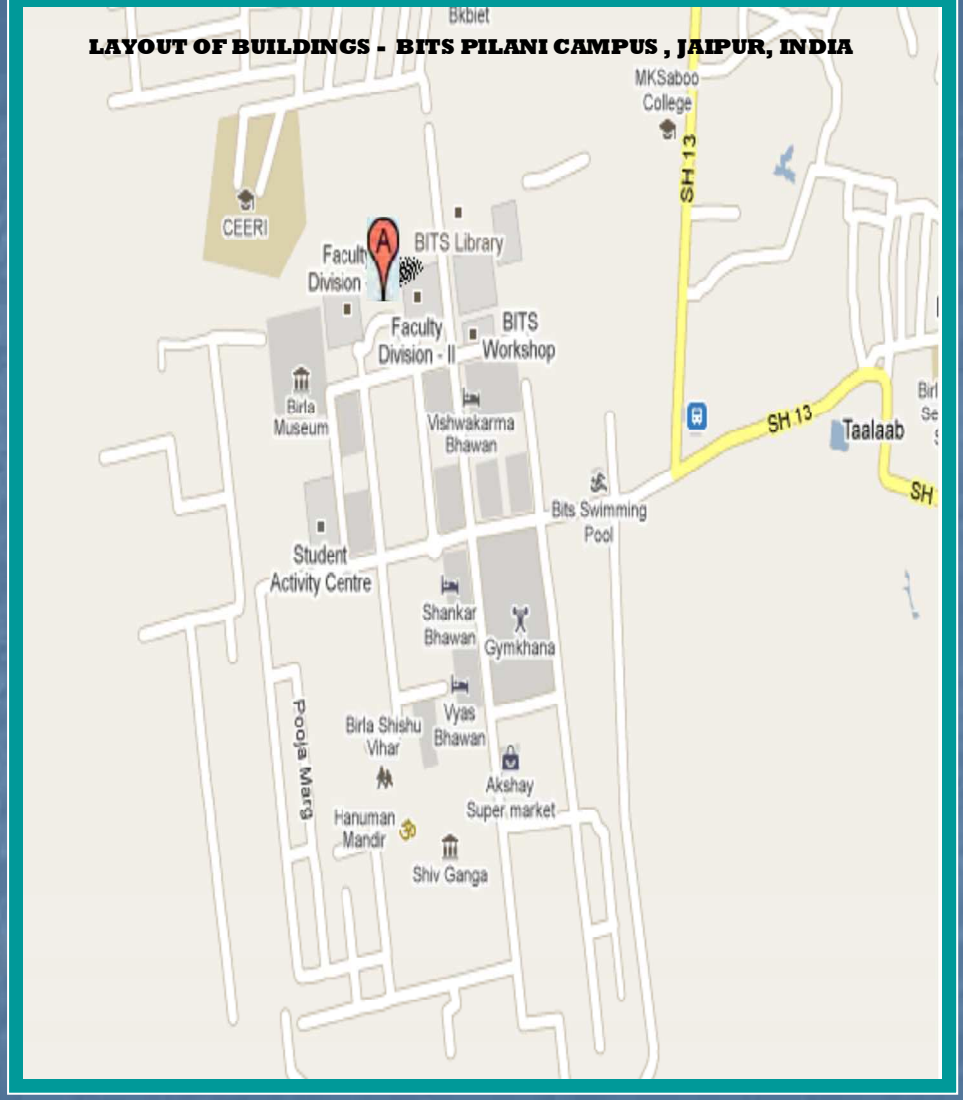



Fig.6.9 Hostel building facility


Fig.6.10 Red Color granite cladding


Fig.6.11 Tree-lined entrance avenue


Fig.6.12 Artistic work by students

area : 400000 SQ.KM
inhabitants : 18,000

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# CASE STUDY 7 – UNIVERSITY OF COLORADO SPRINGS,USA

**Introduction:**
American architectural creation. No other nation has adopted the **"academical village"** as an architectural and landscaping form,

**Its campus is located in Colorado Springs, nestled in the foothills of the front rangeof the Rocky Mountains. The population of the Colorado Springs metropolitan area is over a half million people.**
The diverse, hard-working student body of UCCS is now just less than **8,000** headcount;ability to expand to 30,000 students in future, well over half of whom are full-time students. Today students represent 50states and 67 countries. UCCS offers 25 bachelor's degrees, 18 master's degrees,and 4 Ph.D.'s. It has been called a "Best in the West" by *U.S. News and WorldReport* magazine.

