NATIONAL BOARD OF ACCREDITATION

SELF ASSESSMENT REPORT (SAR)
FOR ACCREDITATION OF
UG ENGINEERING PROGRAMMES
(TIER-I)

NATIONAL BOARD OF ACCREDITATION

4th Floor East Tower, NBCC Place
Bhisham Pitamah Marg, Pragati Vihar
New Delhi 110003
P: 91(11)24360620-22, 24360654
Fax: 91(11) 24360682

(January, 2013)

Contents

Self-Assessment Report (SAR) UG

Part A

I. Institutional Information

I.1. Name and address of the institution and affiliating university:

VISVESVARAYA NATIONAL INSTITUTE OF TECHNOLOGY (VNIT),

SOUTH AMBAZARI ROAD, NAGPUR 440010

I.2. Name, designation, telephone number, and e-mail address of the contact person for the NBA:

Dr. Narendra S. Chaudhari, Director VNIT.

Ph :

Email : director@vnit.ac.in

Dr. K D Kulat, Professor, Department of Electronics Engineering

Ph : 0712-2801345

Email : kdkulat@ece.vnit.ac.in / kishor_kulat@yahoo.com

I.3. History of the institution (including the date of introduction and number of seats of various programmes of study along with the NBA accreditation, if any) in a tabular form:

I.3.1. Historical Background

The VNIT, Nagpur is one of the thirty National Institutes of Technology in the country. The Central Government by Act of Parliament (National Institutes of Technology Act, 2007 (29 of 2007)) declared VNIT Nagpur as an Institute of National Importance. The Act was brought into force from 15th August 2007.

VNIT Nagpur was conferred the Deemed to be University status (under University Grants Commission Act, 1956 (3 of 1956)) with effect from 26th June 2002 by the Central Government.

Earlier, the Institute was known as Visvesvaraya Regional College of Engineering (VRCE). It was established in the year 1960 under the scheme sponsored by Government of India and Government of Maharashtra. The college was started in June 1960 by amalgamating the State Government Engineering College functioning at

		Nagpur since July 1956. In the meeting held in October 1962, the Governing Board of the college resolved to name it after the eminent engineer, planner, and statesman of the country Sir M. Visvesvaraya.
		I.3.2. Location Nagpur known as Orange City is centrally located and well-connected to all the parts of the country by air, rail and road. It is also the second capital of Maharashtra. Nagpur is the largest city in central India and the winter capital of the state of Maharashtra. It is a fast growing metropolis and is the third most populous city in Maharashtra after Mumbai and Pune, and also one of the country's most industrialized cities. With a population of Nagpur is the 13th most populous city and 13th largest urban agglomeration in India. It is the 154th largest agglomeration and 164th largest contiguous urban areas in the world. Nagpur is the seat of the annual winter session of the Maharashtra state assembly, "Vidhan Sabha". Nagpur is a major commercial and political centre of the Vidarbha region of Maharashtra. In addition, the city derives political importance from being the headquarters for the Hindu nationalist organisation RSS and an important location for the Dalit Buddhist movement. According to a survey by ABP News-Ipsos, Nagpur has been identified as the best city in India by topping the liveability, greenery, public transport, and health care indices. It is famous for the Nagpur Orange and is known as the "Orange City" for being a major trade centre of oranges cultivated in the region. The city was founded by the Gonds and later became a part of the Maratha Empire under the royal Bhonsale dynasty. The British East India Company took over Nagpur in the 19th century and made it the capital of the Central Provinces and Berar. After the first reorganisation of states, the city lost its status as the capital. Following the informal "Nagpur Pact" between political leaders, it was made the second capital of Maharashtra. Nagpur is also called the "Tiger Capital of India" as it connects many tiger reserves in India to the world. It is among the important cities for the Information Technology Sector in Maharashtra. Nagpur lies at the dead centre of the country with the Zero Mile marker indicating the geographical centre of India. City of Nagpur is considered as

		geographic centre of India with its famous Zero Mile stone. Major National highways and rail networks connecting Delhi with Hyderabad/ Bangalore/ Kanyakumari and Mumbai with Kolkata pass through the city. It is now recognized as Tiger Capital of India with major Tiger National parks around the city. It's popularly known as "Orange City". Nagpur is second capital of Maharashtra State. VNIT is located in the heart of Nagpur city on sprawling campus of 214 acres. The campus can be located on Google maps as VNIT, N 210, 7' 28", E 790, 3' 8" The official website address for VNIT is: www.vnit.ac.in.
		I.3.3. Regular Academic Programmes*:* **Academic Programmes** The Institute offers 9 Under-Graduate programs viz., B. Tech. In Chemical, Civil, Computer Science, Electrical and Electronics, Electronics and Communication, Mechanical, Metallurgical and Materials and Mining Engineering and Bachelor of Architecture. The Institute also offers 16 Post-Graduate Full time programs (2 years duration) viz., M. Tech. in Industrial Engg., Heat Power Engg, CAD-CAM, Materials Engg, VLSI Design, Communication System Engineering, Computer Science Engg., Industrial Engg., Integrated Power System, Power Electronics and Drives, Structural Engineering, Structural Dynamics and Earthquake Engineering, Environmental Engineering, Water Resources Engineering., Construction Technology and Management, Transportation Engineering and Urban Planning. The Institute also offers M.Tech. by research program in all engineering departments, PhD D (Full/Part Time). Institute has stared M.Sc. programs in Chemistry, Mathematics and Physics from current year. The Doctoral Research is done in all Engineering and Sciences departments. Institute is a recognized centre under TQIP scheme for Ph.D. program in Electrical and Metallurgical & Materials Engineering department and for M. Tech. program in Electrical and Civil Engineering departments.

Sr.No.	Program Name	Year	Intake Capacity
	Under Graduate Program : B. Arch/B. Tech.		
01.	Architecture	1960	62
02	Chemical Engineering	2006	92
03.	Civil Engineering	1956	92
04.	Computer Science Engg.	1987	92
05.	Electronics and Communication Engineering	1980	92
06.	Electrical And Electronics	1960	92
07.	Mechanical Engineering	1960	92
08.	Metal and Materials Engineering	1965	92
09.	Mining Engineering	1982	32
	TOTAL		**738**
	Post Graduate & Research Programs : M. Tech.		
01.	Environmental Engineering	1966	20
02.	Water Resources Engineering	2011	20
03,	Construction Technology	2010	20
04.	Transportation Engineering	2011	20
05.	VLSI Design	2007	20
06.	Communication System Engineering	2012	20
07.	Computer Science Engineering	2007	20
08.	Industrial Engineering	1989	20
09.	Heat Power Engineering	2002	20
10.	CAD-CAM	2010	20
11.	Integrated Power System	1968	20
12.	Power Electronics & Drives	2010	20+5 SP
13.	Material Engineering	2006	20
14.	Structural Dynamics and Earthquake Engineering	2003	20
15.	Structural Engineering	1991	20
16.	Excavation Engineering	2012	
17.	Urban Planning	1988	20
	TOTAL		**320**
	M Sc.		
01.	M Sc Chemistry	2013	20
02.	M Sc Mathematics	2013	20
03.	M Sc Physics	2013	20
	TOTAL		**60**

I.3.4. Accreditation Status:

National Board of Accreditation granted accreditation to the various eligible programs in 2009 wide letter No. F.No. NBA/ACCR-44 (II)/2002, Dated 2nd March 2009. The details are given below:

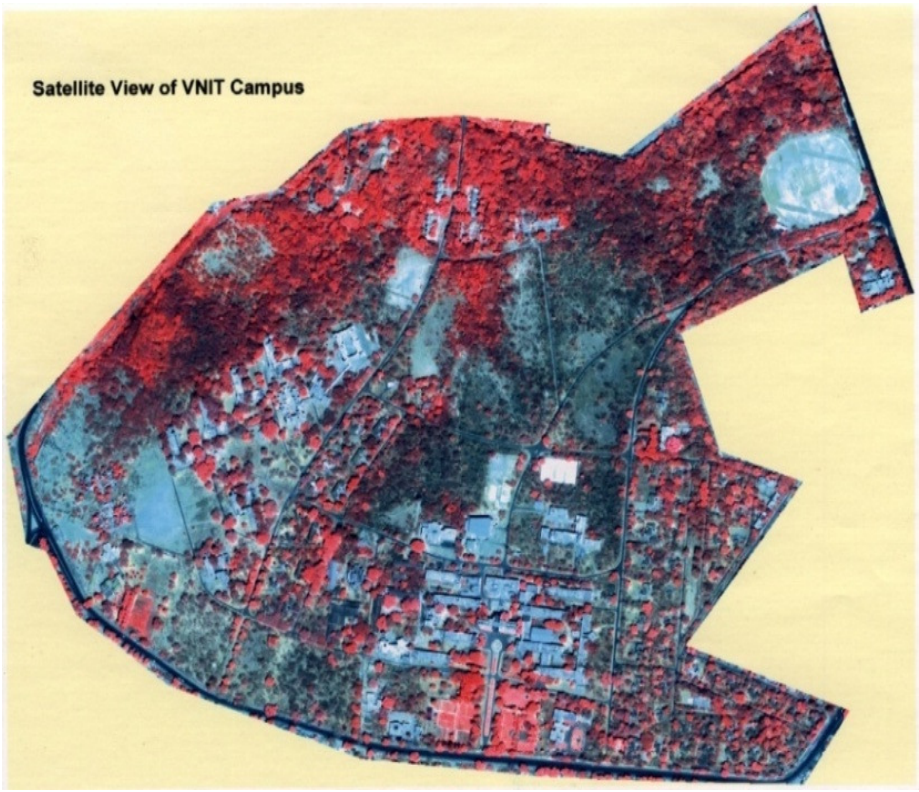
Sr.No	Name of UG & PG Programme(s)	Accreditation Status	Period of validity w.e.f. 10.02.2009
01.	B.Tech. Electronics & Comm. Engg.	Accredited	3 Years
02.	B.Tech. Mechanical Engg.	Accredited	3 Years
03.	B.Tech. Civil Engg.	Accredited	3 Years
04.	B.Tech. Computer Science & Engg.	Accredited	3 Years
05.	B.Tech. Mining Engg.	Accredited	5 Years
06.	B.Tech. Metallurgical & Materials Engg.	Accredited	5 Years
07.	B.Tech. Electrical & Electronics Engg.	Accredited	5 Years
08.	M.Tech. Integrated power System	Accredited	3 Years
09.	M.Tech. Structural Dynamics & Earth Quate Engg.	Accredited	3 Years
10.	M.Tech. Environmental Engg.	Accredited	3 Years
11.	M.Tech. Structural Engg.	Accredited	3 Years
12.	M.Tech. VLSI Design	Accredited	3 Years
13.	M.Tech. Industrial Engg.	Accredited	3 Years
14.	M.Tech. Ferrous Process Metallurgy	WITHDRAWN	WITHDRAWN
15.	M.Tech. Ferrous Process Metallurgy		

(Total number of programmes Accredited vide this letter – Twelve and Withdrawn – Two)

New M.Tech Programs started (2012)

Sr.No.	Title of Program	Intake
01.	Transportation Engineering	20
02.	Communication System Engineering	20
03.	Water Resources Engineering	20
	Total Increased Intake	**60**

Campus



VNIT Campus is spread over an area of 214 acres near Ambazari lake. It presents a panorama of harmony in architecture and natural beauty. The campus has been organized in three functional sectors;

- Hostels for students, Health centre, sports complex
- Academic Buildings, Administrative Building, and Library
- Residential Sector for family & staff

The academic buildings are located fairly in close proximate, to the hostels and the staff quarters. The campus has a full-fledged computerized branch of State Bank of India with ATM facility, Canara Bank, Post office as well as courier services and other needs of students, residents and office are nearby.

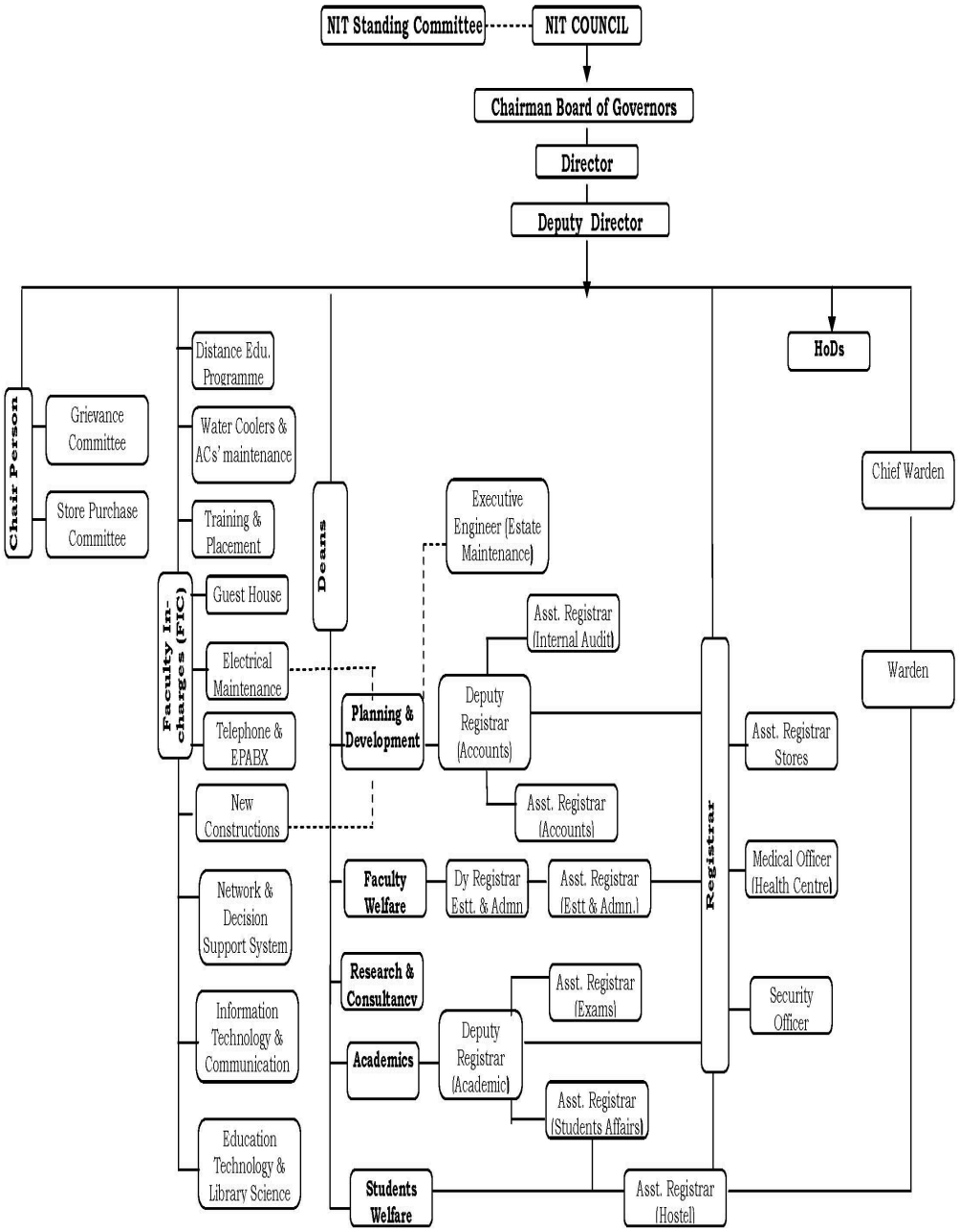
The Institute has its own fully fledged Health Centre with a full time residential Medical Officer. The specialized medical services of a Psychological Counsellor, Dietician, Physiotherapist, Pathology lab, Yoga centre, and also medical consultants in

		Ayurveda and Homeopathy are available. Patients suffering from serious illness / requiring intensive care are referred to the Govt. Medical College and Hospital and other Health care centres duly approved under the CGHS. A full time dedicated Ambulance service in available at the dispensary. Spacious and multi-cuisine canteen is located close to the instruction zone and hostels. Two more cafeterias exist on the campus. The Institute has a well- equipped Gymkhana apart from various playgrounds for Tennis, Badminton, Volley Ball, Foot Ball, Hockey, and Cricket. NCC unit is also located on campus. There are very well used by students and campus residents of quarters.

	I.4	**Ownership status: Govt. (central/state) / trust / society (Govt./NGO/private)/ private/other:** **CENTERAL GOVT. MHRD** Declared as Institute of National Importance by NIT Act of 2007 (27 of 2007)
	I.5.	**Mission and Vision of the Institution:** **Mission** The Mission of VNIT is to achieve high standards of excellence in generating and propagating knowledge in engineering and allied disciplines. V.N.I.T. is committed to providing an education that combines rigorous academics with joy of discovery. The Institute encourages its community to engage in a dialogue with society to be able to effectively contribute for the betterment of humankind. **Vision** To contribute effectively to the national endeavour of producing quality human resource of world class standard by developing a sustainable technical education system to meet the changing technological needs of the Country, incorporating relevant social concerns and to build an environment to create and propagate innovative technologies for the economic development of the Nation

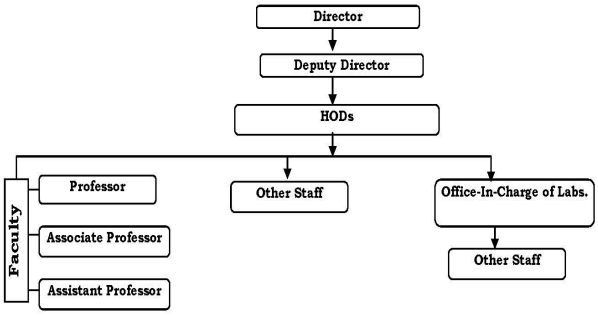
	I.6.	**Organisational Structure:** **Organisational chart showing the hierarchy of academics and administration is to be included** **1.6.1 Administration** As per the provisions of the NIT Act, the Board of Governors (BoG) is responsible for superintendence, direction, and control of the Institute. Thus, the BoG is vested with full powers of the affairs of administration / management and finances of the Institute. Members of the Board represent Government of India, Government of Maharashtra, Industries, and faculty of the Institute. The Director is the principal academic and executive officer of the Institute. Besides the BoG, the Senate, the Finance Committee (FC) and the Building and Works Committee (BWC) are statutory committees and therefore, authorities of the Institute. Apart from the above statutory committees, the Board has the power to constitute various sub-committees for smooth and efficient administration. Thus, the Board has constituted the Stores Purchase Committee (SPC), Grievance Committee (GC), and Special Cell. The SPC administers the centralized procurement of equipment and material whereas the GC provides a platform to hear the views of staff and faculty on grievances. The Special Cell functions to protect the interest of backward-class candidates through procedural, institutional, and other safeguards.

I.6.2. Flow Chart showing Institutional Administration



I.6.3. Flow Chart showing the hierarchy of Academic Departments

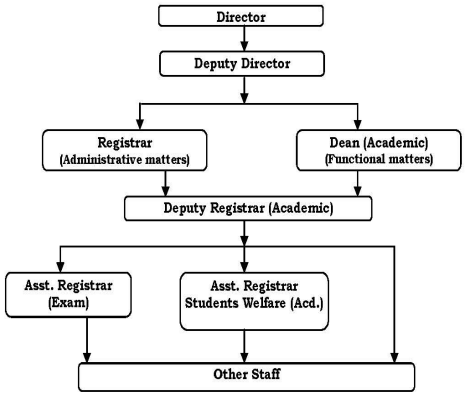
1. ACADEMIC DEPARTMENTS



	Reporting Officer	Reviewing Officer
Professor	Director	Director
Associate Professor / Assistant Professor	HoD	Director
Group – A other than above	HoD	Deputy Director/ Director
Group – C/Other Staff	Lab-In-Charge / HoD	HoD

Note: i) In case Associate Professor is HoD, Director shall also be Reporting Officer for all the Associate Professor in that Departments.
ii) In case, Assistant Professor is HoD, Director shall also be Reporting Officer for all faculty.

2. ACADEMIC SECTION



	Reporting Officer	Reviewing Officer
Group – A	Registrar *	Deputy Director /Director
Group – C/Other Staff	Section Head	Registrar

* In consultation with Dean (Academic)

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I.7. **Financial status: Govt. (central/state) / grants-in-aid / not-for-profit / private/self-financing / other:**

(Instruction: Financial status of the institute has to be mentioned here.)

CFI (Centrally funded institution)

I.8. **Nature of the trust/society:**

Also list other institutions/colleges run by the trust/society

(Instruction: Way of functioning and activities of the trust/society have to be listed here.)

Name of the Institution	Year of establishment	Location
NA	-	-

I.9. **External sources of funds:**

(Rs. in Lacs)

Name of the External Source	CFY 2013-14	CFYm1 2012-13 *	CFYm2 2011-12	CFYm3 2010-11
Plan	**3825=00**	**00**	**7500=00**	**2200=00**
Non Plan	**1620=00**	**3200=00**	**4249=00**	**1500=00**

(Instruction: The different sources of the external funds over the last three financial years are to be listed here.)

* No funds under plan were received.

I.10. **Internally acquired funds:**

Name of the External Source	CFY	CFYm1	CFYm2	CFYm3
Students' fee	27014268	86201169	100325522	177967064
Interest & Other Income	48821680	81688699	56325522	32385087

(Instruction: The different sources of the internal funds over the last three financial years are to be listed here.)

I.11. Scholarships or any other financial assistance provided to students?

VNIT Nagpur is making available to its students and research scholars several avenues for receiving assistance towards scholarships, free ships etc. some of the several scholarships available to VNIT students are :

[1] Indian Oil Corporation Scholarship, Indian Oil Corporation has announced 2600 Scholarships for students of 10+/ITI, MBBS, Engineering & MBA on merit basis.

[2] NTPC Scholarship, NTPC is offering 35 scholarships to students belonging to SC/ST/PC categories persons who are pursuing 4 years full time degree course in engineering on a competitive basis for applicant from NIT.

[3] ONGC Engineering Scholarships ONGC offers 75 Scholarships for SC/ST students who are pursuing higher education in Engineering, Geology, Geophysics and MBA.

[4] GATE stipend for qualified post graduate students.

[5] AICTE PG Scholarship 2013 for M.E./M.Tech/M.Pharma Students AICTE PG Scholarship 2013 for M.E./M.Tech/M.Pharma second year students.

[6] AICTE Scholarships for GATE Qualified Candidates 2013 For GATE Qualified Candidates 2013 for M.E./M.Tech/ second year students.

[7] Cargill Global Scholarships Program for Undergraduate Students 2013 Cargill Global Scholarships Program for Undergraduate Students 2013 is the global scholarship program for India, Brazil, Russia, China and the USA countries.

[8] North South Foundation Scholarships 2014 (NSF) Scholarships 2014 for those doing BE/BTech.

[9] NATIONWIDE EDUCATION AND SCHOLARSHIP TEST (N.E.S.T.) 2013 National wide education and scholarship test (n.e.s.t.) 2013 For Degree Students Of Science Engg. Courses.

[10] Scholarship for Physically Handicapped Students National Handicapped Finance and Development Corporation (NHFDC).

