DETAILED PROJECT REPORT

INDIAN INSTITUTE OF INFORMATION TECHNOLOGY DESIGN AND MANUFACTURING, KURNOOL, ANDHRA PRADESH

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Submitted to:-

Department of Higher Education
Ministry of HRD
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EXECUTIVE SUMMARY

1. The advancement of Information Technology and Computer Science in India is remarkable and active in all spheres. In this regard Government of India is taking keen interest in establishing world class Institutions all over India. The then large state of Andhra Pradesh was bifurcated into two states namely Andhra Pradesh and Telangana by Andhra Pradesh Reorganization Act 2014, and came into effect from 6th June, 2014.The Government of India has been taking effective steps in the process to fulfill its commitments as per the Schedule 13 of the Andhra Pradesh Reorganization Act 2014 to establish Excellent Higher Educational Institutions of National Importance in the present state of Andhra Pradesh. The Indian Institute of Information Technology (IIIT) is one among the higher learning institutions proposed to be set up in the state of Andhra Pradesh.

2. At present there are four **Indian Institutes of Information Technology (IIITs)** set up by the Government of India as premier institutions of higher education in the spheres of Information Technology and related subjects in the last nearly fifteen years period. The main objective of setting up these IIITs are to promote Education, Research & Development and application of Information Technology and related other branches of Science and Technologies. The objective also covers horizontal and vertical growth across the country and also in international level. The existing four IIIT's, are located namely Allahabad, Gwalior, Jabalpur and Kancheepuram , and accorded the status of a Deemed University under the UGC Act of Government of India. It may be of very much importance to state that these IIITs are covered under the IIIT Act, 2014 to become **Institutions of National Importance.** The new IIIT Kurnool in the State of Andhra Pradesh is the fifth Institute to join the elite group of IIITs to receive similar status as Deemed University and Institute of National Importance.

3. As per the prevailing procedures being followed in the Ministry of Human Resources Development, Government of India, a **Detailed Project Report (DPR)** needs to be prepared and presented for establishing the new IIIT, Kurnool in Andhra Pradesh, named as IIITDM, Kurnool for obtaining approval and allocation of funds. The possible reasonable period of completing the construction activities well within the next three

academic years (2017-18, 2018-19, and 2019-2020) taken into consideration and requirement of funds worked out.

4. The Government of Andhra Pradesh allotted 151.51 **Acres** of land for establishing IIITDM Kurnool at **Dinnedevarapadu Gram Panchyat** in Kurnool Mandal in the District of Kurnool, Andhra Pradesh on 22-10-2015. The parcel of land allotted for IIITDM Kurnool is located nearly 5KMs from the Kurnool City towards south. The Bangalore-Hyderabad National Highway NH- 7 is passing on the western side of the proposed IIITDM, Kurnool, about 2.50 KMs away. Similarly, the Kurnool-Chitoor National Highway NH- 18 is passing on the eastern side of the proposed IIITDM Kurnool, about 2.50 KMs away. It is proposed to construct Multi-Storeyed Buildings to cover Administrative Building, Academic Buildings, Residential Buildings, Students Hostel, Amenities etc., for economically using the land to adhere GRIHA norms and make available land for future expansion.

5. The IIITDM Kurnool, proposed to cover B.Tech. Degree Program, M.Tech. Degree Programs, Ph.D. with a total student strength of 1260. Year wise student strength is given below in Table 1.

Table 1: Year-wise Student Strength for Individual Academic Programs

Program / Year	2015-16	2016-17	2017-18	2018-19	2019-20
UG 1. Computer Engineering					
B.Tech	25	40	40	40	40
Dual Degree	--	--	--	20	20
UG 2. Electronics & Communications Engineering with Specialization in Design and Manufacturing					
B.Tech	25	40	40	40	40
Dual Degree	--	--	--	20	20
UG 3. Mechanical Engineering with Specialization in Design and Manufacturing					
B.Tech	0	40	40	40	40
Dual Degree	----	-----	-----	15	20

UG 4 Smart Manufacturing					
B.Tech	0	0	0	40	40
Dual Degree	----	-----	-----	15	20
UG Year Intake	50	120	120	230	240
UG Cumulative	**50**	**170**	**290**	**520**	**760**
PG 1. Computer Engineering					
M.Tech (Computer Engg.)	0	0	0	25	30
M.Tech (Analytics & Decision Sciences)	----	-----	-----	25	30
PG 2. . Electronics & Communications Engineering					
M.Tech (Electronic System Design.)	0	0	0	25	30
M.Tech (Communication System Design)	----	-----	-----	25	30
PG 3. Mechanical Engineering					
M.Tech (Mechanical System Design)	0	0	0	25	30
M.Tech (Smart Manufacturing)	0	0	0	25	30
M.Tech (Industrial Automation Design)	0	0	0	25	30
M.Tech (Energy System Design)	0	0	0	25	30
PG Year Intake	0	0	0	200	240
PG Cumulative	**0**	**0**	**0**	**200**	**440**
Ph. D. Cumulative	----	---	---	**30**	**60**
TOTAL	**50**	**170**	**290**	**750**	**1260**

6. The total number of Academic and Support Manpower has been calculated as per ratio of 1:12 for faculty and student and the ratio of 1:12:1.1 for Academic and Non- Teaching staff respectively based on the total student strength and given in table 2 and table 3 respectively.

Table 2: Year-wise Requirement of Teaching and Non-Teaching Academic Staff

Academic Staff	POSTS	2015-16	2016-17	2017-18	2018-19	2019-20
A. Teaching	**Director**	0	0	0	1	1
	Professors	0	2	3	9	14
	Associate Professors	1	4	7	18	28
	Assistant Professors	3	8	14	36	58
	Total (A)	**4**	**14**	**24**	**64**	**101**
B.Non-teaching	Librarian	0	0	0	0	1
	Deputy Librarian	0	0	0	1	1
	Assistant Librarian	0	0	0	2	2
	TOTAL (B)	**0**	**0**	**0**	**3**	**4**
Grand Total	**A +B**	**4**	**14**	**24**	**67**	**105**

Table 3: Consolidated Requirement of Tenured Support Manpower

POSTS	2015-16	2016-17	2017-18	2018-19	2019-20
Category-I					
Registrar	0	1	1	1	1
Finance & Accounts Officer	0	0	0	0	1
Category-II					
II-A	0	0	0	0	2
II-B	0	0	0	0	1

II-C	0	1	1	1	6
Category-III					
III-A	0	1	1	6	10
III-B	1	4	4	12	34
Category-IV					
IV-A	1	4	7	10	10
IV-B	2	4	12	44	51
GRAND TOTAL	4	15	**26**	**74**	**116**

7. The physical resource requirements for IIIT Kurnool consist of:
   A. Buildings:
      (i) The Students Hostels;
      (ii) The Academic & Support Staff Residences;
      (iii) The Academic Complex comprising the Faculty Rooms, the Laboratory Complex, the Classrooms, etc.
      (iv) The Administrative Complex;

   B. Amenities & Utilities Equipment including instructional equipment, research workshop equipment, Furniture, engineering services equipment, etc.;

   C. Development of Site (Compound Wall, Bulk Services, landscaping and roads)

8. It is proposed to achieve mandatory **THREE (3) star GRIHA** (Green Rating for Integrated Habitat Assessment – a green building rating system) for IIITDM campus Kurnool as per the norms of Government of India to achieve energy efficient and environmentally sustainable campus.
9. The IIITDM Kancheepuram (Tamil nadu) is the mentor Institute for IIITDM Kurnool. The first three years academic activities of the Institute will be managed in a Transit Campus in the mentor Institute (IIITDM, Kanchipuram). Financial estimates are worked out under
   two broader categories namely :-
   a) Capital Cost of the New Campus at IIITDM Kurnool

b) Recurring cost of the New Campus at IIITDM Kurnool.

10. The total project cost for initial five academic years has been worked out by consolidating the cost of above three broader Categories mentioned and shown as Category/ year wise break-up in Table-4.

Table 4: Project Cost Estimations (Rs in crores)

S. No.	Name of Building	Total Covered (Area in sqm)	Rate per sqm(in Rs.)	Total (amount in Crores)
A	BUILDING CONSTRUCTION COST			
1	Academic & Admin	15214	35935	55
2	Employee Residence (96nos)	12370	27414	34
3	Student Accommodation (1260students)	18475	31015	57
4	Amenities & Utilities	5200	28266	15
	TOTAL BUILDING -(A)	51259		161
B	SITE DEVELOPMENT			
	Cost of Compound Wall for 4000 mtr. length	4000 m	9763	4
	Development of Site	102518	2335	24
	TOTAL SITE DEVELOPMENT–(B)			28
	Total (A+B)			189
	Add: Cost Index for 1.4.2017 (17%)	0.17		32
	Total Construction Indexed Cost (I)			221
C	Part HVAC & Security & Surveillance			3
D	Equipment and Furnishing Cost (D)			8
E	Add Consultancy charges (3% of (A+B+C)i.e on Rs.192 Cr.			6
F	Add contingency (3% of (A+B+C)i.e on Rs.192 Cr.			6
G	Add Taxes etc charges (6% of (A+B+C) i.e. on 192 Cr.			12
	Grand Total(I +C+D+E+F+G)			256

11. CAPITAL EXPENDITURE OF NEW CAMPUS

The total space requirement for construction of new complex of IIITDM-Kurnool, Andhra Pradesh, is estimated approximately **51259** sq. m**.** The Total estimated expenditure has been worked out to be **Rs. 297 crore** with completion program of five years. The Detailed break-up of estimated expenditure has been shown below in Table 7.

Table 7: Capital Cost Estimations of New Campus (Rs in crores)

S. No.	Name of Building	Total Covered Area in sq mtrs	Rate per sq mtr (in Rs.)	Total (in Rs. Crore)	A.Y. 1 (2015-16)	A.Y. 2 (2016-17)	A.Y. 3 (2017-18)	A.Y. 4 (i2018-19)	A.Y. 5 (2019-20)
A	BUILDING CONSTRUCTION COST								
1	Academic & Administrative Building	15214	35935	55	-	-	2.00	31.20	21.80
2	Faculty Residence	12370	27414	34	-	-	2.00	14.00	18.00
3	Student Accommodation	18475	31015	57	1.95	11.45	13.30	17.00	13.30
4	Amenities & Utilities	5200	28266	15	-	-	0.50	8.00	6.50
	TOTAL BUILDING COST -(A)	51259		161	1.95	11.45	17.80	70.20	59.60
B	SITE DEVELOPMENT COST - (B)								
1	Compound Wall for 4000 metre length	4000m	9763/mtr	4	-	-	0.40	2.10	1.50
2	Development of Site	102518	2235	24			0.90	12.10	11.00
	Total (A+B)			189	1.95	11.45	19.10	84.40	72.10
	Add: Cost Index			32	-	-	1.90	16.00	14.10
	Total Construction Indexed Cost (1)			221	1.95	11.45	21.00	100.40	86.20
C	Part HVAC and Surveillance system			3	-	-	1.00	1.00	1.00
D	Equipment and Furnishing Cost			8	-	-	2.00	3.00	3.00
E	Add :- Consultancy Charges @ 3 % on (A+B+C)			6	-	0.30	0.50	2.80	2.40
F	Add 3 % Contingency on Total (A+B+C)			6	0.05	0.25	0.50	2.80	2.40
G	Add taxes etc. charges @ 6% on (A+B+C) on Rs.192. crores.			12	0	0	1.00	6.00	5.00
	Grand Total(I +C+D+E+F+G)			256	2.00	12.00	26.00	116.00	100.00

12. RECURRING EXPENDITURE FOR NEW CAMPUS

The Recurring Expenditure of the IIITDM Kurnool is estimated to be Rs. 56.43 crore for the fourth and fifth year**.** The Details of Total Recurring Cost of the New Campus is shown below in Table 8.

Table 8: Estimations of Recurring Cost of New Campus (Rs. in crores)

Particulars	**Total**	**2015-16**	**2016-17**	**2017-18**	**2018-19**	**2019-20**
Employees Remuneration	23.48	0	0	3.47	6.11	13.90
Electricity Water Expenses	5.72	0	0	0.92	1.80	3.00
General& Administrative Expenses	2.70	0	0	0.70	1.00	1.00
Outsourcing Expenditure	1.80	0	0	0.30	0.60	0.90
Scholarships	5.80	0	0	0.60	1.80	3.40
Total	**39.50**	**0**	**0**	**5.99**	**11.31**	**22.20**

13. CHAPTERISATION

Current Report comprises of the following chapters:

CHAPTER 1	INTRODUCTION
CHAPTER 2	THE INFORMATION TECHNOLOGY SECTOR IN INDIA
CHAPTER 3	VISION-MISSION-VALUES, OBJECTS AND BASIC FEATURES OF ACADEMICS
CHAPTER 4	ACADEMIC PROGRAMS
CHAPTER 5	ACADEMIC DIVISIONS
CHAPTER 6	ADMINISTRATION AND GOVERNANCE
CHAPTER 7	HUMAN RESOURCES
CHAPTER 8	INFRASTRUCTURE
CHAPTER 9	ENVIRONMENTAL IMPACT ASSESSMENT AND MANAGEMENT PLAN
CHAPTER 10	FINANCIAL ESTIMATES FOR SETTING UP THE PROPOSED IIIT DM , KURNOOL, ANDHRA PRADESH

Chapter 1

INTRODUCTION

1.1 BACKGROUND

1.1.1 The advancement of Information Technology and Computer Science in India is remarkable and active in all spheres. In this regard Government of India is taking keen interest in establishing world class Institutions all over India. The then large state of Andhra Pradesh was bifurcated into two states namely Andhra Pradesh and Telangana by Andhra Pradesh Reorganization Act 2014, and came into effect from 6th June, 2014. The Government of India has been taking effective steps in the process to fulfil its commitments as per the Schedule 13 of the Andhra Pradesh Reorganization Act 2014 to establish Excellent Higher Educational Institutions of National Importance in the present state of Andhra Pradesh. The Indian Institute of Information Technology (IIIT) is one among the higher learning institutions proposed to be set up in the state of Andhra Pradesh.

1.1.2 At present there are four **Indian Institutes of Information Technology (IIITs)** set up by the Government of India as premier institutions of higher education in the spheres of Information Technology and connected subjects in the last nearly fifteen years period. The main objective of setting up these IIITs are to promote Education, Research & Development and application of Information Technology and related other branches of Science and Technologies. The objective also covers horizontal and vertical growth across the country and in international level.The existing four IIIT's, are located namely at Allahabad , Gwalior , Jabalpur and Kancheepuram accorded the status of a Deemed University under the University Grant Commission Act of Government of India. It may be of very much importance to state that these IIITs are covered under the IIIT Act, 2014 to become **Institutions of National Importance.** The new IIIT Kurnool in the State of Andhra Pradesh is the fifth Institute to join the elite group of IIITs to receive similar status as Deemed University and Institute of National Importance.

1.1.3 The Government of India is continuously taking all steps in the growth of Tier-II & Tier-III cities in the country in order to control moving skilled personnel for suitable job as well as students aspiring for higher studies in Information Technology towards

the Metro cities. Kurnool in the State of Andhra Pradesh is a Tier III city and holding rich back ground for establishing IIITDM which is a multi-disciplinary higher learning institution.

1.1.4 As per the prevailing procedures being followed in the Ministry of Human Resource Development, Government of India, a **Detailed Project Report (DPR)** needs to be prepared and presented for establishing the new IIITDM, Kurnool in Andhra Pradesh for obtaining approval and allocation of funds. The possible reasonable period of completing the construction activities well within the next three academic years (2017-18, 2018-19, and 2019-2020) taken into consideration and requirement of funds worked out.

1.2 SCOPE OF THE PRESENT STUDY

1.2.1 The scope of work is preparation of a **Detailed Project Report (DPR)** for setting up of the proposed Indian Institute of Information Technology Design and Manufacturing (IIITDM) at Kurnool, in the State of Andhra Pradesh. This DPR report comprises (i) Vision, Mission, and Objectives of the IIITDM Kurnool, (ii) the detailed Academic plan, (iii) the Human and Infrastructure resource plan and (iv) the Financial plan and Cost Estimates for establishing the new campus and imparting the various Educational Programs. The Construction Cost Estimate for the Institute has been framed keeping in view the latest CPWD norms, integrated environment related issues, the Mandatory Green Building norms of Government of India (GRIHA).

1.2.2 The Detailed Project Report includes the following:

- Broad Academic & Human Resource Plan for IIITDM Kurnool;
- Cost Estimates for Infrastructure and Equipment;
- Financial Estimates for Recurring Expenditure;

Chapter 2

THE INFORMATION TECHNOLOGY SECTOR IN INDIA

2.1 PRESENT STATUS OF INFORMATION TECHNOLOGY INDUSTRY IN INDIA

2.1.1 In the last Fifteen years period the IT industry had made tremendous progress in almost many sectors of Industry and Services. Initially the contribution of the IT industry to India's GDP growth was nearly 1.2% and now in the year 2012 the contribution of the IT industry to India's GDP growth rose to 8 % with remarkable achievement.

2.1.2 The IT sector has played an extremely important role over the past several years in developing and transforming India's world image from slow moving bureaucratic economy to that of innovative entrepreneurs with high potential for job creation as vibrant economy. The fact and figures indicated by NASSCOM shows that the direct employment in the IT sector for both the domestic and export markets was around 3 million people in Financial Year 2012- 13 [(i) 1.4 million people for IT exports including ER&D and Products, (ii) nearly 1 million people for BPM exports (iii) nearly 0.6 million people for the IT-BPO including software products in domestic market]. It is also noted that additionally about 9.5 million people were indirectly employed. The strength of women employees in the IT sector is around 30% of the total employees and around 100,000 are foreign nationals. This aspect is an indicator of women empowerment. Further the report for 2016-2017 by NASSCOM shows:

GROWTH DRIVERS

- Industry added over USD 11 billion in revenue (8.6% in constant currency; 7.6% in Reported currency)
- Digital became mainstream; key differentiator for industry
- Focus on skills in demand, new business models
- Expanding opportunities in newer markets like Continental Europe, Japan, China and Africa

•Acquisitions / Partnerships to enhance Digital capabilities, Domain and Consulting skills

HEAD WINDS

•Increased rhetoric on protectionism, Elections, Brexit and visa issues

•Delayed decision making due to macro-economic uncertainties

•Slower growth in traditional services, focus on cost optimization

•Currency volatility led to difference of 1–3% between constant currency and reported Currency growth

•Longer gestation period for enhanced R&D investments for products and platforms lead to some impact on margins

New talent addition around emerging job roles: Subject matter experts and hybrid Professionals (domain + tech + soft skills)

•**New job roles:** Cybersecurity, mobile app development, new user interfaces, social media, data scientists, platform engineering

•**New skills:** Big data analytics, cloud & cybersecurity services, IoT service delivery automation, robotics, AI/machine learning/NLP, etc

•**Subject matter experts**: Graphic designers, humanities, sociology, security, finance, payment

2.1.3. The Indian youth have been influenced by IT sector and attracted to become entrepreneur, as a result over 450 funded start-up companies having been promoted in the past few years. The achievement in terms of growth is more than 300% in the last 5 years.

India is considered as one of the biggest IT capitals, in global level due to fast track development made in India in IT sector, having significant presence in the country.

2.2. MAJOR IT-HUBS

2.2.1 The cities of Bangalore, Hyderabad, Chennai, Delhi (including NOIDA & Gurgaon), Mumbai, Pune, Kolkata, Coimbatore, Bhubaneswar, Thiruvananthapuram and Kochi listed hereunder in Table 2.1 in order of their ranking constitute the major IT-Hubs in the country and account for around 90% of all IT activities in the country.

Table 2.1: Major IT-Hub

Rank	City	Description
1.	Bangalore	Popularly known as the Silicon Valley of India and IT Capital of India. Bangalore and contributes 33% of Indian IT Exports. It is considered to be a global information technology hub and largest software exporter from India. The top Indian IT service providers like Infosys and Wipro are headquartered in Bangalore as are many of the global SEI-CMM Level 100 Companies like Intel, Texas Instruments, Bosch, Continental, etc. Bangalore alone houses more than 35% of all the IT companies present in India and contains close to 5000 companies.
2.	Hyderabad	Hyderabad is also a major IT hub. It is the first destination for the Microsoft development centre in India --- the largest software development centre outside of their headquarters in Redmond, Washington. Hyderabad is also known as the Cyber city and houses units of many multinational corporations such as Cognizant, TCS, Infosys, Syntel, Wipro, etc. together in one part of the city called the Hitech City. Hyderabad is also the BPO hub of India.
3.	Chennai	Chennai is the third largest exporter of IT and ITES of India. Almost all companies have their backup operations in Chennai. Cognizant, Syntel are major global IT service company has its Indian operations' office's in Chennai.
4.	Delhi	The National Capital Region comprising of the city of Delhi and its satellites, Gurgaon and NOIDA, has large clusters of software development establishments.
5.	Mumbai	Mumbai is the financial capital of India but it also the

Rank	City	Description
		headquarter of TCS which is India's first and largest IT company as also the headquarters of Reliance,Patni, L&T Infotech, Melstar Information Technologies, Mastek, Syntel and i-Flex. India's IT Services industry was born in Mumbai in 1967 with the establishment of Tata Group in partnership with Burroughs. The first software export zone **SEEPZ** was set up here way back in 1973, the old avatar of the modern day IT park. More than 80 percent of the country's software exports happened out of SEEPZ, Mumbai in the 1980s.
6.	Pune	Major Indian and International Firms have a presence in Pune. It is also the headquarters of C-DAC.
7.	Kolkata	The city is a major back-end operational hub for IBM and Deloitte.
8.	Coimbatore	Coimbatore is one of the fastest emerging IT hub and developing city of India. It houses major IT companies like Cognizant, Wipro, Robert Bosch, HCL Technologies, DELL, Exterro, Tata Consultancy Services. It also hosts the training centre of Cognizant. There are many other IT majors which have planned to shortly start their operation at Coimbatore.
9.	Bhubaneswar	The capital city of Odisha is emerging as an IT and education hub and is one of India's fastest developing cities.
10.	Thiruvanthapuram	Thiruvananthapuram --- the capital of Kerala --- now houses all major IT companies including Oracle, TCS, Infosys, IBS Software Services and UST Global and contributes in IT export of India. India's biggest IT company --- Tata Consultancy Services --- is building the country's largest IT training facility in India's biggest IT company Tata Consultancy Services is building the country's largest IT training facility in Thiruvananthapuram --- a project worth INR10 billion having a capacity of 10,000 seats. The completion of the facility is expected in 2014 or 2015.
11.	Kochi	Kochi which is the commercial capital of Kerala now houses all major IT companies including TCS and Cognizant.

2.2.2 The Tier - 2 cities of Chandigarh and Jaipur in the North, Ahmadabad in the West and Madurai, Mangalore and Mysore in the South are also emerging as IT-hubs among the 11 cities identified. It is to state that in the development of Tier-II and Tier-III cities due importance is being given by Government of India for orderly growth, which

shall control movement of skilled people toward the Metro cities for suitable employment.

2.3. INTERENET LINKAGE

2.3.1 The ERNET which was established in the mid 1980's as a joint undertaking of the Department of Electronics of the Government of India and UNDP was the first communication network launched in India. It provided internet access to around 200 academic and research groups for exchange of email. Initially the individual nodes were connected to each other through 9600 bps leased lines but were subsequently upgrades to 64 Kbps links. International access was provided over a 64 Kbps leased line from NCST, Mumbai to the United States of America. This network is now merged with the NATIONAL KNOWLEDGE NETWORK (NKN).

2.3.2 Videsh Sanchar Nigam Limited (VSNL) --- the Indian International Trunk Carrier Company --- introduced Gateway Electronic Mail Service (GEMS) in 1991, the 64 Kbps leased line Gateway Internet Access Service (GIAS) in 1995 leading to commercial internet access on a visible scale. Initially VSNL enjoyed a monopoly on providing internet accessibility but in 1998 a new ISP Policy was laid down by the Government of India which ended the monopoly of VSNL.

2.3.3 In 1991 the Department of Electronics of the Government of India established a corporation called the Software Technology Parks of India (STPI) which provided VSAT communication linkage to individual IT firms housed in the STP's set-up by STPI in different Indian cities, with the local link being through a wireless radio link thereby ending VSNL monopoly to international communication. In 1993 the government began to allow individual companies to install their own dedicated links thus facilitating direct transmission of work done in India to customers located abroad. Indian firms soon convinced their American customers that a satellite link was as reliable as a team of programmers working in the clients' office.

2.3.4. The Indian economy underwent economic reforms in 1991, leading to a new era of globalization and international economic integration. Economic growth of over 6%

annually was seen during 1993-2002. The economic reforms were driven in part by significant the internet usage in the country. In 1999 the new NDA administration under Prime Minister Vajpayee constituted the Indian National Task Force on Information Technology and Software Development to promote accelerated growth of the IT industry in the country. Within 90 days of its establishment, the Task Force produced an extensive background report on the state of technology in India and an IT Action Plan with 108 recommendations. The Task Force could act quickly because it built upon the experience and frustrations of state governments, central government agencies, universities, and the software industry. Much of what it proposed was also consistent with the thinking and recommendations of international bodies like the World Trade Organization (WTO), International Telecommunications Union (ITU), and World Bank. In addition, the Task Force incorporated the experiences of Singapore and other nations, which implemented similar programs. It was less a task of invention than of sparking action on a consensus that had already evolved within the networking community and government. The recommendations of the IT Task Force led to the enunciation of the "New Telecommunications Policy, 1999" (NTP 1999) which helped further liberalize India's telecommunications sector and the "Information Technology Act 2000" which laid down legal procedures for electronic transactions and e-commerce.

2.3.5. Prominent milestones in India's journey in internet usage are listed hereunder:

- 1985 --- ERNET launched to provide internet access to academic and research institutions;
- 1995 --- VSNL introduces internet access to general public,
- 1996 --- First cybercafé is opened;
- 1997 --- Online banking launched;
- 1998 --- New ISP Policy enunciated by GOI ending monopoly of VSNL;
- 1998 --- First Hacking case registered;
- 2001 --- First cyber crime related arrest;
- 2001 --- Online rail booking started;
- 2001 --- First cyber crime police station opened;
- 2001 --- Bursting of the dot.com bubble resulting in slump in the IT industry;
- 2004 --- First Indian dot.com IPO;

- 2007 --- Youth key drivers to internet usage;
- 2007 --- Office major access point to internet;
- 2007 --- Online Gaming becomes important use of internet;
- 2009 --- Online Advertising started;
- 2009 --- Social Media becomes high point in online engagement;
- 2009 --- Small towns each with a population of less than 5 lakh people overtake metros in percent of population using the internet; and
- 2014 --- India becomes the third largest user of the internet in the world next only to USA and China with a user base of 243 million at the end of June 2014 (a year-on-year growth of 28%) with seven out of eight users accessing the internet on mobile telephones.