**At present, campus land over 533 acres (2,156,983 SQM) and 24 major buildings.**
the campus has been divided into three areas: the Central Campus, the East Campus, and the North Campus.

The front range of the Colorado Rocky Mountains extending from the southwest tothe northwest and 14,110 foot Pikes Peak dominate the views from the campus. Inthe valley below the mountains, the lights of the City sparkle at night. The northernview from the North Campus is of a towering formation named Pulpit Rock.

The topography of the UCCS land is demanding to say the very least. Ranging from high of some 6,450 feet to a low point of about 6,200 feet, there is a change in elevation of 250 feet. While much of this is caused by the steep bluffs and hills, no truly flat area can be found on the campus. Of the total UCCS land holdings of 533acres, it has been estimated that a little less than one-third are considered appropriate for reasonably economical development.

design of storm drainage, pedestrian and vehicular ways and landscape is difficult

**Facilities:**
**The design goal for the UCCS campus is for its visitors and campus family to feel they have entered a hillside town where people have come to learn about wondrous things. This town is made up of several neighbourhoods called "villages." Each village—be it academic, residential, sports or other—has an image of its own but fits comfortably within the total visual fabric of the UCCS campus.**

Over the years on this growing campus, parts of the natural landscape will give way to the urban landscape, which is man-made.

**In heavy use areas of the campus and/or where a formal landscape is desired, it must be man-made or urban.**

**Important are tranquil areas for reflection and quiet activities, large open flat lawns for recreation and social uses, sidewalks, entry landscape features and more.**

Adequate funding and skilled design are urgent in order to create attractive views of the campus from the streets.

Campus edge landscape design must maintain a sense of continuity, soften views of perimeter parking lots, frame long views into the campus and of the bluffs, and improve safety for all modes of movement along the interconnections with the community.

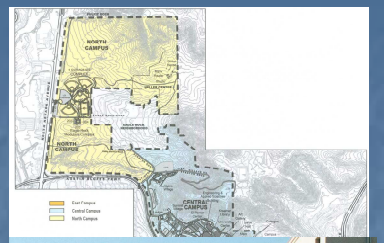
Order and safety on campus will be achieved by establishing clearly separated intracampus circulation systems for vehicles and pedestrians.

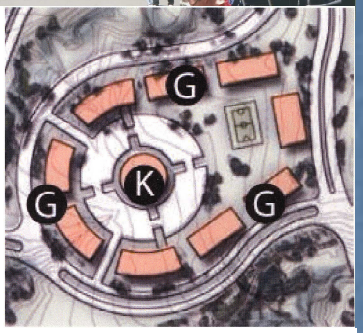
On city or campus bus routes, provide a bus stop lane and attractive shelters to protect waiting passengers from the weather. Provide pick-up lanes as required by heavy building use.

In designing surface parking lots, consideration should be given to the possibilitythey will be built over by multi-level parking structures in the future.

**in an educational enterprise, the Library is the most important campus building.**

**the University Center occupies an important position too.**






**Student Village**

G. Suite Style Residences

K. Dining Center

area : 2,156,983 SQ.M
students : 8,000

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# CASE STUDY 7 – UNIVERSITY OF COLORADO SPRINGS,USA

Should there be a Chapel, it too might be a building that strongly addresses the expectationsof the University.

Architectural features must provide the needed emphasis.

There may be a conflict between the buildings importance on a philosophical basis and those most visible because of their sheer bulk.

The "big box" structures on a campus are often those serving spectators or audiences—the stadium, the sports arena or the performing arts theatre with its toweringstage house.

These buildings should be visually secondary to the Library,University Center or Chapel.