[11] MOMA scholarship – Annually government of India offers 20000 scholarships that distributed among the students of minority communities throughout the country, to eligible students from this institute.

[12] State Government Scholarships from Social Welfare Department for eligible students from this institute.

The aggregate amount of Scholarship amount in (Rs.) year wise is indicated below :

Details	CFY	CFYm1	CFYm2	CFYm3
Category				
Scholarship Assistance	Various sources given in **I.11**			
Amount	**3,28,05,922**	**1,74,86,164**	**1,77,64,254**	**2,37,27,156**

I.12. **Basis/criterion for admission to the institution:**

All India entrance / state- level entrance **/** university entrance **/** 12th standard mark sheet **/** others:

I.13. **Total number of engineering students:**

Total number of other students, if any

	CFY 2012-13	CFYm1 2011-12	CFYm2 2010-11	CFYm3 2009-10
Total no. of boys	2868	2636	2398	2142
Total no. of girls	708	583	500	457
Total no. of students	3576	3219	2898	2599

I.14. **Total number of employees**

Minimum and maximum number of staff on roll in the engineering institution, during the CAY and the previous CAYs (1st July to 30th June):

A. Regular Staff

Items		CAY		CAYm1		CAYm2		CAYm3	
		Min	Max	Min	Max	Min	Max	Min	Max
Teaching staff in engineering	M		131		122		123		119
	F		23		20		20		19
Teaching staff in sciences & humanities	M		24		15		17		16
	F		7		7		7		7
Non-teaching staff	M		9		10		10		12
	F		3		3		3		3

B. Contract Staff

Items		CAY		CAYm1		CAYm2		CAYm3	
		Min	Max	Min	Max	Min	Max	Min	Max
Teaching staff in engineering	M		01		01		02		00
	F								
Teaching staff in sciences & humanities	M		01		-		-		-
	F								
Non-teaching staff	M		73		75		77		76
	F		19		19		19		19

II. Departmental Information

Name and address of the department:

Department of Electronics Engineering
Visvesvaraya National Institute of Technology
South Ambazari Road Bajaj Nagar
Nagpur -440010

Name, designation, telephone number, and e-mail address of the contact person for the NBA:

Name: Dr. R. B. Deshmukh,
Designation: Professor, Electronics Engineering Department,
Telephone number: 0712-2801345/1557,
Email: rbdeskhmukh@ece.vnit.ac.in

History of the department including date of introduction and number of seats of various programmes of study along with the NBA accreditation, if any:

Program	Description
UG B.Tech in ECE	Started with 20 seats in1980 Intake increased to 92 in 2009
	Accredited By NBA 2002 and 2009 Period: 3 years. Current status: Accreditation Expired
PG M. Tech in VLSI Design	Started in 2007 with 13 seats Intake increased to 25 in 2011
PG M. Tech in Communication Systems	Started in 2012 with 25seats in Communication Systems Engineering

Mission and Vision of the Department

Department Vision

Electronics Engineering Department endeavours to facilitate state of the art technical education in the field of electronics engineering by infusing scientific temper in the students leading towards research and to grow as centre of excellence in the field of electronics engineering. The goal of this department is to provide an education to our students that are directly applicable to problems and situations encountered in real life and thus foster a successful career.

Department Mission

1. Provide quality education to Under Graduate and Post Graduate students.
2. Increase research activity and become a leading centre of excellence.
3. Promoting competitive academic programs and ambience that support intellectual growth and skill acquisition.
4. Strengthening and providing support in sustaining a healthy society by improving the quality of life through application of technology.

List of the programmes/ departments which share human resources and/or the facilities of this programmes/ departments (in %):

(Instruction: The institution needs to mention the different programmes being run in the department which share the human resources and facilities with this department/programme being accredited.)

Faculty shares the teaching load of

Department of Electrical Engineering (EEE):

1. EDC
2. Microprocessors
3. Digital Logic Design
4. Linear Integrated Circuits

Computer Science Engineering (CSE):

1. Analog Circuits
2. Digital Circuits and Logic Design
3. Digital Signal Processing
4. Signals and Systems

Total number of students:

UG:2nd YEAR:	96
UG:3rd YEAR:	91
UG:4th YEAR:	97
M.Tech:1st YEAR (Communication):	26
M.Tech:2nd YEAR (Communication):	19
M.Tech:1st YEAR (VLSI):	26
M.Tech:2nd YEAR (VLSI):	22

Minimum and maximum number of staff on roll during the current and three previous academic years (1st July to 30th June) in the department:

Items	CAY		CAYm1		CAYm2	
	Min	Max	Min	Max	Min	Max
Teaching Faculty with the Program	13	13	13	13	13	13
Non teaching Staff	7	7	7	7	7	7
Total	20	20	20	20	20	20

II.7.1. Summary of budget for the CFY and the actual expenditure incurred in the CFYm1, CFYm2 and CFYm3 (for the Department):

Items	Budget in CFY (in lakhs) 2013-14	Actual expenses in CFY *	Budgeted in CFYm1 (in lakhs 2012-13)	Actual Expenses in CFYm1	Budgeted in CFYm2 (in lakhs) 2011-12	Actual Expenses in CFYm2 (in lakhs)
Laboratory Equipments	7,40,50,000	1,72,15,522	7,10,50,000	4,32,85,956	12,50,00,000	3,99,33,386
Software purchase		1,37,28,313		2,72,79,727		84,51,635
Laboratory consumables	9,00,000	3,28,380	36,00,000	34,50,624	36,00,000	14,68,336
Maintenance and spares	25,000	7,54,500	4,00,000	10,02,779	4,00,000	1,63,807
Travel	3,00,000	8,25,317	40,00,000	11,52,857	15,00,000	12,93,657
Miscellaneous expenses for academic activities	75,000	1,55,901	4,00,000	1,86,736	4,00,000	40,451
Total	7,53,50,000	3,30,07,933	7,94,50,000	7,63,58,679	13,09,00,000	5,13,51,272

*** The amounts shown under expenditure does not include many items of routine expenses met from Centralised Institutional Source 'such as AMC/Computer Consumables and student related travel expenditure which, however, are aggregated in The Institutional Income Expenditure statement in Part I - item I-10.**

3. Programme Specific information

Name of the Programme

B Tech in Electronics and Communication Engineering

Title of the Degree

B.Tech (Electronics and Communication Engineering)

Name, designation, telephone number, and e-mail address of the Programme coordinator for the NBA:

Name: Dr. R B Deshmukh,

Designation: Head and Professor, Department of Electronics Engineering

Telephone number: 0712-2801345

Email: rbdeshmukh@ece.vnit.ac.in

History of the programme along with the NBA accreditation, if any:

Program	Description
UG B.Tech in ECE	Started with 20 seats in1980 Intake increased to 92 in 2009
	Accredited By NBA 2002 and 2009 Period: 3 years. Current status: Accreditation Expired

Deficiencies, weaknesses/concerns from previous accreditations:

1. Publications to be increased.
2. Less number of faculties.
3. Centre of excellence to be established

Total number of students in the programme:

UG: 2nd YEAR: 96

UG: 3rd YEAR: 90

UG: 4th YEAR: 97

Minimum and maximum number of staff for the current and three previous academic years (1st July to 30th June) in the programme:

Items	CAY		CAYm1		CAYm2	
	Min	Max	Min	Max	Min	Max
Teaching Faculty with the Program	13	13	13	13	13	13
Non teaching Staff	7	7	7	7	7	7
Total	20	20	20	20	20	20

Summary of budget for the CFY and the actual expenditure incurred in the CFYm1, CFYm2 and CFYm3 (exclusively for this programme in the department):

Item	Budgeted in CFY 2013-14	Actual Expenses in CFY (till…)	Budgeted in CFY m1 2012-13	Actual Expenses In CFY m1	Budgeted in CFY m1 2011-12	Actual Expenses in CFY m1
Laboratory equipment		1064654		11347000		1526729
Software		923534		5076923		1216658
R&D	Plan Grant		Plan Grant		Plan Grant	
Laboratory consumables	40 lakhs	20203	50.00	51005	25.00	107574
Maintenance and spares	Non plan	2146	Non plan	40250	Non plan	26700
Training & travel	3.50	--	3.00	55503	3.00	26874
Miscellaneous expenses for academic activities		10067		24.32		
Total		2020904		16573113		2904535

PART B

1. Vision, Mission and Programme Educational Objectives (100)

Vision and Mission (5)

1.1.1. Vision and Mission of the institute and department (1)

Mission

The Mission of VNIT is to achieve high standards of excellence in generating and propagating knowledge in engineering and allied disciplines. V.N.I.T. is committed to providing an education that combines rigorous academics with joy of discovery. The Institute encourages its community to engage in a dialogue with society to be able to effectively contribute for the betterment of humankind.

Vision

To contribute effectively to the national endeavour of producing quality human resource of world class standard by developing a sustainable technical education system to meet the changing technological needs of the Country, incorporating relevant social concerns and to build an environment to create and propagate innovative technologies for the economic development of the Nation

Vision and Mission of the department

Department Vision: To be the epitome academic rigour still flexible to accommodate every student and faculty for Basic, current and future technologies in Electronics and communication Engineering.

Department Mission: To be a centre of excellence and provide best platform for students and staff for their growth.

1.1.2. Indicate how and where the Vision and Mission are published and disseminated (2)

1. Regulation book
2. Institute website(http://www.vnit.ac.in/)
3. Posters and banners in institute premises and department.
4. Annual report of the institute.
5. Academic regulations(B Tech degree)
6. Academic regulations(M Tech degree)
7. Academic regulations(M Sc. degree)
8. Academic regulations(Research Studies)

1.1.3. Mention the process for defining Vision and Mission of the department (2)

It is in the line of Institute's Mission and Vision with special emphasis to implementation of advanced and emerging techniques in various streams of Electronics and Communication Engineering. In fact, emphasis is being given for proper dissemination of Vision and Mission to stakeholders considering recent developments and better mechanisms.

Programme Educational Objectives (15)

1.2.1. Describe the Programme Educational Objectives (PEOs) (2)

I. To develop the ability among students to understand the concept of Mathematics, Physics and core electronics subjects which will facilitate understanding of new technology.
II. To provide student with a strong foundation in the engineering fundamentals necessary to formulate, solve and analyze engineering problems and to prepare them for graduates studies, R&D, consultancy and higher learning.
III. To build up skills to analyze the requirements of the electronics, understand the technical specifications, design and provide novel engineering solutions and efficient product design.
IV. To prepare graduates who possess the necessary foundation required to take up gainful employment in core sector and allied sector or prepare them for a successful career and work professional to meet the technical acquaintance of Indian and multinational companies.
V. To give exposures to emerging edge technologies, adequate training and opportunities to work as team on multidisciplinary projects with effective communication skills and leadership qualities.

1.2.2. State how and where the PEOs are published and disseminated (2)

a. Department Hand book
b. Department Notice board, class rooms
c. Department website
d. By continuous emphasis in Class lectures and lab assignments

1.2.3. List the stakeholders of the programme (1)

1. Teaching Staff
2. Non-teaching Staff
3. Governing Board
4. Employers in industry.
5. Parents and society.

1.2.4. State the process for establishing the PEOs (5)

To establish PEO as desired, the department uses one or more academic activities listed below. In the departmental meetings a brain storming session is conducted to check that the PEOs mentioned in established.

a. Lectures in classrooms
b. Types of experiments in laboratory
c. Mini projects.
d. Seminars.
e. Final year projects.
f. Industrial visits.
g. Offering large number of electives.
h. Research projects from DST, BARC (BRNS), and MCIT.
i. Deputation for Workshops.
j. Technical contests.

1.2.5. Establish consistency of the PEOs with the Mission of the institute (5)

Our Programme Educational objectives are highly consistent with our mission to produce theoretically and practically competent Engineers with research motivation and continuous learning capabilities and superior ethics.

S.No.	PEOs(Page-24)	Spread Knowledge	Creation of Wealth	Welfare of Humanity
1	To develop the ability among students to understand the concept of Mathematics, Physics and core electronics subjects which will facilitate understanding of new technology.		X	X
2	To provide student with a strong foundation in the engineering fundamentals necessary to formulate, solve and analyze engineering problems and to prepare them for graduates studies, R&D, consultancy and higher learning.	X		
3	To build up skills to analyze the requirements of the electronics, understand the technical specifications, design and provide novel engineering solutions and efficient product design.	X	X	

4	To prepare graduates who possess the necessary foundation required to take up gainful employment in core sector and allied sector or prepare them for a successful career and work professional to meet the technical acquaintance of Indian and multinational companies.	X		X
5	To give exposures to emerging edge technologies, adequate training and opportunities to work as team on multidisciplinary projects with effective communication skills and leadership qualities.	X		X

Achievement of Programme Educational Objectives (30)

1.3.1. Justify the academic factors involved in achievement of the PEOs (15)

Highly correlated_____ **H**
Moderately correlated____ **M**
Weak correlated_____ **W**

Scheme for III Semester						**Mapping with PEOs**				
CORE										
	Course Code	**Course Title**	**L**	**P**	**Credits**	**1**	**2**	**3**	**4**	**5**
1.	PHL 203	Electronic Materials	3	0	6	**M**	**H**	**W**	**W**	**W**
2.	MAL 201	Integral Transforms & Partial Differential Equations	3	0	6	**H**	**H**	**H**	**H**	**M**
3.	EEL 209	Linear Network Theory	3	0	6	**H**	**H**	**H**	**W**	**W**
4.	ECL 201	Electronic Devices	3	0	6	**H**	**H**	**H**	**H**	**H**
5.	ECP 201	Electronic Devices Lab.	0	2	2	**H**	**H**	**H**	**H**	**H**
6.	ECL 202	Digital Logic Design	3	0	6	**H**	**H**	**H**	**H**	**H**
7.	ECP 202	Digital Logic Design	0	2	2	**H**	**H**	**H**	**H**	**H**

Scheme for III Semester										
Electives						**1**	**2**	**3**	**4**	**5**
	Course Code	**Course Title**	**L**	**P**	**Credits**					
1.	ECL210	Signals & Systems	3	0	6	**H**	**H**	**H**	**W**	**W**

Scheme for IV Semester						Mapping with PEOs				
CORE										
	Course Code	Course Title	L	P	Credits	1	2	3	4	5
1.	ECL204	Measurements & Instrumentation	3	0	6	H	H	H	H	M
2.	ECL308	Analog Circuit Design	3	0	6	H	H	H	H	H
3.	MAL205	Numerical Methods & Probability Theory	3	0	6	H	H	H	H	M
4.	ECL306	Microprocessors & Interfacing	3	0	6	H	H	H	H	M
5.	ECL309	Finite Automata	3	0	6	H	H	H	W	W
6.	ECP308	Analog Circuit Design lab	0	2	2	H	H	H	H	H
7.	ECP306	Microprocessors & Interfacing lab	0	2	2	H	H	H	H	M

Scheme for IV Semester						Mapping with PEOs				
Electives										
	Course Code	Course Title	L	P	Credits	1	2	3	4	5
1.	PHL208	Physics of semiconductor devices	3	0	6	H	H	H	H	H

Scheme for V Semester						Mapping with PEOs				
CORE										
	Course Code	Course Title	L	P	Credits	1	2	3	4	5
2.	EEL 310	Control Systems	3	0	6	H	H	H	H	M
3.	EEP 310	Control Systems Lab.	0	2	2	H	H	H	H	M
4.	ECL 301	Analog Communication	3	0	6	H	H	H	H	H
5.	ECP 301	Analog Communication Lab	0	2	2	H	H	H	H	H
6.	ECL 302	Device Modeling	3	0	6	M	M	M	H	H
7.	ECP302	Device Modeling Lab.	0	2	2	M	M	M	H	H
8.	CSL 311	Computer Architecture & Organization	3	0	6	M	M	M	H	H

Scheme for V Semester						Mapping with PEOs				
Electives										
	Course Code	Course Title	L	P	Credits	1	2	3	4	5
1.	EEL309	Power Electronics	3	0	6	H	M	M	H	H
2.	EEP309	Power Electronics Lab	0	2	2	H	M	M	H	H
3.	ECL415	Electronic System Design	3	0	6	M	M	M	H	H

Scheme for VI Semester						Mapping with PEOs				
CORE										
	Course Code	Course Title	L	P	Credits	1	2	3	4	5
1.	ECL304	Digital Signal Processing	3	0	6	H	H	H	H	H
2.	ECL303	Digital Communication	3	0	6	H	H	H	H	H
3.	ECL305	Electromagnetic Fields	3	0	6	H	H	H	H	H
4.	ECP307	Electronic Product Engg. Workshop	0	2	2	M	H	H	H	H
5	ECP304	Digital Signal Processing Lab	0	2	2	H	H	H	H	H
6	ECP303	Digital Communication Lab	0	2	2	H	H	H	H	H

Scheme for VI Semester						Mapping with PEOs				
Electives										
	Course Code	Course Title	L	P	Credits	1	2	3	4	5
1.	CSL312	Concepts in operating systems	3	0	6	W	W	W	H	M
2.	ECL403	Embedded systems	3	0	6	W	M	M	H	H
3.	ECL403	Embedded systems Lab	0	2	2	W	M	M	H	H

Scheme for VII Semester						Mapping with PEOs				
CORE										
	Course Code	Course Title	L	P	Credits	1	2	3	4	5
1	ECD402	Project phase –I				M	M	H	M	H
2	ECL401	Hardware Description Language	3	0	6	W	M	M	H	H
3	ECP401	Hardware Description Language Lab	0	2	2	W	M	M	H	H
4	ECL405	Waveguides and Antennas	3	0	6	H	H	H	H	H

Scheme for VII Semester										
Electives										
	Course Code	Course Title	L	P	Credits	1	2	3	4	5
1	ECL412	Advanced digital signal Processing	3	0	6	M	H	M	H	H
2	ECP412	Advanced digital signal Processing lab	0	2	2	M	H	M	H	H

3	ECL404	RF & Microwave Engineering	3	0	6	M	H	H	M	M
4	ECL434	Wireless Digital Communication	3	0	6	H	H	H	H	M
5	ECL422	Statistical Signal Analysis	3	0	6	H	H	M	M	M
6	ECL423	Image analysis and computer vision	3	0	6	H	H	M	H	H
7	ECL406	Mobile Communication Systems	3	0	6	H	H	H	H	M
8	ECL411	Digital Image Processing	3	0	6	H	H	M	H	H
9	ECL410	Satellite Communication	3	0	6	H	H	M	H	M
10	ECL402	Comm. Net. & Network Applications	3	0	6	H	H	H	H	M

Scheme for VIII Semester						Mapping with PEOs				
CORE										
	Course Code	Course Title	L	P	Credits	1	2	3	4	5
1	ECD402	Project phase -II	-	-		M	M	H	M	H

Scheme for VIII Semester						Mapping with PEOs				
Electives										
	Course Code	Course Title	L	P	Credits	1	2	3	4	5
1	ECL409	Radio Frequency Circuit Design	3	0	6	H	H	M	H	M
2	ECL407	Radar Engineering	3	0	6	H	H	M	H	M
3	ECP423	Image analysis and computer vision lab	0	2	6	H	H	M	H	H
4	ECL402	Comm. Net. & Network Applications lab	0	2	2	H	H	H	H	M
5	ECP409	Radio Frequency Circuit Design lab	0	2	2	H	H	M	H	M
6	ECL 427	Broadband Communication	3	0	6	H	H	H	H	M
7	ECL 424	Optical Communication	3	0	6	M	H	M	H	H
8	ECL413	Adaptive Signal Processing	3	0	6	W	M	H	H	H
9	ECL408	Biomedical Engineering	3	0	6	W	H	M	H	H
10	ECL310	CMOS Design	3	0	6	H	H	M	H	M

1.3.2. Explain how administrative system helps in ensuring the achievement of the PEOs (15)

The following committees shall be constituted common to all the degree programs:

a. Board of Studies

The Board of Studies for each degree program shall execute the functions as follows:

(i)To consider the recommendations of the director on all academic matters.
(ii) To approve curriculum.

(iii) To ensure that all norms and regulations are strictly followed.
(iv) To periodically review these regulations and recommended modifications.
(v) To review the academic performances and make suitable recommendations regarding scheme of teaching.
(vi) To recommend the award of stipends, scholarships, medals, prizes, etc.
(vii)To draw up general time table and finalize the academic calendar.

b. Departmental Academic Committee

There shall be an Academic Committee for each Department that executes the functions such as

(i) To monitor the course registrations of students.
(ii) To monitor the conduct of courses in the department.
(iii) To ensure academic standard and excellence.
(iv) To oversee the evaluation of every student in a class, for each of the courses.
(v) To develop/revise the curriculum and syllabi and recommend the same to the BOS.

Assessment of the achievement of Programme Educational Objectives (40)

1.4.1. Indicate tools and processes used in assessment of the attainment of the PEOs

A. We have the following assessment processes to gather the data upon which the evaluation of the each PEOs is based.

1. Staff members' discussion.
2. Student feedback.
3. Employers' Comments.
4. Alumni Meetings.
5. Academic Audit by IIT Faculty.
6. Meeting with Board of studies Members.
7. SENATE Meetings.

PEOs(Page -24)	**Tools and Process**					
	Class Test &	**Mid-Sem,**	**Seminars**	**Viva voce**	**Project**	**Lab cours**
To develop the ability among students to understand the concept of Mathematics, Physics and core electronics subjects which will facilitate understanding of new	**X**	**X**	**X**	**X**	**X**	**X**

technology.						
To provide student with a strong foundation in the engineering fundamentals necessary to formulate, solve and analyze engineering problems and to prepare them for graduates studies, R&D, consultancy and higher learning.	**X**	**X**	**X**	**X**	**X**	**X**
To build up skills to analyze the requirements of the electronics, understand the technical specifications, design and provide novel engineering solutions and efficient product design.	**X**		**X**	**X**	**X**	**X**
To prepare graduates who possess the necessary foundation required to take up gainful employment in core sector and allied sector or prepare them for a successful career and work professional to meet the technical acquaintance of Indian and multinational companies.			**X**	**X**	**X**	
To give exposures to emerging edge technologies, adequate training and opportunities to work as team on multidisciplinary projects with effective communication skills and leadership qualities.			**X**	**X**	**X**	**X**

B. These assessments are done every semester from students.

1.4.2. Give evidence for the attainment of the PEOs

a) The expected level of attainment for each of the program educational objectives:

- Institute web site
- The assessment is being done in Senate meeting and Board of Governors (BOG) Meeting of the Institute to critically evaluate the PEOs of the departments.
- Annual reports available on institute website and in hardcopy.
- Minutes of Senate meetings and BOG meetings available on institute website and

in hardcopy.

- B.Tech (ECE) students are well placed in core companies, software industries, PSUs and many central government organisations.
- Some students are pursuing their M.Tech/MS and PhD. in world known Indian/foreign universities.
- Some students are also continuing their MBA in reputed institutions of the country and abroad.

b) Summaries of the results of the evaluation processes and an analysis illustrating the extent to which each of the programme educational objectives is being attained; and

- All the PEOS are being attained successfully in the department.
- It is planned to do regular monitoring, modifications and improvement illustrate successful attainment PEOs.

c) How the results are documented and maintained.