2.4. FUTURE OUTLOOK

2.4.1 The current focus of the Indian IT industry is on providing low cost solution in the services business of global IT. The presence of Indian companies in the product development business of global IT is presently at a meagre level. US giants that outsource work to India rarely allocate projects on high-end SDLC (Software Development Life Cycle) processes like requirement analysis, high level design and architectural design to Indian firms even though some Indian IT firms have the requisite competency to take up and successfully complete these high level software jobs.

2.4.2. The migration of Indian IT companies from a service orientation to a product development orientation is to be encouraged and facilities are to be created urgently to overcome shortage of skilled management graduates and high-end IT professionals. Due to hampered by: (i) lack of a culture for innovation amongst the top hierarchy of Indian IT firm; and (ii) shortage of skilled management graduates and high-end IT professionals in the country. However, global multinationals that are currently outsourcing services and back office jobs to India are slowly increasing the extent of Indian outsourcing of higher level jobs in SDLC (Software Development Life Cycle) like requirement analysis and architecture design to firms. The other opportunity that may arise is that global multinationals may enhance the extent of their product

development activities in India through their Indian subsidiaries than what prevails currently.

2.4.3 Research in the IT industry has so far been predominantly focussed towards programming technologies. However, more recently, the research focus has shifted towards technologies like mobile computing, cloud computing and software as a service. This shift in focus is attributed to preference of clients towards ubiquitous computing over stand alone computing and a growing demand for low cost computing solutions.

2.4.4 Another prominent trend is the gradual geographical diffusion of IT jobs that have so far been confined cities like Bangalore, Chennai, Hyderabad and Pune. However, the pace of diffusion is fairly slow mainly in view of the slow pace in development of enough telecommunication infrastructure. On comparison with other countries of the world, the penetration levels are higher for mobile services, but the network speed at which the backbone infrastructure works and the coverage it offers are far below.

2.5. EMPLOYMENT POTENTIAL IN THE INDIAN IT INDUSTRY

2.5..1 The IT industry has over the last two decades been a massive employment generator and continues to be a net employment generator. According to NASSCOM, report – 2012, about 3 million people are directly employed in the IT sector with a further 9.5 million being employed indirectly. NASSCOM estimates that around 0.25 million people would need to be added annually to the rolls of Indian IT companies over the next several years to cater its projected growth rate with a view to continue to maintain its dominance globally for IT & BPO outsourcing as well as to satisfy the demand in domestic market.

2.5.2 In the coming years, the growth of IT sector is going to rise by SMAC (Social Media, Mobility, Analytic and Cloud Technologies). Thus future recruitment is likely to be focussed more towards such domain skills besides soft skills in lieu of technical skills prevailing now. In addition the need of the hour is to hone communication and language skills to cater the Japanese and European markets. The Indian IT companies are to face the challenges of competitiveness in the globalized and modern world, particularly from countries like China and Philippines, who are making all out efforts

to obviate India's obvious advantage of the existence of a massive pool of young English speaking manpower in India, such situation demands nurturing English language competence.

2.6. MANPOWER REQUIREMENT

2.6.1 A bird's eye view of the phenomenal growth story of the IT industry in India and abroad has been dealt above. The observation from the managers of IT industry is "India just does not produce IT professionals in sufficient numbers and despite India's massive human resource base we are unable to meet the IT industry's human resource requirements". In addition it also employs non-graduates who have undergone IT training in the non-formal sector such as certificate programs offered by private education providers. This is clearly an ad-hoc solution to a long-term problem. It compromises the quality of the industrial work place. This ad-hoc arrangement as a strategy has worked well. The present situation forces the IT industry, to set up its own training schools. Such programs do provide technology specific training as well as soft skills but the essential foundational knowledge being provided in formal education programs is completely missing.

2.6.2 India has been losing markets, because of inadequate human resources and language barriers. Whereas India has the potential to pick up business from the English speaking world, PHDDCI has pointed out that absence of language skills in Japanese, French, Spanish, and German puts us **out of bounds from some markets**. Thus there is an emerging China-Japan business connection. PHDDCI has identified other areas where huge numbers of trained human resources shall be needed, IT banking, insurance, tourism, retailing, etc.

2.6.3 The foregoing shows that there is heavy demand for IT workers. The following salient points emerge:

- The shortfall in the IT-BPO sector is in the order of 0.25 million workers annually;
- The aggregated revenue of the IT sector reached the figure of around US $100 billion in F.Y. 2012 with exports contributing roughly 77% of the total industry revenue;

- In 2010 approximately 15.5% of the IT market was in the area of product development;
- Human Resource demand in multinational companies for Research and Development activities as well as for higher level SDLC jobs is set to rise;
- There is loss of markets and business due to language skills in English
- The level of IT activities is rising in Tier–2 & Tier-3 Cities and in fact the percentage of internet usage in the smaller towns with a population of less than 5 lakh people has already surpassed the metros.

2.6.4. Though employment elasticity figures are not available for the IT sector, projections based on figures for 2012 (2.5 million personnel for 100 billion USD of business) means that there is one person employed for every US $ 40000 of business. Based on an annual revenue growth of 10% means that there would be a requirement for additional IT professionals to the tune of around 0.25 million persons annually. Besides the above requirement there shall be need for trained IT manpower for R&D activities and the domestic market for the non-IT sector and for hardware as well as to take care of the lost markets.

NASSCOM REPORT for 2016-2017 states the following.

NASSCOM working with its members / partners to establish a comprehensive digital skilling platform to reskill 1.50 million to 2.00 million work force in next 4 to 5 years.

GROWTH AREAS:

(i). SaaS applications, Cloud Platforms B1, Cognitive embedded analytics.

(ii) INDIA: Fastest growing due to firms modernizing their operations.

(iii) 2018 OUT LOOK: Optimistic as enterprise customers scale digital projects.

2.7. IT Professionals

2.7.1 Based on a developmental perspective of the IT industry the American Computing Research Association classified IT Professionals into four categories, as presented hereunder in Table 2.2, based on the knowledge and skills required to do an IT job.

Table 2.2: Categorization of IT Jobs*

S. No.	Categories	Job Description	Examples of Occupations
1.	Conceptualizer	Individuals who conceive of and sketch out the basic	(i) Entrepreneur; (ii) Product Designer;

		nature of a computer system artifact.	(iii) Research Engineer; (iv)System Analyst; (v) Computer Science Researcher; (vi)Requirement Analyst; (vii)System Architect.
2.	Developer	Individuals who specify, design, construct and test an information technology artifacet.	(i) System Designer; (ii) Programmer; (iii) Software Engineer; (iv) Tester; (v) Computer Engineer; (vi) Microprocessor Designer; (vii) Chip Designer.
3.	Modifier/Extender	Individuals who modify or add on to an information technology artifact.	(i) Maintenance Programmer (ii) Programmer; (iii) Software Engineer; (iv) Computer Engineer; (v) Database Administrator.
4.	Supporters	Individuals who deliver, install, operate, maintain, or repair an information technology artifact.	(i) System Consultant; (ii) Customer Support Specialist; (iii) Help Desk Specialist; (iv) Hardware Maintenance Specialist; (v) Network Installer; (vi) Network Administrator.

***** Source: Computing Research Association, Intersociety Study Group on Information Technology Workers, April 1999.

2.7.2 The typical educational preparation and the typical knowledge & skill mix required for each of the four categories of IT jobs indicated in Table 2.2 has been respectively mapped onto the suggested four categories in Tables 2.3 and 2.4. It may be noted that jobs that fall under the conceptualizer category are commonly populated by master's or doctoral degree holders. The developer or modifier categories are usually filled by people with bachelor's or master's degrees. Jobs under the supporter category tend to be filled with people holding an associate degree or perhaps only a diploma.

Table 2.3: Typical Educational Preparation for IT Jobs*

Categories	High School	Associate Degree**	Bachelor's Degree	Master's Degree	Doctorate Degree
Conceptualizer	2	2	3	4	4

Developer	1	1	3	3	2
Modifier/Extender	1	2	3	3	2
Supporters	2	4	3	1	1

Note:

1- Unlikely; 2 - Occasionally; 3- Common; 4 - Frequently

* Source: Computing Research Association, Intersociety Study Group on Information Technology, April1999.

** Associate Degree can be considered as equivalent to an Indian Polytechnic Diploma.

Table 2.4: Typical Knowledge and Skill Mix for IT Jobs*

Categories	Information Technology	Business & Industry	Communication &Organization
Conceptualizer	4	2	3
Developer	3	2	3
Modifier/Extender	2	3	3
Supporters/Tenders	1	2	3

Note:

Scale: 1 – least important; 2 – moderately important; 3 – important; 4 – critically important.

* **Source:** Computing Research Association, Intersociety Study Group on IT Workers, April 1999.

2.8. SUPPLY SIDE OF THE IT SECTOR

2.8.1 As projected in sub-section 2.7 there is a massive demand for human resources. Table 2.3 indicates that the most common education preparation for IT jobs is a Bachelor's degree. Table 2.4 indicates that for most IT jobs besides IT knowledge the need for knowledge of business & industry as well as communication & organizational skills are fairly important.

2.8.2 The position with respect to the Indian IT sector is that education at the bachelor's degree level is the main contributor to its human resource requirements. Manpower is also recruited from the Certificate Programs in various verticals of Information Technology offered by the non-formal education sector (for example, the 'O' & 'A' level programs under the DOEACC Scheme / GNIIT program of NIIT, etc.) India annually produces about 700,000 engineering graduates out of which 70% are in the ITC areas of Information Technology and Computer Science & Engineering and the

allied disciplines of Electrical Engineering, Electronics Engineering and Instrumentation Engineering. In addition around 9.5 million students graduate in various non-engineering disciplines from the Indian University system. The NASSCOM-Mckinsey Report of 2005 states that only 25 % of technical graduates and 10-15% of general college graduates are suitable for employment in the IT and BMP sectors. **Clearly, even a small improvement in these percentages shall meet the demands of the IT and BPO sectors.** In figures, an improvement of 15%, from 25% to 40%, shall lead to about 100,000 technical personnel being available every year. For general college graduates the effect shall be even more dramatic, only a 1% improvement shall make about 100,000 personnel available per year. However, for this to happen training in soft skills and domain knowledge needs to be added and possibly starting bridge programs covering say 10-15 courses in technical IT skills for non-technical graduates.

2.8.3 The IITs, the Indian Institute of Science Bangalore, the NIT's and most engineering colleges right across the country offer a B. Tech. or equivalent degrees in Computer Science / IT. The University system contributes by offering the MCA and some universities even offer a B. Sc. and M. Sc. degree in IT. With the establishment of dedicated Institutes in the domain of Information Technology by the central and state governments as also by private players in different parts of the country specialist bachelor's degree programs in various verticals in IT are also available. With a view to enhance educational opportunities, particularly for employed professionals the DOEACC Society and private for-profit education providers such as NIIT and APTECH have been offering certificate programs in the domain of IT at different levels recognized as being equivalent to certificate/diploma/UG/ PG degrees in the formal education system. However, such programs concentrate in honing technical skills. Inputs which provide the necessary foundational knowledge and generic skills are conspicuously absent.

2.8.4 Master's and Doctoral degree programs are more limited than the Bachelor's level. Such programs are offered at the national level institutes as well as in some of the recently started private sector institutes, for example, DA-IICT Gandhinagar, NIIT University and JUIT, Himachal Pradesh. However, the total number of candidates registered for the Master's and Doctoral degrees, whether in the private or public

sector institutions is rather small. Steps need to be taken to enhance numbers in such programs to promote R&D activities and increase the number of university teachers.

2.9. SUMMARY OF TRENDS IN THE INDIAN IT INDUSTRY

2.9.1 As may be inferred from the presentation in the earlier sub-sections of this chapter the American Computer Research Association has opined that the most common educational preparation for most categories of IT jobs is a Bachelor's degree with a mix of IT Knowledge (both technical and domain knowledge), Business & Industry Knowledge and Communication & Organizational Skills. On the other hand, with reference to Indian IT Companies the focus till very recently has been on purely technical knowledge in the recruitment of IT Workers. However, over the past 3-4 years there has been a perceivable shift towards domain knowledge and soft skills away from purely technical knowledge in the ratio of 2:2:1 between technical knowledge, domain knowledge and soft skills, respectively. Also NASSCOM has opined that the next spurt in growth of the Indian IT industry is likely to be fuelled by SMAC Technologies (Social Media, Mobile Computing, Data Analytics and Cloud Computing), SaaS applications, Cloud Platforms B1, Cognitive embedded analytics SaaS applications, Cloud Platforms B1, and Cognitive embedded analytics. Also there is likely to be shift towards high-value services, product development and associated R&D away from a pure service orientation. In addition there is likely to be geographical diffusion of operations to newer markets in the non-English speaking areas of the world, say Japan and Europe. There is bright future in new skill areas in information technology and IT enabled services in the years to come. Also NASSCOM has opined that 2018 OUT LOOK would be Optimistic as enterprise customers scale digital projects in its report of 2016-2017 for information technology and IT enabled services in India as well as global level. The Government of India made a target for "Vision to be a TRILLION DOLLAR ECONOMY BY 2022."

2.10 THE EXISTING IIIT's

2.10.1 The existing Indian Institutes of Information Technology (IIITs) comprise of a group of four autonomous institutions established by the Government of India in the cities of Allahabad, Gwalior, Jabalpur and Kancheepuram with the objective of providing

quality education in the broad area of information technology. They presently function in the form of not-for-profit societies registered under the Societies Registration Act. The IIIT's at Allahabad, Gwalior, Jabalpur and Kancheepuram have been granted the status of 'deemed-to-be-universities' by the Ministry of Human Resources Development of the Government of India under provisions of the University Grants Commission Act and are thus empowered to grant degrees and other academic. As per the IIIT Act 2014, there are four IIIT's functioning as Institutions of National Importance. The IIIT Kurnool would become the fifth institution of National Importance.

Chapter 3

VISION-MISSION-VALUES, OBJECTS AND BASIC FEATURES OF ACADEMICS

3.1 VISION-MISSION-VALUES

3.1.1 Vision:

To be an internationally recognized institution of higher learning in Information Technology and related subjects, distinctive areas of education and research driven by a professional and technology-oriented focus and based on a culture of innovation and excellence.

3.1.2 Mission:

To provide distinctive and relevant education in an environment of scientific, technological and professional knowledge creation and innovation with a view to prepare its students to become best locally conscious, globally aware leaders who think critically, question assumptions, and who, during their careers, go on to contribute to solving important problems facing humanity, all while building community and contributing to nurturing a better world.

3.1.3 Values:

The culture of an institution of higher learning is a shared system of values, beliefs, and attitudes that shapes and influences behaviour. The culture is determined through the organization from top to bottom and from generation to generation. We must live our values in order to continuously improve. It is recommended that IIIT Kurnool, Andhra Pradesh defines its culture by seven core operating principles listed hereunder that may serve as a guide for all its activities. While these principles do not in themselves define a strategy for action, adherence to them is most essential for satisfactorily actualizing the proposed vision and mission of the institute.

- **Focus on Students:** Our primary mission is not only to educate students in their chosen disciplines, but also to inspire them to become innovators, leaders, entrepreneur, and positive contributors to society.
- **Strengthen Faculty and Support Staff:** The faculty inspire and direct all we do academically, from basic education to discovery and the creation of new concepts, systems, and products. The support staff delivers our administrative services and partner with the faculty to ensure an excellent student experience.
- **Foster Leadership and Ethical Decision-Making:** Leadership and ethical decision-making are essential for growth of the person and the organization. Leadership development is an important component of education for all segments of the institution --- the faculty, the students, and the support staff. Succession planning is required to continuously promote excellence.
- **Commit to Diversity and Excellence:** If we are to both remain relevant and attract the highest caliber of students, faculty, and support staff, we must ensure that our community is inclusive and open to all viewpoints. A culture of excellence must pervade the institute in both academic and non-academic areas.
- **Focus on Resource Management:** The financial well-being of the institution is critical for our success. We will embrace responsibility-centered management to achieve financial strength and expect that all members of the IIIT Kurnool, including alumni, are responsible for enhancing our resources.
- **Heighten Reputation:** All units of the institution will benefit from the international recognition of any one of them; we must continuously work at gaining recognition as an institution of higher learning. Preeminence in several academic areas must be achieved for us to gain the international reputation we desire.
- **Engage Alumni:** Our greatest legacy is our alumni and their many contributions to business and society. We will celebrate their many achievements as a foundation of the IIIT story. We will engage our alumni in planning for the future of IIIT and rely upon our alumni for their involvement and philanthropic support in the execution of the institute's plans.

3.2 OBJECTS

3.2.1 The objects of IIIT Kurnool, Andhra Pradesh shall be to:

- Emerge as one amongst the foremost institutions in information technology and allied fields of knowledge;
- Advance new knowledge and innovation in information technology and allied fields to empower the nation to the forefront in the global context;
- Develop competent and capable youth imbued with the spirit of innovation and entrepreneurship with the social and environmental orientation to meet the knowledge needs of the country and provide global leadership in information technology and allied fields; and
- Promote and provide transparency of highest order in matters of admission, appointment to various positions, academic evaluation, administration and finance.

3.3 KEY FEATURES OF ACADEMICS

3.3.1 In consonance with the human resource requirements and trends in the Indian IT industry as summarized in sub-section 2.10.1 the key features of academics at the undergraduate level at IIIT Kurnool, Andhra Pradesh shall be:

- Development of strong technical capabilities through a structured core program on computing fundamentals (relevant to IT product development --- for example, software engineering, data engineering, information systems design, hardware interfacing, etc.), mathematics and the natural sciences;
- Inculcation of skills and knowledge in various application domains through a set of streamed professional elective courses as per individual choice of students;
- Familiarization with modern tools and techniques of application design and development;
- Development of an ability 'to do' through industry interaction, hands-on laboratory work, team projects, independent study courses, research participation, etc.;
- Development of right attitudes and generic soft skills for the world of work, inter-personnel skills, team-working ability, communication skills, entrepreneurial attitude, etc. through a structured cross-curricular program; and

- Development of a multi-cultural, multi-lingual outlook through course offerings in the Humanities & Social Sciences area and participation in a community connect program.

3.3.2 The expected outcome is generation of a unique class of ICT engineer having a strong technical foundation coupled with well-developed leadership skills and a broad worldview. Specifically they shall have the following attributes:

- Understanding of theoretical foundations and limits of computing;
- Understanding of computing at different levels of abstraction including circuits and computer architecture, operating systems, algorithms, and applications;
- Ability to adapt established models, techniques, algorithms, data structures, etc. for efficiently solving new problems;
- Ability to design, implement, and evaluate computer based system or application to meet the desired needs using modern tools and methodologies;
- Ability to function effectively in teams to accomplish a common goal;
- An understanding of professional and ethical responsibility;
- Ability to communicate effectively with a wide range of audience;
- Ability to self-learn and engage in life-long learning;
- Understanding and ability to use advanced techniques and tools in different areas of computing;
- Ability to undertake small research tasks and projects;
- Ability to take an idea and develop into a business plan for an entrepreneurial venture (if desired); and
- An understanding of the impact of solutions in an economic, societal, and environment context.

3.3.3 Keeping the above concepts in view it is proposed to frame the course curriculum for various programs of study in a manner such that:

- Each student constructs a significant portions of his/her own curriculum as per his/her own choice to enable development of expertise in an application domain;
- There is lateral integration of some portions of the curriculum across a variety of allied disciplines to enable the student to opt for a minor field of study besides the major field to which he has been admitted;

- Each student mandatorily participates in two co-curricular activities from amongst physical education, the performing arts, crafts, sports, etc.;
- Each student mandatorily audits one period of community engagement over one semester;
- Each student mandatorily audits several short duration cross-curricular capsule courses aimed at honing attributes such as creative thinking, problem-solving skills, communication skills, team-working ability, inter-personal skills, etc.;
- Each student mandatorily undergoes one period of industry internship on a thin sandwich pattern;
- Each student undertakes a course-end synthesizing project which shall constitute around 10% of the total graduation credit requirement. Also in order to hone the students problem-solving skills each course will have some activities in project form; and
- Each student mandatorily audits a course on research methodology and also attends a whole host of extra-mural lectures on contemporary issues organized by the Institute at periodic intervals throughout the academic year.

3.3.4 Education delivery would be through a blend of methodologies including face-to-face delivery in the usual class room mode, interactive learning and synchronous e- learning.

3.3.5 Some international exposure shall be provided to students through collaborative projects with student groups in another country as well as industry internship with multinational companies abroad.

3.3.6 The curriculum structure shall be framed in terms of the modular credit system based on the semester system wherein the academic year shall comprise of two semesters each of around 16 weeks duration (including a two week period for minor tests and semester-end examinations) plus a summer term of around eight to ten weeks. The curriculum shall be developed on the basis of a Knowledge-Skill-Aptitude (KSA) matrix wherein normal classroom learning will be supplemented by non-classroom learning, interactions and internships.

3.3.7 Most programs, including computer science programs, offered in Engineering & Technology Institutes start with general courses in Sciences in the first year and then

migrate to specialized courses for the disciplines in subsequent years. While these courses are indeed foundational courses for many engineering disciplines, they are not foundational courses for Computing; rather they can be treated as application domains (as is evidenced from the fact that most Sciences and Engineering disciplines heavily use computing now). Hence, it is proposed that an inverted pyramid may be adopted for the bachelor's degree program in Computer Science with computing-oriented courses being offered as first year core courses, and students be allowed the possibility of doing Science courses at a later stage. Besides being better suited for a computer science program, it also enables the possibility of students seeing newer applications and possibilities of using computing in these subjects.

3.3.8 Academic performance evaluation of students in individual courses will be on the basis of a Comprehensive Continuous Evaluation (CCE) system with grades being awarded by the concerned Course Instructors, based on student performance in pre-announced evaluation elements (such as quizzes, mid-term tests, trimester-end final examination, term papers, projects, tutorial and laboratory sessions, etc.) throughout the period of teacher-student contact for the particular course.

3.3.9 Admission of students to various categories of academic programs will be based on the existing system of admission prevailing in the IIIT system.

Chapter 4

ACADEMIC PROGRAMS

4.1 ACADEMIC PROGRAMS

4.1.1 It is proposed to offer the following academic programs:

A. **B. Tech. Degree Program** of 4 years duration:

- Computer Science &Engineering;
- Electronics & Communications Engineering;
- Mechanical Engineering.
- Smart Manufacturing

B. **M. Tech. Degree Programs** of 2 years duration:

- Computer Engineering;
- Electronics & Communications Engineering;
- Mechanical Systems Design
- Smart Manufacturing.

C. **Ph. D. Degree Program**

D. **Continuing Education Program.**

The courses are only suggestive for preparation of the DPR for initial five years (Phase I). The Institute will expand further after competition of Phase-I.

4.1.2 Consolidated statements listing the program, duration, entry level, annual intake, basis of admission, type of award and the year of start for the individual academic programs listed hereinabove in sub-section 4.1.1 (A-D) are given hereunder in Tables 4.1 - 4.4:

Table 4.1: Consolidated Statement for B. Tech. Degree Programs

Programs	**UG 1.** Computer Science & Engineering; **UG 2.** Electronics & Communication Engineering; **UG 3.** Mechanical Engineering **UG 4.** Smart Manufacturing
Duration	4 years
Entry Level	Pass in 10+2 of CBSE or equivalent Board with Physics & Mathematics as compulsory subjects and any one amongst Chemistry/Biotechnology/Biology/Computer Science
Annual Intake	Programs UG 1& UG 2: 25students in Year 1 and increasing to 40 students from Year 2 onwards; Program UG 3 &UG 4 : 40 students
Basis of Admission	Merit in JOSSA
Award	B. Tech. degree of IIIT Kurnool, Andhra Pradesh
Year of Start	Programs UG 1 & UG 2: Academic Year 1; Program UG 3: Academic Year 2. Program UG 4: Academic Year 4.

Table 4.2: Consolidated Statement for the M. Tech. Degree Programs

Programs	**PG 1. Computer Engineering;** **PG 2. Analytics & Decision Science** **PG 3. Electronics Systems Design** **PG 4. Communication Systems Design;** **PG 5. Mechanical Systems Design.** **PG 6. Smart Manufacturing** **PG 7. Industrial Automation Design.** **PG 8. Energy Systems Design.**
Duration	2 years
Entry Level	B. Tech, degree in the appropriate discipline from a recognized university with a minimum of 60% marks or a minimum CGPA of 6.75 on a scale of 10
Annual Intake	All Programs: 25Nos. in first year and 30 Nos. in subsequent years
Basis of Admission	Valid GATE score + Merit in an on-line Aptitude Test conducted by IIIT Andhra Pradesh + an interview.
Award	M. Tech. Degree of IIIT Kurnool, Andhra Pradesh
Year of Start	All Programs: From Academic Year 4

Table 4.3: Consolidated Statement for the Ph. D. Degree Program

Areas of Specialization	All core areas of specialization of the Institute.
Duration	Flexible (as provided in the Academic Rules) with scholarship up to 5 year
Entry Level	A Master's Degree in the appropriate discipline from a recognized university with a minimum of 60% marks or a minimum CGPA of 6.75 on a scale of 10
Annual Intake (subject to GOI norms for affirmative action)	Initially 30 students increasing to an overall enrollment of 60 students at any given time for all areas of specialization.
Basis of Admission	Performance in the Master's Degree plus Aptitude Test conducted by IIIT, Kurnool, Andhra Pradesh + interview.
Award	Ph. D. Degree of IIIT Kurnool, Andhra Pradesh.
Year of Start	From Academic Year 4

Table 4.4: Consolidated Statement for Continuing Education Programs

Areas	All subject areas within the core competence of the Institute's Departments subject to availability of faculty.
Duration	As appropriate for the specific program (generally in the order of 1 – 2 weeks) -- to be offered in either face-to-face mode or electronically on online mode both on-campus and at industry work sites.
Target Group	Working Professionals
Student Intake	As per market demand.
Mode of Admission	Assessment of application by the Program Coordinator.
Award	Continuing Education Certificate awarded by IIIT Kurnool, Andhra Pradesh.
Year of Start	Academic Year 4

4.2 PROJECTED STUDENT STRENGTH OF THE INSTITUTE

4.2.1 Based on the annual student intake and the year of start for individual academic programs recommended in Tables 4.1 – 4.4 the year-wise total student strength for each academic program for the initial five years of operation of the Institute is given hereunder in Table 4.5. It may be noted that the total number of registered students for all full time academic programs proposed to be offered is expected to stabilize at a level of 620 students at the start of the fifth year of operations of the Institute. In addition it is proposed to offer non-degree certificate programs for working

professionals in select areas within the core competency of the Institute in both the face-to-face and e-learning mode both on-campus and at company work sites as per market demand. It is proposed that the resource requirements --- human, physical and financial --- for the Institute be based only on the overall strength of regular full time students expected to be enrolled at the Institute, i.e., on a figure of 1260 students.