**designs must allow for possible horizontal or vertical building expansion.**

**Each building must relate to the heritage of the site.**

**This is range land, set in the foothills of the Colorado Rocky Mountains. The design style should grow from that setting….no style imported from another culture is appropriate.**

**Design vitality, so necessary to an attractive campus, must come from the way materials and colors are used on each building and from its massing, form and detailing.**

Building entrances should be inviting and clearly identifiable.

There might be **colonnades, arcades, cloisters, and galleries** along portions of buildings at or near sidewalks. Signage and landscaping add interest. **Courtyards** and "out of the way" seating areas can be integrated into the building design. Spaces between building wings should often become **"people places".**
And there should be a **sense of delight.**
materials and colors used on each building, massing, form and detailing, **must relate to the human scale.**

**Departments:**
**Academic Buildings**
includes libraries, classrooms, research, laboratories, faculty offices, performing and fine arts, museums, galleries, and other buildings.

**There must be a sense of architectural continuity between new academicbuildings and those already in place**

**Well-defined entrances, access drives, public plazas, focal activity areas and pedestrian linkages are important elements that should be incorporated in the design.**

**Residence Hall** includes suite style and apartment residences as well as related dining, social or study facilities.

**These buildings are the on-campus homes of student residents. It is important that they are "residential" in character rather than institutional.**

The design of dining, social and other separate buildings located in residential villages shall express their somewhat **"carefree"** function. Outside patios shall be provided and paved sports courts might be nearby.

**Sports Buildings**
includes the multi-purpose arena, athletic field house, natatorium,recreational and U.S. Olympic Committee buildings proposed for the North Campus.

These are buildings that house often exciting/fun activities. They often serve spectator functions, thus should be clearly visible from the main avenues.

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**Research Park/Athletic Facility District**

D. Multipurpose Arena

E. Fieldhouse with a 200M. indoor track

I. Natatorium Complex

Tr. 400M Track

SP. Soccer Pitch

Te. Tennis

F. Research Park

area : 2,156,983 SQ.M
students : 8,000

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# COMPARITIVE ANALYSIS OF URBAN PLANNING PATTERNS


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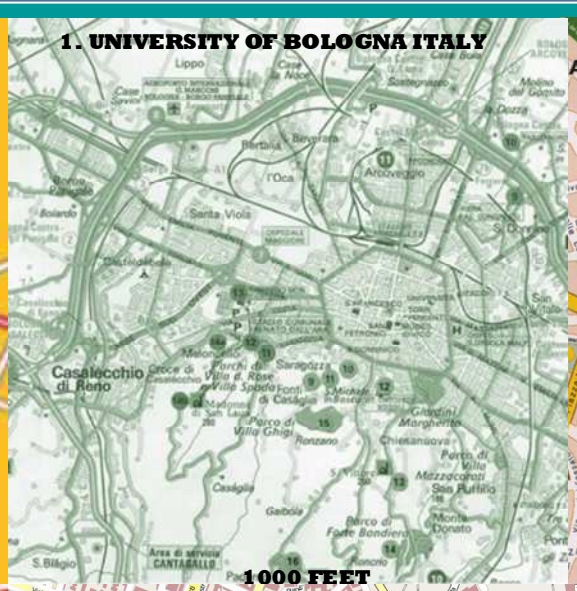


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1000 FEET


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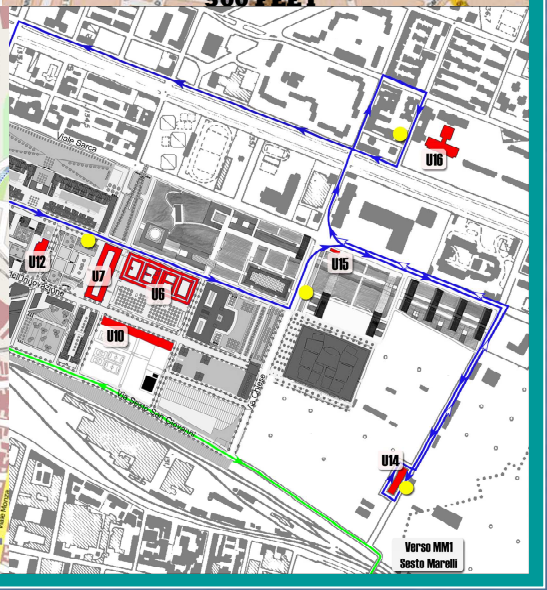
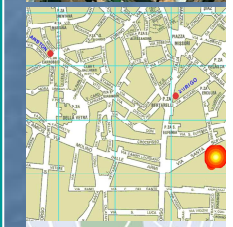
2.UNIVERSITY OF BICOCCA, ITALY