- Transcript reports, various other documents like evaluation reports, available in academic sections.
- Training placements records.
- Senate proceedings.
- Minutes of various meetings put on institute website.
- Some of the minutes are also available as hardcopy with various sections.
- Institute's Web site
- Documents available in Technical Education Quality Improvement programme (TEQIP) office
- Documents available in MIS office.

A. Expected level of attainment of each PEOs

Curriculum for 2010-2013 Batches

Highly correlated_____ **H**

Moderately correlated____ **M**

Not correlated_____ **W**

Scheme for III Semester					**Mapping with PEOs**				
CORE									
	Course Code	**Course Title**	**Content Delivery**	**Knowledge Gained**	**1**	**2**	**3**	**4**	**5**
1.	PHL 203	Electronic Materials	Good	Good	**M**	**H**	**W**	**W**	**W**
2.	MAL 201	Integral Transforms & Partial Differential Equations	Excellent	Good	**H**	**H**	**H**	**H**	**M**
3.	EEL 209	Linear Network Theory	Excellent	Good	**H**	**H**	**H**	**W**	**W**
4.	ECL 201	Electronic Devices	Excellent	Excellent	**H**	**H**	**H**	**H**	**H**
5.	ECP 201	Electronic Devices Lab.	Satisfactory	Satisfactory	**H**	**H**	**H**	**H**	**H**

6.	ECL 202	Digital Logic Design	Excellent	Good	**H**	**H**	**H**	**H**	**H**
7.	ECP 202	Digital Logic Design	Satisfactory	Satisfactory	**H**	**H**	**H**	**H**	**H**

Scheme for III Semester					**Mapping with PEOs**				
Electives									
	Course Code	**Course Title**	**Content Delivery**	**Knowledge Gained**	**1**	**2**	**3**	**4**	**5**
1.	ECL210	Signals & Systems	Good	Good	**H**	**H**	**H**	**W**	**W**

Scheme for IV Semester					**Mapping with PEOs**				
CORE									
	Course Code	**Course Title**	**Content Delivery**	**Knowledge Gained**	**1**	**2**	**3**	**4**	**5**
1.	ECL204	Measurements & Instrumentation	Excellent	Good	**H**	**H**	**H**	**H**	**M**
2.	ECL308	Analog Circuit Design	Excellent	Good	**H**	**H**	**H**	**H**	**H**
3.	MAL205	Numerical Methods & Probability Theory	Excellent	Good	**H**	**H**	**H**	**H**	**M**
4.	ECL306	Microprocessors & Interfacing	Excellent	Excellent	**H**	**H**	**H**	**H**	**M**
5.	ECL309	Finite Automata	Good	Satisfactory	**H**	**H**	**H**	**W**	**W**
6.	ECP308	Analog Circuit Design lab	Satisfactory	Satisfactory	**H**	**H**	**H**	**H**	**H**
7.	ECP306	Microprocessors & Interfacing lab	Satisfactory	Satisfactory	**H**	**H**	**H**	**H**	**M**

Scheme for IV Semester					**Mapping with PEOs**				
Electives									
	Course Code	**Course Title**	**Content Delivery**	**Knowledge Gained**	**1**	**2**	**3**	**4**	**5**
1.	PHL208	Physics of semiconductor devices	Excellent	Good	**H**	**H**	**H**	**H**	**H**

Scheme for V Semester					**Mapping with PEOs**				
CORE									
	Course Code	**Course Title**	**Content Delivery**	**Knowledge Gained**	**1**	**2**	**3**	**4**	**5**
1.	EEL 310	Control Systems	Excellent	Good	**H**	**H**	**H**	**H**	**M**
2.	EEP 310	Control Systems Lab.	Satisfactory	Satisfactory	**H**	**H**	**H**	**H**	**M**
3.	ECL 301	Analog Communication	Excellent	Excellent	**H**	**H**	**H**	**H**	**H**
4.	ECP 301	Analog Communication Lab	Satisfactory	Satisfactory	**H**	**H**	**H**	**H**	**H**
5.	ECL 302	Device Modeling	Excellent	Excellent	**M**	**M**	**M**	**H**	**H**
6.	ECP302	Device Modeling Lab.	Satisfactory	Satisfactory	**M**	**M**	**M**	**H**	**H**
7.	CSL 311	Computer Architecture & Organization	Good	Good	**M**	**M**	**M**	**H**	**H**

Scheme for V Semester					Mapping with PEOs				
Electives									
	Course Code	Course Title	Content Delivery	Knowledge Gained	1	2	3	4	5
1.	EEL309	Power Electronics	Excellent	Good	H	M	M	H	H
2.	EEP309	Power Electronics Lab	Satisfactory	Satisfactory	H	M	M	H	H
3.	ECL415	Electronic System Design	Excellent	Good	M	M	M	H	H

Scheme for VI Semester					Mapping with PEOs				
CORE									
	Course Code	Course Title	Content Delivery	Knowledge Gained	1	2	3	4	5
1.	ECL304	Digital Signal Processing	Excellent	Excellent	H	H	H	H	H
2.	ECL303	Digital Communication	Excellent	Excellent	H	H	H	H	H
3.	ECL305	Electromagnetic Fields	Excellent	Excellent	H	H	H	H	H
4.	ECP307	Electronic Product Engg. Workshop	Satisfactory	Satisfactory	M	H	H	H	H
5	ECP304	Digital Signal Processing Lab	Satisfactory	Satisfactory	H	H	H	H	H
6	ECP303	Digital Communication Lab	Satisfactory	Satisfactory	H	H	H	H	H

Scheme for VI Semester					Mapping with PEOs				
Electives									
	Course Code	Course Title	Content Delivery	Knowledge Gained	1	2	3	4	5
1.	CSL312	Concepts in operating systems	Good	Satisfactory	W	W	W	H	M
2.	ECL403	Embedded systems	Excellent	Excellent	W	M	M	H	H
3.	ECL403	Embedded systems Lab	Satisfactory	Satisfactory	W	M	M	H	H

Scheme for VII Semester					Mapping with PEOs				
CORE									
	Course Code	Course Title	Content Delivery	Knowledge Gained	1	2	3	4	5
1	ECD402	Project phase –I	Satisfactory	Satisfactory	M	M	H	M	H
2	ECL401	Hardware Description Language	Good	Good	W	M	M	H	H
3	ECP401	Hardware Description Language Lab	Satisfactory	Satisfactory	W	M	M	H	H
4	ECL405	Waveguides and Antennas	Excellent	Excellent	H	H	H	H	H

Scheme for VII Semester					Mapping with PEOs				
Electives									
	Course Code	Course Title	Content Delivery	Knowledge Gained	1	2	3	4	5
1	ECL412	Advanced digital signal Processing	Excellent	Excellent	M	H	M	H	H
2	ECP412	Advanced digital signal Processing lab	Satisfactory	Satisfactory	M	H	M	H	H
3	ECL404	RF & Microwave Engineering	Good	Good	M	H	H	M	M
4	ECL434	Wireless Digital Communication	Good	Good	H	H	H	H	M
5	ECL422	Statistical Signal Analysis	Good	Satisfactory	H	H	M	M	M
6	ECL423	Image analysis and computer vision	Good	Satisfactory	H	H	M	H	H
7	ECL406	Mobile Communication Systems	Good	Good	H	H	H	H	M
8	ECL411	Digital Image Processing	Excellent	Excellent	H	H	M	H	H
9	ECL410	Satellite Communication	Excellent	Excellent	H	H	M	H	M
10	ECL402	Comm. Net. & Network Applications	Good	Satisfactory	H	H	H	H	M

Scheme for VIII Semester	Mapping with PEOs

Scheme for VIII Semester					Mapping with PEOs				
Electives									
	Course Code	Course Title	Content Delivery	Knowledge Gained	1	2	3	4	5
1	ECL409	Radio Frequency Circuit Design	Excellent	Excellent	H	H	M	H	M
2	ECL407	Radar Engineering	Good	Satisfactory	H	H	M	H	M
3	ECP423	Image analysis and computer vision lab	Satisfactory	Satisfactory	H	H	M	H	H
4	ECL402	Comm. Net. & Network Applications lab	Satisfactory	Satisfactory	H	H	H	H	M
5	ECP409	Radio Frequency Circuit Design lab	Satisfactory	Satisfactory	H	H	M	H	M
6	ECL 427	Broadband Communication	Excellent	Excellent	H	H	H	H	M
7	ECL 424	Optical Communication	Good	Good	M	H	M	H	H
8	ECL413	Adaptive Signal Processing	Good	Satisfactory	W	M	H	H	H

9	ECL408	Biomedical Engineering	Good	Good	W	H	M	H	H
10	ECL310	CMOS Design	Good	Good	H	H	M	H	M

B. Summary of evaluation

Curriculum for 2010-2013 Batches

T: Theory Hours; **P**: Lab Hours; **SEE**: Student Examination Evaluation

Highly correlated_____ **H**

Moderately correlated____ **M**

Not correlated _____ **W**

Scheme for III Semester						Mapping with PEOs				
CORE										
	Course Code	Course Title	Assign/Oral	SEE						
				T	P	1	2	3	4	5
1.	PHL 203	Electronic Materials	√	√		M	H	W	W	W
2.	MAL 201	Integral Transforms & Partial Differential Equations	√	√		H	H	H	H	M
3.	EEL 209	Linear Network Theory	√	√		H	H	H	W	W
4.	□CL 201	Electronic Devices	√	√		H	H	H	H	H
5.	ECP 201	Electron□c D□v□ces Lab.	√		√	H	H	H	H	H
6.	ECL □02	Digital Logic Design	√	√		H	H	H	H	H
7.	ECP 202	Digital Logic Design	√		√	H	H	H	H	H

Scheme for III Semester						Mapping with PEOs				
Electives										
	Course Code	Course Title	Assign/Oral	SEE						
				T	P	1	2	3	□	5
1.	□CL210	Signals & Systems	√	√		H	H	H	W	W

Scheme for IV Semester						Mapping with PEOs				
CORE										
	Course Code	Course Title	Assign/ Oral	SEE						
				T	P	1	2	3	4	5
1.	ECL204	Measu□ements & Instrumentation	√	√		H	H	H	H	M
2.	ECL3□8	Analog Circuit□De□ign	√	√		H	H	H	H	H
3.	MAL205	Numerical Methods & Probability Theory	√	√		H	H	H	H	M
4.	ECL306	Microprocessors & Interfacing	√	√		H	H	H	H	M
5.	ECL309	Finite Automata	√	√		H	H	H	W	W
6.	□CP308	Analog Circuit Design lab	√		√	H	H	H	H	H
□.	ECP306	Microprocessors & Interfacing□ lab	√		√	H	H	H	H	M

Scheme for IV□Semester						Mapping with PEOs				
Electives										
	Course Code	Course Title	Assign/Oral	SEE						
				T	P	1	2	3	4	5
1.	PHL208	Physics of semic□nductor devices	√	√		H	H	H	H	H

cheme for V Semester						Mapping□wit□ PEOs				
CORE										
	□Course Code	Course Title	Assign/Oral	□EE						
				T	P	1	2	3	4	5
1.	EEL 310	Control Systems	√	√		H	H	H	H	M
2.	EEP 310	Control Systems Lab.	√		√	H	H	H	H	M
3.	ECL 301	Analog Communication	√	√		H	H	H	H	H
4.	E□P 301	Analog Communicatio□ □□b.	√		√	H	H	H	H	H
□.	ECL 302	Device Modelling	√	√		M	M	M	H	H
6.	ECP302	Device Modelling Lab.	√		√	M	M	M	H	H
7.	CSL 311	Computer Architecture & Organization	√	√		M	M	M	H	H

Scheme□for V Semester						Mapping with PEOs				
Electives										
	Course Code	Course Title	A□sig□/Oral	SEE						
				T	P	1	2	3	4	5
1.	EEL309	Power Electronics	√	√		H	M	M	H	H
2.	EEP309	Power Electronics Lab	√		√	H	M	M	H	H

3.	ECL415	Electronic System Design	√	√		M	M	M	H	H

Scheme for VI Semester						Mapping wi□h PEOs				
CORE										
	Course Code	Course Title	Assign/□ral	SEE						
				T	P	1	2	3	4	5
1.	ECL3□4	Digital Signal Processing	√	√		H	H	H	H	H
2.	ECL303	Digital Communication	√	√		H	H	H	H	H
3.	ECL305	Electromagnetic Fiel□s	√	√		H	H	H	H	H
4.	ECP307	Electroni□ Product Engg. Workshop	√	√		M	H	H	H	H
5	ECP□04	Digital Signal Processing Lab	√		√	H	H	H	H	H
6	ECP303	Digital Communication Lab	√		√	H	H	H	H	H

Scheme for VI Semester						Mapping with PEOs				
Electi□es										
	Cours e Code	Course Title	Assign/O□ al	SEE						
				T	P	1	2	3	4	5
1□	C□L31□	Conce□ts in operating systems	√	√		W	W	W	H	M
□2.	ECL403	Embedded systems	√	√		W	M	M	H	H
3.	ECL403	Embedded systems Lab	√		√	W	M	M	H	H

Scheme for VII Semester						Mapping wi□h PEOs				
CORE										
	Course Code	Course Titl□	Assign/Or al	SEE						
				T	P	1	2	3	□	5
1	ECD4□2	Project phase –I	√		√	M	M	H	M	H
2	E□L40□	Hardware Description Language	√	√		W	M	M	H	H
3	ECP401	Hardware Description Language Lab	√		√	W	M	M	H	H
4	ECL405	Waveguides □nd Antennas	√	√		H	H	H	H	H

S□heme for VII Semester						Mapping with□ □EO□				
Elective□										
#	Course Code	Course Title	Assign/□ral	SEE						
				T	P	1	2	3	4	5
1	ECL412	Advanced digital signal Processing	√	√		M	H	M	H	H
2	ECP412	Advanced digital signal Processing lab	√		√	M	H	M	H	H
3	ECL404	RF & Microwave Engineering	√	√		M	H	H	M	M
□	EC□434	Wireless Digital Communication	√	√		H	H	H	H	M
5	ECL422	Statistical Signal Analysis	√	√		H	H	M	M	M
6	ECL423	Image analysis and computer vision	√	√		H	H	M	H	H
7	ECL40□	Mobile Communication Systems	√	√		H	H	H	H	M
8	ECL411	Digital Image Processing	√	√		H	H	M	H	H
9	ECL410	Satellite Communication	√	√		H	H	M	H	M
10	ECL402	Comm. Net. & Network Applications	√	√		H	H	H	H	M

Scheme for VIII Semester						Mapping with PEOs				
CORE										
#	Course Code	Course Title	Assign/Oral	SEE						
				T	P	1	2	3	4	5
1	ECD402	Project phase -II	√		√	M	M	H	M	H

Scheme for VIII Semester						Mapping with PEOs				
Electives										
	Course Code	Course Title Test	Assign /Quiz	SEE						
				T	P	1	2	3	4	5
1	ECL409	Radio Frequency Circuit Design	√	√		H	H	M	H	M
2	ECL407	Radar Engineering	√	√		H	H	M	H	M
□	ECP423	Image analysis and computer vision lab	√		√	H	H	M	H	H
4	ECL402	Comm. Net. & Network Applications lab	√		√	H	H	H	H	M
5	ECP409	Radio Frequency Circuit Design lab	√		√	H	H	M	H	M
6	ECL427	Broadband Communication	√	√		H	H	H	H	M
7	ECL 2□	Optical Communication	√	√		M	H	M	H	H
8	ECL403	Adaptive Signal Processing	√	√		W	M	H	H	H
9	ECL408	Biomedical Engineering	√	√		W	H	M	H	H
10	ECL310	CMOS Design	√	√		H	H	M	H	M

Indicate how the PEOs have been redefined in the past (10)

<u>The PEOs are being defined for the first time based on the following points. They will undergo changes in due course of time, if necessary</u>.

1. Mission and vision of the institute
2. Mission and vision of the Department
3. Policy of the government
4. Requirement of Industry
5. Research and Teaching requirements
6. R & D organizations
7. SWOT analysis

2. Programme Outcomes (225)

Definition and Validation of Course Outcomes and Programme Outcomes (30)

2.1.1. List the Course Outcomes (COs) and Programme Outcomes (POs) (2)

Course Outcomes (COs)

Objectives of the Course outcome for all courses can be summarized as under:

1. Solve numerical related to electrical and electronics circuits.
2. Design and develop circuits for different applications
3. Analyse a problem and find solution to the same.
4. Use general purpose laboratory instruments for measurements and interpret measured parameter.
5. Develop hardware for specific application with use of multiple skills including problem solving, programming, hardware development, circuit simulation, manufacturing and etc.

Graduates in will be able to attain following outcomes:

a. To gain necessary background in fundamentals engineering concepts to pursue undergraduates studies in electronics and Communication Engineering.
b. Learn Electronics system design so to be part of ever growing electronics industry.
c. Acquire through knowledge in Tele-communication, wireless communication system, data communication techniques, satellite communication which form the backbone of current communication technology.
d. Learn to use digital signal processing, embedded systems and VLSI techniques for different engineering applications.
e. Develop the ability to analyze and solve real world engineering problems related to electronics and communication systems.
f. Gain adequate technical and theoretical background of on programming techniques purse career in software industries.
g. Design and implement complex systems as a part of Research Projects over two semesters
h. Gain broad knowledge in multi-disciplinary subjects and domain knowledge to be a part of growing group of managers for industry through higher education studies leading MBA.
i. Gain ability to understand patents, write term papers on advanced techniques in the field of Electronics and Communication Engineering.

All B.Tech Graduates in Electronics and Communication Engineering will be able to attain following outcomes:

ECL204: Measurement and Instrumentation

The students are expected to learn:

- How to get an accurate measurement any physical quantity using various calibration methods.
- The fundamentals of measuring systems including the particular limitations and capabilities of a number of specific measuring devices (pressure transducers, strain gages, thermocouples, etc.) and equipment (oscilloscope, data acquisition card, etc.).
- The experimental process applied in the laboratory for different physical quantity measurement.

ECL210: Signal and Systems

- This Course will introduce you to the fundamental ideas of signals and system analysis. Applications of these ideas include audio and image processing, communications, control, machine learning, and finance.
- The topics we'll cover in the course include basic properties of signals and systems, the processing of signals by linear systems, Fourier series and transforms, sampling, discrete-time processing of continuous-time signals.
- This course will serve as a central building block for students interested in further studying information processing in any form.

EEL209: Linear Network Theory

- This course introduces the fundamentals of network analysis and synthesis.
- This covers the concept of circuit elements, lumped circuits, circuit laws and reduction and Analyse AC steady-state responses and transient response of resistance, inductance and capacitance in terms of impedance.
- At the end students will be able to understand the transient response of series and parallel A.C. circuits and concept of coupled circuits and two port networks.

ECL301: Analog Communication

- The course is designed to covers the fundamentals, principles, concepts, and techniques of analog and digital communication systems like various modulation techniques, digital data transmission, communication technologies, time-domain and frequency domain multiplexing techniques, noise analysis, information theory and various channel coding.

ECL302: Device Modelling

- This course offers an introduction to numerical modelling of semiconductor devices and to deal with advanced concepts in semiconductor electronic devices.

- Through the course, student will understand the physical, electrical, and optical properties of semiconductor materials and their use in microelectronic circuits.

- Course enables students to analyze the relation of atomic and physical properties of semiconductor materials to device and circuit performance issues.

- By the end of course, student understand the connection between device-level and circuit-level performance of microelectronic systems.

- Students can perform analysis of device structures and behaviours using modelling software.

ECL303: Digital Communication

- This course is useful to present the basic principles that underline the analysis and design of digital communication systems.

- The subject of digital communication involves the transmission of information in digital form from a generating source to one or more destinations.

- The course also covers the analysis and design of communication systems are affected by the characteristics of the physical channels through which the information is transmitted.

ECL304: Digital Signal Processing

- This course is designed to provide students with a comprehensive treatment of the important issues in design, implementation and applications of digital signal processing concepts and algorithms.

- It helps the students to develop skills for analyzing and synthesizing algorithms and systems that process discrete time signals, with emphasis on realization and implementation.

ECL305: Electromagnetic Fields

- This course defines capacitors, inductors and resistors in terms of its primary electric and magnetic quantities like electric charge, electric potential, electric current, electric and magnetic flux.

- It also explains universal concepts in three-dimension real world, i.e., electro-magnetic wave propagation in free-space.

- The students will learn to define electric and magnetic fields, calculate electric and magnetic fields from stationary and dynamic charge and current distributions, solve simple electrostatic boundary problems, describe simple models for electromagnetic interaction with media, be able to choose adequate models and solution methods for specific problems, solve problems analytically and numerically.

ECL306: Microprocessor and Interfacing

- Through this course the students will be able to identify the internal registers and memory organization for assembly language programming.
- They are able to design interface circuits for microprocessors and also interface controlling devices and data acquisition systems.
- This course helps the students to develop assembly language codes for microprocessor-based systems.

ECL308: Analog Circuit Design

- Through the course student is able to do the Analysis, design, and applications of modern analog circuits using integrated bipolar transistor and field effect transistor.
- They also demonstrate the use of analog circuit analysis to analyze the operation and behaviour of various modern analog integrated circuits

ECL309: Finite Automata

- This course provides techniques help to understand of structure, behaviour, limitations and capability of logical machines used for wide variety of applications.
- It helps to formulate digital logical design methods and to develop algorithms that can be useful for wide range of applications.

ECL310: CMOS Design

- The course offer the students is to introduce the fundamental principles of VLSI (Very Large Scale Integrated) circuit design and layout, to cover the basic building blocks of large-scale CMOS digital integrated circuits, and to provide hands-on design experience using a professional IC design platform.
- The course help the students to provides an overview of CMOS fabrication technologies, physical VLSI design issues (bottom-up design), basic CMOS logic gates, architectural building blocks and system design (top-down design), with a stronger emphasis on physical design principles.

ECL386: Advanced Sensors and Instrumentation

- The aim of this course is to introduce the students about the fundamentals of intelligent sensor systems including sensors, instrumentation and pattern analysis.

- The course also provides an integrative and multidisciplinary experience by building a complete multi-sensor intelligent system. Course offers the students to develop instrumentation, data acquisition and pattern analysis software using modern equipment and software tools.

ECL388: Automotive Electronics

- The course covers automotive communication networks and protocols, power distribution and hybrid system controls. Students will learn to use on-board diagnostics to communicate with the electronic systems in an automobile and extract essential system performance information.

- The course also reviews trends in automotive electronics as well as issues (such as cost, reliability and systems integration) that are driving the industry. Students will learn concepts and develop basic skills necessary to diagnose automotive electrical problems.

- This course helps the students to diagnose and repair automotive batteries, starting, and charging, lighting systems, advanced automotive electrical systems, to include body electrical accessories, and basic computer control.

EEL309: Power Electronics

- This course is designed to present the basic concepts of power electronics devices, and control.

- The converter analysis, design, modelling, and control of switching converters will be presented as relevant to different applications.