Table 4.5: Year-wise Student Strength for Individual Academic Programs

Program / Year	2015-16	2016-17	2017-18	2018-19	2019-20
UG 1. Computer Engineering					
B.Tech	25	40	40	40	40
Dual Degree	--	--	--	20	20
UG 2. Electronics & Communications Engineering with Specialization in Design and Manufacturing					
B.Tech	25	40	40	40	40
Dual Degree	--	--	--	20	20
UG 3. Mechanical Engineering with Specialization in Design and Manufacturing					
B.Tech	0	40	40	40	40
Dual Degree	----	-----	-----	15	20
UG 4 Smart Manufacturing					
B.Tech	0	0	0	40	40
Dual Degree	----	-----	-----	15	20
UG Year Intake	50	120	120	230	240
UG Cumulative	**50**	**170**	**290**	**520**	**760**
PG 1. Computer Engineering					
M.Tech (Computer Engg.)	0	0	0	25	30
M.Tech (Analytics & Decision Sciences)	----	-----	-----	25	30
PG 2. . Electronics & Communications Engineering					
M.Tech (Electronic System Design.)	0	0	0	25	30
M.Tech (Communication	----	-----	-----	25	30

System Design)					
PG 3. Mechanical Engineering					
M.Tech (Mechanical System Design)	0	0	0	25	30
M.Tech (Smart Manufacturing)	0	0	0	25	30
M.Tech (Industrial Automation Design)	0	0	0	25	30
M.Tech (Energy System Design)	0	0	0	25	30
PG Year Intake	0	0	0	200	240
PG Cumulative	**0**	**0**	**0**	**200**	**440**
Ph. D. Cumulative	**----**	**---**	**---**	**30**	**60**
TOTAL	**50**	**170**	**290**	**750**	**1260**

Chapter 5

ACADEMIC DIVISIONS

5.1 TYPES OF ACADEMIC DIVISIONS AND THEIR FUNCTIONS

5.1.1 It is recommended that academic activities at IIITDM Kurnool, Andhra Pradesh be carried out under the aegis of various academic divisions classified under the following heads:

- Departments;
- Centers of Research; and
- Academic Service Facilities/Units.

5.1.2 It is suggested that the primary functions of Departments may be:

- Disciplinary and inter-disciplinary teaching at the UG, PG and Pre-Ph. D. levels;
- Academic research including guiding of UG & PG Projects and Ph. D. theses;
- Curriculum and laboratory development;
- Offering of continuing education programs for working professionals and the development of learning resource material; and
- Sponsored R & D and consultancy practice.

5.1.3 It is suggested that the primary functions of Centers of Research may be:

- The development and transfer of technology, products and processes in well-defined areas through group effort in collaboration with allied departments;
- Participation in teaching and research programs in domain-specific academic programs offered by complementary departments;
- Conduct mission-oriented time-bound projects sponsored by industry, user agencies and S&T funding agencies;

- Collaborate with faculty of complimentary departments in the guidance of UG & PG Projects and Ph. D. theses in topics of technology development;
- Collaborate with faculty of complimentary departments in offering continuing education programs for working professionals to disseminate cutting-edge technical know-how; and
- Undertaking industrial consultancy projects.

5.1.4 It is suggested that the primary function of Academic Service Facilities / Units shall be to provide and manage a specific academic service needed by more than one department /centre. Such a facility / unit may be a constituent unit of a Department or a Centre of Research or it may be an independent unit.

5.1.5 It is recommended that at its inception the Institute may have the following Departments:

- Computer Science & Engineering;
- Electronics & Communication Engineering;
- Mechanical Engineering

5.1.6 It is recommended that the establishment of Centers of Research may be deferred till such time a particular inter-disciplinary / department research program has acquired sufficient maturity and long term industrial importance and justification can be made that the activity cannot be properly carried out in an existing department.

5.1.7 It is recommended that at its inception the Institute has the following independent Academic Service Facilities/Units:

- Central Library;
- Computer Centre;
- Workshop;
- Virtual Learning Centre;
- Classroom Complex; and
- Conference Centre-cum-Auditorium.

5.1.8 Primary and essential information with respect to the suggested Departments and Academic Service Facilities/Units are given in the following sections.

5.2 DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

5.2.1 Objective

The primary objective of the Department of Computer Science & Engineering is to impart education of the highest quality to spawn engineers at the undergraduate, postgraduate and doctoral levels in the realm of computing science and its applications. The department would also engage in fundamental research with a view to develop newer problem solving methods and to apply these to creative design scenarios in contemporary and emerging technologies. It would also offer consultancy services and conduct continuing education programs for working professionals in its areas of focus.

5.2.2 Areas of Focus

The areas of focus of the department shall be:

- Data Bases & Information Science;
- Computer Graphics & CAD;
- Computer Communication & Networking;
- Software Engineering;
- Human Computer Interface;
- AI & Robotics;
- Digital Media & Web Technologies;
- Data Analytics;
- Mobile Computing;
- Cloud Computing; and
- Social Media.

5.2.3 **Academic Programs**

The department shall offer the following academic programs:

Program	Duration	Annual Intake
B. Tech. in Computer Science & Engineering	4 years	Initially 25 students increasing to 40 students from 2nd year onward
B. Tech in CSE Dual Degree program	4 Years	20 students
M. Tech. in Computer Engineering	2 years	Initially 25 students increasing to 30 students from 2nd year onwards
M. Tech. in (Analytics & Decision Sciences)	2 years	Initially 25 students increasing to 30 students from 2nd year onwards
Continuing Education Programs in core areas of specialization	Generally of the order of 1-2 weeks	As per market demand
Ph. D. Program in all areas of faculty expertise	Flexible up to 5 years	Flexible

5.3 DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING

5.3.1 **Objective**

The primary objective of the Department of Electronics & Communication Engineering is to impart education of the highest quality to spawn engineers at the undergraduate, postgraduate and doctoral levels in the science & engineering of communication technologies with an emphasis on the design aspects of systems. The department would also engage in fundamental research with a view to develop newer problem solving methods and to apply these to creative design scenarios in contemporary and emerging technologies. It would also offer consultancy services and conduct continuing education programs for working professionals in its areas of focus.

5.3.2 Areas of Focus

The areas of focus of the department shall be:

- VLSI & Electronics Product Design;
- DSP & Communications Product Design;
- Electronics Systems Design; and
- Communication Systems Design.

5.3.3 Academic Programs

The department shall offer the following academic programs:

Program	Duration	Annual Intake
B. Tech. in Electronics &Communication Engineering	4 years	Initially 25 students increasing to 40 students from 2nd year onwards
B. Tech in ECE Dual Degree program	4 Years	20 students
M. Tech. in Electronic Systems Design;	2 years	Initially 25 students increasing to 30 students from 2nd year onwards
M. Tech. in Communication Systems Design	2 years	Initially 25 students increasing to 30 students from 2nd year onwards
Continuing Education Programs in core areas of specialization	Generally of the order of 1-2 weeks	As per market demand
Ph. D. Program in all areas of faculty expertise	Flexible up to 5 years	Flexible

5.4 DEPARTMENT OF MECHANICAL ENGINEERING

5.4.1 Objective

The primary objective of the Department of Mechanical Engineering is to impart education of the highest quality to spawn engineers at the undergraduate, postgraduate and doctoral levels in the domain of Mechanical Engineering with an emphasis on the design aspects of systems. The department would also engage in fundamental research with a view to develop newer problem solving methods and to apply these to creative design scenarios in contemporary and emerging technologies. It would also offer consultancy services and conduct continuing education programs for working professionals in its areas of focus.

5.4.2 **Areas of Focus**

The areas of focus of the department shall be:

- Product Design;
- Material Science;
- Mechanical Systems Design;
- Manufacturing Engineering;
- Thermo - Fluid Sciences; and
- Engineering Mechanics.
- Smart Manufacturing

5.4.3 **Academic Programs**

The department shall offer the following academic programs:

Program	**Duration**	**Annual Intake**
B. Tech. in Mechanical Engineering	4 years	40 students
B. Tech in Mech. Engg. Dual Degree program	4 Years	20 students
B. Tech. in Smart Manufacturing	4 years	40 students
B. Tech in Smart Manufacturing Dual Degree program	4 Years	20 students
M. Tech. in Mechanical Systems Design	2 years	Initially 25 students increasing to 30 students from 2nd year onwards
M. Tech. in Smart Manufacturing	2 years	Initially 25 students increasing to 30 students from 2nd year onwards
M. Tech. in Industrial Automation Design	2 years	Initially 25 students increasing to 30 students from 2nd year onwards
M. Tech. in Energy Systems Design	2 years	Initially 25 students increasing to 30 students from 2nd year onwards
Continuing Education Programs in core areas of specialization	Generally of the order of 1-2 weeks	As per market demand
Ph. D. Program in all areas of faculty expertise	Flexible up to 5 years	Flexible

5.5. CENTRAL LIBRARY

5.5.1 Objective

The primary objectives of the Central Library are as indicated hereunder:

- To serve as a **'learning resource centre'** which provides its users access to a variety of print and non-print knowledge resources;
- To actively contribute to knowledge creation by assisting the Institute faculty and students in information search as a part of their research and project work; and
- To serve as a mechanism to ensure that all users of the library's services are information literate, i.e., they hone the skills of retrieval, evaluation and making practical use of the acquired knowledge and information base with a view to develop their ability to become independent life-long learners.

5.5.2 Central Library Management

The day-to-day management of the Central Library shall vest with the Institute Librarian assisted by the Deputy & Assistant Librarians and appropriate level of professional support staff for operations of the Library. Policy guidance shall be provided to the management by the Users Advisory Committee on Library & Information Resource Services.

5.6 COMPUTER CENTER

5.6.1 Objective

The objectives of the Computer Centre are as stated hereunder:

- To provide computing facilities to meet the academic and support information service requirements of the Institute;
- To assist in the planning and implementation of the computerization of the administration of the Institute and its constituent units including codification of data for students and employees, accounts, stores, student admission and academic records, library services, etc.;
- To offer manpower training programs for administrative and support staff for effective implementation of the Institute's Management Information System;

- To develop system support software for the user community; and
- To manage the campus voice, data & picture communication network and the campus WAN & LAN for inter-connection and linkage with national and international communication networks.

5.6.2 Computer Centre Management

The day-to-day management of the Computer Centre is proposed to vest with the Chief Systems Manager assisted by a Systems Manager and a Technology Officer responsible for management of the Voice, Picture & Data Communication Network. They will be supported by appropriate level of technical support staff for operations, maintenance and network management. Policy guidance shall be provided to the management of the Computer Centre by the Users Advisory Committee on Computer Centre Services.

5.7. WORKSHOP

5.7.1 Objectives

The primary objective of the Workshop is to provide:

- Training facilities in basic workshop skills to B. Tech. students;
- Manufacturing facilities for fabrication of industrial products developed by B. Tech. & M. Tech. students; and
- Repair & maintenance facilities for electronics and mechanical equipment.

5.7.2 Workshop Management

The day-to-day management of the Workshop shall vest with a Workshop Superintendent. Policy guidance shall be provided to the central workshop management by a Workshop Users Advisory Committee.

5.8. VIRTUAL LEARNING CENTRE

5.8.1. Objective

The primary objectives of the Virtual Learning Centre

- To manage an on-line learning portal where institute students can access digital educational material uploaded by faculty, submit on-line assignments and take online quizzes;

- To undertake the development of professional quality learning resources such as slides, OHP transparencies, models, video films, CAI and multimedia packages for use of the teaching programs offered by the Institute;
- To generate a Resource Library of non-print material in the core academic areas of the various constituent academic units of the Institute by procuring selected software and information resources from a wide range of sources;
- To make available regular classroom lectures delivered by Institute faculty as a part of the Institute's formal Academic Programs in the e-learning mode as well as to produce and transmit programmed courses as per industry requirement from its AV Studio Classroom to off-campus working professionals under the Institute's Continuing Education Program;
- To bring students in every classroom face-to-face with renowned professors and industry leaders from across the world using synchronous learning technology;
- To deliver lectures to students during their internship period at industry work sites through use of synchronous learning tools; and
- To motivate the Institute's Faculty to adopt modern educational pedagogical
- Systems for delivery of courses and to undertake training programs for them to develop their skills in the development of educational technology software.

5.8.2 Virtual Learning Centre Management

The day-to-day management of the Centre is proposed to vest with a Multi-Media Manager with assistance of appropriate level of professional and technical support staff for operations and maintenance of the facility. Policy guidance shall be provided to the management by the Users Advisory Committee for the Virtual Learning Centre.

5.9. CLASSROOM COMPLEX

5.9.1 To cater to the above educational programs classrooms / lecture rooms/ design studio of different sizes would be required for students teaching. Each desk should have a drawing board with an attached storage facility. The class room complex shall have all modern amenities and suitably designed.

5.9.2 It is recommended that each of the lecture theatres and classrooms may be networked with the Studio Classroom in the Virtual Learning Centre to enable access to synchronous learning tools with a view to bring students face-to-face with professors and industry leaders across the world as well as to enable access to the non-print material archived in the Resource Library of the Virtual Learning Centre. It is also proposed that each of the lecture theatres and classrooms be provided with stand alone projection facilities for use by the instructor while delivering a lecture.

5.9.3 It is recommended that lecture halls may also double up as conference rooms and thus the initial three rows of seats in these lecture theatres may be removable to enable conversion to conference halls. They may also be air conditioned, acoustically treated and fitted with a desk-top microphone system in each of the seats.

Chapter 6

GOVERNANCE AND EXECUTIVE MANAGEMENT

6.1 PREAMBLE

As indicated in Chapter 1, IIIT Kurnool, Andhra Pradesh is to be the fifth member of the IIIT group of institutions. It is to be promoted and fully financed by the Government of India with the objective of imparting high quality education in the realm of information technology and related areas. As is the case with the other members of the IIIT group of institutions, it is envisaged that IIIT Kurnool, Andhra Pradesh would function as an autonomous institute under the umbrella of **The Indian Institutes of Information Technology Act, 2014 and amendment Act, 2017**, that has very recently been assented to by Parliament.

6.2 STRUCTURE OF GOVERNANCE

6.2.1 Inter-linked system of governance

(a) As schematically indicated hereunder in Table 6.1 it is proposed to operate IIIT Kurnool, Andhra Pradesh under a four-tier interlinked system of governance and executive management as provided in **The Indian Institutes of Information Technology Bill, 2014 and amendment Act, 2017.**

Table 6.1: Schematic of the inter- linked system of Governance and Executive & Operations Management

Tier	Task	Authority
IV	**Strategic Supervision**	**The IIIT Council** on behalf of the promoters and the stakeholders.
III (a, b)	**Governance** * Strategic & Policy Mgt. * Planning for the Future	**The Board of Governors (B o G)** supported by the Senate, the Finance Committee (FC) and the Building & Works Committee (B & W C).
II (a, b)	**Executive Management** * Execution of Present Plans * Coordination & Synergistic Control	**The Director** supported by the Deans, the Registrar, the Heads of Departments, the Institute Engineer-cum-Estate Managers and the Officers of the Registry.
I (a, b)	**Operations Management** * Line Function Management * Support Function Management	*** The Heads of Departments** subject to policy guidance by the respective Department Faculty Boards *** The Registrar / the Accounts & Finance Officer / the Institute Engineer-cum-Estate Manager** assisted by the Deputy Registrars and the Support Staff of the Registry.

(b) The four-tier structure represented in Table 6.1 ensures that:

- **strategic supervision** being independent of strategic & policy management can be conducted with objectivity with a view to protect and enhance stakeholder value and to ensure accountability;
- **strategic & policy management** being independent of executive management remains focused towards providing the principle-centered leadership to enable the Institute to meet the challenges of tomorrow and to set policies and strategies to drive it forward towards a position of leadership in the realm of national security;
- **executive management** being free from responsibilities for day-to-day operations can focus on coordination and synergistic control and execution of present plans; and
- **operations management** of both line and support functions being free from executive management of the Institute as a whole can focus on enhancing the quality, efficiency and effectiveness of individual line / support functions.

(c) The roles and responsibilities of the various Authorities and Officers of the Institute flow from the structure outlined in sub-section 6.2.1 (a) whereas the provisions of **the Indian Institutes of Information Technology Bill 2014 and amendment Act 2017** (and the Statutes to be framed under the Bill) provide the necessary empowerment to the Authorities and Officers of the Institute to enable them to discharge their assigned responsibilities.

6.2.2 Authorities of the Institute

(a) The said Bill provides for the Authorities listed hereunder, and diagrammatically represented in Fig. 6.1, to carry out the functions of strategic supervision and strategic & policy management:

(i) The IIIT Council;

(ii) The Board of Governors (B o G); and

(iii) The Senate.

(b) It is further recommended that a Finance Committee (FC) and a Building & Works Committee (B&WC) may be provided for as additional Authorities under the Statutes.

(c) The composition and powers / functions of the Authorities listed in sub-clause (a) hereinabove are provided under various clauses of the Indian Institutes of Information Technology Act 2014 and amendment Act 2017 /or the IIIT Statutes as listed hereunder:

Authority	**Reference to**
IIIT Council	Clauses 34 (2) and 36 of The IIIT Act, 2014
Board of Governors	Clauses 12 (2) and 14 of The IIIT Act, 2014
Senate	Clauses 15 and 16 of The IIIT Act 2014
Finance Committee	To be provided under the IIIT Statutes
Building & Works Committee	To be provided under the IIIT Statutes
Research Council	Clause 17 of The IIIT Act, 2014

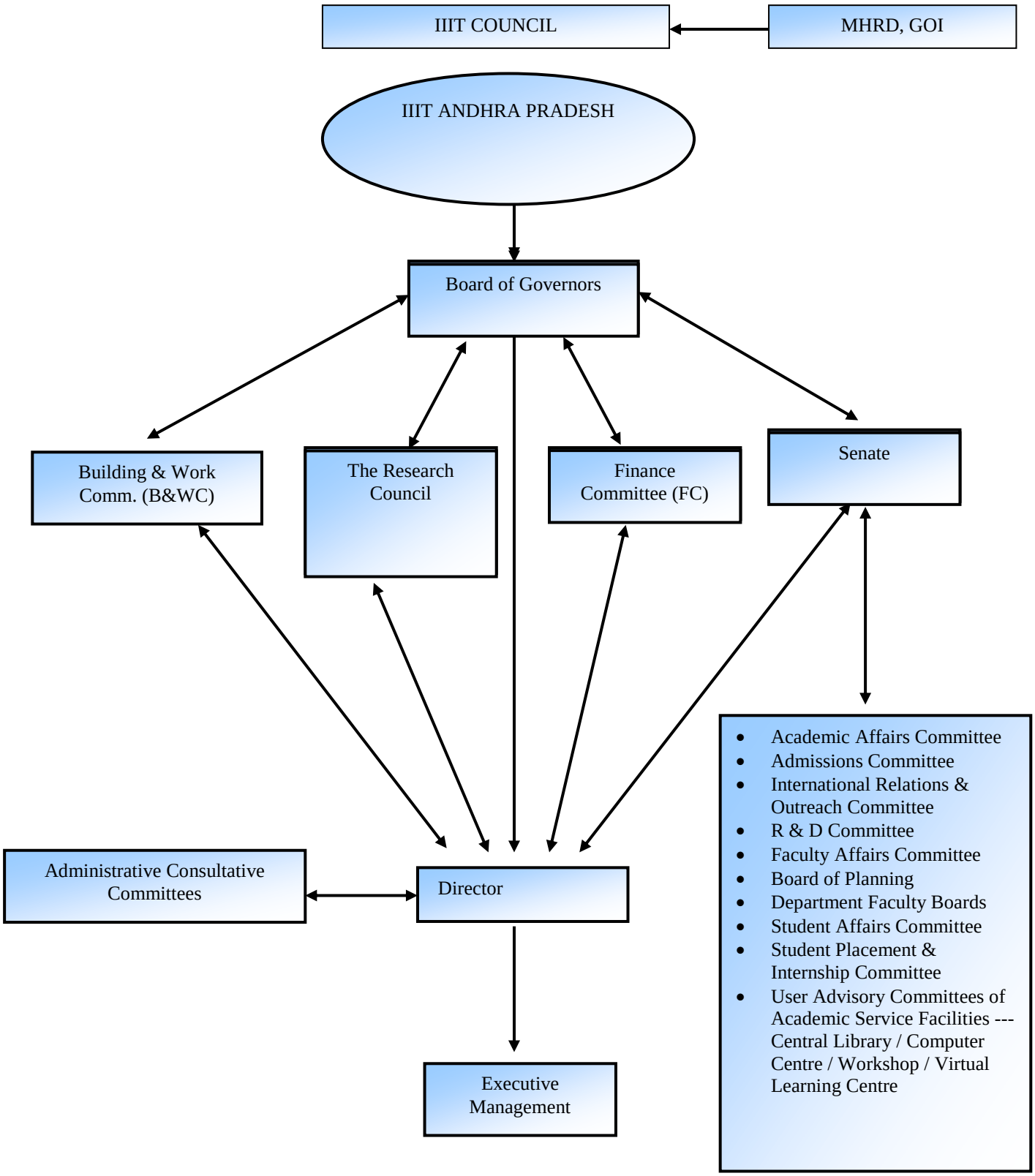


Fig 6.1: Governance Structure: IIIT ANDHRA PRADESH

6.3. EXECUTIVE MANAGEMENT

6.3.1 IIIT Andhra Pradesh is expected to carry-out the broad set of activities diagrammatically presented hereunder in Fig. 6.2.

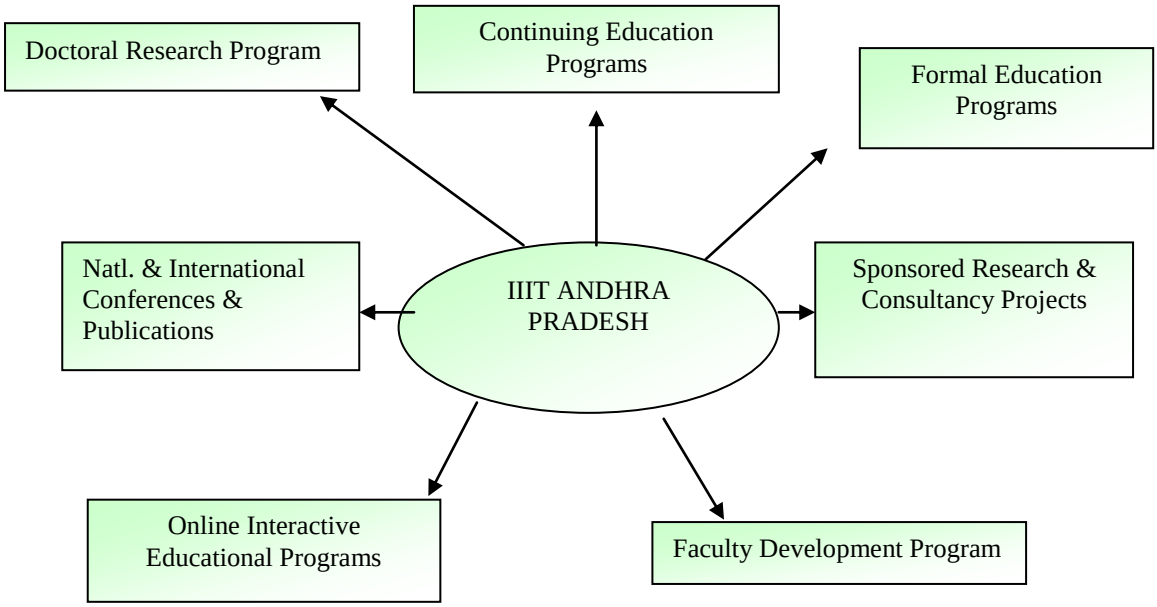


Fig 6.2: Activities of IIIT Andhra Pradesh

6.3.2 In order to carry out these multifarious set of activities there is a need to have in place an executive management system which is: (i) self-managed by objectives; (ii) provides for appropriate decentralization of authority and responsibility for decision-making; (iii) places a premium on transparency and the building of harmonious relationship with and between all stakeholders; and (iv) is in consonance with the core principles of governance of the Institute. Furthermore, the design of the organizational framework needs to be totally flexible and thin and sharp in its functioning. It should provide for information access and sharing through a computerized MIS and an inter-office communication system. Also the management hierarchy needs to be thin and straight with the role & responsibilities of key functionaries and the reporting structure being clearly spelt out.

6.3.3 Keeping the system guidelines indicated in sub-clause 6.3.2 in mind it is proposed that the day-to-day executive managements of the Institute vest in a Director to be appointed as the Institute's Chief Academic & Executive Officer by the Board of

Governors in accordance with the provisions in clause 18(3) of the IIIT Bill 2014. It is envisaged that the Director shall be responsible to the Board of Governors for the proper functioning of the Institute and for implementation of decisions of various Authorities of the Institute. It is further proposed that the responsibilities of the Director shall cover all aspects of the operation of the institute which may be broadly classified as line operations and support operations as listed hereunder in Table 6.2.