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20000 FEET


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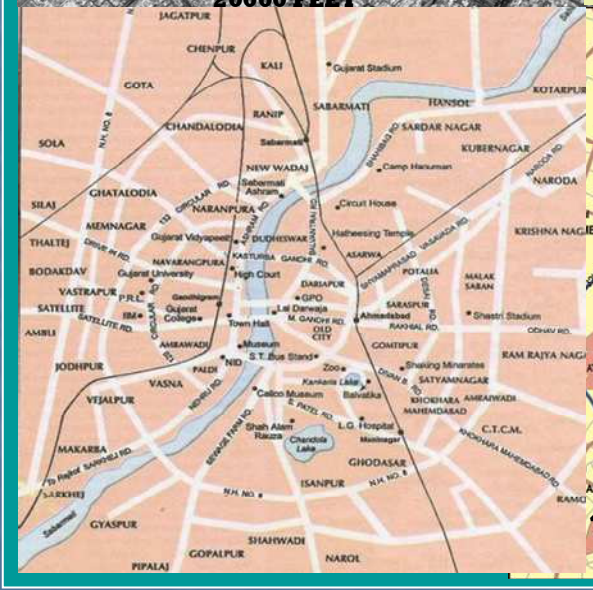
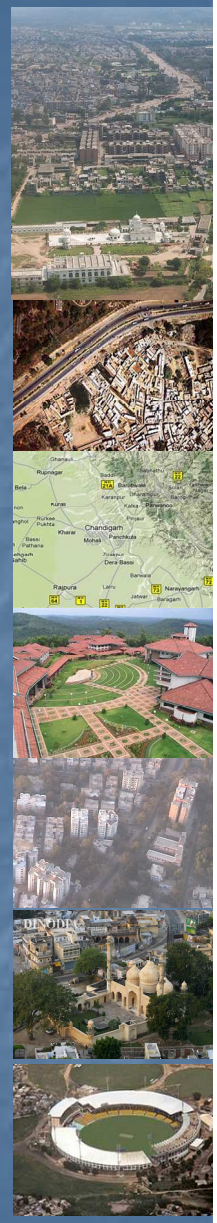




4. INDIAN INSTITUTE OF MANAGEMENT, INDIA

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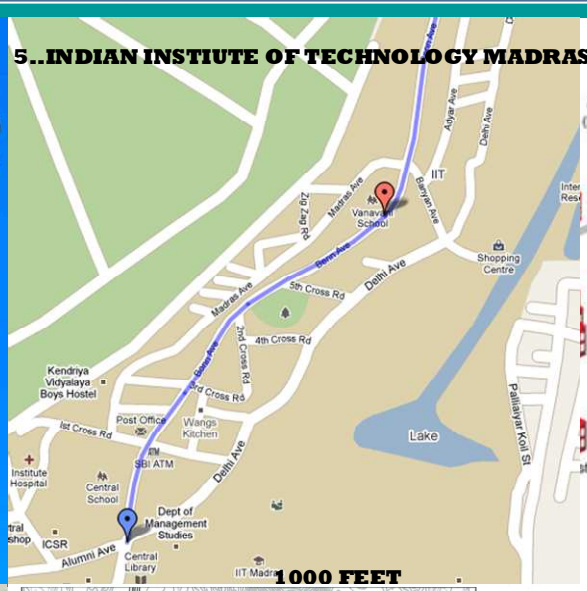