EEL310: Control Systems

- Students will learn the modelling of linear dynamic systems via differential equations and transfer functions utilizing state-space and input-output representations.
- They can analysis of control systems in the time and frequency domains and using transfer function and state-space methods.
- Through the successful completion of the course, the student will be able to:

- Learn various systems exhibiting control mechanisms and understand their operation,
- Represent Mathematical model of Feedback Control Systems.
- Evaluate the concept and significance of a Control System model and its applicability.

CSL311: Computer Architecture & Organization

This course helps to learn:

- How computers work, basic principles,
- How to analyse their performance,
- How computers are designed and built.
- It gives understanding of issues affecting modern processors (caches, pipelines etc.).

CSL 312: Concepts in operating systems

- This course is about models of Operating Systems from the uni-processor / multiprocessor perspectives.
- It attempts to provide the frame of reference on which the existing designs have emerged, and the future design possibilities are likely to evolve.
- In this course, the emphases would be on the paradigm that views an Operating System environment in the collective interplay of processes requiring economic resources.
- In this course we would also develop to gain knowledge about the Operating Systems concepts such as process, main memory management, secondary memory management, CPU and disk scheduling etc.

CSL377: Software Engineering

- This course provides the student to understand the basic theory of software engineering, and to apply these basic theoretical principles to a group software development project.
- This course offers the concepts and methods required for the construction of large software intensive systems.
- It aims to develop a broad understanding of the discipline of software engineering.

CEL495: Environment Management

- Through this course students will be able to understand national and global

environmental issues and understand the requirements of Bureau of Standards (BOS).

- At the end of this course students identify and evaluate environmental aspects and impacts and write an environmental policy.

- Course helps them to understand basic principles of auditing and certification.

ECL401: Hardware Description Language

- This course covers an introduction to hardware description languages and associated methodologies for digital system design.

- It also provides in-depth coverage includes applications to the simulation and synthesis of digital systems.

- The students will get familiar with the process of digital integrated circuit synthesis, together with place and route, starting from HDL code to silicon/gate array level.

ECL402: Communication Network and Network application

- This course provides students with an overview of the concepts and fundamentals of data communication and computer networks.

- Through the course, students will be able to understand the fundamental concepts of computer networking and familiar with the basic taxonomy and terminology of the computer networking area.

- The course introduces the student about to advanced networking concepts and gain expertise in some specific areas of networking such as the design and maintenance of individual networks.

ECL403: Embedded Systems

- The aim of this course is to provide the student with a detailed understanding of Microcontrollers and Embedded systems.

- The course covers fundamentals of Architecture, Assembly Language Programming, Instruction set, Serial Communication and Interfacing techniques of 8051 Microcontroller.

- By the end of course, students are able to design an application specific embedded system.

ECL 405: Waveguides and Antennas

- The course provides students an introduction to radiation theory, antennas,

radiation fields, radiation resistance and gain.

- It helps to understand transmitting arrays, plane-wave approximation of radiation fields, plane-wave propagation, reflection, and transmission.

- It introduces Doppler Effect, evanescent waves and tunnelling, dispersion, phase and group velocities, waveguides and resonant cavities, antenna reception and link budgets.

ECL406: Mobile Communication Systems

- This course provides an introduction to fundamental technologies of the mobile telecommunications.

- Through this course, students examine fundamental concepts of mobile cellular communications and specifics of current and proposed cellular systems.

- Course introduces fundamental concepts of physical layer such as propagation loss, multi-path fading and methods of reducing fading effects, Equalization and Diversity Techniques are included in the course.

- 4.At the end students should have knowledge about Cellular standards including 2G code-division multiple access (CDMA), IS-95A, 2.5G IS-95B, 2G time-division multiple access (TDMA), Global System for Mobile (GSM), and Evolution of GSM technologies towards 4G.

ECL407: Radar Engineering

- Through this course students are able to learn the fundamental issues involved in radar signal processing, the frequency and time domain methods of power and velocity measurements and algorithms for the enhancement of radar performance.

- The course also provides how a Doppler radar can be used for precipitation measurements, study the statistical properties of the various algorithms used with Doppler radars.

ECL408: Biomedical Engineering

- After successful completion of this course, students will be able to practice biomedical engineering to serve state and regional industries, hospitals, government agencies, or national and international industries and work independently in particular areas such as biomedical electronics, medical instrumentation, medical imaging, biomedical signal processing, rehabilitation engineering, and neuro engineering.

ECL408: Biomedical Engineering

- After successful completion of this course, students will be able to practice

biomedical engineering to serve state and regional industries, hospitals, government agencies, or national and international industries and work independently in particular areas such as biomedical electronics, medical instrumentation, medical imaging, biomedical signal processing, rehabilitation engineering, and neuron engineering.

ECL409: Radio Frequency Circuit Design (RFCD)

- This course covers the analysis, design and simulation of radio frequency (RF) circuits and components for communication systems and industrial applications.
- This course is useful to students for understanding fundamental RF circuit and system design skills and it introduces students the basic RF electronics utilized in the industry and how to build up a complex RF system from basis.

ECL410: Satellite Communication

- This course presents the fundamentals of satellite communications link design and provides an overview of practical considerations.
- Existing systems are described and analyzed, including direct broadcast satellites, VSAT links, and Earth-orbiting and deep space spacecraft.
- Topics include satellite orbits, link analysis, antenna and payload design, interference and propagation effects, modulation techniques, coding, multiple access, and Earth station design.

ECL411: Digital Image Processing

- This course offers fundamentals of digital image processing and algorithms that are used.
- At the end of the course the student should have a clear impression of the breadth and practical scope of digital image processing and have arrived at a level of understanding that is the foundation for most of the work currently underway in this field.
- Students will be able to implement basic image processing algorithms using different tools such as MATLAB, Java.

ECL412: Advance Digital Signal Processing

- The course covers fundamental theory including the Discrete Fourier Transform, and Fast Fourier Transform algorithms; it then progresses into the design of digital filters.
- The goal of advanced digital signal processing course is to provide the

students a comprehensive coverage of signal processing methods and tools, including leading algorithms for various applications.

ECL 413: Adaptive Signal Processing

- The primary objective of this course is to develop the ideas of optimality and adaptation in signal processing.
- The students will discuss the design, analysis, and implementation of digital signal processing systems that can be considered optimal in some sense.
- Through this course students will be able to understand why adaptation is required if a system is to remain optimal in a continually changing environment and why an emphasis is placed on developing adaptive algorithms with applications to specific engineering problems.

ECL415: Electronic System Design

- This course helps the students to understand the principles and operation of advanced electronic circuits and devices such as bipolar junction transistor, operational amplifier, filters, digital logic gates, ADC and DAC, 555 Timer and Instrumentation amplifiers.
- It also emphasizes the importance of modelling the behaviour of complex electronic circuits and devices using systematic mathematical techniques.
- Students will be able to design, analysis and simulation advanced electronic circuits using PSPICE software tools.

ECL422: Statistical Signal Analysis

- This course covers random signals and statistical signal processing.
- It gives an understanding of statistical signal representation that is mainly in the discrete-time context so that a random vector observation is a principal focus.
- This course introduces students about statistical signal processing problems and methods, basic signal processing methods for detection, parameter estimation, optimum filtering and spectrum estimation problems.

ECL423: Image analysis and Computer vision

- Through this course students will learn about the difficulties associated with automated image content recognition and understand the imaging issues from the perspective of quantitative image analysis will provide students with a balanced view of modern microscopy studies.
- The course will cover a broad range of computer vision techniques and

provides students with appropriate training to allow them to select and apply methods that are most relevant to their research.

- It introduces the student to computer vision algorithms, methods and concepts which will enable the student to implement computer vision systems with emphasis on applications and problem solving.

ECL424: Optical Communication

- 1.This course designed to enable students to develop a full understanding of the components and the design and operation of optical fibre communication systems and introduces the principles of wavelength division multiplexed (WDM) systems, RF photonic systems and passive optical networks (PONs).

- Students are able to understand the characteristics and limitations of system components like laser diodes, external modulators, optical fibre, and optical amplifiers.

- By the end of this course students will be able to analyze the performance of both analog and digital optical fibre systems and calculate the system bandwidth, noise, probability of error and maximum usable bit rate of a digital fibre system.

ECL 427: Broadband Communication Networks

- This course provides an introductory overview on broadband communication networks.

- The course covers major aspects of communication networks, such as network design, performance evaluation, protocols and technologies.

- This course focuses on the network modelling by using mathematical tools, such as queuing theory and stochastic processes, and network optimization, which can provide guaranteed transmission performance with efficient usage of network resources.

ECL434: Wireless Digital Communication

- This course provides the students deep knowledge in modern digital communication systems at the theoretical & practical level and introduces the most advanced standards, the future of digital wireless communication systems & networks.

- The course will focus on modern digital wireless communication systems including the cellular concept, mobile radio environment, signals generation, modulation & processing.

- At the end of course, students will should able to work in the communication industry & in mobile communication networks.

ECL465: Soft Computing

- This course designed to identify and describe soft computing techniques and their roles in building intelligent machines and to recognize the feasibility of applying a soft computing methodology for a particular problem.

- This course also helps to apply fuzzy logic and reasoning to handle uncertainty and solve engineering problems, apply genetic algorithms to combinatorial optimization problems, and apply neural networks to pattern classification and regression problems.

- By the end of this course, students will effectively use existing software tools to solve real problems using a soft computing approach,

- Evaluate and compare solutions by various soft computing approaches for a given problem.

ECL468: Electronics Product Design and Reliability

- This course provides a methodical approach to product design which breaks the process into sequential steps and emphasizes the concept that design cannot be carried out in isolation from the manufacturing process, where quality and reliability are essential to economic success.

- By the completion of this course, the student should be able to estimate the reliability of a given design, enhance reliability figure by introducing elements of redundancy and aware of the cost implications of reliability.

MCL497: Robotics

- This course provides an introduction of robotics used in modern industry.

- At the successful completion of this course, the student will be able to select the coordinate, drive, and control system necessary to implement a robot in a specific job task.
- They can write, save, load, and edit a robot control program and interface various types of peripheral devices used in robotic work cells.
- Students are able to describe basic mechanical, electrical and electronic components used for machine control.
- They also describe appropriate safety procedures and able to implement them in a work cell by proper design and selection of hardware and peripheral equipment.

2. Programme Outcomes (POs)

A. Additional Programme Outcomes (POs)

1. The Department of Electronics and Communication Engineering has a strong focus on providing students with a strong background in mathematics, science and engineering. The department provides students with adequate practical training by way of laboratory sessions, design and problem based learning.

2. Students shall participate and succeed in competitive examinations such as GATE, GRE and TOEFL, PSUs and may admit to various programs like Master of Science (Abroad/ India), Master of Technology (India) and Doctor of Philosophy (India/ Abroad).

3. Students will be able to realize their ideas with the help of 'Incubation Centre' established within college premises and will be able to participate in National / International level project (Design/ Coding) competitions organized by Industry/ Institutes.
4. With the help of technical and entrepreneur skills students will be able to employ appropriate techniques using hardware and software engineering tools for modern engineering applications and will demonstrate an ability to apply their knowledge of advanced mathematics and electronics engineering principles towards creating new technologies that helps students to establish their own industries/ ventures.
5. With the help of established laboratories (ATMEL MCU Centre, TEXAS INSTRUMENTS Analog Laboratory) students are working with cutting edge technology and can pursue their career in the specific areas.
6. By working amid project groups of various projects sponsored by DST, BARC (Govt. of India funded projects), students can participate and gain research experience which will be useful for pursuing a career in various government and private R&D centres in India and Abroad.
7. Through the work experience gained from summer / winter training programs conducted by the expert faculties from the department and at various reputed organizations in India and Abroad, students can have up to date knowledge of the specific field and can pursue career in that field.

2.1.2. State how and where the POs are published and disseminated (3)

- Annual report.
- Minutes of various meetings.
- Institute's Web site(http://www.vnit.ac.in)
- Documents available in Academics section.
- Documents available in Technical Education Quality Improvement programme (TEQIP) office.
- It is planned to include these in the curriculum and regulation book in the future.

2.1.3. Indicate processes employed for defining of the POs (5)

Processes already existing

- Formulation and implementation of projects for government agencies, public sectors units (PSUs) and industries.
- Capacity building by organizing short term courses, workshops, conferences and training programs at various levels.
- Providing training to the students in industry or industry based projects.
- Student's feedback verbal as well as written.
-

Processes modified additionally

- Views of Experts from IIT during academic audit.
- Department representatives, Industry members, alumni meet every year to review and define the POs under BOS meeting.
- Industry-department based interactions at B.Tech, M.Tech. Projects and feedback from alumni office on regular basis.
- Induction of courses based on industrial need and modification in curricula.
- Induction of courses based on recent development being studied globally.

2.1.4. Indicate how the defined POs are aligned to the Graduate Attributes prescribed by the NBA (10)

Graduate Attributes of NBA

A. Graduates will demonstrate knowledge of mathematics, science and Engineering.
B. Graduates will demonstrate ability to identify, formulate and solve electronics and communication engineering problems.
C. Graduate will demonstrate ability to design and conduct Experiment, analyze and interpret data.
D. Graduates will demonstrate an ability to implement digital and analog system as per needs and specifications.
E. Graduates will demonstrate an ability to visualize and work on laboratories and multi - disciplinary tasks as a part of team.
F. An ability to use the technique, skills and modern engineering tools necessary for engineering practice.
G. Graduates will demonstrate understanding of professional and ethical responsibilities.
H. Graduate will demonstrate to communicate effectively in both verbal and written form.
I. Graduate will show the understanding of impact of engineering solutions on the society and also will be aware of contemporary issues.
J. Graduate will develop confidence for self-education and understand the value for lifelong learning.

ALIGNMENT OF DEFINED POs with GRADUATE ATTRIBUTES OF NBA

S No.	PO -- Program Objectives (Page No.54)	Aligned to Graduate Attributes of NBA (Page No.53)
1.	The Department of Electronics has a strong focus.....	A, B,C,D,E
2.	The Students shall participate.....	A, B,C,D,E,G,H
3.	Students will be able to realize.....	A,F,G,H,I,J
4.	With the help of technical and entrepreneur skills.....	A,F,H,I,J
5.	With the help of established laboratories.....	F,I,J
6.	By working amid project groups of various projects.....	F,G,H,I,J
7.	Through the work experience gained from summer / winter.....	F,G,H,I,J

2.1.5. Establish the correlation between the POs and the PEOs (10)

All the PEOS are being transformed to Pos through various means of applications, such as

- Coursework
- Laboratory work
- Software use
- Seminar and technical writing
- Summer Research or Industrial Project
- Research project work of one year
- Expert lectures
- International/national exchange visits
- Technical activities of the department

The co-relation between the SEVEN POs (ON PAGE 52) defined by the Department and the FIVE PEOs (ON PAGE 24) also defined by the Department are tabulated below.

		Mapping of the PEOs				
		1	2	3	4	5
1	The Department of Electronics has a strong focus.....	H	H	H	H	M
2	The Students shall participate.....	H	H	H	M	H
3	Students will be able to realize.....	M	H	M	M	H
4	With the help of technical and entrepreneur skills.....	H	H	H	H	H
5	With the help of established laboratories.....	M	H	M	H	H
6	By working amid project groups of various projects.....	M	H	M	H	H
7	Through the work experience gained from summer / winter.....	M	H	M	H	H

Attainment of Programme Outcomes (40)
2.2.1. Illustrate how course outcomes contribute to the POs (10)
Strong Contribution_____ **H**
Moderate Contribution_____ **M**
Weak Contribution_____ **L**

Contribution of Courses To Program Outcomes		Program Outcomes						
Course	**Credits**	**1**	**2**	**3**	**4**	**5**	**6**	**7**
Integral Transforms & Partial Differential Equations	6	H	M	L	H	M	M	H
Numerical Methods & Probability Theory	6	H	M	L	H	M	M	H
Linear Network Theory	6	H	L	L	H	L	M	L
Electronic Devices	6	H	H	M	M	M	M	H
Electronic Devices Lab.	2	H	L	M	H	H	H	M
Digital Logic Design	6	H	H	M	M	L	M	H
Digital Logic Design Lab.	2	H	L	M	H	H	H	M
Analog Circuit Design	6	H	H	L	M	M	L	H
Analog Circuit Design lab.	2	H	L	L	H	H	H	M
Microprocessors & Interfacing	6	H	H	M	M	M	M	H
Microprocessors & Interfacing lab.	2	H	L	M	H	H	H	M
Control Systems	6	H	H	M	L	L	M	H
Control Systems Lab.	2	H	L	M	H	H	L	M
Analog Communication	6	H	H	L	L	L	M	L
Analog Communication Lab	2	H	L	L	H	H	L	M
Device Modelling	6	H	H	H	M	L	M	H
Device Modelling Lab.	2	H	L	H	H	H	H	M
Electronic System Design	6	L	L	H	M	H	M	L
Signals & Systems	6	L	H	H	M	M	L	H
Digital Signal Processing	6	H	H	H	M	M	M	H
Digital Signal Processing Lab	2	H	L	L	H	H	H	M
Digital Communication	6	H	H	M	M	L	L	H
Digital Communication Lab	2	H	L	L	H	L	H	M
Embedded systems	6	H	H	H	M	M	M	H
Embedded systems Lab	2	H	L	L	H	H	H	M
Hardware Description Language	6	H	H	H	M	M	M	H
Hardware Description Language Lab	2	H	L	L	H	H	H	M
Electromagnetic Fields	6	M	L	M	M	L	H	H
Waveguides and Antennas	6	M	H	M	L	M	H	H
RF & Microwave Engineering	6	M	M	M	M	L	H	H
Wireless Digital Communication	6	M	H	M	M	M	H	H
Satellite Communication	6	M	M	M	L	L	M	H
Mobile Communication Systems	6	M	H	M	M	M	H	H
Project phase –I		M	H	H	H	H	H	H
Project phase –II		M	H	H	H	H	H	H

2.2.2. Explain how modes of delivery of courses help in attainment of the POs (10)

The department is monitoring the following functions towards attainment of program outcomes:

- **Lectures in classrooms:** Gives students strong background in science, mathematics and engineering and enable them to solve problems through analytical techniques.

  Result: POs attained ------- 1, 2, 4, 7(see page –52 for POs)

- **Labs:** Enables students to demonstrate their practical knowledge using hardware and software engineering tools. Also enable them to work in teams.

  Result: POs attained ------- 1, 2, 3,4,5,7 (see page – 52 for POs)

- **Mini AND MAJOR and electronic workshop:** Focuses on multidisciplinary activities, team work, application of engineering knowledge, researching new ways and technologies.

  Result: POs attained ------- 1,2,3,4,5,6,7 (see page – 52 for POs)

- **Field visits:** Makes students aware of the various implementation and problem solving skills for real world engineering challenges.

  Result: POs attained ------- 4,5,6,7 (see page – 52 for POs)

- **Seminars and workshops:** Students get to see the research side of engineering. They may also generate interest in a topic which might excite them enough to pursue higher education of the same field
  Result: POs attained ------- 1, 4, 7 (see page – 52 for POs)

- **Expert lectures:** Gives students a new prospective about engineering challenges and solutions.

  Result: POs attained ------- 3, 4, 6 (see page – 52 for POs)

2.2.3. Indicate how assessment tools used to assess the impact of delivery of course/course content contribute towards the attainment of course outcomes/programme outcomes (10)

Continuous Internal Evaluation

- This consists of two sessional examinations conducted at regular intervals during the semester as well as class assignment.
- Practical test conducted through the semester.
- Class committees

Result: POs ATTAINED 1,4,5 (see page – 52 for POs)

Semester End Evaluation:

- This considers the performance of student in end semester exam and two sessional exams and the result is shown in terms of grades.

Result: POs ATTAINED 1, 4 (see page – 52 for POs)

Course Feedback:

- This is the direct assessment tool. It checks if the course outcomes are in line with the course contents actually delivered.
- This is taken for each course individually at the end of the semester and is compulsory to be filled by each student.

Result: POs ATTAINED 1 (see page – 52 for POs)

Faculty Advisor Meeting:

- A faculty advisor is assigned to a group of 20 students. This faculty advisor meets the students thrice in a semester to find the progress.
- If any discrepancy is found steps are taken to correct it.

Result: POs ATTAINED 1,4,5,6 (see page – 52 for POs)

2.2.4. Indicate the extent to which the laboratory and project course work are contributing towards attainment of the POs (10)

Towards the advancement and future exposures about the coder courses, department has developed some laboratories with coordination of industry experts. These labs are as follows:

	Laboratories	POs (Page-52)
1.	Various Course laboratories	1,3,5,6
2.	ATMEL MCU Centre	4,5,6
3.	Texas Embedded Laboratory	4,5
4	Texas Analog System Laboratory	4,5
5.	Compulsory Academic Projects	1,2,4,5
6.	Summer and Winter Projects	3,4,5,7
7.	R& D Projects(DST,MICT,BRNSS)	4,6,7
8.	Industrial Training and Projects (DRDO, ISRO, EICL....)	4,6,7

Evaluation of the attainment of the Programme Outcomes (125)

2.3.1. Describe assessment tools and processes used for assessing the attainment of each PO (25)

We have the following assessment processes to gather the data upon which the evaluation of the each PEOs is based.

1. Staff members' discussion.
2. Student feedback.
3. Alumni Meetings.
4. Academic Audit by Expert Faculty.
5. Meeting with Board of studies Members.
6. SENATE Meetings.

The assessment is done through

1. Two Mid semester examination and Teachers' assessment with 40% to 60% weightage
2. End semester examination with 60% to 40 % weightage
3. Teacher's assessment through assignment, tutorial and class tests.
4. Continuous evaluation for laboratory courses
5. Evaluation through seminars and POSTER presentation FOR PROJECTS
6. Evaluation of submitted report

S.No.	Pos (Page-52)	Assessments Tools and Process					
		1	2	3	4	5	6
1.	The Department of Electronics and Communication Engineering has a strong focus on providing students with a strong background in mathematics, science and engineering. The department provides students with adequate practical training by way of laboratory sessions, design and problem based learning.	X	X	X	X		
2.	Students shall participate and succeed in competitive examinations such as GATE, GRE and TOEFL, PSUs and may admit to various programs like Master of Science (Abroad/ India), Master of Technology (India) and Doctor of Philosophy (India/ Abroad).	X	X		X	X	X
3.	Students will be able to realize their ideas with the help of 'Incubation Centre' established within college premises and will be able to participate in National / International level project (Design/ Coding) competitions organized by Industry/ Institutes.					X	X
4.	With the help of technical and entrepreneur skills students will be able to employ appropriate techniques using hardware and software engineering tools for modern engineering applications and will demonstrate an ability to apply their knowledge of advanced mathematics and electronics engineering principles towards creating new technologies that				X	X	X

	helps students to establish their own industries/ ventures.						
5.	With the help of established laboratories (ATMEL MCU Centre, TEXAS INSTRUMENTS Analog Laboratory) students are working with cutting edge technology and can pursue their career in the specific areas.				X	X	X
6.	By working amid project groups of various projects sponsored by DST, BARC (Govt. of India funded projects), students can participate and gain research experience which will be useful for pursuing a career in various government and private R&D centres in India and Abroad.					X	X
7.	Through the work experience gained from summer / winter training programs conducted by the expert faculties from the department and at various reputed organizations in India and Abroad, students can have up to date knowledge of the specific field and can pursue career in that field.					X	X

Include Information on: (50)

a) A listing and description of the assessment used to gather the data which the evaluation of each the programme educational objectives is based .Examination of data collection processes may include ,but are not limited to, specific exam questions, students portfolios ,internally developed assessment exam, senior project presentations, nationally –normed exams, oral-exams, focus groups, industrial advisor committee.