Table 6.2: Line and Support Operations at IIIT Andhra Pradesh

LINE OPERATIONS	SUPPORT OPERATIONS
• Student Admission; • Teaching and Academic Research; • Examinations; • Applied and Sponsored Research; • Consultancy • Student Internships; • Cross-curricular (Generic Skills) Activities; • Student Discipline; • Non-academic Student Affairs including management of student hostels and co-curricular Activities; • Student Placement; • Library & Information Resource Services; • Computing Services including the Voice, Data & Picture Communication Network / MIS / Web Communication; • Virtual Learning Centre; • Continuing Education Programs; • Faculty Development Programs; • Student Placement; • Student Guidance & Counseling; • Student Mentoring; • Resource Planning & Mobilization; • Linkage with research & higher education institutions; and • Linkage with the MHRD / UGC / AICTE / State & Central Governments, etc. • Linkage with the IT & User Industries.	• Accounts & Finance (including Budgeting and Audit); • Personnel & Administration Matters (including Faculty & Staff Recruitment / Discipline / Welfare); • Staff Development; • Works & Estate Management; • Stores & Purchase; • Public Relations; • Vigilance & Legal Matters; • Security; • Transport Services; and • Medical Services.

6.3.4 As an organization the Institute is expected to perform the following functions from a management cybernetics point of view:

(a) Operations --- both line and support operations --- for which the Institute primarily exists;
(b) Coordination and synergistic control (administrative support functions);
(c) Execution of present plans;
(d) Long term planning; and
(e) Strategic supervision - cum - Strategic and policy management.

6.3.5 It is proposed to structure the five functions listed in sub-section 6.3.4 into a hierarchy of controls with system (1) being concerned with function (a), system (2) with function (b) and so on keeping in mind the ideas presented in sub-section 6.3.2 hereinabove. The main operative functions (the line operations --- indicated in column 1 of Table 6.2) are expected to be carried out by the instructional faculty with the Heads of Departments and Functional Coordinators (Admissions, T & P, Student Activities, etc.) serving as the Line Operations Managers. Policy guidance with regards matters covered under line operations is expected to be provided by the Senate through the set of Standing Committees of the Senate indicated in Fig. 6.1. On the other hand, the support functions, i.e., the staff operations which comprise of functions such as finance, personnel management, administration, estate maintenance, etc., are expected to be carried out by the support staff with a hierarchy of administrative offices serving as the Support Operations Managers.

6.3.6 The function of coordination and synergistic control is expected to be carried out by the Deans, the Chairman Admissions, the Registrar, the Finance & Accounts Officer and the Institute Engineer-cum-Estate Manager who constitute the system (2) Managers. The system (2) Managers are responsible for coordinating decisions and to channelize information between the system (1) Managers and the Director. The system (2) Managers report to the Director who as the executive head of the Institute functions as the system (3) Manager and is responsible to the Board of Governors for the execution of present plans and for implementation of policies as may be laid down by the Board. In view of the Institute being relatively small in size it is recommended

that the system (2) Managers may also function as the decision-support structure at the system (3) level.

6.3.7 The corporate planning activity is proposed to be carried out as an independent system (4) function distinct from that of execution of present plans. It is proposed to constitute a Board for Planning (as a Standing Committee of the Senate as indicated in Fig. 6.1) with the Director as its Chairperson to provide policy guidance for sustained development and to propose and monitor long and short term plans of the Institute. It is envisaged that logistic and secretarial support to the Board of Planning shall be provided by a permanent Planning Cell functioning under a Dean Planning & External Programs.

6.3.8 Responsibility for carrying out the system (5) function, i.e. the function of strategic supervision-cum-strategic and policy management is proposed to vest on the Board of Governors.

6.3.9 The proposed systems framework for executive management of the Institute as outlined in sub-sections 6.3.5 - 6.3.8 is diagrammatically presented in Fig. 6.3 with the corresponding management hierarchy being as presented in Fig. 6.4.

Fig 6.3: Systems Framework for Executive Management: IIIT Andhra Pradesh

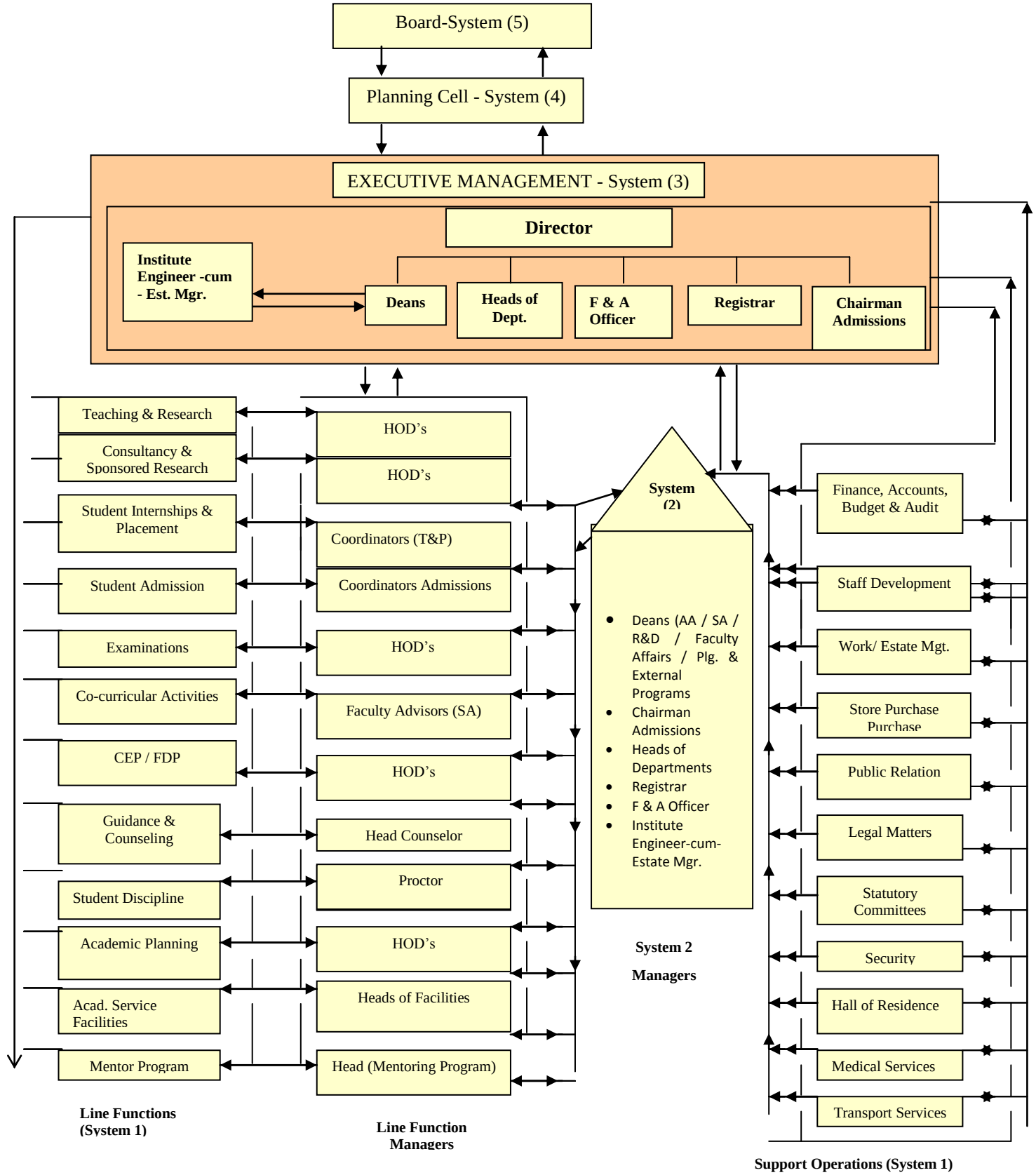
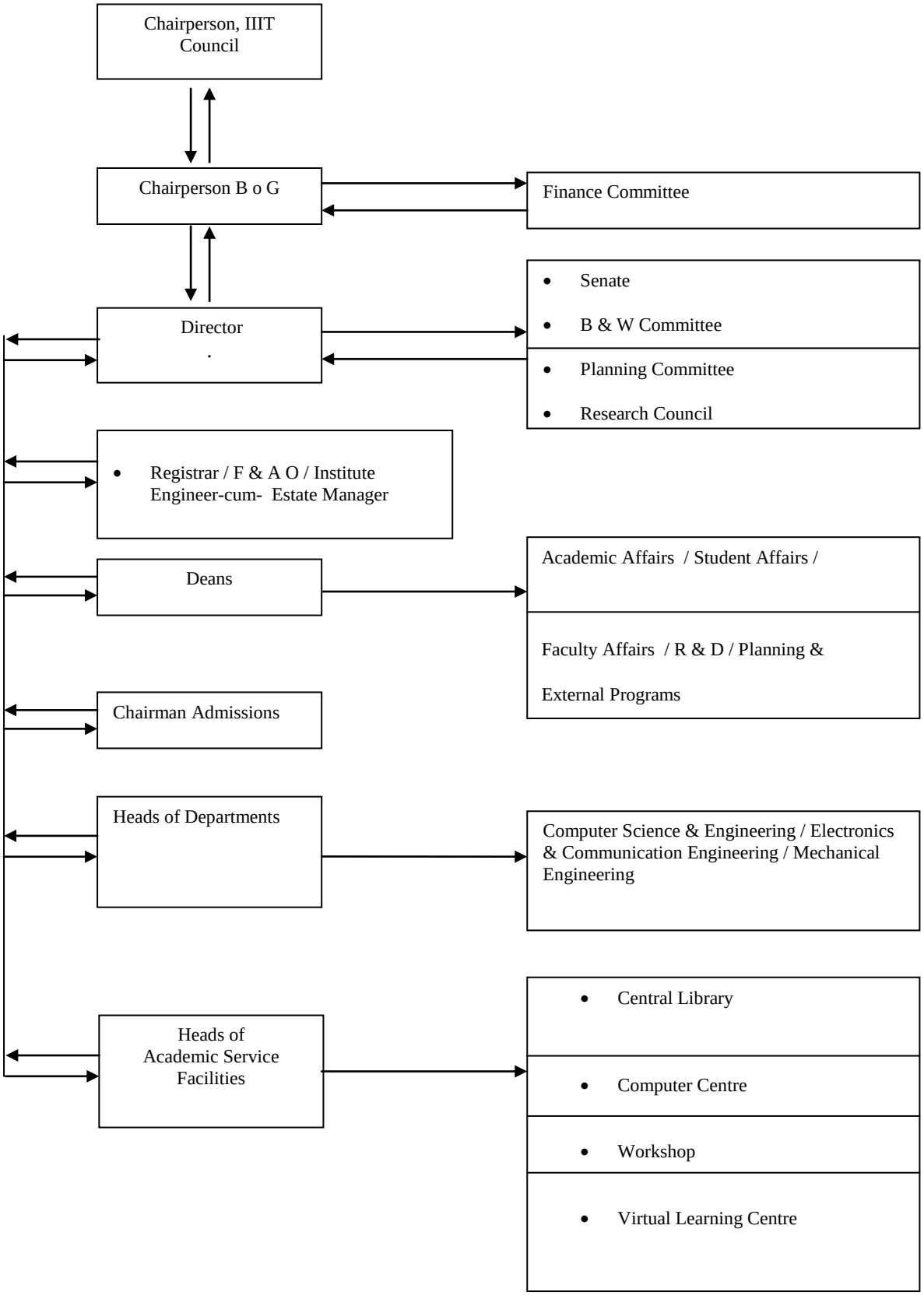


Fig. 6.4: Reporting Hierarchy: IIIT Andhra Pradesh


Chairperson, IIIT Council
Chairperson B o G
Finance Committee
Director
.
Senate
B & W Committee
Planning Committee
Research Council
Registrar / F & A O / Institute Engineer-cum- Estate Manager
Deans
Academic Affairs / Student Affairs /
Faculty Affairs / R & D / Planning &
External Programs
Chairman Admissions
Heads of Departments
Computer Science & Engineering / Electronics & Communication Engineering / Mechanical Engineering
Heads of Academic Service Facilities
Central Library
Computer Centre
Workshop
Virtual Learning Centre

6.4 MANAGEMENT OF NON-ACADEMIC STUDENT AFFAIRS

6.4.1 Responsibility as the System (2) Executive Manager to serve as the points person for handling all issues pertaining to non-academic student affairs at the Institute is proposed to vest in the Dean (Student Affairs) to be appointed by the Director from amongst the faculty as per a procedure that may be prescribed by the Board of Governors on the recommendation of the Senate.

6.4.2 As indicated in Fig. 6.1 it is proposed to constitute a Student Affairs Committee (SAC) as a Standing Committee of the Senate with the Director as the ex-officio Chairperson and comprising of members of the faculty and the students of the Institute to serve as the apex body for the management of non-academic student affairs at the Institute. It is proposed that the SAC be charged with the responsibility for overall policy formulation, coordination and review of all matters pertaining to non-academic student affairs such as student co-curricular activities, student housing, student counseling, student welfare, student discipline other than breach of academic integrity and issues of ragging and gender harassment, etc. Further it is envisaged that the SAC shall also serve as a forum for discussion on all other aspects of student life including curricular affairs.

6.4.3 The composition and other details regarding the Student Affairs Committee shall be as may be laid down by the Senate in consultation with the students.

6.4.4 With a view to inculcate qualities of leadership and a spirit of team working in the students of the Institute it is imperative that the students themselves be an integral part of the process of management of their own affairs with the faculty being involved only as mentors and advisors. Keeping the above stated premise in mind it is recommended that the following set of Standing Committees of the Student Affairs Committee be constituted at the grass-root level to handle individual aspects of non-academic student affairs:

- Committee for Cultural & Creative Activities (CCCA);
- Committee for Sports Activities (CSA);

- Committee for Hostel Management (CHM);
- Committee for Student Discipline;
- Committee for Student Welfare (CSW); and
- Guidance & Counseling Cell (G&CC).

6.4.5 Essential details with respect to the composition, procedure for nomination / election of members, duties & responsibilities, procedure for conduct of business, etc. of each of the above named Standing Committees of the Students Affairs Committee shall be as may be prescribed by the Student Affairs Committee.

6.5 OFFICERS AND THEIR FUNCTIONS

6.5.1 The following officers have been proposed at the top executive management level with the reporting hierarchy as indicated in Fig. 6.4:

(i) The Director;
(ii) The Deans (Academic Affairs / Planning & External Programs / R & D / Student Affairs / Faculty Affairs);
(iii) Heads of Departments;
(iv) The Registrar;
(v) Chairman Admissions;
(vi) The Finance & Accounts Officer; and
(vii) The Institute Engineer-cum-Estate Manager.

6.5.2 The officers indicated hereinabove under sub-clause 6.5.1 (i) – (iv) are statutory positions to be appointed in the manner prescribed in the IIIT Bill, 2014 whilst those indicated under sub-clause 6.5.1 (v) – (vii) are non-statutory positions proposed as a part of the recommended Structure of Executive Management.

6.5.3 The role and responsibilities for each of these key positions are indicated hereunder in Table 6.3:

Table 6.3: Role & Responsibilities of Key Officers

Position (i) : DIRECTOR	
Designation	Director
Method of Appointment	Appointed by the B o G as per procedure prescribed in clause 18 (3) of the IIIT Bill 2014
Salary Scale	As prescribed by the B o G on the recommendation of the MHRD, GOI.
Report to	Chairman B o G
Reported by	• Deans; • Heads of Departments; • Chairman Admissions; • Academic Program Coordinators; • Registrar; • Heads of Academic Service Facilities; • Finance & Accounts Officer; • Institute Engineer-cum-Estate Manager; • Faculty & Support Staff of the Institute through their respective Supervisors.
Role & Responsibilities	• Academic & Executive Officer; • Chairperson of the Academic Council / Building & Works Committee / Planning Committee / Research Council; • To inspire and motivate all constituents of the Institute to willingly carry out their respective responsibilities with a view to accomplish both their personal and organizational goals; • To make the **Vision Mission Value (VMV)**Statement of the Institute 'livable' by continuously articulating the VMV Statement as well as by setting an example through actually living out the ideas contained in the VMV Statement; • To develop human resource practices at the Institute with a view towards nurturing excellence; • To plan for the future and to mobilize resources for their fruition; • Public Relations and Networking with Stakeholders and the Community; • To create an enabling environment for academic-value addition; • Inter-personal relations and conflict management; • Building the brand equity of the Institute;

	• Financial management; • Nurturing a second-level of leadership; and • Conducting 'accountability audits' on an on-going basis.
Position (ii-a) **DEAN** **ACADEMIC** **AFFAIRS**	
Designation	Dean Academic Affairs
Salary Scale	Scale as being drawn as a Professor + honorarium & perquisites as may be decided by the Board of Governors from time to time.
Method of Appointment	Appointed, for a term of 3 years, by the Board of Governors from amongst the Professors of the Institute on the recommendation of the Director as per procedure to be prescribed in the IIIT Statutes.
Report to	Director
Reported by	AR (Academics)
Role & Responsibilities	• Chairperson of Senate Academic Affairs Committee; • Course Registration; • Framing of Academic Time Table; • Semester Schedule; • Academic Discipline (in consultation with the Dean Student Affairs; • Monitoring of Teaching**;** • Student feedback on Courses; • Student - Faculty Academic Interaction; • New Academic Programs; • Student Exchange Schemes; • Curriculum Development; • Organization of Effective Teaching Workshops; • Liaison with Coordinators, Academic Programs / Heads of Departments; • Organization of the Annual Convocation.

Position (ii-b): **DEAN PLANNING & EXTERNAL PROGRAMS**	
Designation	Dean Planning & External Programs
Salary Scale	Scale as being drawn as a faculty member + honorarium and perquisites as may be decided by the Board of Governors from time to time.
Method of Appointment	Appointed, for a term of 3 years, by the Board of Governors from amongst the Professors of the Institute as per procedure to be prescribed in the IIIT Statutes.
Report to	Director
Reported by	• AR (Planning); • AR (Resource Mobilization) • PRO; • Manager Guest House; • AR (External Programs); • Coordinator (Alumni Affairs)
Role & Responsibilities	• Prospective Planning; • Institute Budget in consultation with the Finance & Accounts Officer; • Accountability Audit; • Public Relations; • Management of Guest House; • Resource Generation; • Liaising with National & International Institutes of Higher Learning & Research; • Alumni Affairs & Alumni Supported Programs; • Networking with National & International Academic & Research Bodies; • International Collaborations; • Community Connect Programs; • International Fellows.

Position (ii-c) **DEAN R & D**	
Designation	Dean R & D
Salary Scale	Scale as being drawn as a faculty member + honorarium and perquisites as may be decided by the Board of Governors from time to time.
Method of Appointment	Appointed, for a term of 3 years, by the Board of Governors from amongst the Professors of the Institute as per procedure to be prescribed in the IIIT Statutes.
Report to	Director
Reported by	• AR (R&D) • Coordinator CEP • Coordinator Student Training & Placement
Role & Responsibilities	• Chairperson Senate Research Committee; • Promotion of Research; • Faculty Research Initiation Program; • Student Research Opportunities Program; • Management of Sponsored R&D Projects; • Student Industry Internship; • Industry Interaction; • Consultancy; • Business Incubation; • Continuing Education Programs; • Student Mentoring; • Student Placement including interview schedules; • Maintaining data base and an Information Library on Companies; • Providing logistic support to companies visiting for campus interviews; • Maintaining Placement Statistics; • Liaising with Coordinators Academic Programs ; • Advising on the framing of Placement / Training rules; • Seeking training slots and matching student – company interests in consultation with Coordinators Academic Programs; • Ascertaining / Analysis feedback from students and companies; • Liaising with the Institute's Research Council.

Position (ii-d) **DEAN** **STUDENT** **AFFAIRS**	
Designation	Dean Student Affairs
Salary Scale	Scale as being drawn as a faculty member + honorarium and perquisites as may be decided by the Board of Governors from time to time.
Method of Appointment	Appointed, for a term of 3 years, by the Board of Governors from amongst the Professors of the Institute as per procedure as may be prescribed in the IIIT Statutes.
Report to	Director
Reported by	• AR (Student Affairs); • Wardens; • Sports Officer; • Faculty Advisors Student Co-curricular Activities; • Faculty Advisor Student Counseling Service.
Role & Responsibilities	• Student Welfare; • Management of Student Hostels & Messing; • Supervision of Student Co-curricular Activities; • Supervision of Student Mentoring Service; • Supervision of Student Guidance & Counseling Service; • Student non-academic discipline; • Student Health Services; • Foreign Students; • Liaison with Wardens/Faculty Activity Advisors; • Liaison with Alumni Association.

Position (ii-e) **DEAN FACULTY AFFAIRS**	
Designation	Dean Faculty Affairs
Salary Scale	Scale as being drawn as a faculty member + honorarium and perquisites as may be decided by the Board of Governors from time to time.
Method of Appointment	Appointed, for a term of 3 years, by the Board of Governors from amongst the Professors of the Institute as per procedure to be prescribed in the IIIT Statutes.
Report to	Director
Reported by	• AR (Faculty Affairs); • Coordinator Faculty Development Program
Role & Responsibilities	• Chairperson Board of Faculty Affairs; • Formulation of manpower policies for faculty including

	faculty search, creation of posts, recruitment & appointment; • Faculty Development Program; • Performance Appraisal; • Faculty Welfare; • Grant of medium / short leave to faculty; • Processing requests of faculty for long leave; • Nomination of faculty to attend seminars / conferences in India; • Processing requests of faculty for nomination to attend seminars / conferences abroad; • Liaison with Heads of Departments.

Position (iii) **HEADS OF DEPARTMENTS**	
Designation	Head of Departments
Method of Appointment	Appointed, for a term of 3 years, by the Director from amongst the faculty of the Department as per procedure to be prescribed in the IIIT Statutes
Salary Scale	Scale as being drawn as a faculty member + honorarium and perquisites as may be decided by the Board of Governors from time to time.
Report to	Director
Reported by	Faculty and Support Staff of the respective Departments.
Role & Responsibilities	• Responsible for all aspects of the working of the concerned Departments subject to the general control of the Director; • Implementation of all applicable policy decisions with respect to academic, personnel and administrative matters as prescribed by the Authorities of the Institute; • Any other matter as may be specifically assigned by the Director.

Position (iv) **REGISTRAR**	
Designation	Registrar
Method of Appointment	Appointed on contract for a term of 5 years by the Board of Governors on the recommendation of a Selection Committee in the manner to be prescribed in the IIIT Statutes.
Salary Scale	As prescribed by the Board of Governors from time to time on the recommendation of the MHRD, GOI.
Report to	Director
Reported by	• AR's (in-charge of various administrative sections under the overall charge of the Registrar); • Coordinator Non-Academic Staff Training
Role & Responsibilities	• Secretary of B o G / Academic Council / B&W Committee / Finance Committee --- Notice of Meetings, Circulation of Agenda, Minutes, Follow-up Action, etc. • General Administration & Discipline; • Manpower Policies for Non-Academic Staff --- Creation of Posts, Staff Recruitment and Appointments, etc. • Staff Training & Development; • Service matters and Service Records of Non-Academic Staff --- performance appraisal, mentoring etc.; • Preparation of an Administrative Manual; • Welfare, Health and Safety of Non-Academic Staff; • Implementation of general service and conduct rules. • Security; • Housekeeping; • Vigilance; • Legal Matters; • Central Records; • General Coordination; • Legislature Questions; • Transport Services; • Official language policy & its implementation; • Any other duties as may be assigned by the Director and / or the Board of Governors and / or the Statutes and Rules &Regulations of the Institute.

Position (v) **CHAIRMAN ADMISSIONS**	
Designation	Chairman Admissions
Method of Appointment	Appointed by the Director for term of 3 years, in rotation, from amongst the institute faculty in accordance with a procedure as may be laid down by the Board of Governors on the recommendation of the Senate.
Salary Scale	Scale as being drawn as a faculty member + honorarium and perquisites as may be decided by the Board of Governors from time to time.
Report to	Director
Reported by	A.R. (Admissions)
Role & Responsibilities	• Responsible for all aspects of Student Admissions; • Liaison with Heads of Departments / Dean Academic Affairs / Department Admissions Coordinators; • Liaison with Chairman Admissions in sister IIIT's; • Liaison with national / state level Regulatory Bodies for Student Admission.

Position (vi) **FINANCE & ACCOUNTS OFFICER**	
Designation	Finance & Accounts Officer
Method of Appointment	Appointed on a permanent basis by the Board of Governors on the recommendation of a Selection Committee in accordance with the procedure to be prescribed in IIIT Statutes.
Salary Scale	As prescribed by the Board of Governors from time to time on the recommendation of the MHRD, GOI.
Report to	Director
Reported by	• Deputy/Assistant Finance Officers; • Internal Audit Officer.
Role & Responsibilities	**(i) <u>Finance</u>:** • Fund mobilization; • Revenue planning; • Grants-in-aid from the government/sponsors; • Co-ordination & liaison with the Finance Division of the Ministry of Human Resources Development, Government of India on all financial matters; • Investment monitoring and budgetary control of grants; • Scrutiny of all financial proposal raised by various units of the Institute. **(ii) <u>Accounts:</u>**

	• Payments for materials& services; • Payroll; • Maintenance of accounts; • Preparation of financial statements. (iii) **<u>Audit:</u>** • Audit of purchase & works tenders; • Coordination with the internal auditor and the statutory external auditor; • Compliance of audit and inspection reports.

Position (vii) **INSTITUTE ENGINEER – CUM- ESTATE MANAGER**	
Designation	Institute Engineer-cum-Estate Manager
Method of Appointment	Appointed on a permanent basis by the Board of Governors on the recommendation of a Selection Committee in accordance with the procedure to be prescribed in IIIT Statutes.
Salary Scale	As prescribed by the Board of Governors from time to time on the recommendation of the MHRD, GOI.
Report to	Director
Reported by	All staff of the Works & Estate Maintenance Unit through their respective Supervisors.
Role & Responsibilities	• Overall planning, contracting, supervision and monitoring of works of construction, renovation and repairs; • Maintenance of Civil / Electrical / Air Conditioning / Horticulture Works; • Monitoring of Housekeeping Contract; • Standardization of norms for space utilization; • Space Audit; • Monitoring of works bills of contractors & suppliers; • House Allotment; • Commercial Establishments.