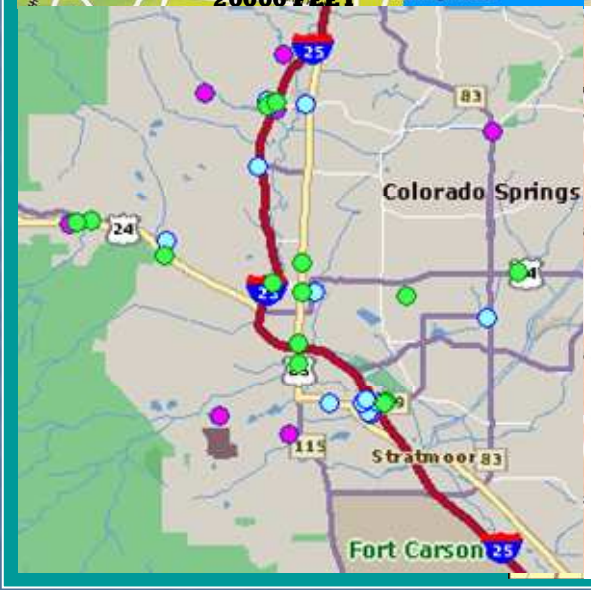


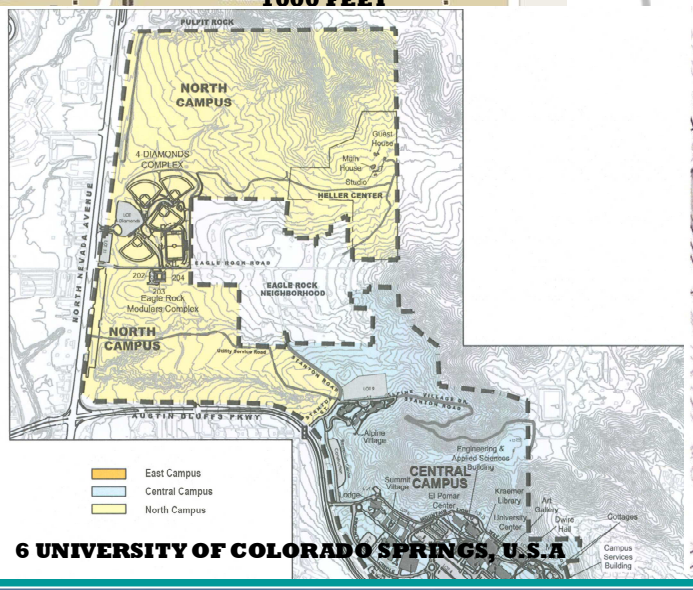


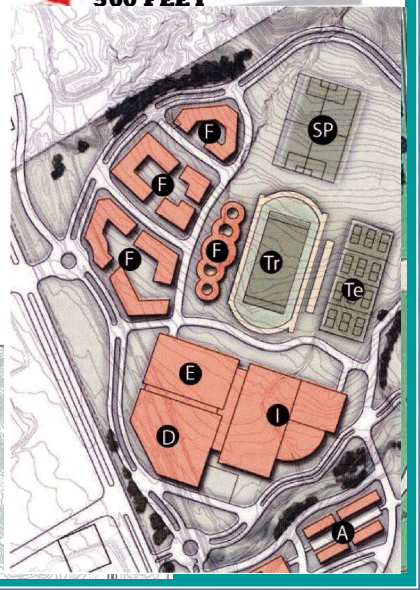


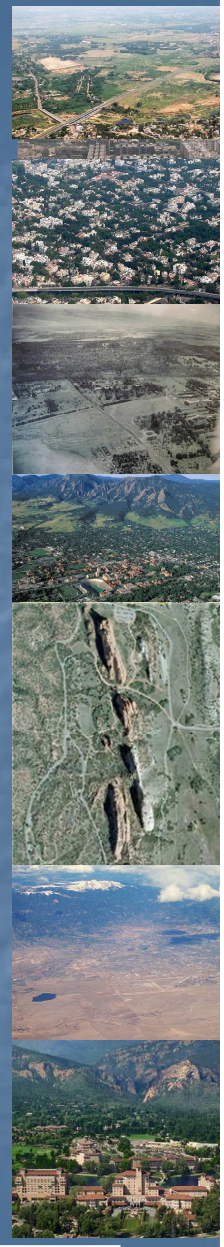

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THANK YOU