	Pos (Page-52)	Assessment Tools and process
1.	The Department of Electronics and Communication Engineering has a strong focus on providing students with a strong background in mathematics, science and engineering. The department provides students with adequate practical training by way of	(1) Job market scenario based on data from campus requirement (2) science activity in the country (3) National /International standard examination like

		laboratory sessions, design and problem based learning.	GATE,CAT,NET,GRE,TOFEL (3) Technical advances in the various field of electronics and communication.
	2.	Students shall participate and succeed in competitive examinations such as GATE, GRE and TOEFL, PSUs and may admit to various programs like Master of Science (Abroad/ India), Master of Technology (India) and Doctor of Philosophy (India/ Abroad).	(1) National /International standard examination like GATE, CAT, NET, GRE, TOFEL. (2) National demand for students in India to take up management and technical studies at premier institutes.
	3.	Students will be able to realize their ideas with the help of 'Incubation Centre' established within college premises and will be able to participate in National / International level project (Design/ Coding) competitions organized by Industry/ Institutes.	(1) R & D projects received from sponsored agencies (2) Interest of multinational hardware companies to establish laboratories at Institute/universities (3) New trends in consumer electronics technology.
	4.	With the help of technical and entrepreneur skills students will be able to employ appropriate techniques using hardware and software engineering tools for modern engineering applications and will demonstrate an ability to apply their knowledge of advanced mathematics and electronics engineering principles towards creating new technologies that helps students to establish their own industries/ ventures.	(1) National demand for students in India to take up management and technical studies at premier institutes. (2) New trends in management and technical education to take care of changing market scenario (3) Job opportunities with software companies, MNCs and PSU. (4) Market demand for acquired skill.
	5.	With the help of established laboratories (ATMEL MCU Centre, TEXAS INSTRUMENTS Analog Laboratory) students are working with cutting edge technology and can pursue their career in the specific areas.	(1) Interest of multinational hardware companies to establish laboratories at Institute/universities (2) New trends in consumer electronics technology. (3) R & D projects received from sponsored agencies.
	6.	By working amid project groups of	(1) R & D projects received

	various projects sponsored by DST, BARC (Govt. of India funded projects), students can participate and gain research experience which will be useful for pursuing a career in various government and private R&D centres in India and Abroad.	from sponsored agencies (2 Thrust for innovation to improve commercial returns from the research outputs. (3) Job opportunities with software companies, MNCs and PSU.
7.	Through the work experience gained from summer / winter training programs conducted by the expert faculties from the department and at various reputed organizations in India and Abroad, students can have up to date knowledge of the specific field and can pursue career in that field.	(1) Job opportunities with software companies, MNCs and PSU. (2) Research areas and research publications in the designated field

b) The frequency with which these assessment processes are carried out.

	Pos (Page-52)	Frequency of assessment processes
1.	The Department of Electronics and Communication Engineering has a strong focus on providing students with a strong background in mathematics, science and engineering. The department provides students with adequate practical training by way of laboratory sessions, design and problem based learning.	Annually
2.	Students shall participate and succeed in competitive examinations such as GATE, GRE and TOEFL, PSUs and may admit to various programs like Master of Science (Abroad/ India), Master of Technology (India) and Doctor of Philosophy (India/ Abroad).	Annually
3.	Students will be able to realize their ideas with the help of 'Incubation Centre' established within college premises and will be able to participate	Just started Annually planned

	in National / International level project (Design/ Coding) competitions organized by Industry/ Institutes.	
4.	With the help of technical and entrepreneur skills students will be able to employ appropriate techniques using hardware and software engineering tools for modern engineering applications and will demonstrate an ability to apply their knowledge of advanced mathematics and electronics engineering principles towards creating new technologies that helps students to establish their own industries/ ventures.	Annually
5.	With the help of established laboratories (ATMEL MCU Centre, TEXAS INSTRUMENTS Analog Laboratory) students are working with cutting edge technology and can pursue their career in the specific areas.	Annually
6.	By working amid project groups of various projects sponsored by DST, BARC (Govt. of India funded projects), students can participate and gain research experience which will be useful for pursuing a career in various government and private R&D centres in India and Abroad.	Once in 1-2 Years
7.	Through the work experience gained from summer / winter training programs conducted by the expert faculties from the department and at various reputed organizations in India and Abroad, students can have up to date knowledge of the specific field and can pursue career in that field.	Bi-annually

B. These assessments are done every semester from students

2.3.2. Indicate results of evaluation of each PO (50)

1. Based on the student feedback, the alumni survey and the student exit survey, each course has been successful to achieve the program outcomes.

2. Every faculty keeping the records of each sessional and end semester examination. With reference to this faculty doing the result analysis and formulate the grades for students. Finally these grades are uploaded to the college website.

3. The expected level of attainment for each of the program outcomes;

- 100% attainment for each program outcomes is being observed

4. Summaries of the results of the evaluation processes and an analysis illustrating the extent to which each of the programme outcomes are attained.

- Evaluation process used to attain the program outcome are satisfactory and being improved at regular intervals in best possible ways.

5. How the results are documented and maintained.

- Annual report
- Minutes of various meetings
- Institute web site
- Documents available in Academic section
- Documents available in Technical Education Quality Improvement Program(TEQIP) office
- Documents available in MIS office.

	Pos (Page-52)	Results of Evaluation
1.	The Department of Electronics and Communication Engineering has a strong focus on providing students with a strong background in mathematics, science and engineering. The department provides students with adequate practical training by way of laboratory sessions, design and problem based learning.	Achieved
2.	Students shall participate and succeed in competitive examinations such as GATE, GRE and TOEFL, PSUs and may admit to various programs like Master of Science (Abroad/ India), Master of Technology (India) and Doctor of Philosophy (India/ Abroad).	Achieved
3.	Students will be able to realize their ideas with the	Partially Achieved

	help of 'Incubation Centre' established within college premises and will be able to participate in National / International level project (Design/ Coding) competitions organized by Industry/ Institutes.	
4.	With the help of technical and entrepreneur skills students will be able to employ appropriate techniques using hardware and software engineering tools for modern engineering applications and will demonstrate an ability to apply their knowledge of advanced mathematics and electronics engineering principles towards creating new technologies that helps students to establish their own industries/ ventures.	Achieved
5.	With the help of established laboratories (ATMEL MCU Centre, TEXAS INSTRUMENTS Analog Laboratory) students are working with cutting edge technology and can pursue their career in the specific areas.	Majority Achieved
6.	By working amid project groups of various projects sponsored by DST, BARC (Govt. of India funded projects), students can participate and gain research experience which will be useful for pursuing a career in various government and private R&D centres in India and Abroad.	Partially Achieved
7.	Through the work experience gained from summer / winter training programs conducted by the expert faculties from the department and at various reputed organizations in India and Abroad, students can have up to date knowledge of the specific field and can pursue career in that field.	Majority Achieved

Use of evaluation results towards improvement of the programme (30)

2.4.1. Indicate how the results of evaluation used for curricular improvements (5)

The results of each semester including course feedback are analysed at a Department level meeting and appropriate actions are identified. Senior faculty members refine the syllabus and make the necessary improvements and send a draft copy to BOS for approval.

The results of assessment and feedback received helped in

1. Improving the course content,
2. Enhancing laboratory facilities
3. Elaborating project work as demand driven project work
4. Improving technical skills as demand driven project work
5. Gaining multi-disciplinary subject knowledge

	Pos (Page-52)	Results of Evaluation				
		1	2	3	4	5
1.	The Department of Electronics and Communication Engineering has a strong focus on providing students with a strong background in mathematics, science and engineering. The department provides students with adequate practical training by way of laboratory sessions, design and problem based learning.	X	X	X	X	
2.	Students shall participate and succeed in competitive examinations such as GATE, GRE and TOEFL, PSUs and may admit to various programs like Master of Science (Abroad/ India), Master of Technology (India) and Doctor of Philosophy (India/ Abroad).	X			X	X
3.	Students will be able to realize their ideas with the help of 'Incubation Centre' established within college premises and will be able to participate in National / International level project (Design/ Coding) competitions organized by Industry/ Institutes.			X	X	X
4.	With the help of technical and entrepreneur skills students will be able to employ appropriate techniques using hardware and software engineering tools for modern engineering applications		X	X	X	X

	and will demonstrate an ability to apply their knowledge of advanced mathematics and electronics engineering principles towards creating new technologies that helps students to establish their own industries/ ventures.					
5.	With the help of established laboratories (ATMEL MCU Centre, TEXAS INSTRUMENTS Analog Laboratory) students are working with cutting edge technology and can pursue their career in the specific areas.		X	X	X	X
6.	By working amid project groups of various projects sponsored by DST, BARC (Govt. of India funded projects), students can participate and gain research experience which will be useful for pursuing a career in various government and private R&D centres in India and Abroad.				X	X
7.	Through the work experience gained from summer / winter training programs conducted by the expert faculties from the department and at various reputed organizations in India and Abroad, students can have up to date knowledge of the specific field and can pursue career in that field.		X	X		X

2.4.2. Indicate how results of evaluation used for improvement of course delivery and assessment (10)

1. At BOS meeting course delivery aspects are deliberated.

2. Discussions in Class committees

3. The results of assessment and feedback received helped in

(a) Delivering the course content using classroom, LCD Projector and web based materials.
(b) Explaining laboratory analysis using soft computing techniques, hardware

models, etc.
(c) Carrying out project work on real life situations and demands of industries and other agencies.

	Pos (Page-52)	Results of Evaluation Used For
1.	The Department of Electronics Engineering has a strong focus on providing students with a strong background in mathematics, science and engineering. The department provides students with adequate practical training by way of laboratory sessions, design and problem based learning.	(1) Evaluation through examination, assignments and assessment (2) Theory and Laboratory course evaluation (3) Mini and Major Projects (4) Class Tests
2.	Students shall participate and succeed in competitive examinations such as GATE, GRE and TOEFL, PSUs and may admit to various programs like Master of Science (Abroad/ India), Master of Technology (India) and Doctor of Philosophy (India/ Abroad).	Personal Advise and problem solving with Faculty Advisor and Project Guides
3.	Students will be able to realize their ideas with the help of 'Incubation Centre' established within college premises and will be able to participate in National / International level project (Design/ Coding) competitions organized by Industry/ Institutes.	Interaction with industry. E-Cell helps in motivating the students by arranging lectures and competitions
4.	With the help of technical and entrepreneur skills students will be able to employ appropriate techniques using hardware and software engineering tools for modern engineering applications and will demonstrate an ability to apply their knowledge of advanced mathematics and electronics	Pre incubation centre activities are available on campus for interested students.

	engineering principles towards creating new technologies that helps students to establish their own industries/ ventures.	
5.	With the help of established laboratories (ATMEL MCU Centre, TEXAS INSTRUMENTS Analog Laboratory) students are working with cutting edge technology and can pursue their career in the specific areas.	Publications in journals and conferences Participation in National/International Summer term Project and national level technical Contests
6.	By working amid project groups of various projects sponsored by DST, BARC (Govt. of India funded projects), students can participate and gain research experience which will be useful for pursuing a career in various government and private R&D centres in India and Abroad.	Students are registered for PhD and provided assistantships
7.	Through the work experience gained from summer / winter training programs conducted by the expert faculties from the department and at various reputed organizations in India and Abroad, students can have up to date knowledge of the specific field and can pursue career in that field.	Our alumni are placed in high positions in Govt. and public sector organizations.

2.4.3. State the process used for revising/redefining the POs (15)

The POs are being defined for the first time. They will undergo changes in due course of time, if necessary. Academic audit and brain storming sessions will be planned.
This outcome based process has been introduced this year for the first time. The results of future surveys and assessments will be documented in due course and utilised for revision of PO's.

3. Programme Curriculum (125)

Curriculum (20)

1.1.1. Describe the Structure of the Curriculum (5)

L : Lecture Horus; **P** : Lab. Horus
: Seminars, project work may be considered as practical

Scheme for III Semester					
#	**Course Code**	**Course Title**	**L**	**P**	**Credits**
1.	PHL 203	Electronic Materials	3	0	6
2.	MAL 201	Integral Transforms & Partial Differential Equations	3	0	6
3.	EEL 209	Linear Network Theory	3	0	6
4.	ECL 201	Electronic Devices	3	0	6
5.	ECP 201	Electronic Devices Lab	0	2	2
6.	ECL 202	Digital Logic Design	3	0	6
7.	ECP 202	Digital Logic Design Lab	0	2	2
8.	ECL210	Signals & Systems	3	0	6
	Total		**18**	**4**	**40s**

Scheme for IV Semester					
#	**Course Code**	**Course Title**	**L**	**P**	**Credits**
1.	ECL204	Measurements & Instrumentation	3	0	6
2.	ECL308	Analog Circuit Design	3	0	6
3.	MAL205	Numerical Methods & Probability Theory	3	0	6
4.	ECL306	Microprocessors & Interfacing	3	0	6
5.	ECL309	Finite Automata	3	0	6
6.	ECP308	Analog Circuit Design Lab	0	2	2
7.	ECP306	Microprocessors & Interfacing lab	0	2	2
8.	ECP309	Finite Automata Lab	0	2	2
9.	ECP204	Measurement & Instrumentation Lab	0	2	2
10.	PHL208	Physics of semiconductor devices	3	0	6
	Total		**18**	**8**	**44s**

Scheme for V Semester					
#	**Course Code**	**Course Title**	**L**	**P**	**Credits**
1.	EEL 310	Control Systems	3	0	6
2.	EEP 310	Control Systems Lab.	0	2	2
3.	ECL 301	Analog Communication	3	0	6
4.	ECP 301	Analog Communication Lab	0	2	6

5.	ECL 302	Device Modelling	3	0	2
6.	ECP302	Device Modelling Lab.	0	2	2
7.	CSL 311	Computer Architecture & Organization	3	0	6
8.	EEL309	Power Electronics	3	0	6
9.	EEP309	Power Electronics Lab	0	2	2
10.	ECL415	Electronic System Design	3	0	6
	Total		**18**	**8**	**44s**

Scheme for VI Semester					
#	**Course Code**	**Course Title**	**L**	**P**	**Credits**
1.	ECL304	Digital Signal Processing	3	0	6
2.	ECL303	Digital Communication	3	0	6
3.	ECL305	Electromagnetic Fields	3	0	6
4.	ECP307	Electronic Product Engg. Workshop	0	2	2
5.	ECP304	Digital Signal Processing Lab	0	2	2
6.	ECP303	Digital Communication Lab	0	2	2
7.	ECL304	Digital Signal Processing Lab	0	2	2
8.	CSL312	Concepts in operating systems	3	0	6
9.	ECL403	Embedded systems	3	0	6
10.	ECL403	Embedded systems Lab	0	2	2
	Total		**15**	**10**	**40s**

Scheme for VII Semester					
#	**Course Code**	**Course Title**	**L**	**P**	**Credits**
1.	ECD402	Project phase –I	0	2	0
2.	ECL401	Hardware Description Language	3	0	6
3.	ECP401	Hardware Description Language Lab	0	2	2
4.	ECL405	Waveguides and Antennas	3	0	6
5.	ECL412	Advanced digital signal Processing	3	0	2
6.	ECP412	Advanced digital signal Processing Lab	0	2	6
7.	ECL404	RF & Microwave Engineering	3	0	6
8.	ECL434	Wireless Digital Communication	3	0	6
9.	ECL422	Statistical Signal Analysis	3	0	6
10.	ECL423	Image analysis and computer vision	3	0	6
11.	ECL406	Mobile Communication Systems	3	0	6
12.	ECL411	Digital Image Processing	3	0	6
13.	ECL410	Satellite Communication	3	0	6
14.	ECL402	Comm. Net. & Network Applications	3	0	6
	Total		**33**	**6**	**70s**

Scheme for VIII Semester					
#	**Course Code**	**Course Title**	**L**	**P**	**Credits**

1.	ECD402	Project phase –II	0	0	0
2.	ECL409	Radio Frequency Circuit Design	3	0	6
3.	ECL407	Radar Engineering	3	0	6
4.	ECP423	Image analysis and computer vision Lab	0	2	2
5.	ECL402	Comm. Net. & Network Applications Lab	0	2	2
6.	ECL409	Radio Frequency Circuit Design Lab	0	2	2
7.	ECL 427	Broadband Communication	3	0	6
8.	ECL 424	Optical Communication	3	0	6
9.	ECL413	Adaptive Signal Processing	3	0	6
10.	ECL408	Biomedical Engineering	3	0	6
11.	ECL310	CMOS Design	3	0	6
	Total		**21**	**8**	**48s**

3.1.2. Give the Prerequisite flow chart of courses (5)

Type	Departmental Core Courses						
	Code	**Title**	**Credit Structure**	**Credits**	**Sem**	**Prerequisite code**	**Prerequisite Title**
L	PHL203	Electronic Materials	3-0-0	6	3	None	None
L	MAL201	Integral Transforms & Partial Differential Equations	3-0-0	6	3	None	None
L	EEL209	Linear Network Theory	3-0-0	6	3	None	None
L	ECL201	Electronic Devices	3-0-0	6	3	None	None
P	ECP201	Electronic Devices Lab.	0-0-2	2	3	None	None
L	ECL202	Digital Logic Design	3-0-0	6	3	None	None
P	ECP202	Digital Logic Design Lab.	0-0-2	2	3	None	None
L	MAL205	Numerical Methods and Probability Theory	3-0-0	6	4	None	None
L	ECL204	Measurement & Instrumentation	3-0-0	6	4	None	None
P	ECP204	Measurement & Instrumentation Lab.	0-0-2	2	4	None	None
L	ECL308	Analog Circuit Design	3-0-0	6	4	ECL201	Electronic Devices
P	ECP308	Analog Circuit Design Lab	0-0-2	2	4	ECL201	Electronic Devices
L	ECL309	Finite Automata	3-0-0	6	4	ECL202	Digital Logic Design
P	ECP309	Finite Automata Lab	0-0-2	2	4	ECL202	Digital Logic Design

L	EEL310	Control Systems	3-0-0	6	5	MAL201	Integral Transforms & Partial Differential Equations
P	EEP310	Control Systems Lab.	0-0-2	2	5	MAL201	Integral Transforms & Partial Differential Equations
L	ECL301	Analog Communication	3-0-0	6	5	MAL201, MAL205	Integral Transforms & Partial Differential Equations, Basic Numerical Analysis and Probability Theory
P	ECP301	Analog Communication Lab	0-0-2	2	5	MAL201, MAL205	Integral Transforms & Partial Differential Equations, Basic Numerical Analysis and Probability Theory
L	ECL302	Device Modelling	3-0-0	6	5	PHL203, ECL201	Electronic Materials, Electronic Devices
P	ECP302	Device Modelling Lab.	0-0-2	2	5	PHL203, ECL201	Electronic Materials, Electronic Devices
L	CSL311	Computer Architecture & Organization	3-0-0	6	5	ECL202	Digital Logic Design
L	ECL303	Digital Communication	3-0-0	6	6	ECL301	Analog Communication
P	ECP303	Digital Communication Lab.	0-0-2	2	6	ECL301	Analog Communication
L	ECL304	Digital Signal Processing	3-0-0	6	6	MAL201	Integral Transforms & Partial Differential Equations
P	ECP304	Digital Signal Processing Lab.	0-0-2	2	6	MAL201	Integral Transforms & Partial Differential Equations
L	ECL305	Electromagnetic Fields	3-0-0	6	6	MAL102	Mathematics-II

L	ECL306	Microprocessors & Interfacing	3-0-0	6	4	ECL202	Digital Logic Design
P	ECP306	Microprocessors & Interfacing Lab	0-0-2	2	4	ECL202	Digital Logic Design
P	ECP307	Electronic Product Engg. Workshop	0-0-2	2	6	ECL308	Analog Circuit Design
L	ECL401	Hardware Description Languages	3-0-0	6	7	ECL309	Finite Automata
P	ECP401	Hardware Description Languages Lab.	0-0-2	2	7	ECL309	Finite Automata
D	ECD401	Project Phase - I	0-0-2	4	7	None	None
L	ECL405	Wave guides and Antennas	3-0-0	6	7	ECL305	Electromagnetic Fields
D	ECD402	Project Phase-II	0-0-0	8	8	ECD401	Project Phase - I
Total Credits: **152**							

Dept. Elective (UEDE)

	Code	Title	Credit Structure	Credits	Sem	Prerequisite code	Prerequisite Title
L	CSL208	Programming in C and C++	3-0-0	6		None	None
P	CSP208	Programming in C and C++ Lab	0-0-2	2		None	None
L	PHL208	Physics of semiconductor devices	3-0-0	6	4	None	None
L	EEL309	Power Electronics	3-0-0	6	5	ECL308	Analog Circuit Design
P	EEP309	Power Electronics Lab	0-0-2	2	5	ECL308	Analog Circuit Design
L	ECL310	CMOS Design	3-0-0	6	8	ECL302	Device Modelling
L	ECL311	Automotive Electronics	3-0-0	6	8	ECL204	Measurement & Instrumentation
L	CSL312	Concepts in Operating Systems	3-0-0	6	6	None	None
C	ECC401	Advanced Topics in Electronic Engineering	0-0-2	2		None	None

L	ECL402	Comm. Net. & Network Applications	3-0-0	6	8	ECL303	Digital Communication
P	ECP402	Comm. Net. & Network Applications Lab	0-0-2	2	8	ECL303	Digital Communication
L	ECL403	Embedded Systems	3-0-0	6	6	ECL306	Microprocessors & Interfacing
P	ECP403	Embedded Systems Lab	0-0-0	2	6	ECL306	Microprocessors & Interfacing
L	ECL404	RF & Microwave Engg.	3-0-0	6	7	ECL305	Electromagnetic Fields
L	ECL405	Optical Communication	3-0-0	6	8	ECL303	Digital Communication
L	ECL406	Mobile Communication Systems	3-0-0	6	8	ECL303	Digital Communication
L	ECL407	Radar Engineering	3-0-0	6	8	ECL305	Electromagnetic Fields
L	ECL408	Biomedical Engineering	3-0-0	6	7	ECL204	Measurement & Instrumentation
L	MAL408	Statistical Analysis & Queuing Theory	3-0-0	6	8	None	None
L	ECL409	Radio Frequency Circuit Design	3-0-0	6	8	ECL302	Device Modeling
P	ECP409	Radio Frequency Circuit Design Lab	0-0-2	2	8	ECL302	Device Modeling
L	ECL410	Satellite Communication	3-0-0	6	8	ECL303	Digital Communication
L	ECL411	Digital Image Processing	3-0-0	6	8	ECL304	Digital Signal Processing
L	ECL412	Advanced Digital Signal Processing	3-0-0	6	7	ECL304	Digital Signal Processing
P	ECP412	Advanced Digital Signal Processing Lab	0-0-2	2	7	ECL304	Digital Signal Processing
L	ECL413	Adaptive Signal Processing	3-0-0	6	7	ECL304	Digital Signal Processing
P	ECP413	Adaptive Signal Processing Lab	0-0-2	2	7	None	None
L	ECL414	Electronic Product Design and Reliability	3-0-0	6	8	ECP307	Electronic Product Engg. Workshop
L	ECL415	Electronic System Design	3-0-0	6	7	ECL306	Microprocessors & Interfacing
P	ECP415	Electronic System Design Lab.	0-0-2	2	7	ECL306	Microprocessors & Interfacing

L	CSL416	Soft Computing	3-0-0	6	7	None	None
P	CSP416	Soft Computing Lab	0-0-2	2	7	None	None
L	ECL416	Fuzzy Logic and Neural Networks	3-0-0	6	7	ECL304	Digital Signal Processing
L	ECL417	Multimedia Networks	3-0-0	6	8	ECL303	Digital Communication
L	ECL418	Network Planning and Management	3-0-0	6	8	ECL303	Digital Communication
L	ECL419	Wireless Sensor Networks	3-0-0	6	8	ECL303	Digital Communication
L	ECL420	Smart Antennas	3-0-0	6	8	ECL405	Wave guides & Antennas
L	ECL421	Advanced Sensors and Instrumentation	3-0-0	6	8	ECL204	Measurement & Instrumentation
L	ECL434	Wireless Digital Communication	3-0-0	6	7	ECL303	Digital Communication
L	ECL426	Advanced Microprocessors & Interfacing	3-0-0	6	8	ECL306	Microprocessors & Interfacing
P	ECP426	Advanced Microprocessors & Interfacing Lab	0-0-2	2	8	ECL306	Microprocessors & Interfacing
Total Credits: **170**							

3.1.3. Justify how the programme curriculum satisfies the program specific criteria (10)

The students studies Principles of engineering, basic science, and mathematics (including multivariate calculus and differential equations).