Chapter 7

HUMAN RESOURCES

7.1 CLASSIFICATION OF STAFF

7.1.1 It is proposed that all tenured posts at IIIT Andhra Pradesh be classified as indicated hereunder in Table 7.1:

Table 7.1: Classification of Tenured Staff (suggestive)

CADRES	POSTS
Academic Cadres	
Faculty	• Director • Professor • Associate Professor • Assistant Professor
Academic Non –Teaching	• Librarian • Deputy Librarian • Assistant Librarian
Support Staff Cadres	
Scientific Staff	• Chief Scientific Officer • Principal Scientific Officer • Senior Scientific Officer • Scientific Officer • Scientific Assistant

CADRES	POSTS
Technical Staff	• Research Engineer • Instrumentation Engineer • Computer Engineer • Systems Manager • Programmer • AV Technician • AV Production Assistant • AV Producer • Workshop Superintendent • Assistant Superintendent Workshop • Technical Officer • Senior Technical Assistant • Technical Assistant • Mechanic • Workshop Foreman
Engineering Staff	• Institute (Superintending) Engineer • Executive Engineer • Assistant Engineer • Junior Engineer
Medical & Paramedical Staff	• Chief Medical Officer • Medical Officer • Senior Pharmacist • Pharmacist • Nurse • Medical Technician
Professional Staff	• Sports Officer • Assistant Sports Officer • Counselor • Physical Training Instructor • Physical Education Trainer • Coach
Laboratory Staff	• Senior Laboratory Assistant • Laboratory Technician • Laboratory Attendant

CADRES	POSTS
Administrative & Ministerial Staff	• Registrar • Deputy Registrar • Assistant Registrar • Estate Officer • Senior Security Officer • Security Officer • Assistant Security Officer • Public Relations Officer • Central Purchase Officer • Stores Officer • Internal Audit Officer • Accountant • Assistant Accountant • Personal Secretary to the Director • Personal Assistant • Assistant • Library Assistant • Junior Assistant (Multi-skill) • Junior Office Assistant (Multi-skill) • Junior Superintendent • Superintendent • Senior Stenographer • Stenographer • Storekeeper • Senior Storekeeper

7.2 FACULTY POSTS

7.2.1 The faculty is the lifeline of any academic institution. The cornerstone of success in implementing an institution's vision, mission and values and in the nurturing of excellence in whatever it does is critically dependent on the quality of its faculty resources. The novelty and breadth of its academic programs and the challenges faced in their implementation require more than merely bright individuals to man faculty positions. The requirement is for people who are passionate about the objectives of the institution and are prepared to use innovative methods to accomplish the set goals. Recruiting the best-in-class human resources would therefore be essential for its success.

7.2.2 Based on: (i) a faculty to student ratio of 1:12; (ii) a cadre distribution of 1:2:4 between the three permanent faculty positions of Professor, Associate Professor and Assistant Professor; and (iii) the total strength of students for all programs offered by IIIT, Andhra Pradesh is summarized hereunder in Table 7.2.

Table 7.2: Year-wise Requirement of Tenured Faculty Positions

POSTS	2015-16	2016-17	2017-18	2018-19	2019-20
Total Students	50	170	290	750	1260
Director	0	0	0	1	1
Professors	0	2	3	9	14
Associate Professors	1	4	7	18	28
Assistant Professors	3	8	14	36	58
Total	**4**	**14**	**24**	**64**	**101**

7.2.3 It is further proposed that the tenured faculty be supplemented by employing visiting/adjunct faculty from industry/scientific laboratories/other academic institutions teaching on a part-time basis for teaching specialized courses in the proposed verticals including in the curriculum as well as teaching/research associates for assisting the tenured faculty in carrying out routine assignments. The cost for visiting faculties has not been included in the report.

7.3 ACADEMIC NON-TEACHING POSTS

7.3.1 The year-wise requirement of the academic non-teaching staff for each cadre position is given hereunder in Table 7.3.

Table 7.3: Year-wise Requirement of Non-Teaching Academic Staff

POSTS	2015-16	2016-17	2017-18	2018-19	2019-20
Librarian	0	0	0	0	1
Deputy Librarian	0	0	0	1	1
Assistant Librarian	0	0	0	2	2
TOTAL	**0**	**0**	**0**	**3**	**4**

7.4 NON-FACULTY POSTS

7.4.1 Support Manpower for Academic and Administrative Units

(i) Table 7.4 shows that the estimated total requirement of tenured support staff in all for the Institute as a whole is 61 which is 1.1 times the number of tenured faculty & non-teaching academic staff as prevailing in such type of technical institutions. In addition, a Registrar, Finance & Accounts officer and Manager (personal & Administration) is proposed.

Table 7.4: Consolidated Requirement of Tenured Support Manpower

POSTS	2015-16	2016-17	2017-18	2018-19	2019-20
Category-I					
Registrar	0	1	1	1	1
Finance & Accounts Officer	0	0	0	0	1
Category-II					
II-A	0	0	0	0	2
II-B	0	0	0	0	1
II-C	0	1	1	1	6
Category-III					
III-A	0	1	1	6	10
III-B	1	4	4	12	34
Category-IV					
IV-A	1	4	7	10	10
IV-B	2	4	12	44	51
GRAND TOTAL	4	15	**26**	**74**	**116**

7.4.2. Support Manpower through Outsourcing

It is proposed that routine services that are amendable to outsourcing such as housekeeping / cleaning, hostel messing, horticulture, canteen, guest house services, transport, building maintenance, watch & ward, road cleaning, etc. be catered to through outsourcing with the tenured staff of the Institute only being involved as supervisors for such services.

Chapter 8

PHYSICAL RESOURCES

8.1 INFRASTRUCTURE REQUIREMENT

The physical resource requirements consist of:

- Land (including land development, landscaping and road network);
- Built up Space comprising:
  - (i) The Students Hostels and Amenities;
  - (ii) The Academic & Support Staff Residences and Amenities;
  - (iii) The General Amenities --- Common to Students, Academic & Support Staff;
  - (iv) The Academic Complex comprising the Faculty Building, the Laboratory Complex, the Classroom, and the Academic Service Facilities; and
- Utilities;
- Equipment including instructional equipment, research equipment, workshop equipment, kitchen equipment, engineering services equipment, etc.; and
- Furniture

8.2 LAND & LAND DEVELOPMENT

8.2.1 Govt. of Andhra Pradesh allotted **151.51 acre** for establishing the proposed Institute in the district of Kurnool. The Land Development includes construction of 3metre high compound wall around the periphery of campus, Bulk services, landscaping, roads etc.

8.3 BUILT-UP SPACE FOR STUDENT HOSTELS & AMENITIES

8.3.1 Student Hostels

(a) <u>Number of Hostels:</u>

IIIT Andhra Pradesh is envisaged to be a fully residential institute with respect to students in line with the prevailing practice in the older IIIT group of institutions. Hence on-campus accommodation would need to be provided in Student Hostels for 1260 UG /PG/ Ph.D students. The details of hostel facility are given below:

- One Girls student hostel for UG Students with 96 Seat capacity
- One Boys Student hostel for UG/ PG students with 516 seat capacity.
- One Mixed Hostel partitioned into two independent wings with 516 seat capacity.
- One PG/ Ph.D student Hostel for 132 Students

(b) <u>Messing Facilities:</u>

(i) It is proposed that instead of providing captive messing facilities in each of the Hostel a kitchen-cum-dining hall complex be provided in close proximity to the Hostels. It is further proposed that the messes cater to different cuisines. It is further proposed that the messes be operated on contract basis through mess contractors under the control of individual Mess Management Committee(s) comprising of faculty and students.

(c) General Facilities in the Hostels:

Each of the Hostels should be provided with the following general facilities:

- An attached covered shed for the parking of cycles and scooters/motorcycles and a suitable car parking area for visitor parking;
- A well-designed reception area along with a proper display board indicating room numbers and names of occupants;
- A mail box with separate pigeon holes with locking facilities for the mail of each student;
- A TV Room;
- Reading Room;
- A Table Tennis and an Indoor Games Room divided by a partition'
- Four Activity Rooms for activities such as photography, weight-lifting, art, etc. and a store for the sale of small items of necessity to be operated by the students themselves;
- At least two Public Telephones;
- Internal telephones through the institute exchange having inward dialing facilities --- one on each floor, one in each dining hall, one each in the offices of the Warden and Caretaker and one at the Reception Desk;
- A Computer Room for housing a PC Cafeteria networked to the Institute Computer Center and the Institute Library on the Institute's LAN;
- One Guest Lounge for day time visitors with an attached bathroom;
- Three offices --- one each for the Warden, the Caretaker and the Hostel Accountant-cum-Dues Collector;
- A Store for furniture, left luggage, etc.;
- An underground sump, an overhead tank and a pumping system of sufficient capacity to ensure continuous supply of water to the Hostel;

  Sufficient number of toilets and baths along with a suitable hot water system;

  Security personnel round the clock

8.3.2 Student Amenities

Types of Amenities:

Amenities proposed to be provided in the student hostel complex shall comprise of the following:

- Student Activities Center (including a Gymnasium and indoor games)
- Canteen.

a) Multi-purpose Hall cum Student Activities Centre:

A Student Activities Centre may be provided to serve as a hub for all student activities. It is proposed that the Activity Centre complex may comprise of the following facilities:

- Multi-purpose Hall to serve as the venue for indoor basketball, badminton Table Tennis Room and gymnastics;
- Sports Store;
- Creative Activities Store;
- Small Committee Room for meetings of Activity Organizers;
- Sports & Games Office;
- Recreational & Creative Activities Office;

(b) Canteen:

A Canteen of suitable size may be provided adjacent to the Hostels.

8.3.3 Built-up Space for Hostels

The total area provided for Hostels is 18475 sqm.

8.4 ACADEMIC & SUPPORT STAFF RESIDENCES AND AMENITIES

8.4.1 Faculty Residences

(a) It is proposed that on-campus housing of the following categories as per Government of India yardsticks and norms may be provided to the Institute's faculty and equivalent non-teaching academic and senior support staff:

i) Director's Residence: 1 Nos.
ii) Type VI Quarters
iii) Type V Quarters
iv) Type IV Quarters
v) Type III Quarters

vi) Type II Quarters Transit Hostel to Faculty as stopgap arrangement for initial short period on joining the institution.

8.5. GENERAL AMENITIES

8.5.1 Types of General Amenities

The following general amenities that are a common requirement of all sections of the institute community are proposed to be provided:

- Security Kiosks;
- Horticulture Amenities; and
- Vehicle Parking.

8.5.4 Communication Service

It is proposed that the following communication facilities may be provided:

- Internal telephones in the Director's Residence.
- Internal telephones in all faculty offices and in all academic / administrative units, the commercial establishments, the student hostels,
- A large number of call offices distributed over the campus for internal communication within the campus;
- Telecom Center with telex, FAX and local/STD/ISD call facilities;
- A DOT/private telephone exchange for connection of the Institute communication network (digital PABX with voice with required extensions) with the National Telecommunication Network;
- Uplink and downlink facilities to the national educational satellite (EDUSAT) at the Virtual Learning Centre;
- Wi Fi connectivity to the Institute's Voice, Picture and Data Network in the faculty residences, the student hostel rooms, the administrative and faculty offices, the library, the laboratories, etc.;
- A closed-circuit TV system for educational use; and

8.5.5. Commercial Facilities

On-campus commercial facilities as indicated hereunder may be provided for purchase of day-to-day necessities:

- Shopping Complex for provisions, consumer products, fruits and vegetables, meat, milk, books, periodicals & stationery;
- Bank Extension Counter;

- Telecom Center with telex, FAX and local/STD/ISD call facilities;

- Reprography, Electronic Typing & Binding facilities;
- Parking lot for cars/scooters/bicycles.

8.5.6. Security Service

(a) For a self-contained campus provision of security is very important. It is proposed that such services be outsourced to an outside contractor under the supervision of the Institute Security Officer. It is further suggested that the campus be protected by a high compound wall with a limited number of access / exit points. In addition to security at the access / exit points, night patrols should also be arranged. The campus security may also be responsible for traffic and parking control inside the campus for which a suitable set of rules and a program of implementation would need to be worked out. All residents of the campus (including family members of faculty & staff, students, commercial vendors and contract staff) should be provided with an identity card. Also all vehicles (cars, scooters, motor bicycles, bicycles) regularly plying on the campus be issued with a campus registration permit.

(b) For the effective functioning of the security unit the guards provided by the outsourcing contractor should undergo training at periodic intervals. Also the following facilities may be provided to the security unit:

- CCTV's at strategic points;
- Barracks as rest facility for night-shift guards.

8.5.7. Horticulture Amenities

The campus should have several gardens, parks, lawns and a nursery for the enjoyment of all its residents. Trees must be planted along all campus roads to provide shade and for conferring other benefits of vegetation. Waste water recycling may be explored for watering of gardens.

8.5.8. Vehicle Parking

Parking lots may be provided at suitable locations in the academic complex and adjacent to individual Hostels, etc. Also garages for Institute vehicles should be provided in the academic complex.

8.5.8. Built-up Space Requirement for General Amenities

Details of the space requirement for the General Amenities as described hereinabove are indicated hereunder in Table 8.1.

Table 8.1: Built-up Space Requirement for General Amenities

BUILT-UP SPACE REQUIREMENT FOR GENERAL AMENITIES

Sl. No.	Category of Buildings	No. of units	Area per Unit	Gross Area (Sqm.)
1	Utilities for functional requirements and services	1	2500	2500
2	Mess Block s	2	1100	2200
3	Commercial Facilities	1	500	500
			Total	**5200**

Note: Detailed break-up of area is given at Annexure III.

8.6. THE ACADEMIC BUILDINGS AND ADMINISTRATIVE BUILDING.

8.6.1 Buildings in the Academic Complex

It is proposed that the Academic Complex comprise of a cluster of the following buildings:

- The Faculty Building;
- The Laboratory Complex
- The Academic Service Facilities comprising:
  - The Computer Centre;
  - The Virtual Learning Centre;
  - The Workshop; and

- The Central Library;

- The Classroom Complex;

8.6.2 Space Requirement

The total area provided for the Academic and Administrative Complex is 15214 Sqm. which is as per the standard yardstick being followed for similar institutions.

8.7 UTILITIES

The requirement of Utilities to meet the needs of the Institute is indicated hereunder:

8.7.1 Water Supply

It is estimated that in a framework of 5 years on completion of its first phase of development the Institute would need to arrange supply of fresh water to the tune of 3.00 lakh litres per day to cater to the needs of around1260 students plus residences on-campus plus faculty and staff of the academic services. As the Institute is likely to be established in a rural area near to Kurnool Town, it is highly unlikely that it would have access to municipal supply of treated fresh water. It would therefore have to meet its requirement for fresh water from a network of tube wells on the campus. There would thus be need to provide water treatment facilities besides underground and overhead storage tanks plus a pumping system and a distribution network to supply the water to the users. It would also need to have a system in place for daily monitoring of water quality. Further in order to ensure the replenishment of the ground water aquifer it would need to put in place a suitable Rain water harvesting system.

8.7.2 Electric Supply

(i) It is estimated that in a framework of 5 years on completion of its first phase of development the Institute would need to make arrangement to procure around 3 MW of power through a dedicated 33 KVA double circuit line from the nearest sub-station of the State Electricity Board to a 33 KVA sub-station on the Institute campus. Thereafter step-down to 220 volts and distribution to various campus sites would have to be arranged internally.

(ii) It is also proposed that a stand-by diesel / gas turbine / solar generating plant of 1.5 MW capacity be installed.

(iii) In order to conserve energy resources the principles of solar passive architecture must be explored to minimize air conditioning for thermal comfort within buildings. In addition the possibility of installing a system for geo-thermal (earth air) cooling to minimize the use of air conditioning may be explored.

8.7.3 Sewerage Disposal

Sewerage treatment and disposal facilities of suitable capacity catering to a campus population of around 1800 persons would need to be provided.

8.7.4 Garbage Disposal

It is suggested that a system of separation of garbage in terms of recyclables, bio-degradable and other material at source should be introduced from inception of the Institute. Also incinerators for disposal of bio-degradable garbage and a mechanized collection system catering to the Hostels (including the messes) and households should be provided.

8.7.5 Drainage System

The designed drainage system be laid to suit the terrain and as required for the development of site covered.

8.7.6 Air Conditioning Plant

Temperature controlled conditions would need to be maintained in the Central Library / the Computer-cum-Voice, Data and Picture Communication Network Management Centre / the Virtual Learning Centre / the Large Lecture Theatre-cum-Conference Hall in the Classroom Complex / the Laboratories, etc. For this purpose it is proposed that a number of centralized air conditioning plants of various capacities be provided.

8.8 EQUIPMENT & FURNITURE

8.8.1 Equipment and furniture is needed for:

- Teaching and R&D Activities;
- Library & Information Support Services;
- Academic Support Facilities including the Computational Facilities, the Workshop and the Virtual Learning Centre;
- Administrative Support Services;
- Furniture & Equipment for Student Hostels / Mess Kitchens / Student Co-Curricular Activities / CEP Centre / Works & Maintenance Unit.

8.9 TOTAL AREA REQUIREMENT

The summary for total area requirement as mentioned in different sections above is given below in Table 8.2.

Table 8.2: Summary of total area requirement

S.No.	Building description	Total area
1	Academic & Administrative Buildings	15214
2	Faculty Residences	12370
3	Student Residential	18475
4	General Amenities & utilities	5200
	Grand Total	**51259**

Chapter 9

ENVIRONMENTAL MANAGEMENT PLAN (EMP) FOR IIIT-ANDHRA PRADESH

9.1 ENVIRONMENTAL IMPACT ASSESSMENT & ENVIRONMENTAL MANAGEMENT PLAN

9.1.1 NOTIFICATION OF MINISTRY OF ENVIRONMENT, FOREST & CLIMATE CHANGE

The Government of India, Ministry of Environment, Forest & Climate Change, and New Delhi published Gazette Notification dated 9th December, 2016. The important features in respect of Educational Institutions are listed below

1	2	3	4	5
8		Building / Construction Projects / Area Development projects and Town ships		
8(a)	Building and Construction Projects	----	≥ 20,000 Sq.m and <1,50,000sqm.of built up area	The term built up area for the purpose of this notification is the built up or covered area on all floors put together including its basement and other service areas, which are proposed in the buildings and construction projects. Note.1 The projects or activities shall not include industrial shed , Universities, College, hostel for educational institutions but such buildings shall ensure sustainable environmental management , solid and liquid and implement environmental conditions given at Appendix-XIV.

The proposals given under shall comply with above Note-1 given in the table. The following details are covered.

(i) Availability of water resources near to the project site,

(ii) Ground water depth in the nearby areas,

(iii) Nearest common municipal solid waste management facility,

(iv) Presence of important floral and faunal species in the surrounding areas,

(v) Nearest industrial area from the project site,

(vi) Present practice being carried out for management of all type of waste (liquid and solid waste),

(vii) Ground water quality of the area,

(viii) Source of electricity near to the project site,

(ix) Presence of common Sewage treatment facility,

(x) Nearest coal based thermal power plant,

This project also aims to achieve 3-Stars in Green Rating for Integrated Habitat Assessment (GRIHA). Implementation of GRIHA considerations will further reduce the environment impacts of proposed project.

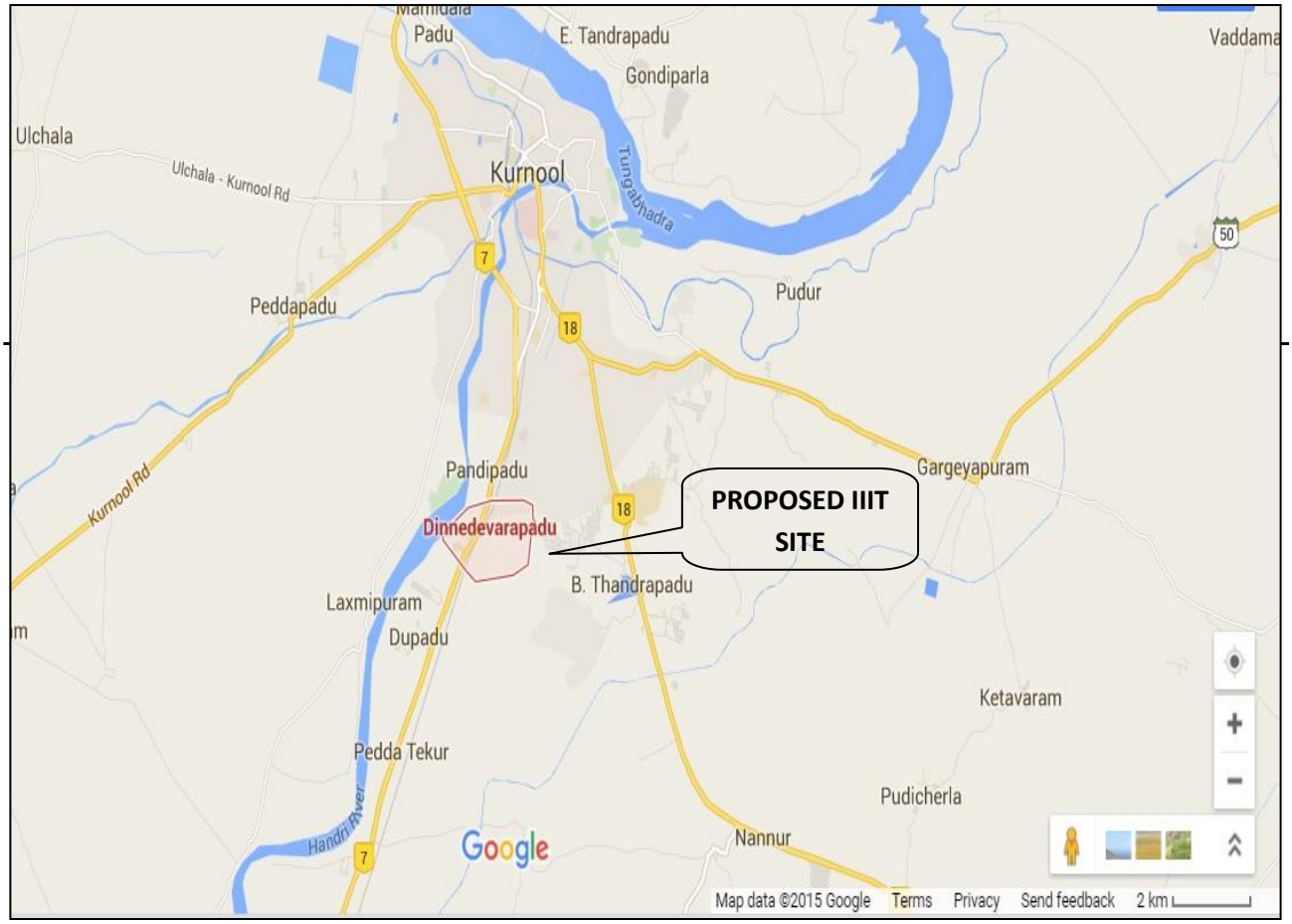
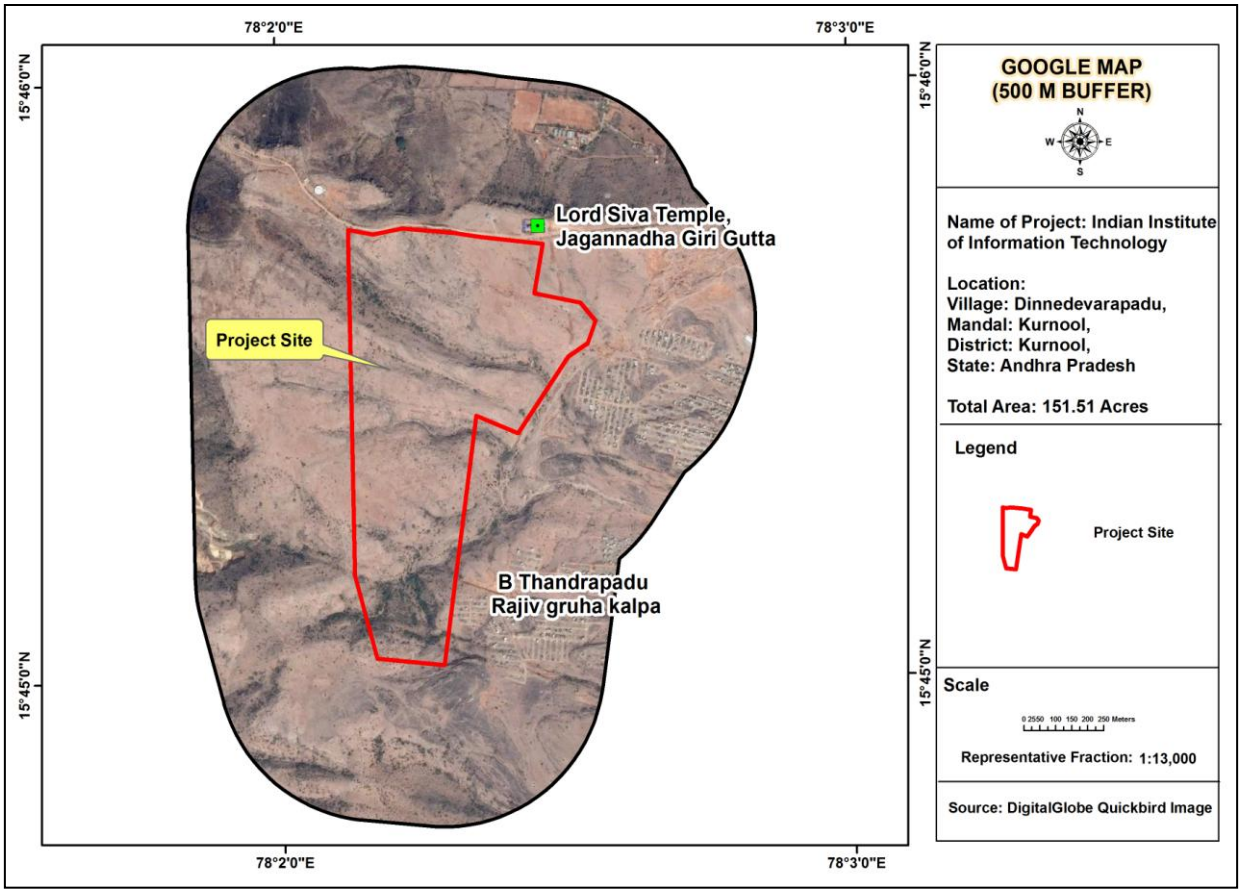


Figure – 1: Location Map of Proposed IIIT Site

The geographical location map showing the proposed project site for IIIT is shown in Fig. 1 above.The Project site is located in the **Dinnedevarapadu Gram Panchyat** in Kurnool Mandal of the state of Andhra Pradesh. Kurnool is known as an industrial town. In Kurnool, Food Fats and Fertilizers (FFF), produces soap oil, fertilizer raw materials and other food oil components (palm oil, vanaspati, rice bran oil) etc., is one of the larger industrial units. The proposed site well connected to National Highways from two side. NH-7 (connecting Bangalore to Hyderabad) is towards western side from the proposed site and it is about 2.5 KM from the project site. NH-18 (connecting Kurnool to Chitoor) is towards eastern side from the proposed site and it is about 2.5 KM from the project site. Handri River (a tributary of Tungabhadra River) is on the western side of the project site and it is at approx 3 km from the site. Proposed project site is hilly area. Elevation of the site varies from 325 m above mean sea level to 400 m above mean sea level.