1) Students learn to model, analyse, and design, Electronics and Digital Circuits, Communication Systems

2) Students are prepared to work professionally in the fields of Communication Engineering, Signal Processing and VLSI.

3) Students are prepared for competitive exams such as GATE through objective type class test

4) Students organize technical workshops such as robotics from the knowledge gained in various subjects.

State the components of the curriculum and their relevance to the POs and the PEOs (15)

Programme curriculum grouping based on different components

Course Component	Curriculum Content (% of total number of credits of the program)	Total number of contact hours	Total number of credits	Pos (Page-52)	PEOs (Page-24)
Mathematics	10%	30	24	2,3 5	2,5
Sciences	5%	15	12	1	1,3,4
Computing	5%	15	12	1	3,4,5
Humanities	5%	15	12	4	6,7
Professional core	75%	225	162	1	1,2,3,4,5

State core engineering subjects and their relevance to Programme Outcomes including design experience (10)

CONTRIBUTION	GRADE
Strong Contribution	H
Moderate Contribution	M
No Contribution	W

Scheme for III Semester									
#	Course Code	Course Title	1	2	3	4	5	6	7
1.	PHL 203	Electronic Materials	H	H	M	M	M	M	M
2.	MAL 201	Integral Transforms & Partial Differential Equations	H	M	W	H	M	M	H
3.	EEL 209	Linear Network Theory	H	W	W	H	W	M	W
4.	ECL 201	Electronic Devices	H	H	M	M	M	M	H
5.	ECP 201	Electronic Devices Lab.	H	W	M	H	H	H	M
6.	ECL 202	Digital Logic Design	H	H	M	M	W	M	H
7.	ECP 202	Digital Logic Design Lab.	H	W	M	H	H	H	M
8.	ECL210	Signals & Systems	W	H	H	M	M	W	H

Scheme for IV Semester									
#	Course Code	Course Title	1	2	3	4	5	6	7
1.	ECL204	Measurements & Instrumentation	H	M	W	W	W	W	W
2.	ECL308	Analog Circuit Design	H	H	W	M	M	W	H

3.	MAL205	Numerical Methods & Probability Theory	H	M	W	H	M	M	H
4.	ECL306	Microprocessors & Interfacing	H	H	M	M	M	M	H
5.	ECL309	Finite Automata	M	M	M	H	H	H	H
6.	ECP308	Analog Circuit Design lab	H	W	W	H	H	H	M
7.	ECP306	Microprocessors & Interfacing lab	H	W	M	H	H	H	M
8.	ECP309	Finite Automata Lab	M	M	W	H	H	H	H
9.	ECP204	Measurement & Instrumentation lab	M	M	H	H	H	H	M
10.	PHL208	Physics of semiconductor devices	H	W	W	H	H	H	M

Scheme for V Semester

#	Course Code	Course Title	1	2	3	4	5	6	7
1.	EEL 310	Control Systems	H	H	M	W	W	M	H

Scheme for VII Semester

#	Course Code	Course Title	1	2	3	4	5	6	7
1.	ECD402	Project phase-I	M	H	H	H	H	H	H
2.	ECL401	Hardware Description Language	H	W	H	M	M	M	M
3.	ECP401	Hardware Description Language Lab	W	W	M	H	H	M	M
4.	ECL405	Wavegnides and Antennas	M	W	M	W	M	M	M
5.	ECL412	Advanced digital signal Processing	H	W	M	H	H	M	M
6.	ECP412	Advanced digital signal Processing Lab	H	W	H	H	H	H	H

Scheme for VI Semester

#	Course Code	Course Title	1	2	3	4	5	6	7
1.	ECL304	Digital Signal Processing	H	H	H	M	M	M	H
2.	ECL303	Digital Communication	H	H	M	M	W	W	H
3.	ECL305	Electromagnetic Fields	M	W	M	M	W	H	H
4.	ECP307	Electronic Product Engg. Workshop	H	H	H	H	H	H	H
5.	ECP303	Digital Communication Lab	H	W	W	H	W	H	M
6.	ECL304	Digital Signal Processing Lab	H	W	W	H	H	H	M
7.	CSL312	Concepts in operating systems	H	W	H	H	H	M	M
8.	ECL403	Embedded systems	H	H	H	M	M	M	H
9.	ECL403	Embedded systems Lab	H	W	W	H	H	H	M

7.	ECL404	RF & Microwave Engineering	**M**	**M**	**M**	**M**	**W**	**H**	**H**
8.	ECL434	Wireless Digital Communication	**M**	**H**	**M**	**M**	**M**	**H**	**H**
9.	ECL422	Statistical Signal Analysis	**M**	**M**	**M**	**H**	**H**	**H**	**H**
10.	ECL423	Image analysis and computer vision	**M**	**M**	**H**	**H**	**H**	**H**	**H**
11.	ECL406	Mobile Communication Systems	**M**	**H**	**M**	**M**	**M**	**H**	**H**
12.	ECL411	Digital Image Processing	**M**	**M**	**H**	**H**	**H**	**H**	**H**
13.	ECL410	Satellite Communication	**M**	**M**	**M**	**W**	**W**	**M**	**H**
14.	ECL402	Comm. Net. & Network Applications	**M**	**H**	**H**	**H**	**H**	**H**	**H**

Scheme for VIII Semester								
#	**Course Code**	**Course Title**	**1**	**2**	**3**	**4**	**5**	**6**	**7**
1.	ECD402	Project phase –II	**M**	**H**	**H**	**H**	**H**	**H**	**H**
2.	ECL409	Radio Frequency Circuit Design	**H**	**H**	**H**	**H**	**H**	**H**	**H**
3.	ECL407	Radar Engineering	**W**	**W**	**M**	**M**	**M**	**W**	**W**
4.	ECP423	Image analysis and computer vision Lab	**M**	**M**	**H**	**H**	**H**	**H**	**H**
5.	ECL402	Comm. Net. & Network Applications Lab	**M**	**H**	**H**	**H**	**H**	**H**	**H**
6.	ECL409	Radio Frequency Circuit Design Lab	**A**	**H**	**H**	**H**	**H**	**H**	**H**
7.	ECL 427	Broadband Communication	**M**	**M**	**M**	**W**	**W**	**M**	**H**
8.	ECL 424	Optical Communication	**M**	**H**	**H**	**H**	**H**	**H**	**H**
9.	ECL413	Adaptive Signal Processing	**W**	**H**	**H**	**M**	**M**	**W**	**H**
10.	ECL408	Biomedical Engineering	**W**	**M**	**H**	**H**	**H**	**M**	**M**
11.	ECL310	CMOS Design	**W**	**M**	**H**	**H**	**H**	**M**	**H**

Industry interaction/internship (10)

The Department of Electronics Engineering has interaction with ATMEL, Texas, BRNS, NI, Tektronix, Xilinx, Scientech and many other Industries for Consultancy and research projects.

R & D activities as mentioned below:

Department has sponsored research projects with BRNS, MCIT, ADA, RGSTC, TEQIP, Atmel, Texas Instruments.

- Department has industrial consultancy projects.
- Department has industrial collaboration under COE.

- The industry personal are encouraged to take up higher education leading to M.Tech (research) & PhD.

Our Students are taking up summer/winter internship in some of the Industries. Summer/Winter internships are provided by faculty members based on live problems. Our Students are given a provision to do projects in the On-Campus labs which have been set up by Industry. The following are the labs set up by Industry.

- ATMEL MCU Centre.
- Texas Embedded Laboratory.
- Texas Analog System Laboratory

Curriculum Development (15)

3.5.1. State the process for designing the programme curriculum (5)

The Process for designing is based on following points:

1. Departmental Academic Committee that comprises of the faculty of the department discusses the Curriculum and provides the first version of the syllabus.
2. Inclusion of traditional subjects required for Electronics and Communication Engineering
3. The Senate of institute gives the final ratification of the syllabus.
4. Considering courses/special courses being taught at different International/National Institutes of repute.
5. Considering the industrial requirements.
6. The Board of Studies, consisting of all faculties of the department, and experts from reputed academic institutes and industry, discusses the draft syllabus thoroughly and suggest modifications, if any.
7. Criteria specified by international and national professional societies.
8. Based on feedback from alumni.

3.5.2. Illustrate the measures and processes used to improve courses and curriculum (10)

- The course curriculum is continuously updated by the faculty member based on feedback from stakeholders. This is achieved by modifying open-ended laboratory experiments.
- Special topics lectures are arranged with industry personal.

- A new course can be introduced as special topics in Electronics and Communication Engineering or special laboratory courses in Electronics and Communication Engineering.
- On completion of one semester feedback is taken from students and the course is introduced as a regular course.
- Before incorporating a regular course the course is evaluated by dept. BOS and is introduced after approval of the senate. The senate meets at least four times in a year to take care of different academics issues.
- The institute curriculum is revised through a major revision process at regular intervals not exceeding 4-5 years.
- Feedback about the curriculum is collected periodically from the faculty, students, and external experts. The feedback is discussed in the Department BOS and suitable modifications are incorporated. This whole process is reviewed in Board of Studies.
- Remedial classes are conducted on demand.

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Course Syllabi (5)

Refer Annexure Table

4. Students' Performance (75)

Admission intake in the programme

Item	CAY	CAYm1	CAYm2	CAYm3
Sanctioned intake strength in the program (N)	92	92	92	93
Total number of admitted students in first year minus number of students migrated to other programs at the end of 1st year (N1)	91	92	91	81
Number of admitted students in 2nd year in the same batch via lateral entry (N2)	-	-	-	-
Total number of admitted students in the program (N1+N2)	91	92	91	81

Success Rate (20)

Year of entry (in reverse	Number of Students admitted in 1st year + admitted via lateral entry in 2nd year (N1+N2)	Number of students who have successfully completed*			
		1st year	2nd year	3rd year	4th year
CAY (2012-13)	91	70	85	84	88
CAYm1(2011-12)	92	72	82	84	86
CAYm2(2010-11)	91	74	82	82	82

*: Successfully completed implies zero backlogs

Success rate = 20 × mean of success index (SI) for past three batches

SI= (Number of students who graduated from the programme in the stipulated period of course duration)/(Number of students admitted in the first year of that batch and admitted in 2nd year via lateral entry)

Item	LYG (CAYm4)	LYGm1 (CAYm5)	LYGm2 (CAYm6)
Number of students admitted in the corresponding First year + laterally admitted via lateral entry in 2nd year	70	60	60
Number of students who have graduated in the stipulated period	66	54	58
Success Index (SI)	0.92	0.88	0.91

Average SI = 0.90

Success Rate = 20* Average SI = 18

Academic Performance (20)

API	=	Academic Performance Index
	=	Mean of Cumulative Grade Point Average of all successful Students on a 10 point CGPA system
Or	=	Mean of the percentage of marks of all successful students / 10

	Number of Students		
CGPA	**CAY(2013 Summer)**	**CAYm1(2012 Summer)**	**CAYm2(2011 Summer)**
9-10	**24**	**22**	**23**
8-9	**77**	**75**	**75**
7-8	**83**	**78**	**80**
6-7	**44**	**54**	**40**
5-6	**17**	**15**	**18**
<5	**14**	**11**	**15**
	259	**255**	**251**
API	**8.01**	**8.00**	**8.00**
Average API	**8.00**		

Assessment = 2 x API
Av. Assessment for three years

Assessment = 2 x 8=16
Av. Assessment for three years

4.2.1. Placement and Higher Studies (20)

Assessment Points = 20 × (x + 1.25y)/N

Where, x = Number of students placed
y =Number of students admitted for higher studies with valid qualifying scores/ranks, and
N = Total number of students who were admitted in the batch including lateral entry subject to maximum assessment points = 20.

Item	LYG	LYGm1	LYGm2
Number of admitted students corresponding to LYG including lateral entry (N)	92	92	93
Number of students who obtained jobs as per the record of placement office (x1)	57	59	49
Number of students who found employment otherwise at the end of the final year (x2)	28	29	35
x = x1 + x2	85	88	84
Number of Students who opted for higher studies with valid qualifying scores/ranks (y)	15	16	10
Assessment Point	20	20	20

Average assessment points = 20

4.3. Professional Activities (15)

BHURCHANDI SENGUPTA VINAY KUMAR

4.3.1. Professional societies / chapters and organising engineering events (3) (Instruction: The institution may provide data for past three years).

IEEE student chapter activity for the year 2011-12
Students organized workshops on

- Ethical Hacking
- Basic Robotics
- Multicolour Line Follower
- Circuit Simulation Using Pspice
- Image Processing Using MATLAB.
- Basics of Embedded Systems and AVR Programming
- Serial Communication Using UART

IEEE student chapter activity for the year 2012-13

Students organized workshops on

- Basic Manual Robotics
- Line Follower and Obstacle Avoidance
- Introduction to the world of Humanoid Robots
- Image Processing Using Matlab
- Basic of Embedded Systems and AVR Programming

  Project
- Newsletter

Industrial tour to industries within and around Bangalore.

Tour Report : 30 November, 2011 to 6 December, 2011 Bangalore

30 December 2011	
Assembly at Auditorium	10:30 AM
Departure for Station	11:00 AM
Departure for Chennai (GT Express)	12:30 PM
1 December 2011	
Arrival at Chennai	06:15 AM
Departure for Bangalore (Bangalore Express)	01:35 PM
Arrival at Bangalore	08:35 PM
Check-In at Hostel	09:20 PM
2 December 2011	
Visit to BHEL-EDN	12:00 PM to 3:30 PM
Visit to ISKCON Temple	4:00 PM to 5:00 PM
3 December 2011	
Visit to CISCO	9:00 PM to 1:00 PM
4 December 2011	
Visit to Visvesvaraya Industrial and Technological Museum	10:00 AM to 1:00 PM

Visit to Lalbaugh Botanical Garden	4:00 PM to 5:30 PM	
5 December 2011		
Visit to Hindustan Aeronautical Limited	9:00 AM to 1:00 PM	
Visit to HAL Aeronautical Museum	2:00 PM to 3:30 PM	
Check-out of Hostel	7:30 PM	
Departure for Nagpur (Sampark Kranti Express)	10:10 PM	
6 December 2011		
Arrival at Nagpur	5:05 PM	

1) Visit to BSNL cellular centre in Nagpur.

- Visit is organised by IEEE chapter in 2011-2012 with 80-90 students of first year and second year.
- Working of controller used in switching telecommunication system

2) Mini projects done by the students

- Multi colour line follower
- RGB led display using micro controller
- Touch screen interfacing with AVR micro controller
- DTMF based robot with line follower
- Biped robot with 6 degree of freedom with passive balancing
- Robotic arm of 4 degree of freedom using at MEGA 640
- Workshop on Xmega microcontroller under ATMEL Lab in Electronics department.
- Substitute Eyes for blind with Navigator Using Android

  Project was done by electronics department students and mechanical Department student for TEXAS instrument analog design contest 2012 and they got 3rd national level prize.

3) Monthly newsletter publication.

News letter is published in our college monthly by Eyezonely club which includes all departments activities related to sports, technical achievements and literature.

ROBOTICS SOCIETY

Robotics Society named ROBOBANK is coordinated by Dr. K. M Bhurchandi. The society is funded by the institute and works under the agies of VNIT students activities. The Society is instrumental in encouraging department and institute students to undertake academic and co-curricular projects in the field of robotics. So far a fund of around 2, 70,000/- has been spent on this activity.

Student coordinators 1) Karan Shah

2) Deepak Verma

Records of the activities are available with coordinators.

Currents Projects undertaken are as below.

1) Snake robot
2) Electrically operated prosthetic Arm
3) Humanoid Robot.

The Society facilitates availability of components to all the amateur students willing to work in this area. The society conducts ROBOTICS activities during AXIS an beyond.

4.3.2. Organisation of paper contests, design contests, etc. and achievements (3) (Instruction: The institution may provide data for past three years).

- **AXIS**

i. Organisation Autonomous robotics competition.
ii. Workshop for guidance is conducted by IEEE student committee and kits are provided by them
iii. DTMF based design circuit event, technodox.

4.3.3. Publication of technical magazines, newsletters, etc. (3)
(Instruction: The institution may list the publications mentioned earlier along with the names of the editors, publishers, etc.).

29th Annual International Technical Festival Apogee 2011 during 25th to 29 th March

4.3.4. Entrepreneurship initiatives, product designs, and innovations (3)
(Instruction: The institution may specify the efforts and Achievements.)

- CONSORTIUM, an initiative by the students and E-CELL of VNIT Nagpur, is the business and management festival of Visvesvaraya National Institute of Technology, Nagpur, India. It is an annual convention which takes place in mid January every year.

4.3.5. Publications and awards in inter□institute events by students of the programme of study (3)

(Instruction: The institution may provide a table indicating those publications, which fetched awards to students in the events/conferences organised by other institutes. A tabulated list of all other student publications may be included in the appendix.)

- Paper published in Texas instrument conference by Akash laturia (ECE), Aneesh kulkarni(ECE), Tushar kshirsagar(ECE) On intelligent tracker for photovoltaic panels.
- IEEE paper on Face detection &Implementation on beagle board Xm in IACC 2013 by sachin barambe(ECE)
- Internship through DAAD scholarship was done by Divesh Dixit in 2012
- Vamsi Krishna &Ankit kalpande attended workshop on beagle board &Embedded linux in june 2012
- 3rd IEEE International Advance Computing Conference during 22-23 Feb. 2013 by Sachin Bharambe
- TI India Educators Conference 2013 during april 4 to 5th 2013, Rohan Thakker, Harsharanga patil and sachin bharambe

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B-5 Faculty Contribution

5. Faculty Contribution

S.No.	Name of the Faculty	Qualification University and year of graduation	Designation and Date of Joining the Institution	Distribution of teaching load (%)			Number of research publications in journals and conferences since joining	IPRs	R & D and Consul-tancy work with amount	Holding an incubation unit	Inter-action with outside world
				Iyear	UG	PG					
1	Dr. Avinash Gajanan Keskar	PhD VRCE NagpurB.Tech. (1979)	Professor April 1988		0.75	0.25	I J-03 I C-07 N C-00				
2	Dr K.D. Kulat	Ph.D VNIT,NAGPUR	Professor 03-07-84		0.75	0.25	I J -08 I C -14 N C -02				YES
3	Dr R.M. Patrikr	Ph.D. 1992	Professor 17/12/2008	None	0.5	0.5		2 Patents	2 lakh (In last three years)	Formed the Incubation center as a sponsored project.	
4	Dr R.B. Deshmukh	Ph.D VNIT,NAGPUR	Professor		0.0	1.0					
5	Dr. A.S. Gnadhi	PhD VNIT,NAGPUR	Professor		0.75	0.25					
6	Dr. A.G. Kothari	PhD VNIT,NAGPUR	Asso. Prof		0.75	0.25					
7	Dr. K.M Bhurchnadi		Asso. Prof.		0.75	0.25		1			
8	Dr. Sanjay BhargavdasDhok	PhD VNIT Nagpur B.Tech. (1992)	Associate Professor 15 Oct 1998		0.75	0.25	I J -03 IC-01 N C-04				Delivered expert lectures in NIT Uttarakhand
9	V.R Satpute	M.Tech 2003 IIT Madras	Assistant. Prof.		0.75	0.25	02				

10	Joydeep Sengupta	M.Tech 2004	Assistant Professor		0.75	0.25	I J-04 I C-01 N C-01				Deliver expert lecture in NIT Uttarakhand And many other colleges
11	PradnyaH. Ghare	M.Tech,VNIT Nagpur, 2012	Assistant professor, 17th May2006		1.00	**0.0**	Journals -01 Conferences- 04	Nil	Nil	No	
12	K. Surendra		Assistant. Prof.		0.00	0.00	05				ON QIP
13	Vinay Kumar	M.Tech. MNIT,Allahabad M.Tech. (2010) B.Tech. (2006)	Assistant Professor 29 March 2012		0.75	0.25	IJ -01				Deliver expert lecture in NIT Uttarakhand

		Papers published / presented by the Faculty
Academic year	**Name of the Faculty**	**Details of the Journal/ Details of the Conference / Title of the paper**

2009-2010	Dr. A.G.Keskar	1. Journal of Advanced Computational Intelligence and Intelligent Informatics (JACIII). Vol.13 No.4 2009 ➢ Rough Set Approach for Overall Performance Improvement of an Unsupervised ANN-Based Pattern Classifier. 2. International Journal of Pattern Recognition and Artificial Intelligence (IJPRAI), World Scientific, Singapore, ISSN- 0218-0014,May 2010 ➢ UANN based Pattern Classifier Using Rough Set Approach, 3. Recent Trends & Challenges in Internet technology(RTCIT) at MANIT Bhopal 19th March 2010 ➢ "Body area Networks –Challenges and Issues"
2009-2010	Dr. R. M Patrikar	1. International Conference on MEMS, IIT Madras, Jan 3-5, 2009. ➢ Modeling and simulation of MEMS cantilever for Bio-sensor application, 2. 13th IEEE VLSI Design & Test (VDAT) Symposium, July 2009 ➢ An Algorithm for High speed, Low power Implementation of Modular Multiplier 3. 13th IEEE VLSI Design & Test (VDAT) Symposium, July 2009 ➢ Weak Inversion based Low Power Low Noise Sixth order gm-C Filter at 1V for ECG Application with 180nm Technology 4. 'Proceedings of XV International workshop on Physics of semiconductor Devices (IWPSD) 2009 ➢ Simulation of Nanostructure Floating Gate Asymmetric Channel EEPROM Cells 5. Journal of Low Power Electronics May 2009 ➢ Design of Low Power Parallel Multiplier 6. International Journal of Computer Science & Network Security (IJCSNS) Dec. 2009 ➢ Perfect Difference Network for Network-on-Chip

		Architecture" 7. Microelectronics Reliability Dec. 2009 ➢ Design of a Novel Fault Tolerant Voter Circuit for TMR Implementation to Improve Reliability in Digital Circuits 8. Proceedings of XV International workshop on Physics of semiconductor Devices (IWPSD) Dec,2009 ➢ Study of Optical Properties of different nanostructures for biomedical application 9. International Journal on Computer Engineering & Information Technology Jan 2010 ➢ Review of Network-on-Chip Architecture
2009-2010	Dr. Ashwin Kothari	1. Recent Trends & Challenges in Internet technology(RTCIT) at MANIT Bhopal ➢ "Body area Networks –Challenges and Issues"
2009-2010	Pradnya H.Ghare	1. Recent Trends & Challenges in Internet technology(RTCIT) at MANIT Bhopal ➢ "Body area Networks –Challenges and Issues"
2010-2011	Dr. A.G.Keskar	1. International Conference On Advanced Topics on Artificial Intelligence, Phuket (ATAI) Nov 2010 ➢ Fast Fractal Encoding through FFT using Modified Cross-correlation based Similarity Measure 2. International Journal on Computing ,Vol 1, Issue 2 ,Feb 2011 ➢ Efficient Fractal Image Coding using Fast Fourier Transform 3. International Conference on Communication Systems and Technologies(ICCST) at UC Berkeley San Francisco pp225-230 , 20-22 October 2010 ➢ "Modification of 802.15.4 MAC for Body Area Networks Applications 4. Third international conference on Communication Systems and

		Networks(COMSNETS) 3-5 January 2011 ➢ "Modification of super frame structure of 802.15.4 MAC for Body Area Networks" 5. International Conference on signal Acquisition and Processing (ICSAP) at Singapore 26-28 Feb 2011 ➢ "Evaluation of scalability issue of 802.15.4 MAC for Body Area Networks"
2010-2011	Dr. K.D. Kulat	1. Special Issue of IJCCT Vol.1 Issue 2, 3, 4, 2010. ➢ Compensation of nonlinear distortions in Hiperlan/2 using Simple Self organizing and Parameter less self-organizing maps
2010-2011	Dr. R. M Patrikar	1. International Conference on Advances in Computer Engineering June 2010 ➢ Energy-aware Network-on-Chip architecture using Perfect Difference Network 2. Proc. of International conference on NANO Technology materials and composites for frontier Aug 2010 ➢ Formation of silicon quantum dots using LPCVD on substrate treated with rapid thermal processing 3. International Conference on "Communication, Computing & Security-ICCCS Feb 2011 ➢ Comparative Study of Switching Techniques for Network-on-Chip Architecture

2010-2011	Dr. R B Deshmukh	1. Int. Conf. On Advanced Topics on Artificial Intelligence, Phuket Nov.2010 ➢ Fast Fractal Encoding through FFT using Modified Cross-correlation based Similarity Measure", Pg. A-39-43. 2. International Journal on Computing Feb 2011 ➢ "Efficient Fractal Image Coding using Fast Fourier Transform", Vol 1, Issue 2, Pg. 35-40
2010-2011	Dr. K M Bhurchandi	1. IJAC, Springer 22nd June 2010 ➢ Interpolation of Images using Discrete Wavelet Transform to Simulate Image Resizing as in Human Vision 2. IS & T- ACM, USA 20-23 Sept 2010 ➢ NIP26 2010 ➢ Optimization of Cartridge Life Using JND Sampling Without Compromising the Visual Quality of Printed Images 3. IS&T/SPIE Nov 14-16 2010 ➢ Algorithms & Systems VIII Conference, 2010 meeting ,California, USA ➢ Hierarchical Representation of Objects Using Shock Graph Approach
2010-2011	Dr.Ashwin Kothari	1. International Conference on Communication Systems and Technologies (ICCST) at UC Berkeley San Francisco pp225-230 20-22 October 2010. ➢ "Modification of 802.15.4 MAC for Body Area Networks Applications" 2. Third international conference on Communication Systems and Networks(COMSNETS) 3-5 January 2011 ➢ "Modification of super frame structure of 802.15.4 MAC for Body Area Networks" 4. International Journal of Pattern Recognition and Artificial Intelligence Vol.

		24, No. 7 (2010) 1091_1109 ➢ Uann based pattern classifier Using rough set approach 5. International Conference on signal Acquisition and Processing (ICSAP) at Singapore 26-28 Feb 2011 ➢ "Evaluation of scalability issue of 802.15.4 MAC for Body Area Networks"
2010-2011	Dr. S.B.Dhok	1. Int. Conf. On Advanced Topics on Artificial Intelligence, Phuket Nov.2010 ➢ "Fast Fractal Encoding through FFT using Modified Cross-correlation based Similarity Measure", Pg. A-39-43.
2010-2011	V R Satpute	1. International Conference on IEEE Recent Advances in Intelligent Computational Systems 2011 (RAIC 2011) , September 22-24,2011 ➢ "A novel approach based on variance for local feature analysis of facial images"
2010-2011	Pradnya H.Ghare	1. Recent Trends &Challenges in Internet technology(RTCIT) at MANIT Bhopal 19th March 2010 ➢ Body area Networks –Challenges and Issues" 2. International Conference on Communication Systems and Technologies(ICCST) at UC Berkeley SanFranciscopp225-230 20-22 October 2010 ➢ "Modification of 802.15.4 MAC for Body Area Networks Applications" 3. Third international conference on Communication Systems and Networks(COMSNETS) 3-5 January 2011 ➢ "Modification of super frame structure of 802.15.4 MAC for Body Area Networks"" 4. International Conference on signal Acquisition and Processing (ICSAP) at

		Singapore 26-28 Feb 2011 ➢ "Evaluation of scalability issue of 802.15.4 MAC for Body Area Networks"
2011-2012	Dr.A.G.Keskar	1. **12th** International Conference on Contemporary issues and applications of statistics(CIAS) Jan 2012 ➢ Tumor segmentation by tolerance near set approach in mammography and lesion classification with neural network 2. **Intern** International Conference on Communication Systems and Network Technologies (CSNT), May 2012 ➢ ECG Feature Extraction Using LCAD 3. International conference on Signal, Image and Video Processing (ICSIVP-2012), IIT Patna, on 13-15 Jan. 2012, pp. 148-153. ➢ "Variance Method for finding local feature points on facial images" 4. International Conference on IEEE Recent Advances in Intelligent Computational Systems 2011 (RAIC 2011) , September 22-24,2011 ➢ "A novel approach based on variance for local feature analysis of facial images 5. National Conference on Computer Science and Informatics – NCCSI'12 ➢ Image Compression Using Wavelet Transform: Compression Ratio and PSNR Calculations
2011-2012	Dr. K.D. Kulat	1. International Journal of Modeling and Optimization vol. 2, no. 3, pp. 365-370, 2012. ➢ A Neural Approach for Compensation of Effects of PAPR Causing BER Degradations in Hiperlan 2. International Journal of Engineering Research and Application (IJERA), Special issue VNCET-March 2012, pp. 358-360. ➢ Path Loss Propagation Model for Rural and Semi Urban Mobile Environment 3. International Conference on IEEE Recent Advances in Intelligent Computational Systems 2011 (RAIC 2011) , September 22-24,2011

2011-2012	Dr. K.D. Kulat	➢ A novel approach based on variance for local feature analysis of facial images 4. IEEE International Conference on Computational Intelligent and Computing Research, 2011 ➢ Empirical model for propagation loss in rural and semi urban wireless Environment 5. International Conference on current trends in technology`NUiCONE-2011', Dec. 8-10, 2011 ➢ Performance Evaluation of IEEE 802.16e WiMax Physical layer 6. RAIT-2011 International conference at IIT, Roorkee. ➢ Image and Text compression using dynamic Huffman RLE coding 7. IET conference SEISCON 2011, 20-22 July 2011, Dr. MGR University, Chennai, India ➢ A neural approach for overall improvement of OFDM system 8. IEEE International Conference on Industrial and Information Systems ICIIS 2011, 16-19 August 2011, University of Peradeniya, Kandy Sri Lanka. ➢ Parameter less Self Organizing Map for Improving OFDM System Performance 9. International conference on Signal, Image and Video Processing (ICSIVP-2012), IIT Patna, on 13-15 Jan. 2012, pp. 148-153. ➢ Variance Method for finding local feature points on facial images 10. IETE Journal of research, volume 57, No. 4. July-Aug 2011. ➢ Morphological segmentation based fuzzy features for retrieval of brain MRI 11. National Conference on Computer Science and Informatics, Madurai, April 2012, Page no. 195-199. ➢ Image Compression Using Wavelet Transform: Compression Ratio and PSNR Calculations

2011-2012	Dr. R. M Patrikar	1. 15th IEEE VLSI Design & Test (VDAT) Symposium July 2011 ➢ Inductive Degenerated Low noise Amplifier for Wireless Application in 0.18um UMC CMOS 2. ISVLSI 2011 July 2011 ➢ Low Power Asynchronous Sigma-Delta Modulator Using Hysteresis Level Control 3. 15th IEEE VLSI Design & Test (VDAT) Symposium July 2011 ➢ Simulation of Low Voltage Flash Memory Cell 4. 15th IEEE VLSI Design & Test (VDAT) Symposium July 2011 ➢ Low Power High Throughput Differential Current Mode Signalling Technique for Global VLSI Interconnect 5. International Conference on "Communication, Computing & Security-ICCCS Feb 2011 ➢ Comparative Study of Switching Techniques for Network-on-Chip Architecture 6. Journal of Molecular modeling May 2012 ➢ Validation of computational approach to study monomer selectivity toward the template Gallic acid for rational molecularly imprinted polymer design
2011-2012	Dr. K M Bhurchandi	1. JSSE Canada March 2011 ➢ An Improved Shock Graph For Improved Object Recognition 2. IEEE Kuala Lumpur Malaysia Section17-19 June 2011 ➢ ICCET 2011,Kualalumpur ➢ Estimation of Minimum Number of Eigen vectors for reconstruction of Image and Video Signals 3. IEEE Computer Society, 19-21 Nov 2011 ➢ ICETECT 2011 Mauritius ➢ A simple graph theoretic approach for object recognition 4. IISTE, USA February 2012

		➢ Color Image Watermarking using JND Sampling Technique 5. IEEE Computer Society, New Delhi 22-23rd February 2012 ➢ IEEECSE Annual Conference ➢ Face Detection and Localization 6. IISTE,USA March 2012 ➢ A Quadrature Radon Transform for Smoother Reconstruction of Color Images
2011-2012	Dr.Ashwin Kothari	1. Future computer and communication JOURNAL ISSN no 2010-3751 IJFCC Vol 1 -2012, June 9-10 2012 ➢ Reduct Generation from Binary Discernibility Matrix: An Hardware Approach 2. Journal of Medical Imaging and Health Informatics, vol.2, pp-1-5, May 2012. ➢ "Addressing Scalability issue of medical body area networks with modified IEEE 802.15.4", 3. Proceedings of International Conference on Communication Systems and Network Technology, CSNT 2012, Rajkot, India, May 2012. ➢ ECG Feature extraction using LCAD
2011-2012	Dr.S.B.Dhok	1. International Journal on Computing Feb 2011 ➢ " Efficient Fractal Image Coding using Fast Fourier Transform", Vol 1, Issue 2, Pg.35-40
2011-2012	V R Satpute	1. IEEE-RAICS International Conference on Recent Advances in Intelligent Computational Systems (RAICS) 2011 ➢ "A novel approach based on variance for local feature analysis of facial images" 2. International conference on Signal, Image and Video Processing (ICSIVP-2012), IIT Patna, on 13-15 Jan. 2012, pp. 148-153 ➢ "Variance Method for finding local feature points on facial images" 3. National Conference on Computer Science and Informatics, Madurai, April 2012, Page no. 195-199.

		➢ "Image Compression Using Wavelet Transform: Compression Ratio and PSNR Calculations"
2011-2012	Pradnya H.Ghare	1. Third international conference on Communication Systems and Networks(COMSNETS 3-5 January 2011 ➢ "Modification of super frame structure of 802.15.4 MAC for Body Area Networks" 2. International Conference on signal Acquisition and Processing (ICSAP) at Singapore 26-28 Feb 2011 ➢ "Evaluation of scalability issue of 802.15.4 MAC for Body Area Networks" 3. Journal of Medical Imaging and Health Informatics, vol.2, pp-1-5, May 2012. ➢ "Addressing Scalability issue of medical body area networks with modified IEEE 802.15.4",
2012-2013	Dr.A.G.Keskar	1. Intentional Conference on communication, Information & Computing Technology (ICCICT) Oct 2012 ➢ Mammogram Segmentation by Near Set approach and Mass Lesions classification with rough Neural Network 2. **12thI** International Conference on Intelligent Systems Design and Applications (ISDA), Nov 2012 ➢ Analysis and monitoring of a high density traffic flow at T-intersection using statistical computer vision based approach 3. **12^{t} ^{h}** International Conference on Advanced Machine Learning Technologies and Applications (AMLTA), 2012 Volume 322, 2012, pp. 60-69 ➢ Mammogram Segmentation Using Rough k-Means and Mass Lesion Classification with Artificial Neural Network

		4. International Conference on Signal, Image and Video processing (ICSIVP) 2012. ➢ Variance Method for Finding Local Feature Points on Facial Images" 5. IEEE International Conference on Communication, Information and Computing Technology, ICCICT 2012,19-20th October, Sardar Patel Institute of Technology, Mumbai, India. ➢ Tumour Segmentation by Tolerance Near Set Approach in Mammography and Lesion Classification with Neural Network 6. IEEE, International Conference on Power, Control and Embedded Systems (ICPCES), MNNIT Allahabad ➢ Application of Image Processing for Spray Angle Measurement of Furnace Oil Gun Nozzle
2012-2013	Dr. K.D. Kulat	1. International Journal of Emerging Technology & Advanced Engineering (IJETAE 2012). ➢ Performance analysis of Wi-MAX system by increasing capacity using various compression techniques 2. International Journal of Engineering Research and Applications (IJERA), Vol.2, Issue-3 May-June 2012, PP 2550-2556. ➢ Performance Analysis of OFDM System: A Case Study of Optimize IFFT Size for M-PSK Demodulator Technique 3. International Journal of computer Applications, Vol. 70. No.27, May 2013, pp. 01-04. ➢ A study of the influence of path loss and short term fading on the performance of mobile radio system 4. International Journal of Electronics and Communication Engineering and Technology (IJECET), vol. 4, issue 3, June 2013, pp. 115-123. ➢ Channel Estimation for High Data Rate Communication in Mobile

		Wi-Max System" 5. International Journal of Computer Science Issues (IJCSI) vol. 10, issue 4, July 2013. ➢ Iterative Decoding Termination Schemes for Turbo Code Performance Optimization in Mobile Wi-Max Environment 6. International Journal of Computer Science and Telecommunication, vol. 4, Issue 7, July 2013, pp. 23-28. ➢ Implementation and Analysis of Cognitive Radio System using MATLAB 7. International Conference on Signal, Image and Video processing (ICSIVP) 2012. ➢ Variance Method for Finding Local Feature Points on Facial Images 8. International Conference on Networks & Information (ICNI 2012), 24-25 Nov. 2012, Bangkok, Thailand ➢ A novel WLAN receiver performance in a highly dispersive and non-linear environment 9. ICCCS-2012, NIT Rourkela, 06-08 Oct. 2012. ➢ Soft Output Decoding Algorithm for Turbo Code Implementation in Mobile WiMax Environment 10. IEEE Transactions on Neural Networks, 2nd International Conference on Power, Control and Embedded Systems (ICPCES), 17-19 Dec. 2012. ➢ Performance evaluation of SOM and PLSOM based OFDM receiver structure in fading multipath channels 11. ET2ECN-2012, SVNIT Surat, 19-21 Dec. 2012. ➢ Performance Optimization of physical Layer Using Turbo Codes: A Case Study of Mobile WiMax Environment 12. 8th International conference on Microwaves, Antenna, propagation and remote sensing (ICMARS-2012) 11th-15th December 2012, at international

		center for Radio Science, Jodhpur, India. ➢ Characterization of outdoor wireless propagation channel-A simulation study 13. IEEE, International Conference on Power, Control and Embedded Systems (ICPCES), MNNIT Allahabad ➢ Application of Image Processing for Spray Angle Measurement of Furnace Oil Gun Nozzle
2012-2013	Dr. R. M Patrikar	1. 5th National Conference, Institute of Smart Structures and Systems (ISSS), September 2012. ➢ Design and Analysis of Micromachined Cantilever with Control Circuit for Temperature Sensing Application 2. 5th National Conference, Institute of Smart Structures and Systems (ISSS), September 2012. ➢ Modeling and Simulation of Electro kinetic flow with Surface Roughness effects using Lattice Boltzmann Method 3. IEEE Transaction on Electron Devices July 2012 ➢ Effect of Asymmetric Channel on Charging Behavior of 22 nm Quantum Dot Floating Gate Flash Memory Cell 4. Journal of Sensors Oct 2012 ➢ Design of Micro cantilever Based Biosensor with Digital Feedback Control Circuit,
2012-2013	Dr. K M Bhurchandi	1. IJAC, Springer December 2012 ➢ De-noising of Digital Images using Curvelet Transform 2. IEEE Korea Section 3-5 Dec 2012 ➢ ICCET 2012, Seoul ➢ Segmentation of Color Images Using Genetic Algorithms with 4D-Histogram

2012-2013	Dr.Ashwin Kothari	1. Proceedings of International Conference on Communication Information and Computing Technology, ICCICT 2012, Mumbai, India, October 2012. ➢ Detection of Cardiac Hypertrophy by ECG Analysis 2. IEEE International Conference on Communication, Information and Computing Technology, ICCICT 2012,19-20th October, Sardar Patel Institute of Technology, Mumbai, India. ➢ Tumour Segmentation by Tolerance Near Set Approach in Mammography and Lesion Classification with Neural Network 3. 12th International Conference on Advanced Machine Learning Technologies and Applications (AMLTA), 2012 Volume 322, 2012, pp. 60-69 ➢ Mammogram Segmentation using Rough k-means and Mass Lesion Classification with Artificial Neural Network 4. International Journal of Future computer and communication, June 2012. ➢ Reduct Generation from Binary Discernibility Matrix: An Hardware Approach
2012-2013	Dr.S.B.Dhok	1. International Journal of Computer Applications (IJCA) December 2012 ➢ "Review of Proposed High Efficiency Video Coding (HEVC) Standard", , Vol, 59, No. 15, pp. 1-9 2. International Journal of Computer Applications (IJCA) November 2012 ➢ Review of Fractal Transform based Image and Video Compression"Vol. 57, No. 19, pp. 23-31
2012-2013	V R Satpute	1. International Conference on Signal, Image and Video processing (ICSIVP) 2012. ➢ "Variance Method for Finding Local Feature Points on Facial Images" 2. IEEE, International Conference on Power, Control and Embedded Systems (ICPCES), MNNIT Allahabad ➢ Application of Image Processing for Spray Angle Measurement of Furnace Oil Gun Nozzle

2012-2013	Joydeep Sengupta	1. International conference of Control, Communication & Power Engineering (CCPE 2012) April 2012 ➢ Bio signal Acquisition System for stress monitoring 2. International journal of Electronics & Computer Science Engineering (IJECSE) Oct 2012 ➢ Variation of Impedances in IMPATT diode at high frequencies 3. International journal of Advanced Technology & Engineering Research (IJATER) Nov 2012 ➢ Frequency Response of Ka band IMPATT diode
2012-2013	Pradnya H.Ghare	1. Journal of Medical Imaging and Health Informatics, vol.2, pp-1-5 May 2012 ➢ "Addressing Scalability issue of medical body area networks with modified IEEE 802.15.4"
2012-2013	Vinay Kumar	1. Journal of Computer Networks and Communications, Hindawi Publication ➢ Routing in IPv6 over Low-Power Wireless Personal Area Networks (6LoWPAN):A Survey"
2013-2014	Dr. A.G.Keskar	1. Seventh International Conference on Image and Signal Processing (ICISP-2013)August 2013 ➢ Video Surveillance for Disorganized Traffic Flow at T-Intersections 2. International Symposium on Communications and Information Technology, to be held at Koh Samui, Thailand on 5th September 2013 ➢ Development of an Embedded System for Real Time Heart Rate Variability Analysis

2013-2014	Dr. R. M Patrikar	1. 1st National Conference on Micro and Nano Fabrication, Jan 2013 ➢ Silicon micro channel fabrication for application in microfluidics
2013-2014	Dr. K M Bhurchandi	1. Texas instruments 4-5th April 2013 ➢ TI, Bangalore Educators conference 2013 ➢ An embedded system for navigational assistance of Blinds', Texas Instruments 2. IEEMA, 2013 21-22feb 2013 ➢ IEEMA annual Annual Conference, New Delhi ➢ Remote monitoring of Energy Meters 3. 3rd IEEE International Advance Computing Conference (IACC) 2013. ➢ Face localization and its implementation on Embedded Platform
2013-2014	Dr.Ashwin Kothari	1. 3rd IEEE International Advance Computing Conference (IACC) 2013. ➢ Face localization and its implementation on Embedded Platform
2013-2014	Joydeep Sengupta	1. International journal of Scientific & Engineering Research (IJSER) April 2013 ➢ Comparison of performance of IMPATT diode for various materials 2. International journal of Electrical & Electronics Engineering Research (IJE&EER)June 2013 ➢ Comparison of Noise Measurement of IMPATT diode for various Materials

Faculty Development/Training Activities by the Faculty					
Academic year	**Name of Faculty**	**Workshop**	**Period**	**Venue**	**Date**
2009-2010	Dr. K.M. Bhurchandi	Signal and Image Processing, Faculty Training	1 Week,	GHRCE, Nagpur	23rd June 2010
	Dr. K.M. Bhurchandi	Color Vision and image Processing	2 Week	HiTech COE, Aurangabad	10th Feb 2010
	Dr. S.B Dhok	IUCEE workshop on signals, systems and signal processing	One Week	Mysore Infosys Centre, Mysore	6-10 July 2009
	Joydeep Sengupta	Embedded system design	One week	IIT Kharagpur	4.1.2010-8.1.2010
	Joydeep Sengupta	"Multidimensional Data analysis and data mining"	One week	VNIT	22.6.09-26.6.09
	Joydeep Sengupta	"Research Methodologies and opportunities	One week	VNIT	11.5.2009-15.5.2009