Statutory Requirement	**Applicable Act/Rules/Notification**	**Competent Authority**	**Compliance Status**	**Remarks**
Environmental Clearance (EC) Built up area more than 20,000 sqm and less than 1,50,000sqm	Environmental Protection Act, 1986 & its subsequent amendment dated 09-12-2016- Schedule 8(a)	State Environmental Impact Assessment Authority (SEIAA), Andhra Pradesh	Environmental Management Plan shall be prepared as stipulated in the notification dated 09-12-2016 for implementation	Necessary intimation sent to the State Environmental Impact Assessment Authority as this is Educational building, total covered area 51259 sqm is less than 1,50,000sqm for which EIA is exempted.
The Mandatory conditions for covered area of buildings included is 51,259 sqm which is above 20,000 sqm and less than 1,50,000 Sqm hence the Environmental conditions regarding (i) Topography and Natural Drainage (ii) Water conservation , (iii) Rainwater Harvesting and Ground water recharge (iv) Waste Management (v) Air Quality and noise, (vi) Green cover (vii) Top soil preservation and reuse (viii) Transport are to be complied .				

9.2 SITE DESCRIPTION AND SURROUNDINGS (Figure-.2)



A Google image in **Figure- 2** given above depicts the surrounding features of the site within 500meter radius of the project site. The proposed site is well connected with National highway NH-7 and NH-18. The site falls under village **Dinnedevarapadu Gram Panchyat** under Kurnool Mandal of A.P.

Table-9.1: Site Surroundings Receptors

Name	**Distance (km)**	**Direction**
NH-7	2.5 KM	Western
SH-18	2.5 KM	Eastern

Table 9.2: Site Location

Proposed Project	IIIT, Kurnool
Location	**Dinnedevarapadu Gram Panchyat**
Latitude & Longitude	15°45' 35.39" N and 78° 02' 21.51" E

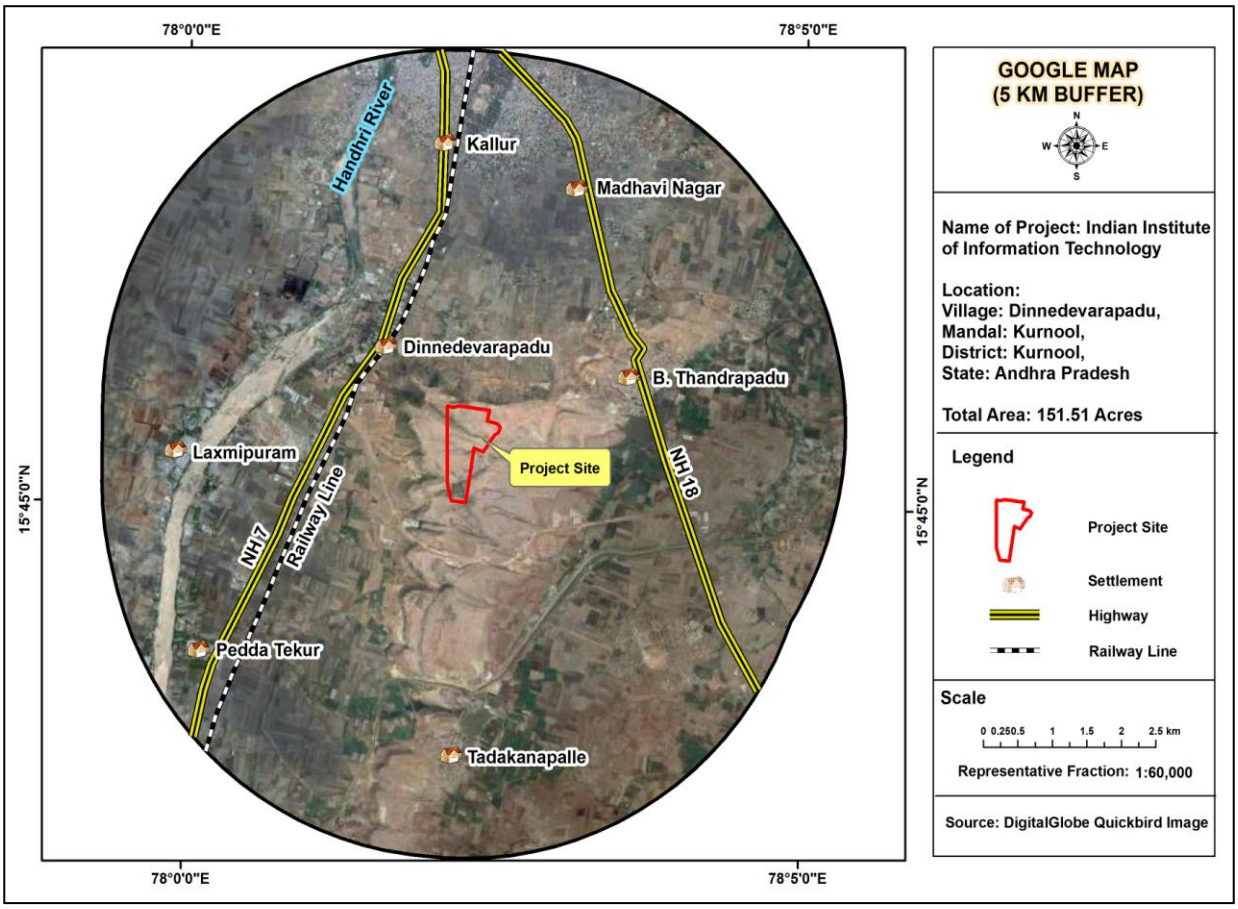
.**Figure: 2 Surrounding features within 500meter radius from the boundary of IIIT**

Table-9.3: Important Features Surrounding Project Site

Nearest Airport	The nearest airport is Rajiv Gandhi International Airport, at Hyderabad which is about 200 Km.
Railway Stations	Kurnool railway station ~10 km towards Northern side and Dupadu railway station ~4 km towards South-Western Side.
Institution	Rayalaseema University is on North-Eastern side. G Pulla Reddy Polytechnique College is on North-Eastern side
National Highway	NH-7 and NH-18

*All distances are aerial distances from the project site.

Further, another Google image given in **Figure - 3** depicts the surrounding features of the site within 5 kilometer radius of the project site..



Further, another Google image given in **Figure - 4 also** depicts the surrounding features of the site within 10 kilometer radius of the project.

Figure – 4: Surrounding features within 5 kilometer radius

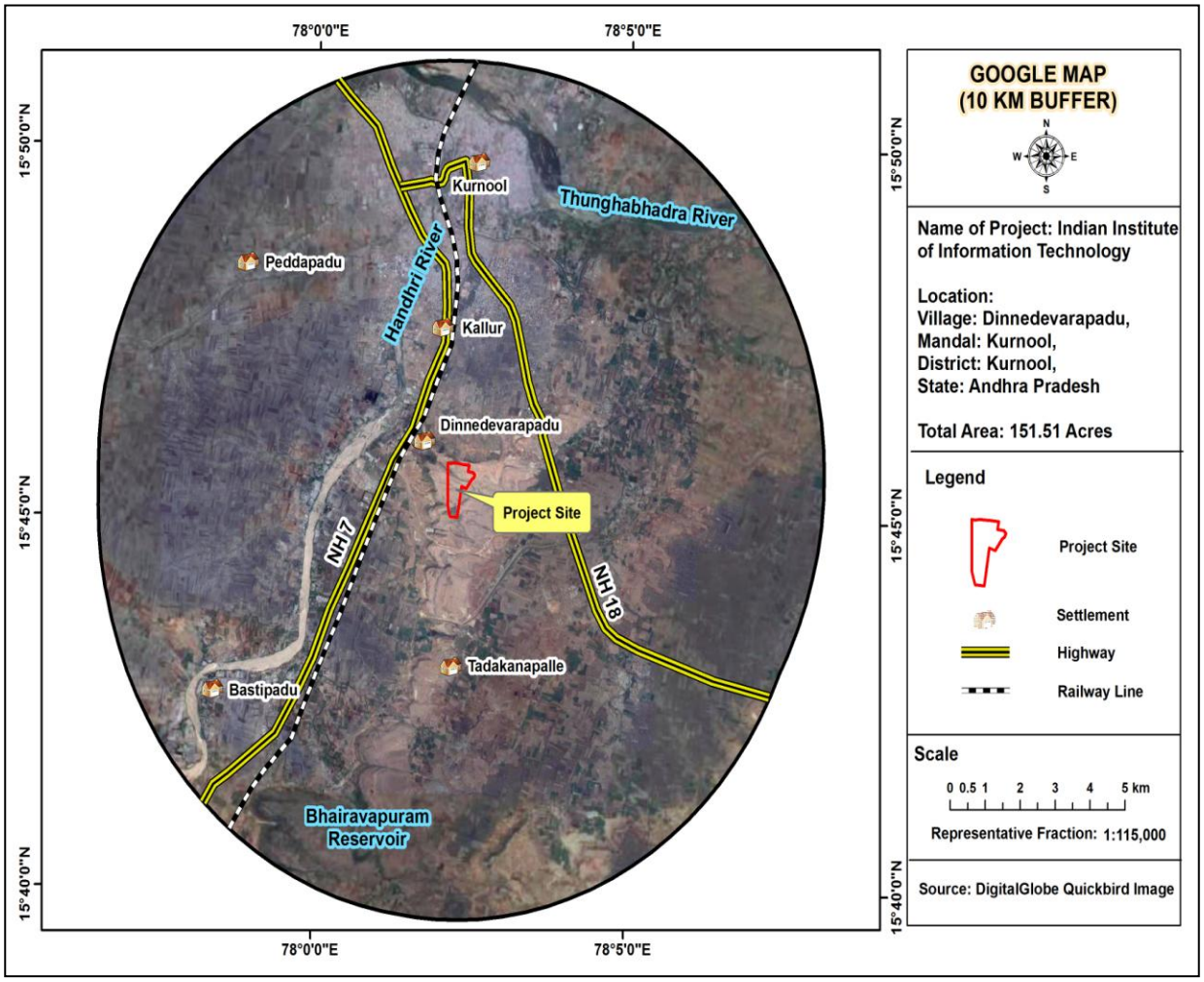


Figure – 4: Surrounding features within 10 kilometer radius

9.3 PHYSICAL CHARACTERSTICS OF THE PROJECT SITE

Rainfall and Climate

Kurnool lies on the banks of the Tungabhadra River. The Hundri and Neeva rivers also flow through the city. Proposed IIIT project site is located closed to Hundri River. The K.C. Canal (Kurnool–Cuddapah) was built by the Dutch for transportation, but presently it is being used for irrigation.

The climate is tropical with temperatures ranging from 26 °C (78.8 °F) to 46 °C (114.8 °F) in the summer and 12 °C (53.6 °F) to 31 °C (87.8 °F) in the winter.

Table-9.4: Climatic Data-Kurnool

Climate data for Kurnool (1971–2000)													
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
Record high °C (°F)	37.3 (99.1)	39.9 (103.8)	43.3 (109.9)	44.8 (112.6)	45.6 (114.1)	45.6 (114.1)	38.5 (101.3)	37.8 (100)	38.7 (101.7)	38.4 (101.1)	38.8 (101.8)	34.4 (93.9)	45.6 (114.1)
Average high °C (°F)	31.4 (88.5)	34.6 (94.3)	38.1 (100.6)	40.3 (104.5)	40.3 (104.5)	36.1 (97)	33.5 (92.3)	32.4 (90.3)	32.9 (91.2)	32.5 (90.5)	31.1 (88)	30.3 (86.5)	34.5 (94.1)
Average low °C (°F)	17.3 (63.1)	20.1 (68.2)	23.2 (73.8)	26.5 (79.7)	27.0 (80.6)	25.2 (77.4)	24.1 (75.4)	23.6 (74.5)	23.6 (74.5)	22.6 (72.7)	19.8 (67.6)	17.3 (63.1)	22.5 (72.5)
Record low °C (°F)	8.3 (46.9)	11.1 (52)	12.8 (55)	15.5 (59.9)	19.4 (66.9)	17.6 (63.7)	19.2 (66.6)	19.9 (67.8)	17.0 (62.6)	13.0 (55.4)	9.3 (48.7)	6.7 (44.1)	6.7 (44.1)
Average Precipitation (inches)	2.6 (0.102)	3.8 (0.15)	5.7 (0.224)	23.2 (0.913)	45.6 (1.795)	87.2 (3.433)	111.7 (4.398)	142.8 (5.622)	144.4 (5.685)	107.1 (4.217)	25.6 (1.008)	5.4 (0.213)	705.1 (27.76)
Average precipitation days	0.2	0.3	0.6	1.6	2.9	5.3	7.8	8.9	7.9	5.5	2.3	0.5	43.8
Source: India Meteorological Department (record high and low up to 2010)													

Rainfall:

The average annual rainfall of the district is 665.5mm, which ranges from nil rainfall in January and December to 139.6 mm in September. August and September are the wettest months. The mean seasonal rainfall distribution is 459.1mm in southwest monsoon (June-September), 133.7mm in northeast monsoon (Oct-Dec), 1.9 mm rainfall in Winter (Jan-Feb) and 70.8 mm in summer (March–May). The percentage distribution of rainfall, season wise, is 69% in southwest monsoon, 20.1 % in northeast monsoon, 0.3 percentage in winter and 10.6 % in summer. The annual and seasonal rainfall distribution with its departure from mean along with percentage distribution is given in **Table – 9.5.** The annual rainfall ranges from 482 mm in 2011 to 1082.2 mm in 2007. The annual rainfall departure ranges from -28 % in 2011 to 62% in 2007. The southwest monsoon rainfall contributes about 69 % of annual rainfall. It ranges from 338.5 mm in 2002 to 939.5 mm in 2007. The year 1999 and 2011 experienced drought conditions in the district as the

annual rainfall recorded in these two years is 27 % and 28% less than the long period average (LPA) respectively. The annual rainfall during 2012 is 615 mm.

Table – 9.5: The annual and seasonal rainfall distribution

Sl No	Year	Annual	SW	NE	WINTER	Sum-mer	SW (%)	NE (%)	Winter (%)	Summer (%)	Dep From LPA(%)
1	1999	483.0	366.0	47.0	2.0	68.0	75.78%	9.73%	0.41 %	14.08%	-27%
2	2000	922.0	731.0	120. 0	14.0	57.0	79.28%	13.02%	1.52 %	6.18%	38%
3	2001	718.2	384.0	283. 2	3.0	48.0	53.47%	39.43%	0.42 %	6.68%	8%
4	2002	558.5	338.5	139. 0	5.0	76.0	60.61%	24.89%	0.90 %	13.61%	-16%
5	2003	570.9	425.7	117. 2	0.0	28.0	74.57%	20.53%	0.00 %	4.90%	-14%
6	2004	643.5	386.8	101. 4	4.9	150.4	60.11%	15.76%	0.76 %	23.37%	-3%
7	2005	838.2	479.4	278. 3	6.3	74.2	57.19%	33.20%	0.75 %	8.85%	26%
8	2006	600.8	411.5	84.4	0.0	104.9	68.49%	14.05%	0.00 %	17.46%	-10%
9	2007	1082.2	939.5	74.8	3.0	64.9	86.81%	6.91%	0.28 %	6.00%	62%
10	2008	708.6	409.2	152. 5	12.8	134.1	57.75%	21.52%	1.81 %	18.92%	6%
11	2009	767.9	429.1	258. 4	0.1	80.3	55.88%	33.65%	0.01 %	10.46%	15%
12	2010	823.2	618.7	140. 2	4.1	60.2	75.16%	17.03%	0.50 %	7.31%	24%
13	2011	482.1	356.2	76.0	3.7	46.2	73.89%	15.76%	0.77 %	9.58%	-28%
		665.5	459.1	133. 7	1.9	70.8	68.99%	20.09%	0.29 %	10.64%	

GEOMORPHOLOGY, GEOHYDROLOGY AND LANDUSE:

Kurnool is surrounded by district of Mahabubnagar & district of Telangana State to the North, Anantapur district, Kadapa district to south, Prakasam district to east and Bellary District of Karnataka State to the west.

The landscape of the terrain in Kurnool district is dominated by the Erramala and Nallamalai Hill Ranges in the east and by low undulating terrain in the west. The various geomorphic units delineated have a direct bearing on the utilisation of the terrain. The pediplains in the western part are ideal for agriculture, urbanisation and industrial development.

GEOHYDROLOGY:

The quality of groundwater varies from place to place depending on the geological environment, climate, drainage conditions and pollution. The groundwater is generally neutral to alkaline with its value of pH ranging from 7.00 to 8.5. The chloride content here ranges from 28 to 525 ppm. The quality of groundwater in Cuddapah and Kurnool Formations is generally inferior in the central and eastern part of the district. The total dissolved soilds in many places exceed 1000 ppm. Water is generally alkaline in nature with pH from 7.3 to 8.4.

SOIL

It is important to know the soil strata of the campus for planning the foundation of various buildings and availability of water below ground level to be tapped for the purpose of construction as well as functioning of the Institute. The Soil Investigation Report states that the soil is predominantly fractured rock and composite elements of weathered rock and hard fractured rock layers. The Safe Bearing Capacity of soil recommended is 35metric tonnes per square metre at 1.00metre below ground level.

Drainage

The important rivers flowing in the district are the Tungabhadra, and its tributaries. namely the Handri, the Krishna and the Kunderu. Handri river and Tungabhadra river are located close to the project site and within the vicinity of 10 KMS from the project site. Tungabhadra rises in the western ghats and forms the northern boundary between Kurnool and Mahabubnagar districts. The Handri drains Pattikonda and Dhone areas and joins Tungabhadra near Kurnool Town. The excess storm water runoff available in the campus shall be discharged into the nearest stream or drainage system in concurrence with the local authorities.

Groundwater

Ground water occurs under unconfined conditions in shallow weathered zones and under semi confined conditions in joints, fissures and fractures. Occurrence of joints and fissures extends down to depth ranging from 20metre to 100 metre below ground level in the Kurnool district. It is noticed from the data available in the soil investigation report IIIT Kurnool campus that even up to a depth of 8.00 metres below ground level water table is not met with, hence suitable detailed investigation to be carried out by engaging special agencies to obtain

Hydrogeological report before resorting to number of bore wells of suitable diameter and depth keeping in view the quantum of water required for the daily use of the campus for effective functioning. Provision has been made for collection of Rainwater for domestic use in RCC sumps, ground recharging etc. It is emphasized that the conditions given in the exemption for Environmental Impact Assessment, particularly the aspects of (i) Natural Drainage (ii) Water conservation, (iii) Rainwater Harvesting and Ground water recharge shall be adhered to during construction and normal functioning.

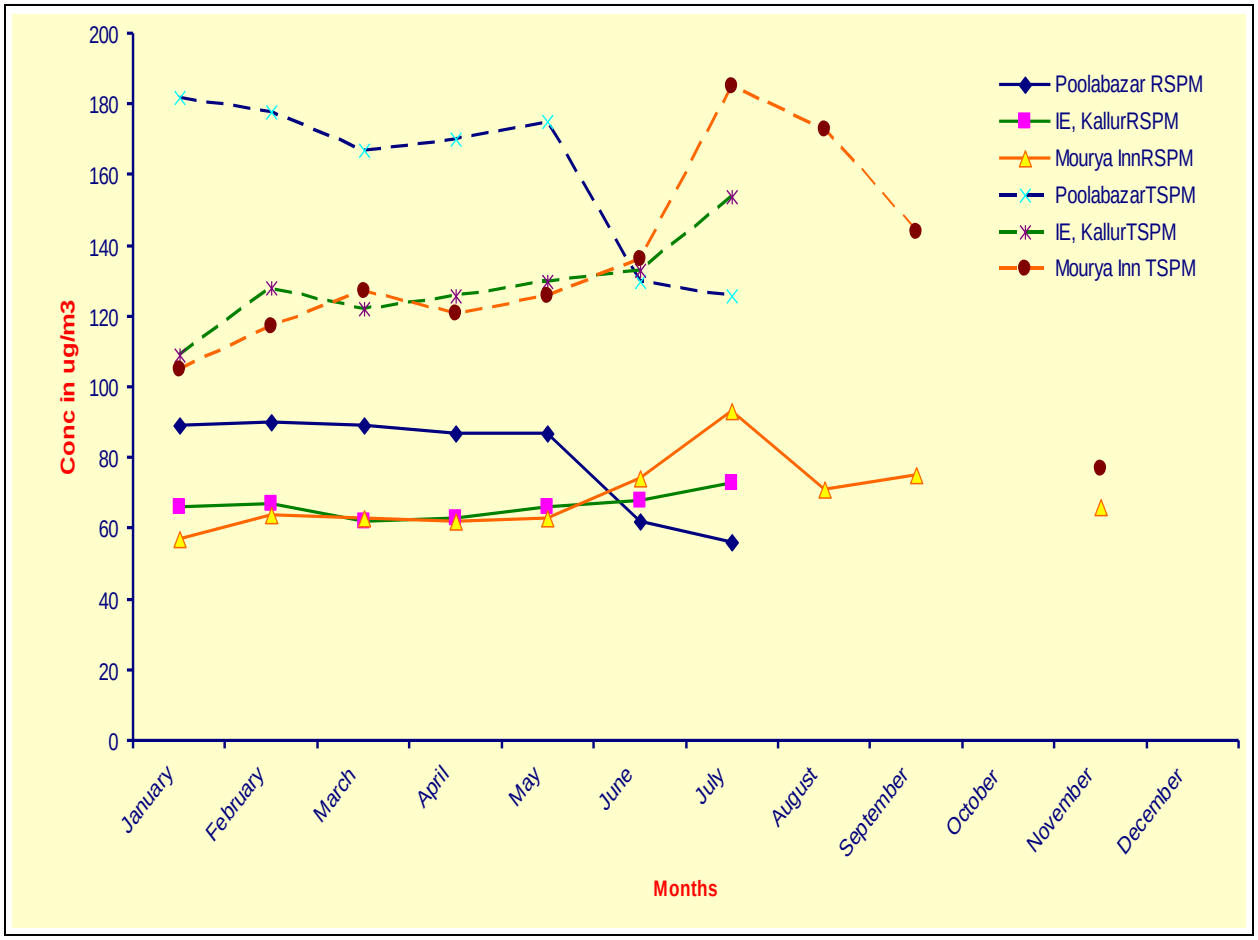
Artificial Recharge and Rainwater Harvesting:

As project site is located on hilly area different artificial recharge structures like percolation tanks, subsurface dykes, and contour bunds should be constructed, based on the technical feasibility, deep water level, depth of weathering, declining water levels and stage of ground water development in the area. The rainwater harvesting system shall be planned and implemented as being practiced and prescribed by the local authority, the Andhra Pradesh Pollution Control Board, Central Ground Water Board.

9.4 AIR QUALITY

There are three Ambient Air Quality Monitoring stations in Kurnool. They are:

1. Industrial estate Kallur representing industrial area
2. Poola bazaar representing commercial area
3. Krishna Nagar representing residential and commercial area.



Source: Andhra Pradesh Pollution Control Board

Figure -7: Monthly averages of RSPM and TSPM of Kurnool city for the year 2007

Observations:

- The concentrations of RSPM and TSPM are exceeding the NAAQS.
- The percentage of RSPM to TSPM is in the range of 50%.
- The RSPM concentrations ranged from 56-93 ug/m^3 and the TSPM concentrations are in the range of 105-182ug/m^3**.**
- The data was not available from August to December 07.

The above data is collected from the annual report of APPCB. This is representative data to show the baseline of the Kurnool region.

9.5 POWER

The power to be obtained through the **Power Distribution Company of A.P. Ltd.** which may be supplemented/augmented through non-grid solar power generation by installing solar panels. Techno-commercial feasibility of water heating and solar lighting system should be conducted. Also in order to conserve energy resources the principles of solar passive architecture must be explored to minimize thermal comfort within buildings.

9.6 ENVIRONMENTAL IMPACTS WITH MITIGATION

This section identifies and predicts the potential impacts on different environmental attributes due to the construction and operation of the proposed IIIT Kurnool. It details out all the possible potential impacts on biophysical and socio-economic components of the local environment due to the proposed project activities and sub-activities.

Prediction of impacts is the most important component in the assessment of environmental impact and formulation of Environmental Management Plan (EMP). Several qualitative as well as quantitative techniques and methodologies are used to conduct analysis of the potential impacts likely to occur as a result of the proposed development activities on physical, ecological and socio-economic environments. The

proposed institutional project would create impacts on the environment in two distinct phases:

- During the construction phase which may be regarded as temporary or short – term impacts.
- During the operation stage, this would have long term effects.

The negative impacts of the project will be mitigated/prevented/controlled by relevant regulatory activities. Details of the control and preventive measures are described in details in the subsequent sections.

9.7 Impacts on Land Environment

Proposed development of IIIT would include development of various academic buildings and infrastructure at various levels. Following are some of the impacts and mitigation measures of waste during construction and operation phase of the project.

9.7.1 Impacts of waste & their mitigation measures in IIIT during Construction phase:

The average quantity of waste generated from the proposed IIIT during construction phase would be inert waste from the construction activities (mainly comprising of clay, sand, gravel, brick, concrete, concrete block, asphalt, pipes, conduits, steel waste etc.) which would be used at the project site for internal leveling (wherever required), internal road construction, filling material, in construction of boundary wall etc. It is suggested to maximize the reuse of recyclable wastes, safe disposal of non-reusable wastes from the site to reduce the impact to insignificant levels.

Secondly, waste generated from the labour camp would be in the form of garbage. Mostly garbage would be organic in nature and it can be converted into compost by natural vermin composting method. Littering of waste would be prohibited by organizing proper training and awareness camp. The applicable provisions of Municipal Solid Waste (Management and Handling) Rules 2000 as amended will be followed.

9.7.2 Impacts of waste generation and their suitable management during IIIT operation

The overall waste expected to be generated from proposed IIIT project during operational phase can be identified and categorized as follows:

- Solid Waste.
- Hazardous Waste.
- E-Waste.
- Battery waste.

9.7.3 Type of Waste and their proposed management practices:-

1. **Solid Waste–**The proposed project site is within limit of Municipal Corporation. Possibilities of using Common Municipal Solid Waste Management Facility located in city to be explored. There is One Compost yard to an extent of 56.00 acres situated at Gargeyapuram and 215 M.T.'s of garbage is being lifted and transported from various sanitary divisions of the city to the compost yard at Gargapuram. Presently, there is a proposal for purchasing / acquiring separate lands at various places nearer to the sanitary divisions of **Kurnool and Kallur** areas for providing compost yards by shifting the existing compost yard from Gargapuram and also initialization of solid waste management plant for treatment of wastage in scientific method. So that the wastage will be disposed and gain some financial benefit to the Corporation.

   There is no solid waste processing and disposal facility is functional near to the proposed project site. However, if it would not be possible to accommodate waste from proposed IIIT in the 56.00 acres land at Gargeyapuram there will be requirement to develop waste management facility within the campus only. Bio-degradable waste can be managed in the campus by means of organic waste converter or conventional vermin-composting technique suited as per site condition. Total municipal solid wastes estimated to be generated in full fledge

will be approx. **310 kg/day**. Regarding temporary storage of different kind of wastes, bins or containers will be suitably placed at various locations.

(a) **Biodegradable waste:**-Management through mechanical organic waste converter or conventional vermin-composting technique.

(b) **Recyclable waste:** - After segregation of waste at the site recyclable waste will be managed by authorized recycler in the nearby vicinity. A legal agreement for their disposal must be signed between IIIT and authorized waste recycler. Recyclable or non-recyclable waste will be kept separated in bins with color coding of 20 Liter capacity.

(c) **Inorganic Waste**: - (Apart from biodegradable and recyclable) shall go for sanitary land filling at government approved Landfill site. A Memorandum of Understanding shall be made with the authorized Municipal Solid Waste operator of a facility for safe disposal of inorganic waste and relevant record shall be maintained regarding disposal.

Outside the building, community bins will be kept of a capacity of 100 L depending on the waste generation. One vehicle will be dedicated for Collection of waste. Manpower required for the collection of Municipal Solid Waste is 10 to 15. Two-wheelers hand cart will be provided for the purpose of collection of Municipal Solid Waste. Segregation of solid waste will be done in different colored bins viz: *green bins* for **biodegradable waste** and *blue bins* for recyclable waste.

2. **Hazardous waste**-The overall generated hazardous waste will be managed by Hazardous waste Management's operator of a facility by undergoing appropriate agreement as per amended Hazardous Waste (Management, Handling and Trans-boundary Movement) Rules 2008. As per the prevailing rules to ensure compliance with the conditions on a continual basis, Hazardous wastes would be stored in secured places with adequate secondary containment and labeling (in Form-8) as per the Hazardous Wastes (Management, Handling and Trans-boundary Movement) Rules 2008. Appropriate records of hazardous wastes generation and disposal (in Form-3, Form-4, Form-9, Form-13 etc.) shall be maintained as per the requirements of above mentioned rule. The proposed IIIT is expected to generate following categories of hazardous wastes:

- Used Oil (Category 5.1, as per Schedule-1 of the Rules) - from DG sets Oil
- Contaminated Wastes (Category 5.2, Schedule-1) - from cleaning of DG sets, maintenance operations etc.

The used oil and oil-contaminated wastes shall be disposed of through authorized recyclers/re-refiners. Any other hazardous wastes, generated on-site, shall be sold only to authorized operators under A.P. pollution control Board. Black colored bins shall be used for the disposal of any hazardous waste to be generated at the proposed site.

3. **E-Waste**- The E-waste disposal would be done with the help of Authorized local recycler/dismantler of a facility and disposed-off as per E-waste (Management and Handling) Rules, 2011. At the site, proper segregation and storage of the waste would be done. The disposal plan would be developed to follow the environmental norms set by the local regulatory body i.e. APPCB. Overall it would be ensured that all waste fractions are appropriately recycled/ disposed of through authorized recyclers. Records would be kept regarding amount and characteristics of all types of wastes. As this is an institutional Project, bulk

amount of electronic goods to be during fully operational of the proposed project and thus the proposed IIIT shall come under category of bulk consumer as per E-waste (Management and Handling rules), 2011. Therefore, it is advisable to procure the electronic goods up to maximum extent from authorized manufactures who have framed extended manufacturer's responsibility in their policy so that the electronic goods after their end use can be go under buy back to the company from which they originally purchased. Apart from end used bulk electronic goods rest of the scrap shall be sent to E-waste recycling operator of the facility.

Table – 9. 6: E-waste to be generated from the proposed IIIT

S. No	Electronic Waste
1.	E-waste- Circuit boards, CRTs, Electronic parts, weld waste
2.	Fluorescent lamps intact and crushed, halogen lamps, arc lamps, UV lamps, high pressure sodium lamps, neon lamps, incandescent lamps.
3.	Mercury containing lamps/tubes, mercury vapor lamps, Mercury containing devices

4. **Battery waste** - Used Lead Acid battery waste will be managed by local competent operator of a facility authorized by APPCB under Batteries (Management and Handling) Rules, 2001 as amended

9.7.4 Green Belt Development

(A qualified Horticultural consultant well versed with the best Locally practiced landscaping works shall be engaged for framing Landscape Planning. The goal of landscaping work shall be identifying suitable fast growing species, with economical consumption of water, sustainable during summer, generating less amount of dry leaves.)

9.8 IMPACTS ON AIR ENVIRONMENT

Proposed development of IIIT at Kurnool includes construction of various academic buildings and other infrastructure. Following are some of the impacts and mitigation measures for controlling ambient air pollution during construction and operation phase of the project.

9.8.1 Impacts on Ambient Air quality & their mitigation measures by Construction of IIIT :

following types of impacts on the ambient air environment anticipated:

- Fugitive Dust Emission
- Gaseous Emission

Sources of Fugitive Dust Emission shall be movement of vehicle caring construction materials and land preparation activities, loading and un-loading, etc. The building material carrying vehicles as well as the construction machinery generate dust emissions in terms of particulate matter (PM_{10}) and deteriorate the AAQ. Construction machineries pose a special threat to air quality. Source of Gaseous emission during construction phase would be temporary Diesel Generator sets installed at the project site.

Dust Suppression and soil conservation from erosion

The most cost-effective dust suppressant applied to mitigate airborne dust is water, because of its efficiency as well as ready availability at the project site. Water can be applied using handheld sprays and automatic sprinkler systems depending on the location. Thus, Fugitive dust will be controlled by sprinkling of water at the site.

Material storages / warehouses – Care would be taken to keep all material storages adequately covered and contained so that they are not exposed to situations where winds on site could lead to dust / particulate emissions. Fabrics and plastics for covering piles of soils and debris is an effective means to reduce fugitive dust. Further, Paving is a more permanent solution to dust control, suitable for longer duration projects. High cost is the major drawback to paving.

Emission Control for Construction Equipment and Vehicles

Construction equipment and heavy transport vehicles shall meet emission standards like Bharat Stage –Stage-IV requirements for vehicles. Reducing the speed of a vehicle to 20 km/h can reduce emissions by a large extent. Recognizing that significant emission

reductions can be achieved through regular equipment and vehicle maintenance, all site contractors will be asked to take necessary steps for proper maintenance of vehicle and equipment's. On-Road- Inspection should be done for black smoke generating machinery.

9.8.2 Impacts on Ambient Air quality & their mitigation measures during IIIT operation

During the operational phase, the DG sets to be operated for back-up power supply are the major source of air pollution. The point source of gaseous pollutants would be emissions from the DG sets; this will be controlled by maintaining proper stack height. Hence, there would not be any significant increase in the concentration of PM_{10}, $PM_{2.5}$, SO_2, NO_2 & CO. The Pollution under Control (PUC) certification will be ensured for the vehicles coming on the site at regular basis. Six monthly monitoring of D.G. stack will be done to keep a check on emissions. A port hole in the D.G. stack shall be provided to collect emission samples. The port hole shall be located at a height of either 8*d from the bottom of the stack or 2*d from the top of the stack, where'd' is the diameter of the stack.

Stacks for D.G. Sets

Adequate stack height of all DG sets would be maintained as per the CPCB norms. During the installation of heights of DG Sets the conditions specified in The Environment Protection Act, 1986 and their subsequent amendment shall be complied. All D.G. sets will run on High Speed Diesel (HSD), which has ultra-low sulphur content. This will ensure minimum emission of sulphur from the D.G sets.

9.8.3 Impacts on Noise Environment

Proposed IIIT includes construction of academic buildings and other substructure. Following are some of the impacts and mitigation measures for controlling ambient noise pollution during construction and operation phase of the project.

9.8.4 Impacts on Ambient Noise quality &their mitigation by Construction of IIIT During the construction phase of the site, the main source of noise pollution would be

Construction equipment, transportation activities and noise from DG sets and in line of requirement following mitigation measures proposed.

Restriction of Time of Construction: The heavy construction and transport activities shall be restricted to daytime operation when the background noise levels are high so that impacts like sleep disturbance during the night time are avoided.

Provision of Noise Barrier: All around the construction activity area on the site periphery, about 2.5 meter high barrier (temporary) shall restrict the noise impact from the ground level construction activity by about 10 dB(A).

Proper Maintenance of Construction Equipment/Vehicles: Proper operation and maintenance of heavy equipment as well as transport vehicles shall also ensure lower noise emissions.

Occupational & Passive Protection: Ear plugs, ear muffs, etc. provided to workers handling high noise equipment or stone cutting operations shall protect them from high noise exposure.

9.8.5 Impacts on Ambient Noise quality &their mitigation during IIIT operation

During operational phase of the project, the major source of noise would be of DG sets. The impact of the traffic activity on the noise and vibrations will not be significant as the number of vehicle movement due to the project will be not very significant in comparison to the existing vehicular movement on NH-7 & NH-18.

Provision of Enclosures for DG Sets

As regards DG sets, these shall be provided with acoustic chambers ensuring maximum outside noise level of 70-75 dB (A) at 1.0 m distance. The noise level of DG sets will be maximum 70 dB (A) (at 1.0 m distance) as per the prescribed compliance standards of the MoEF&CC. The resultant outside noise level expected from DG sources in simultaneous operation but housed in an efficient acoustic enclosure shall not exceed 75 dB (A). The

DG sets will be operated only during power deficient hours. However, as they will be acoustically enclosed, not significant impacts are expected on the outside community.

Control of noise from road traffic

Two rows of Trees with heavy foliage planted on both sides of carriage way help slightly muffle the noise provided the foliage extends for a considerable distance of 30m or above.

9.9 IMPACTS ON WATER ENVIRONMENT

Construction activities for the proposed project can have non-significant impact on the water environment. Potential impacts on the surface and ground water quality have been discussed as under:

9.9.1 Impacts on Water quality & their mitigation during construction phase of IIIT

Employment of local construction workers, there would be fewer requirements to provide facility for the stay of workers onsite, which in turn decrease the consumption of domestic water and also generation of waste water during construction phase. A small labour camp can be set up either at the project site or at a suitable location from where the project site is easily accessible. For the treatment of waste water generated during the construction phase a modular compact STP of adequate capacity can be installed at the site. To mitigate any impacts, it would be ensured that construction materials and wastes stockpiles are moved on a periodic basis to prevent any stockpiles.

Table – 9.7: Management of Waste Water during construction phase

S. No	Possible Aspect	Probable Impact	Mitigation measures
1	Wastewater generated from the construction areas and construction materials stocks	Soil Erosion	***sedimentation basins*** can be made to ensure reuse of supernatant water in order to reduce raw water consumption
		Groundwater contamination	
2	DG spent Oil	Surface Run-off	Oil Grease Trap

3	Washing of Vehicle	Groundwater contamination	***Sedimentation Basin*** shall settle the suspended solid generated
4	Wastewater generation	Groundwater contamination	Mobile STP
		Soil Erosion	Soak pit/septic tank may be constructed for management of insignificant quantity of construction wastewater
		Water stagnation	

9.9.2 Impacts on Water quality & their mitigation during operational phase of IIIT

During this phase, two basic activities related to impacts on water environment are:

a. ***Procurement of water:*** Water requirement for the proposed institution would be met from abstraction of groundwater after obtaining due consent from competent authority.

b. ***Release of wastewater:*** While developing the water system for the project, utmost care would be taken to maximize the recycle/ reuse of sewage and minimize waste water quantity. Zero Discharge system shall be adopted by designing a dual plumbing system, and reuse of treated sewer after treatment in Sewage treatment plant.

The ground water at the site comes under Safe Zone as per ground water profile of CGWB. Therefore, abstraction of groundwater can meet the overall water requirement after obtaining due consent. Care should be taken while pipe installation and PVC pipe hereby recommended due corrosive nature of groundwater.

Waste Water Treatment

Waste water would be generated as sewage from the proposed project site. Considerable impact from wastewater would occur if this would not be treated properly before disposal or reuse. Hence, proper arrangement of disposal of wastewater would be require. While developing the water system for the project, utmost care would be taken to maximize the recycle/reuse of sewage and minimize waste water quantity. Sewage would be treated in the STP.

Proposed Waste Water Treatment Scheme: Waste water to be generated from the proposed IIIT would be treated in the Sewage Treatment Plant (STP). The technology for treatment will be based on the quality of inlet water. As this is an educational infrastructure development project, the waste water will be generated mainly from domestic sources only. The best possible technology that can be employed to treat sewage shall be **MBR** technology**.**

Table – 9.8: Environmental Impact Matrices of the proposed project activity

S No	Parameter	Negative Impact	No Impact	Positive Impact	Short Term Impact	Long Term Impact
A. Impact On Land Environment						
i.	Change of Land use pattern			*		*
ii.	Impact on Soil Quality	*			*	
iii.	Soil Erosion	*			*	
B. Impact on Water Environment						
i.	Change in Natural drainage pattern		*			
ii.	Pollution at Construction site	*			*	
iii.	Impact on water quality		*			
iv.	Increased water Demands	*				
C. Impact On Air Environment						
i.	During Construction	*			*	
ii.	During Operation	*			*	
D. Impact on Noise Environment						
i.	During Construction	*			*	
ii.	During Operation	*			*	
E. Impact on Biological Environment						
i.	Impact on Fauna	*			*	
F. Impact on Socio Economic Environment						
i.	Employment opportunity			*		*
ii.	Education			*		*

Chapter 10

FINANCIAL PLAN FOR SETTING UP IIIT, ANDHRA PRADESH

10.1 FINANCIAL REQUIREMENT

The financial estimates have been categorized under two different categories namely:-

a) Capital Cost of the New Campus

b) Recurring cost of the New Campus.

10.2 TOTAL PROJECT COST

The total project cost for initial five academic years worked out by consolidating the cost of two categories mentioned above. Total Project cost as well as Category/ year wise break-up has been shown below in Table 10.1 (a) and 10.1 (b) respectively.

Table 10.1 (a): Project Cost Estimations (Rs. in crores)

S. No.	Name of Building	Total covered (Area in sqm)	Rate per sqm(in Rs.)	Total (amount in Crores)
A	BUILDING CONSTRUCTION COST			
1	Academic & Admin	15214	35935	55
2	Employee Residence (96nos)	12370	27414	34
3	Student Accommodation (1260students)	18475	31015	57
4	Amenities & Utilities	5200	28266	15
	TOTAL BUILDING -(A)	51259		161
B	SITE DEVELOPMENT			
	Cost of Compound Wall for 4000 mtr. length	4000 m	9763	4
	Development of Site	102518	2335	24
	TOTAL SITE DEVELOPMENT–(B)			28
	Total (A+B)			189
	Add: Cost Index for 1.4.2017 (17%)	0.17		32
	Total Construction Indexed Cost (I)			221
C	Part HVAC & Security & Surveillance			3
D	Equipment and Furnishing Cost (D)			8
E	Add Consultancy charges (3% of (A+B+C)i.e on Rs.192 Cr.			6
F	Add contingency (3% of (A+B+C)i.e on Rs.192 Cr.			6
G	Add Taxes etc charges (6% of (A+B+C) i.e. on 192 Cr.			12
	Grand Total(I +C+D+E+F+G)			256

Table 10.1 (b): Project Cost Estimations Year wise Plan (Rs in crores)

S. No.	Name of Building	Total (in Rs. Crore)	A.Y. 1 (2015-16)	A.Y. 2 (2016-17)	A.Y. 3 (2017-18)	A.Y. 4 (i2018-19)	A.Y. 2 (2019-20)
A	BUILDING CONSTRUCTION COST						
1	Academic & Administrative Building	**55**	-	-	2.00	31.20	21.80
2	Faculty Residence	**34**	-	-	2.00	14.00	18.00
3	Student Accommodation	**57**	1.95	11.45	13.30	17.00	13.30
4	Amenities & Utilities	**15**	-	-	0.50	8.00	6.50
	TOTAL BUILDING COST - (A)	**161**	1.95	11.45	17.80	70.20	59.60
B	SITE DEVELOPMENT COST - (B)						
1	Compound Wall for 4000 metre length	**4**	-	-	0.40	2.10	1.50
2	Development of Site	**24**			0.90	12.10	11.00
	Total (A+B)	**189**	1.95	11.45	19.10	84.40	72.10
	Add: Cost Index	**32**	-	-	1.90	16.00	14.10
	Total Construction Indexed Cost (1)	**221**	1.95	11.45	21.00	100.40	86.20
C	Part HVAC and Surveillance system	**3**	-	-	1.00	1.00	1.00
D	Equipment and Furnishing Cost	**8**	-	-	2.00	3.00	3.00
E	Add :- Consultancy Charges @ 3 % on (A+B+C)	**6**	-	0.30	0.50	2.80	2.40
F	Add 3 % Contingency on Total (A+B+C)	**6**	0.05	0.25	0.50	2.80	2.40
G	Add taxes etc. charges @ 6% on (A+B+C) on Rs.192. crores.	**12**	0	0	1.00	6.00	5.00
	Grand Total(I +C+D+E+F+G)	**256**	**2.00**	**12.00**	**26.00**	**116.00**	**100.00**

The Institute has already initiated its first year of operation from IIITDM, Kancheepuram. As it is operational in the available infrastructure of IIITDM, Kancheepuram, cost towards capital expenditure is taken as nil for the transit campus.

10.3 CAPITAL EXPENDITURE OF NEW CAMPUS

10.3.1 As per rough cost estimations, the total space requirement for construction of new complex of IIIT-Andhra Pradesh, will be 51259 sq.m.as given in Table 8.6 in Chapter 8.

10.3.2. On the basis of the cost estimates towards Building and Civil Works **(as per CPWD PAR 2012)**, the total requirement of Furniture, equipment's and teaching aids etc., the Capital Expenditure of new Campus has been categorized in Two major categories namely:-

a) Capital Expenditure on Building and Civil- works including Land development, Allied development provisions and Infrastructure development.

b) Cost towards procurement/ Installation of Lab- Equipment's, Office Equipment's, Teaching- Aids/ equipment's and Furnishing Cost etc.

The cost towards procurement/ Installation of Lab- equipment's, Office Equipment's, Teaching- Aids/ equipment's and Furnishing Cost etc has been arrived at on average basis without considering any specific make of the equipment/ Item.

The Total estimated capital expenditure has been worked out to be **Rs. 256 crores** and it is proposed that the Construction Phase will be over by the end of the Fifth Year. The Detailed break-up of estimated expenditure has been shown below in Table 10.2.

Table 10.2: Capital Cost Estimations of New Campus (Rs in crores)

Sl. No.	Name of Building	Total Covered Area in sq mtrs	Rate per sq mtr (in Rs.)	Total (in Rs. Crore)	A.Y. 1 (2015-16)	A.Y. 2 (2016-17)	A.Y. 3 (2017-18)	A.Y. 4 (i2018-19)	A.Y. 5 (2019-20)
A	BUILDING CONSTRUCTION COST								
1	Academic & Administrative Building	**15214**	**35935**	**55**	-	-	2.00	31.20	21.80
2	Faculty Residence	**12370**	**27414**	**34**	-	-	2.00	14.00	18.00
3	Student Accommodation	**18475**	**31015**	**57**	1.95	11.45	13.30	17.00	13.30
4	Amenities & Utilities	**5200**	**28266**	**15**	-	-	0.50	8.00	6.50
	TOTAL BUILDING	**51259**		**161**	1.95	11.45	17.80	70.20	59.60

Sl. No.	Name of Building	Total Covered Area in sq mtrs	Rate per sq mtr (in Rs.)	Total (in Rs. Crore)	A.Y. 1 (2015-16)	A.Y. 2 (2016-17)	A.Y. 3 (2017-18)	A.Y. 4 (i2018-19)	A.Y. 5 (2019-20)
	COST -(A)								
B	SITE DEVELOPMENT COST - (B)								
1	Compound Wall for 4000 metre length	**4000m**	**9763/mtr**	**4**	-	-	0.40	2.10	1.50
2	Development of Site	**102518**	**2235**	**24**			0.90	12.10	11.00
	Total (A+B)			**189**	1.95	11.45	19.10	84.40	72.10
	Add: Cost Index			**32**	-	-	1.90	16.00	14.10
	Total Construction Indexed Cost (1)			**221**	1.95	11.45	21.00	100.40	86.20
C	Part HVAC and Surveillance system			**3**	-	-	1.00	1.00	1.00
D	Equipment and Furnishing Cost			**8**	-	-	2.00	3.00	3.00
E	Add :- Consultancy Charges @ 3 % on (A+B+C)			**6**	-	0.30	0.50	2.80	2.40
F	Add 3 % Contingency on Total (A+B+C)			**6**	0.05	0.25	0.50	2.80	2.40
G	Add taxes etc. charges @ 6% on (A+B+C) on Rs.192. crores.			**12**	0	0	1.00	6.00	5.00
	Grand Total(I +C+D+E+F+G)			**256**	**2.00**	**12.00**	**26.00**	**116.00**	**100.00**

10.4 RECURRING COST OF NEW CAMPUS

The Recurring Expenditure of the Institute in its new Campus from Forth year onwards till seventh year has been estimated to be **Rs. 39.50 crores**. The Recurring cost includes:

a) Employees Remuneration,

b) Cost of Electricity and water charges,

c) Cost of General Administrative Expenses

d) Outsourcing Expenditure

e) Scholarship.

The Total Recurring Cost of the New Campus is shown below in Table 10.3

Table 10.3 Estimations of Recurring Cost of New Campus (Rs in crores)

Particulars	Total	2015-16	2016-17	2017-18	2018-19	2019-20
Employees Remuneration	23.48	0	0	3.47	6.11	13.90
Electricity Water Expenses	5.72	0	0	0.92	1.80	3.00
General& Administrative Expenses	2.70	0	0	0.70	1.00	1.00
Outsourcing Expenditure	1.80	0	0	0.30	0.60	0.90
Scholarships	5.80	0	0	0.60	1.80	3.40
Total	**39.50**	**0**	**0**	**5.99**	**11.31**	**22.20**

10.4.1 Employees Remuneration and Benefits for On- Roll staff

The employees' costs, pay structures for various categories of staff have been considered as per 6th pay commission norms of IIIT's. The employees' costs also include cost of other benefits like Medical Re-imbursement, LTA, Education Allowance, Retirement Benefits etc. Since the period of estimation is spread over to next seven years therefore to cover the future inflation costs an increment of 8% has been provided every year. In order to calculate Cost towards other emoluments/ benefits to staff a provision of 20 to 23% has been made every year on the Salary Cost.

10.4.2 Outsourcing Expenditure

The Cost of per contractual employee/per year has been estimated on the basis of prevailing rates of the area. Since the period of estimation is spread over to next seven years therefore to cover the future inflation costs an increment of 8% has been provided every year.

Requirement of Security Staff has been calculated as per the prevailing practice in IIITDM Kancheepuram. It has been assumed that the single shift be of eight hours per day. As such there will be three shifts in a day

10.4.4 Electricity and Generator Backup Expenses

This estimation is based on the total requirement of electricity Consumption and prevailing electricity rates for educational institutes

10.4.5 General and Administrative Expenses

These expenses are related to printing & stationery, water charges, telephone, fax, postage, advertising and publicity, traveling and conveyance, Training, committee Meetings, other administrative expenses and contingencies. The expenses have been estimated keeping in view the total strength of students as well as total staff in campus of the Institute as given in Chapter 4 and Chapter 7.

The Expenditure has been projected in table 10.4

Annexure 1: BUILT-UP SPACE FOR STUDENT HOSTELS

S.No.	Category of Buildings	Room Name	Unit Size (Sqm.)	Area
1	2	3	4	
(i)	Boys Hostels	UG & PG Students	The total students strength is 1260 Nos. Based on the yardstick of @ 15Sqm per student the total area works out to = 18900 However restricted to 18475 sqm.	
(ii)	Girls Hostel	UG & PG Students :		
(ii)	Mixed Hostels	UG , PG & Research Scholars		18475 sqm

Annexure 2 BUILT-UP SPACE FOR ACADEMIC & SUPPORT STAFF RESIDENCES

S.No.	Name of Buildings	Category	Plinth Area per Unit in sqm.	No. of Units	Area (Sqm.)
	Academic & Support Staff Housing and Amenities				
		Director's Bungalow	380	1	380
		Type -VI	269	4	1076
		Type V:	201	10	2010
		Type I V:	128	20	2560
		Type III :	80	30	2400
		Type II:	70	30	2100
		Transit Hostel Accommodation			1844
				Total	**12370**

Annexure 3 BUILT-UP SPACE REQUIREMENT FOR GENERAL AMENITIES

S. No.	Category of Buildings	No. of units	Area per Unit	Gross Area (Sqm.)
1	Utilities for functional requirements and services	1	2500	2500
2	Mess Block s	2	1100	2200
3	Commercial Facilities	1	500	500
			Total	**5200**

Annexure 4 BUILT-UP SPACE REQUIREMENT FOR THE ACADEMIC COMPLEX

S.No.	Description	Category of Buildings	Room Name	Unit Size Carpet area (Sqm.)	No. of Rooms	Total Area (Sqm.)
1	2	3	4	5	6	8
A	**Department of Computer Science & Engineering**				**	
1		Laboratories	UG Laboratories	100.00	8	
2			PG Laboratories	100.00	6	
3			Research Laboratories	100.00	4	
4		Other Functions	Office of HOD	40.00	1	
5			Faculty Offices	15.00	25	
6			Research Scholars Cubicles (each with 10 cubicles @ 5sq m per cubicle)	50.00	20	
7			Department Office	30.00	1	
8			Seminar Room-cum-Committee Room	75.00	1	
9			Store	50.00	1	
10			Department Library	50.00	1	
11			Computational room	50.00	2	
12			Faculty & Student Common Room	100.00	1	
13			Pantry	10.00	1	
	Total Plinth Area considered for **Computer Science & Engineering Branch**					1900 Sqm
	** Area and Nos. of rooms given are tentative					

S.No.	Description	Category of Buildings	Room Name	Unit Size Carpet area (Sqm.)	No. of Rooms	Total Area (Sqm.)
1	2	3	4	5	6	8
B	**Department of Electronics & Communication Engineering**				**	
1		Laboratories	UG Laboratories	100.00	8	
2			PG Laboratories	100.00	6	
3			Research Laboratories	100.00	4	
4		Other Functions	Office of HOD	40.00	1	
5			Faculty Offices	15.00	25	
6			Research Scholars Cubicles(each with 10 cubicles @ 5sq m per cubicle)	50.00	20	
7			Department Office	30.00	1.00	
8			Seminar Room-cum-Committee Room	75.00	1.00	
9			Store	50.00	1.00	
10			Department Library	50.00	1.00	
11			Computational room	50.00	1.00	
12			Faculty & Student Common Room	100.00	2.00	
13			Pantry	10.00	1.00	
	Total Plinth Area considered for **Electronics & Communication Engineering**					1900Sqm
	** Area and Nos. of rooms given are tentative					

S.No.	Description	Category of Buildings	Room Name	Unit Size Carpet area (Sqm.)	No. of Rooms	Total Area (Sqm.)
1	2	3	4	5	6	8
C	**Department of Mechanical Engineering**					
1		Laboratories	UG Laboratories	100.00	8.00	
2			PG Laboratories	100.00	8.00	
3			Research Laboratories	100.00	6.00	
4		Other Functions	Office of HOD	40.00	1.00	
5			Faculty Offices	15.00	42.00	
6			Research Scholars Cubicles(each with 10 cubicles @ 5sq m per cubicle)	50.00	6.00	
7			Department Office	30.00	1.00	
8			Seminar Room-cum-Committee Room	75.00	1.00	
9			Store	50.00	1.00	
10			Department Library	50.00	1.00	
11			Computational room	50.00	1.00	
12			Faculty & Student Common Room	100.00	2.00	
13			Pantry	10.00	1.00	
	Total Plinth Area considered for **Mechanical Engineering**					1900Sqm
	** Area and Nos. of rooms given are tentative					
D	**Central Library**					
			Space and Manpower Requirement		1.00	2500sqm

E		**Computer Center**			**	
1			PC Cafeteria	300.00	1.00	
2			Mini Computer Clusters	300.00	1.00	
3			High Performance Computing Cluster	300.00	1.00	
4			Voice-Data-Picture Communication including CATV link	300.00	1.00	

5			Air Conditioning Plant	150.00	1.00	
6			Uninterrupted Power Supply	50.00	1.00	
7			Store	50.00	1.00	
8			Seminar -cum- Committee Room	100.00	1.00	
9			Administrative office of the Computer Centre	50.00	1.00	
10			Offices of Chief Systems Manager / Systems Manager /Technology Officer / Programmers	120.00	1.00	
11			Micro - earth Station	Open Air		
	Total Plinth Area considered for **Computer centre**					750 Sqm
	** Area and Nos. of rooms given are tentative					

	Work shop					
F			Machine Shop	600.00	1.00	
			Fitting Shop			
			Wood Working Shop			
			Welding Shop			
			Model Shop			
			Rapid Prototyping Facility			
			Electrical -cum - Electronic Shop including PCB Fabrication & SDM Facility (for low volume production)	200.00	1.00	
			Store	50.00	1.00	
			Seminar Room -cum - Classroom	50.00	1.00	
			Offices of workshop Superintendent	40.00	1.00	
			Administrative Office of the Central Workshop	30.00	1.00	
	Total Plinth Area considered for **Work shop**					800Sqm
	** Area and Nos. of rooms given are tentative					

	Virtual Learning Centre					
			Control Room I : AV Studio Classroom with a seating capacity of 60 student --- TV Production in the candid classroom mode	400.00	1.00	
			Control Room II : Production Control (Power & lighting) for Studio Classroom	50.00	1.00	
			Storage Area : Storage of props / special furniture / blank & source tapes / consumables / recording equipment	50.00	1.00	
			Editing Bays :AV Post Production -- both on and off line	50.00	1.00	
			Preview Room :AV Post Production -- both on and off line	25.00	1.00	
			Graphic Room : Drawing / Drafting /Graphic Design	25.00	1.00	
			Computer Laboratory : CAI	75.00	1.00	
			Photography Laboratory : Photo Studio /Slide Production	25.00	1.00	
			Workshop :Preparation of models /cut outs ,etc.	75.00	1.00	
			Non -Print Media Library : Resource Library / Viewing Cubicles	75.00	1.00	
			Maintenance Facility : Service , Maintenance& Calibration	50.00	1.00	
			Utility Room : AC Plant / Pump Room / Service Facilities ,etc	100.00	1.00	
			Operation & Maintenance of AV Facilities in the Classroom / Library AV Cubicles / Conference Centre ,etc.	---		

			Cubicles for Operating Staff	200.00	1.00	
			Office of the Media Manager	25.00	1.00	
			Administrative Office of the Center	50.00	1.00	
	Total Plinth Area considered for **Virtual Learning Centre**					750Sqm
	** Area and Nos. of rooms given are tentative					

	Classroom Complex					
			Large Lecture Theatres - cum -Conference Halls(Capacity 240 Students)	480.00	2.00	
			Large Lecture Theatres(Capacity 120 Students)	240.00	4.00	
			Small Lecture Theatres(Capacity 60 Students)	120.00	20.00	
			Classrooms / Tutorial Rooms(Capacity 30 Students)	60.00	10.00	
			Design Studios (Capacity 30 Students)	120.00	2.00	
			Industrial Exhibition hall + Model Archive	200.00	1.00	
			Photography Laboratory : Photo Studio /Slide Production	25.00	1.00	
			Workshop :Preparation of models /cut outs ,etc.	75.00	1.00	
			Non -Print Media Library : Resource Library / Viewing Cubicles	75.00	1.00	
			Maintenance Facility : Service , Maintenance& Calibration	50.00	1.00	
			Utility Room : AC Plant / Pump Room / Service Facilities ,etc	100.00	1.00	
			Operation & Maintenance of AV Facilities in the Classroom / Library AV	---		

			Cubicles / Conference Centre ,etc.			
	Total Plinth Area considered for **Classroom Complex**					2715 Sqm
	** Area and Nos. of rooms given are tentative					

Annexure 5: BUILT-UP SPACE REQUIREMENT FOR THE ADMINISTRATIVE COMPLEX

S.No.	Description	Category of Buildings	Room Name	Unit Size	No. of Rooms	Total Area (Sqm.)
				Carpet area (Sqm.)		
1	2	3	4	5	6	8
	Admin Building					
1			Director's Secretariat	150.00	1.00	
2			Offices of the Deans (5 Nos)	35.00	5.00	
3			Office of the Registrar	25.00	1.00	
4			Office of the Finance & Accounts Officer	25.00	1.00	
5			Admissions Section	150.00	1.00	
6			Academic Section	200.00	1.00	
7			Student Affairs Section plus Space in Hostels / Student Affairs Centre	150.00	1.00	
8			Planning & Resource Planning & Generation	150.00	1.00	
9			Public Relation & Institute Publication	150.00	1.00	
10			R & D including Student Training & Placement Cell	250.00	1.00	
11			International Relation & Outreach Programs including Alumni Affairs	150.00	1.00	
12			Faculty Affairs including FDP Cell	150.00	1.00	

S.No.	Description	Category of Buildings	Room Name	Unit Size	No. of Rooms	Total Area (Sqm.)
				Carpet area (Sqm.)		
1	2	3	4	5	6	8
13			Personnel & Administration Office including Staff Training Cell /Vigilance Cell / Legal Cell / Caretaking & Housekeeping Cell / Transport Service Cell / Hindi Cell / Coordination Cell	400.00	1.00	
14			MIS	100.00	1.00	
15			Store & Purchase Unit	150.00	1.00	
16			Finance & Accounts and Internal Audit Unit	200.00	1.00	
17			Secretariat of Statutory Bodies	100.00	1.00	
18			Campus Security Unit	50.00	1.00	
19			Communication Service Unit	150.00	1.00	
20			Engineering Service & Estate Office	200.00	1.00	
21			Chairman BOG's Office	50.00	1.00	
22			Academic Council Room	200.00	1.00	
23			Board Room	100.00	1.00	
24			Committee Rooms : 2Nos	100.00	1.00	
25			Reception Desk	50.00	1.00	
26			Reception Lobby	300.00	1.00	
	Total Plinth Area considered for **Admin Building**					2000 Sqm
	** Area and Nos. of rooms given are tentative					

Annexure 6: ABSTRACT OF SPACE REQUIREMENT FOR ADMIN &ACADEMIC BUILDING

S. No.	Category of Buildings	Area in Sqm.	Remarks
1	Dept. of Computer Science & Engg.	1900	** Area and Nos. of rooms given are tentative
2	Dept. of Electronics & Communications Engg.	1900	
3	Dept. of Mechanical Engg.	1900	
4	Central Library	2500	
5	Computer Centre	750	
6	Work shop	800	
7	Virtual Learning	750	
8	Class room complex	2715	
9	Administrative Block	2000	
	Total	**15214**	

Annexure 7 CAPITAL COST ESTIMATE OF NEW CAMPUS OF IIITDM KURNOOL (Rs. In Crores)				
Sl.No.	Name of Building /Work	Total Covered Area in Sqm	Rate per Sqm.	Total(Rs. In Crores)
A	BUILDING CONSTRUCTION COST			
1	Academic & Admin Building	15214	35935	55
2	Faculty Residence	12370	27414	34
3	Students Accommodation - 1260 Students	18475	31015	57
4	Amenities & Utilities	5200	28266	15
		51259		
	TOTAL BUILDING COST-(A)			161
B	SITE DEVELOPMENT COST- (B)			
	Cost of Compoundwall for 4000 metre length @ Rs.9763/- per metre.	4000	9763	4
	Development of Site	102518	2335	24
	COST- (B)			28
	TOTAL COST-(A +B)			189
	Add Cost Index for 01-04-2017 @ 17 %	189	0.17	32
	Total Construction Indexed Cost (I)			221
C	Part HVAC Security & Surveilence System			3
D	Equipment & Furnishing Cost			8
E	Add Consultancy Charges @ 3% on (A+B+C)	192	0.03	6
F	Add Contingency @3 % on (A+B+C)	192	0.03	6
G	**Add Taxes etc. Charges [6 % of (A+B+C)]**	192	0.06	12
	Grand Total (I + C+D+E+F+G)			256

	Annexure 8: Cost Estimate for Admn & Academic Buildings				
	Area	1260	130	163800	15214
		15214	Sqm	Floor Height	3.65 metre
Sl.No.	Description	Quantity	Unit	Rate	Amount
1	RCC Framed Structure with Floor Height of 3.35 metre	15214	Sqm.	23500	357529000
2	Extra for every 0.30 m additional height above normal floor height of 3.35 m upto 3.65 m (3.65-3.35 =0.30 m)	15214	Sqm.	270	4107780
	Total (A)				361636780
3	Extra for rock cutting				1500000
4	Making stronger foundation to take load of one additional floor in future	1520	Sqm.	2270	3450400
5	Earth Quake resistant forces	15214	Sqm.	1140	17343960
6	Large Modules over 35 Sqm.	15214	Sqm.	1500	22821000
7	Fire Fighting -Wet riser	15214	Sqm.	500	7607000
8	Fire Fighting - Sprinkler System	8500	Sqm.	750	6375000
9	Fire Alarm System	15214	Sqm.	500	7607000
10	Static Fire Sump-1 Lac lit capacity	100000	Lit	15	1500000
11	Fire tank at roof	20000	Lit	15	300000
	Total (B)				68504360
	Normal building Cost for Services	15214	Sqm.	19000	289066000
	Area of Laboratories	8500	sqm	19000	161500000
	Internal Services				
12	Internal water supply & Sanitary Installation@ 4%	289066000		0.04	11562640
13	External Service Connections @ 5%	289066000		0.05	14453300
14	Internal Electrical Installations @12.5 %	289066000		0.125	36133250
15	Extra for Internal Electrical Installations for Laboratories @15 % (15.00-12.50 = 2.50 %)	161500000		0.025	4037500
16	Extra for power wiring and Plugs @ 4%	289066000		0.04	11562640
17	Extra for Central call bell System @ 1 %	289066000		0.01	2890660
18	Extra for Lightning Conductor @ 0.5%	289066000		0.005	1445330
19	Extra for Telephone Conduits @0.5%	289066000		0.005	1445330
20	Extrafor computer conduiting @ 0.5%	289066000		0.005	1445330
21	Solar Power Generator 50kwp	50	Kwp	100000	5000000
22	Extra for Quality Assurance @ 1 %	289066000		0.01	2890660
	Total (C)				92866640
23	Passenger Lifts for 16 persons capacity	6	Nos	3950000	23700000
	Total (D)				23700000

	Grand Total of (A + B + C+ D)				546707780
	Rate per Sqm		15214		35935

Annexure 9: Cost Estimate for Faculty Residential Buildings

	Area	221	602	133042	12370
		12370	Sqm	Floor Height	2.90 metre
Sl.No.	Description	Quantity	Unit	Rate	Amount
1	RCC Framed Structure with Floor Height of 2.90 metre	12370	Sqm.	16000	197920000
2	Extra for 0.10 metre Additionl height of floor above normal height of 2.90m	12370	sqm	90	1113300
3	Every Additional Storey over six storeys upto 9 storeys with floor height -one storey	2500	sqm	560	1400000
	Total (A)				200433300
4	Earth Quake resistant forces	12370	Sqm.	1140	14101800
5	Extra for RCC Raft Foundations	2500	sqm	6450	16125000
6	Extra for Rock Cutting				2000000
8	Extra for Vitrified tile flooring	4000	sqm	550	2200000
	Extra for Granite Flooring on staircaase	1200	sqm	1800	2160000
9	Fire Fighting -Wet riser	12370	Sqm.	500	6185000
10	Fire Alarm System	12370	Sqm.	500	6185000
11	Static Fire Sump-1 Lac lit capacity	100000	Lit	15	1500000
12	Fire tank at roof	50000	Lit	15	750000
13	Fire Extinquishers				200000
	Total (B)				51406800
	Normal building Cost for Services	12370	Sqm.	14500	179365000
	Internal Services				
14	Internal water supply and Sanitary Installation @12%	179365000		0.12	21523800
15	External Service Connections @ 5%	179365000		0.05	8968250
16	Internal Electrical Installations @12.5 %	179365000		0.125	22420625
17	Extra for power wiring and Plugs @ 4%	179365000		0.04	7174600
18	Extra for Central call bell System @ 1 %	179365000		0.01	1793650
19	Extra for Lightning Conductor @ 0.5%	179365000		0.005	896825
20	Extra for Telephone Conduits @0.5%	179365000		0.005	896825
21	Solar Power Generator 50 kwp	50	Kwp	100000	5000000
22	Extra for Quality Assurance @ 1 %	179365000		0.01	1793650
	Total (C)				70468225
23	Passenger Lifts for 13 persons capacity	6	Nos	2800000	16800000
	Total (D)				16800000
	Grand Total of (A + B + C+ D)				339108325
	Rate per Sqm		12370		27414

	Annexure 10: Cost Estimate for Students Hostel Buildings				
	Area	1260	158	199080	18475
			Sqm	Floor Height	3.00metre
Sl.No.	Description	Quantity	Unit	Rate	Amount
1	RCC Framed Structure with Floor Height of 2.90 metre	18475	Sqm.	16500	304837500
2	Extra for Rock Cutting				4000000
3	Every Additional Storey over six storeys upto 9 storeys with floor height 2.90 metres = 3 x 1030x 2 = 6180 sqm	6180	sqm	560	3460800
4	Every Additional Storey over 9 storeys upto 10 th Storey with floor height 2.90 metres- one storey =1030 x2=2060 sqm	2060	sqm	1140	2348400
5	Extra for 0.10 m additional height above normal floor height of 2.90 m upto 3.00 m (3.00- 2.90 =0.10 m)	18475	Sqm.	90	1662750
6	Extra for RCC Raft Foundations	2060	sqm	6450	13287000
	Total (A)				329596450
7	Earth Quake resistant forces	18475	Sqm.	1140	21061500
8	Extra for Vitrified tile flooring	11340	sqm	550	6237000
9	Extra for Facades	4800	sqm	3000	14400000
10	Extra for Cup Board to each student	1260	each	25000	31500000
11	Extra for built in	1260	each	15000	18900000
12	Extra for Granite Flooring on staircaase	6000	sqm	1800	10800000
13	Extra for stronger structural Members to take heavy Load above 500 kg per sqm upto 1000 sqm	2060	sqm	1500	3090000
14	Fire Fighting -Wet riser	18475	Sqm.	500	9237500
15	Fire Fighting - Sprinkler System	18475	Sqm.	750	13856250
16	Fire Alarm System	18475	Sqm.	500	9237500
17	Static Fire Sump-1 Lac lit capacity(2 blocks)	200000	Lit	15	3000000
18	Fire tank at roof (2 Blocks)	100000	Lit	15	1500000
	Total (B)				141319750
19	Normal Building Cost for Services	18475	sqm	15000	277125000
	Internal Services				
20	Internal water supply and Sanitary Installation @ 10%	277125000		0.10	27712500
21	External Service Connections @ 5%	277125000		0.05	13856250
22	Internal Electrical Installations @12.5 %	277125000		0.125	34640625
23	Extra for Electric Signage	18475	sqm	85	1570375
24	Extra for Central call bell System @ 1 %	277125000		0.01	2771250
25	Extra for Lightning Conductor @ 0.5%	277125000		0.005	1385625
26	Extra for computer Conduits @0.5%	277125000		0.005	1385625

27	Extra for Quality Assurance @ 1 %	277125000		0.01	2771250
	Cost Estimate for Students Hostel				
28	Solar Water Heating System (-40 Nos of each 1000 LPD)	40	1000 lpd	230000	9200000
29	Solar Power Generator 100kwp	100	Kwp	100000	10000000
	Total (C)				86093500
30	Passenger Lifts for 16 persons capacity	4	Nos	4000000	16000000
	Total (D)				16000000
	Grand Total of (A + B + C+ D)				573009700
	Rate per Sqm		18475		31015

	Annexure 11 : Cost Estimate for Amenities & UtilitiesBuildings				
	Area	2016	Sqm	Floor Height	3.65 metre
Sl.No.	Description	Quantity	Unit	Rate	Amount
1	RCC Framed Structure with Floor Height of 3.35 metre	2016	Sqm.	19000	38304000
2	Extra for every 0.30 m additional height above normal floor height of 3.35 m upto 3.65 m (3.65-3.35 =0.30 m)	2016	Sqm.	270	544320
	Total (A)				38848320
3	Earth Quake resistant forces	2016	Sqm.	1140	2298240
4	Large Modules over 35 Sqm.@50%	1008	Sqm.	1500	1512000
5	Fire Extinquishers				50000
6	Extra for Rock Cutting				200000
7	Fire Alarm System	1008	Sqm.	500	504000
	Total (B)				4564240
a	**Internal Services**				
8	Internal water supply and Sanitary Installations @ 4 %	38848320		0.04	1553933
9	External Service Connections @ 5%	38848320		0.05	1942416
10	Internal Electrical Installations @12.5 %	38848320		0.125	4856040
11	Extra for power wiring and Plugs @ 4%	38848320		0.04	1553933
12	Extra for Central call bell System @ 1 %	38848320		0.01	388483
13	Extra for Lightning Conductor @ 0.5%	38848320		0.005	194242
14	Extra for Telephone Conduits @0.5%	38848320		0.005	194242
15	Solar Power Generator 25 kwp	25	Kwp	100000	2500000
16	Extra for Quality Assurance @ 1 %	38848320		0.01	388483
	Total (C)				13571771
	Grand Total of (A + B + C+)				56984331
	Rate per Sqm		2016		28266

Annexure 12: Construction of Compound Wall -4000m length

Scope:- RCC column of size 300mm x 300mm at 4.50 metre intervals, with RCC footing and columns connected by grade beam. construction of 230 mm thick brick work over grade beam to a height of 3.00 metre above ground level. RCC coping over Brick work to connect the columns as well as to form RCC framed panel. Necessary vent of suitable size shall be provided on the face of brick wall for passage of wind.

	Compound Wall -Quantity & cost for 30 metres length	Nos.	L	B	D	Qty	DSR-2014-Rate	Amount
1	Earth work							
	Col	7	1.10	1.00	0.90	6.93		
	Grade beam	7	3.50	0.60	0.60	8.82		
						15.75		
	Add for variation due to slope	15	%			2.36		
						18.11		
	E/W Qty		18.11	0.80		14.49	157.50	2282
	Rock cutting		18.11	0.20		3.62	620.55	2248
2	Earth filling							
	E/W Qty				cum	15.75		
	Deduct-CC1:5:10				1.83			
	RCC Qty upto GL				4.16			
	Brick work	25.2	0.23	0.22	1.28			
					7.26	-7.26		
						8.49		
	Add for variation due to slope	15	%			1.27		
					cum	9.76	112.40	1098
3	P/L CC 1:5:10							
	Col	7	1.10	1.00	0.08	0.62		
	Grade beam	6	4.20	0.60	0.08	1.21		
						1.83		
	Add for variation due to slope	5	%			0.09		
					cum	1.92	4004.00	7675
4	RCC Footings 1:2:4							
	Footing	7	0.90	0.80	0.25	1.26		
	Pedestal	7	0.45	0.60	0.20	0.38		
	Grade beam	6	4.20	0.30	0.30	2.27		
	Col upto GL	7	0.30	0.30	0.40	0.25		
					4.16			
	Col above GL upto 1.20m	7	0.30	0.30	1.20	0.76		
						4.91	cum	

		10	%			0.49		
					cum	5.41	5725.90	30951
5	RCC 1:2:4 Wall							
	Col above GL upto 1.20m upto 3.00 m	7	0.30	0.30	1.80	1.13	cum	
		10	%			0.11		
					cum	1.25	6570.00	8195
6	RCC 1:2:4 coping							
	coping	1	30.00	0.30	0.10	0.90	6778.20	6100
7	Centring /Shuttering							
7.1	Footings	7	3.4	0.25	1	5.95		
		7	2.1	0.2	1	2.94		
					sqm	8.89	196.45	1746
7.2	Grade beam	2	6	4.2	0.3	15.12	332.15	5022
7.3	Column	7	1.2	3.4	1	28.56		
	Add for variation due to slope	15	%			4.28		
					sqm	32.84	453.35	14890
7.4	Edges of beam less than 0.20m	2	30	1	1	60.00	116.40	6984
8	Reinforcement							
	Footings	3.14	80	kg/cum		250.83		
	Grade beam	2.27	100	kg/cum		227.00		
	Column	2.26	150	kg/cum		338.31		
	RCC coping	0.90	100	kg/cum		90.00		
						906.14	68.10	61708
9.1	Brick Work in CM 1:6 upto GL	6	4.2	0.23	0.15	0.87		
		6	4.2	0.23	1.2	6.96		
						7.82		
	Add for variation due to slope	10	%			0.78		
					cum	8.61	4677.25	40257
9.2	Brick Work in CM 1:6 aabove 1.20m	6	4.2	0.23	1.7	9.85	5667.55	55844
10	6mm rendering							
	col	7	0.45	3	1	9.45		
	coping	1	30	0.58	1	17.40		
					sqm	26.85	134.70	3617
12	12mm Plastering	1	30	3	1	90.00	149.45	13451
13	15mm Plaster	6	4.2	3	1	75.60	172.8	13064
14	Exterior Painting							
	6mm Plaster				26.85			
	12mm				90.00			
	15mm				75.60			
					192.45			
	Add 2.5% due to slope			sqm	4.81	197.26	90	17754

	Cost for 30 metres							292885
	Cost for one metre				292885	divide	30	9763

	Annexure 13: Cost Estimate for Development				
	Area				
Sl.No.	Description	DPAR-12	Qty	Unit	Amount
	Plot Development				
1	Levelling	95	102518	sqm	9739210
2	Extra Cost for Rock cutting average	465	102518	cum	47670870
3	Internal Roads & Path ways	145	102518	sqm	14865110
4	Sewers	110	102518	sqm	11276980
5	Distribution Lines 100 Dia & below	80	102518	sqm	8201440
6	Peripheral Grid 150mm dia to300mm dia below	60	102518	sqm	6151080
7	Unfiltered Water Supply Grid	45	102518	sqm	4613310
8	Storm Water Drains	85	102518	sqm	8714030
9	Horticultural Operations	80	102518	sqm	8201440
10	Water Tanks, Rain Water Harvesting tanks , STPs, ETP and Biological Waste Disposal as per Annexure	375	102518	sqm	67562500
11	Substation Equipment @Rs.7000 per KVA based on supplement PAR for Specialised E &M Works	7000	4000	sqm	28000000
12	Optical fibre and data cabling			LS	4000000
13	Street-scaping (approx)	20	102518	sqm	2050360
14	Exit Sign Boards including electric signage	85	102518	sqm	8714030
15	Street Lighting with HPSV lamps	165	102518	sqm	16915470
16	Borewell & Pumps	8	300000	each	2400000
	Total				239336620
	Rate per Sqm				2335