Faculty Development/Training Activities by the Faculty

Academic year	Name of Faculty	Workshop	Period	Venue	Date
2010-2011	Dr. K.M. Bhurchandi	Embedded Systems	1day	JRSRCE, Vijaywada,	22nd Jan 2011
	Dr. K.M. Bhurchandi	Mobile Communication	1 Week,	ACE, Nagpur	28th Feb 2011
	Dr. K.M. Bhurchandi	Mobile Communication	1 Week,	RECOM, Nagpur	21st March 2011
	Dr. K.M. Bhurchandi	Image Processing	1 week,	JIT, Nagpur	08/03/2011
	Joydeep Sengupta	Telecommunication Networks with State-of-the-Art Hands-on Experiments	One week	IIT Kharagpur	20.6.11-27.6.11

Faculty Development/Training Activities by the Faculty					
Academic year	**Name of Faculty**	**Workshop**	**Period**	**Venue**	**Date**
2011-2012	Dr. K.M. Bhurchandi	Signal and Image processing	2 Week	Dept ECE, YCCE Nagpur	30th Nov 2011
	Dr. K.M. Bhurchandi	Image processing	2 days	DOE, SGGSIET Nanded	8th Dec 2011
	Dr. K.M. Bhurchandi	Image Processing with MATLAB	2 days	DOE, SRTM University	7-8th January
	Dr. K.M. Bhurchandi	Signal and Image Processing	1 day	JDCOE Nagpur	13th January 2012
	Dr. K.M. Bhurchandi	Teaching Skills and Class Control	3 day W/S	Vainganga COE, Nagpur	February 2012
	Joydeep Sengupta	"Applying Pervasive Computing and Social Networks to Accelerate the Growth of Rural and Urban India	One week	IIT Roorkee	5.6.12-29.6.12

Faculty Development/Training Activities by the Faculty					
Academic year	**Name of Faculty**	**Workshop**	**Period**	**Venue**	**Date**
	Dr. K.D Kulat	Outcome based evaluation organized by NBA	2 days	DTU	21-22 Sept. 2012.
	Dr. K.D Kulat	Strategic Leadership	2 days	ISB Hyderabad	13th &14th Oct 2012
2012-2013	Dr. R.M. Patrikar	STTP on Recent Advances in Mathematics and its Applications to Science and Engineering (RAMASE - 2013)	One week	Department of Mining Engg.	6-10, May 2013
	Dr. K.M. Bhurchandi	How your mobile communication Works?	2 Week UGC Training for Teachers	SGB Amravati University,	21st July 2012
	Dr. K.M. Bhurchandi	Embedded Systems	3 days Training program	NIT Silchar	29/08/2012
	Dr. K.M. Bhurchandi	Teaching Skills and Pedagogy	2Week	DBACOE, Nagpur	10th Oct 2012
	Dr. K.M. Bhurchandi	Advanced Mp And Computer Architecture	1 day Seminar	Sagar IT, Bhopal	18 Feb 2013
	Dr. K.M. Bhurchandi	Advanced Topics in Electronics Engg.;	2 days Seminar	SGGSIET, Nanded	2nd March 2013

		Mobile communication			
	Dr. K.M. Bhurchandi	Embedded Systems	1day W/S	DBACOE, Nagpur	13 march 2013
	Pradnya H. Ghare	Lab view – Customized Training	One week	VNIT, Nagpur	21st -24th August & 31st August- 1st September 2012
	Vinay Kumar	One Week ISTE Workshop for Coordinator on Analog Electronics	One week	IIT KGP	1.4.2013 to 05.4.2013
	Vinay Kumar	Two week ISTE Main workshop on Analog Electronics	Two week	VNIT Nagpur	04.6.2013 to 14.6.2013

Faculty Development/Training Activities by the Faculty					
Academic year	**Name of Faculty**	**Workshop**	**Period**	**Venue**	**Date**
2013-14	Joydeep Sengupta	'Quest for Best' Learning New Pedagogy in the Contemporary Engineering Education	One week	VNIT, Nagpur	1.7.13-5.7.13
	Pradnya H. Ghare	'Quest for Best' Learning New Pedagogy in the Contemporary Engineering Education	One week	VNIT, Nagpur	1st – 5th July 2013
	Vinay Kumar	'Quest for Best' Learning New Pedagogy in the Contemporary Engineering Education	One week	VNIT Nagpur	1.7.2013 to 5.7.2013

Funded R&D Projects and Consultancy (FRDC) Work minimum amount of Rs. 1 lakh:

Academic year	Name of Faculty	Title of Project	Funding Agency	Amount	National/ State/Trust	Period	Date
2009-2010	Dr. R.M Patrikar	Special Manpower Development Project II in VLSI	MCIT	119 lakh	Government of India	7 yrs	2006-2013
	Dr. R.M Patrikar	Simulation and Characterization of Nano devices	MCIT	312 Lakh	Government of India	4.5 Yrs	2007-2011
	Dr. R.M Patrikar	National MEMS design center	ADA/NPMASS	14 lakh + CAD Softwares	Government of India	5 Yrs	2009-2014

Academic year	Name of Faculty	Title of Project	Funding Agency	Amount	National/ State/Trust	Period	Date
2010 - 2011	Dr. R M. Patrikar	Special Manpower Development Project II in VLSI	MCIT	119 lakh	Government of India	7 yrs	2006-2013
	Dr.R.M Patrikar	Simulation and Characterization of Nano devices	MCIT	312 lakh	Government of India	4.5 yrs	2007-2011
	Dr. R.M Patrikar	National MEMS design center	ADA/NPMASS	14lakh +CAD Softwares	Government of India	5 yrs	2009-2014

Academic year	Name of Faculty	Title of Project	Funding Agency	Amount	National/ State/Trust	Period	Date
2011-2012	Dr. R.M Patrikar	Special Manpower Development Project II in VLSI	MCIT	119 lakh	Government of India	7 yrs	2006-2013
	Dr. R.M Patrikar	National MEMS design center	ADA/NPMASS	14 lakh + CAD Softwares	Government of India	5 Yrs	2009-2014
	Dr. R.M Patrikar	Fabrication of picoammeter and source	BRNS	25 lakh	Government of India	2.5 Yrs	2011-2014
	Dr.R.M Patrikar	Center for Innovation at VNIT	RGSTC	227 lakh	State	3 yrs	2011-2014

Academic year	Name of Faculty	Title of Project	Funding Agency	Amount	National/ State/Trust	Period	Date
2012-2013	Dr. R.M Patrikar	National MEMS design center	ADA/NPMASS	14 lakh + CAD Softwares	Government of India	5 Yrs	2009-2014
	Dr. R.M Patrikar	Fabrication of picoammeter and source	BRNS	25 lakh	Government of India	2.5 Yrs	2011-2014

	Dr. R.M Patrikar	Center for Innovation at VNIT	RGSTC	227 lakh	State	3 yrs	2011-2014
	Dr. K M Bhurchandi	Rotation and Scale invariant Recognition of Human Faces from Gray level Still Images.	BRNS	73.16 lakh	National	3 yrs	1-04-12 to 31-03-2015
	Dr. K M Bhurchandi	ComBedded Systems	NPIU	2Crores	National	2.5 yrs	July 2012-Dec 2014

5.8. Faculty Intellectual Property Rights (FIPR) (10)

Name of Faculty	Title of IPR /	Name of Publisher	Date
R.M.Patrikar	1) Method and Circuits for Performing Two's Complement of a Binary Number 2) Micro cantilever Based Tunable Temperature Sensor with Electrical Read-out Method	Indian Patent Office Indian Patent Office	2010 2013
K M Bhurchandi	Remote monitoring of Energy meter using communication Channels	Govt of India, IPR Journal	10/08/2010

5.1. Student -Teacher Ratio (STR) (20)

STR is desired to be 15 or superior

Assessment = 20 × 15/STR; subject to maximum assessment of 20

STR = (x + y + z)/N1

where, x = Number of students in 2nd year of the programme

y = Number of students in 3rd year of the programme

z = Number of students in 4th year of the programme

N1 = Total number of faculty members in the programme (by considering fractional load)

Year	x	Y	z	x+y+z	N1	STR	Assessment (Max. is 20)
CAYm2	103	97	91	291	8	36.37	8.21
CAYm1	102	96	94	292	8	36.50	8.21
CAY	101	92	91	284	8	35.50	8.45
						Average Assessment	8.29

For Item nos. 5. 2 to 5. 8, the denominator term (N) is computed as follows:

N = Maximum {N1, N2}

N1 = Total number of faculty members in the programme (considering the fractional load)

N2 = Number of faculty positions needed for student-teacher ratio of 15.

Year	N1	N2	N = Max (N1, N2)
CAYm2	8	18	18
CAYm1	8	18	18
CAY	8	18	18

5.2. Faculty Cadre Ratio (20)

Assessment = 20 × CRI

where, CRI = Cadre ratio index

= 2.25 × (2x + y)/N; subject to max. CRI = 1.0

where, x = Number of professors in the programme

y = Number of associate professors in the programme

Year	x	Y	n	CRI	Assessment
CAYm2	2.75	1.5	18	0.875	17.5
CAYm1	2.75	1.5	18	0.875	17.5
CAY	2.75	1.5	18	0.875	17.5
				Average Assessment	17.5

X AND Y ARE FRACTIONAL DUE TO PG PROGRAM SHARE

5.3. Faculty Qualifications (30)

Assessment	=	3* FQI
Where CRI	=	Faculty Qualification Index
	=	(10x+6y+4z)/N2 Such that , x+y+ z_O <=N2; and z_O <= z
Where x	=	Number of Faculty members with PhD
y	=	Number of Faculty members with ME/M.Tech
z	=	Number of Faculty members with BE/B.Tech

Year	x	Y	n	FQI	Assessment
CAYm2	8	5	18	6.11	18.33
CAYm1	8	5	18	6.11	18.33
CAY	8	5	18	6.11	18.33
				Average Assessment	18.33

5.4. Faculty Competencies correlation to Programme Specific Criteria (15)

(Provide evidence that program curriculum satisfies the applicable programme criteria specified by the appropriate American professional associations such as ASME, IEEE and ACM. You may list the programme specific criteria and the competencies (specialisation, research publication, course developments etc.,) of faculty to correlate the programme specific criteria and competencies)

5.5. Faculty as participants/resource persons in faculty development/training activities (15)

Participant/resource person in two week faculty development programme : 5 points

Participant/resource person in one week faculty development programme : 3 Points

Name of faculty	Max. 5 per faculty		
	CAYm2	CAYm1	CAY
Dr.A.G.Keskar	3	3	3
Dr.K.D.Kulat	3	3	3
Dr. R.M.Patrikar	3	3	3
Dr.R.B.Deshmukh	0	3	0
Dr.A.S Gandhi	5	5	5
Dr.A.G.Kothari	5	5	5
Dr.K.M.Bhurchandi	5	5	5
Dr.S.B.Dhok	0	3	0
V.R Satpute	0	0	0
P.H Ghare	3	3	0
K Surendra	0	0	0
Joydeep Sengupta	3	3	3
Vinay Kumar Triphathi	3	3	3
Sum	33	39	30
N(Number of faculty positions required for an STR 15)	18	18	18
Assessment = 3x Sum/N	5.5	6.5	5.0
		Average assessment	5.75

5.6. Faculty Retention (15)

Assessment = 3 × RPI/N

where RPI = Retention point index

= Points assigned to all faculty members

Where points assigned to a faculty member = 1 point for each year of experience at the institute but not exceeding 5.

Item	CAYm2	CAYm1	CAY
Number of faculty with experience of less than l year (X_0)	1	1	0
Number of faculty with 1 to 2 years experience	0	0	1
Number of faculty with 2 to 3 years experience	0	0	0

Number of faculty with 3 to 4 years experience	0	0	0
Number of faculty with 4 to 5 years experience	0	0	0
Number of faculty with more than 5 years experience (X_5)	12	12	12
N	18	18	18
RPI = X1+2X_2 + 3X_3 + 4X_4 + 5X_5	60	60	61
Assessment	10	10	10.16
		Average assessment	10

5.7. Faculty Research Publications (FRP) (20)

Assessment of FRP = 4 × (Sum of the research publication points scored by each faculty member)/N
(Instruction: A faculty member scores maximum five research publication points depending upon the quality of the research papers and books published in the past three years.)

The research papers considered are those (i) which can be located on Internet and/or are
Included in hard-copy volumes/proceedings, published by reputed publishers, and (ii) the faculty member's affiliation, in the published papers/books, is of the current institution.

Name of faculty (contributing to FRP)	FRP points (Max. 5 per faculty)		
	CAYm2	CAYm1	CAY
Dr.A.G.Keskar	5	5	5
Dr.K.D.Kulat	5	5	5
Dr. R.M.Patrikar	5	5	5
Dr.R.B.Deshmukh	5	5	5
Dr.A.S Gandhi	5	5	5
Dr.A.G.Kothari	5	5	5
Dr.K.M.Bhurchandi	5	5	5
Dr.S.B.Dhok	5	5	5
V.R Satpute	3	3	3
P.H Ghare	3	3	3
K Surendra	0	0	0
Joydeep Sengupta	3	3	3
Vinay Kumar Triphathi	0	3	0
Sum	49	52	49
N(Number of faculty positions required for an STR of 15)	18	18	18
Assessment FRP = 4x Sum/N	10.88	11.55	10.88
		Average assessment	11.10

5.8. Faculty Intellectual Property Rights (FIPR) (10)

Assessment of FIPR = 2 × (Sum of the FIPR points scored by each faculty member)/N (Instruction: A faculty member scores maximum five FIPR points each year??. FIPR includes awarded national/international patents, design, and copyrights.)

Name of faculty (contributing to FIRP)	FRP points (Max. 5 per faculty)		
	CAYm2	CAYm1	CAY
Dr. R.M Patrikar	5	0	0
Dr. K.M. Bhurchandi	5	0	0
Sum	10	0	0
N	18	18	18
Assessment FIPR = 2x Sum/N	2	0	0
Average assessment			1

5.9. Funded R&D Projects and Consultancy (FRDC) Work (20)

Assessment of R&D and consultancy projects = 4 × (Sum of FRDC by each faculty member)//N

(Instruction: A faculty member scores maximum 5 points, depending upon the amount.) A suggested scheme is given below for a minimum amount of Rs. 1 lakh:

Five points for funding by national agency,

Four points for funding by state agency,

Four points for funding by private sector, and

Two points for funding by the sponsoring trust/society.

Name of faculty (contributing to FRDC)	FRDC points (Max. 5 per faculty)		
	CAYm2	CAYm1	CAY
Dr. R.M. Patrikar	5	5	5
Dr. K.M Bhurchandi	0	5	5
Dr. A.S. Gandhi	0	0	5
Sum	5	10	15
N	18	18	18
Assessment FPPC = 4x Sum/N	1.11	2.22	3.33
Average assessment			2.22

5.10. Faculty Interaction with Outside World (10)

FIP = Faculty interaction points

Assessment = 2 × (Sum of FIP by each faculty member)/N

(Instruction: A faculty member gets maximum five interaction points, depending upon the type of institution or R&D laboratory or industry, as follows)

Five points for interaction with a reputed institution abroad, institution of eminence in India, or national research laboratories,

Three points for interaction with institution/industry (not covered earlier).

Points to e awarded, for those activities, which result in joint efforts in publication of books/research paper, pursuing externally funded R&D / consultancy projects and/or development of semester-long course / teaching modules.

Name of faculty (contributing to FIP)	FIP points		
	CAYm2	CAYm1	CAY
Dr.A.G.Keskar	3	3	3
Dr.K.D.Kulat	0	0	0
Dr. R.M.Patrikar	5	5	5
Dr.R.B.Deshmukh	5	5	5
Dr.A.S Gandhi	3	3	3
Dr.A.G.Kothari	0	3	3
Dr.K.M.Bhurchandi	3	3	3
Dr.S.B.Dhok	0	0	0
V.R Satpute	0	0	0
P.H Ghare	0	0	0
K Surendra	5	5	5
Joydeep Sengupta	0	0	0
Vinay Kumar Triphathi	0	0	0
Sum	24	26	28
N	18	18	18
Assessment FIP = 2x Sum/N	2.66	2.88	3.11
		Average assessment	2.88

6.

6. Facilities and Technical Support (75)

Room Description	Usage	Shared/Exclusive	Capacity	Rooms Equipped with PC, Internet, Book rack, meeting space...
LH-1	Class room for 4th Year	Exclusive	100	Green Board ,cordless mic, speaker, OHP, LCD Projector
NR-126	Class room for 3rd Year	Exclusive	90	Green Board ,cordless mic,speaker, OHP, LCD Projector
NR-127	Class room for 2nd Year	Exclusive	90	Green Board ,cordless mic,speaker, OHP, LCD Projector
NR-121	Class room for MTech 2nd Year	Exclusive	30	Green Board ,cordless mic,speaker, OHP, LCD Projector
NR-122	Class room for MTech 1st Year	Exclusive	30	Green Board ,cordless mic,speaker, OHP, LCD Projector
Tutorial Rooms		NOT APPLICABLE		Green Board ,cordless mic,speaker, OHP, LCD Projector
Seminar Room	Conducting Seminar	Exclusive	30	Whiteboard , PC, Internet , Cordless mic,speaker, OHP, LCD Projector
Meeting Room	Conducting meeting	Exclusive	30	Whiteboard , PC, Internet ,cordless mic,speaker,OHP, LCD Projector
Faculty Room(15)	Faculty sitting place	Exclusive	1	PC, Printer, internet, Book case, white board, telephone

6.1. Classrooms in the Department (20)

6.1.1. Adequate number of rooms for lectures (core/electives), seminars, tutorials, etc., for the program (10)

- Adequate

6.1.2. Teaching aids---multimedia projectors, etc. (5)
(Instruction: List the various teaching aids available)

- Audio system, LCD Projector, Internet connectivity

6.1.3. Acoustics, classroom size, conditions of chairs/benches, air circulation, lighting, exits, ambience, and such other amenities/facilities (5)

- Adequate

6.2. Faculty Rooms in the Department (15)

6.2.1. Availability of individual faculty rooms (5)

- Every faculty has individual rooms

6.2.2. Room equipped with white/black board, computer, Internet, and such other amenities/facilities (5)

- Faculty rooms are equipped with white boards, Computers, Internet connectivity and telephone.

6.2.3. Usage of room for counselling/discussion with students (5)

- Faculty and students use rooms for discussion and counselling

6.3. Laboratories in the Department to meet the Curriculum Requirements and the POs (25)

The following table is required for the subsequent criteria.

Lab Description in the Curriculum	Exclusive use/ Shared	*Space, Number of students	Number of Experiments	Quality of Instruments	Lab Manuals
Electronic Devices circuits	Exclusive	25	Minimum 08 or More	State of Art	Yes
Electronics workshop	Exclusive	25	Minimum 08 or More	State of Art	Yes
Digital circuits	Exclusive	25	Minimum 08 or More	State of Art	Yes

Analog Circuits	Shared	25	Minimum 08 or More	State of Art	Yes
Microprocessors	Exclusive	25	Minim 08 or More	State of Art	Yes
Embedded Systems	Exclusive	25	Minimum 08 or More	State of Art	Yes
Embedded Research Lab	Exclusive	15	Project	State of Art	Yes
Analog Communication	Exclusive	25	Minimum 08 or More	State of Art	Yes
Digital Communication	Exclusive	25	Minimum 08 or More	State of Art	Yes
Netwoks LAB	Exclusive	25	Minimum 08 or More	State of Art	Yes
RF Lab	Exclusive	15	Minimum 08 or More	State of Art	Yes
Advanced Communication	Exclusive	25	Minimum 08 or More	State of Art	Yes
Digital Signal Processing	Exclusive	25	Minimum 08 or More	State of Art	Yes
Image Processing	Exclusive	15	Minimum 08 or More	State of Art	Yes
EDA Electronic Design Automation	Exclusive	25	Minimum 08 or More	State of Art	Yes
National MEMS Design Center	Exclusive	15	Minimum 08 or More	State of Art	Yes
HDL Lab	Exclusive	25	Minimum 08 or More	State of Art	Yes
Nano Electronics	Exclusive	15	Project	State of Art	Yes
Electrical Characterization	Exclusive	10	Project	State of Art	Yes
Clean Room	Exclusive	10	Project	State of Art	Yes

6.3.1. Adequate, well-equipped laboratories to meet the curriculum requirements and the POs (10)

- Equipment are adequate and in good condition to perform the experiments.

6.3.2. Availability of computing facilities in the department (5)

- Computing facilities are available in all the laboratories

6.3.3. Availability of laboratories with technical support within and beyond working hours (5)

- Technical supports are available within and beyond working hours

6.3.4. Equipment to run experiments and their maintenance, number of students per experimental setup, size of the laboratories, overall ambience, etc. (5)

- Adequate numbers of equipment are available in the Laboratories.
- 3 or 4 students per experimental set up
- Size of the Laboratories is adequate to accommodate the students
- Overall ambience is good.

6.4. Technical Manpower Support in the Department (15)

6.4.1. Availability of adequate and qualified technical supporting staff for programme- specific laboratories (10)

Name of the Technical Staff	Designation (Pay-Scale)	Exclusive/ Shared Work	Date of Joining	Qualification		Other Technical skills gained	Responsibility
				At joining	Now		
Shri N.R.Chidam	Technical Assistant PB-2+GP Rs 4200/-		03/05/08	Diploma in Electronics &Telecommunication(I div), B.E Mech(I div)		-	-
Shri P.B.Gawali	Technician(SG-II) PB-1+GP Rs 2800/-		23/07/99	H.S.S.C. (IInd Div) Diploma in Electronics and Comm. Engg. (IInd Div.)	H.S.S.C. (IInd Div) Diploma in Electronics and Comm. Engg. (IInd Div.) Certificate course in Information Technology, Computer hardware and basic networking(Grade-A)	-	-
Shri S.P. Mashanakar	Sr.Lab Assistant PB-1+GP Rs 2400/-		27/05/97	B.Sc. (IInd Div.) Computer Operation	-	-	-

- All the technical supporting staff for laboratories is well qualified

6.4.2. Incentives, skill, upgrade, and professional advancement (5)

- Skill-up graduation and professional advancement schemes are available for technical supporting staff.

7.

Academic Support Units and Teaching-Learning Process (75)

Students' Admission

Admission intake (for information only)

Item	CAY 2012-13	CAYm1 2011-12	CAYm2 2010-11	CAYm3 2009-2010
Sanctioned Intake Strength in the Institute (N)	738	738	738	652
Number of students admitted on merit basis (N1)	713	724	713	617
Number of students admitted on management quota / otherwise (N2)	48	14	45	54
Total number of admitted students in the Institute (N1+N2)	761	738	758	671

Sr. No.	Rank range (AIEEE Ranking)	2012-13	2011-12	2010-11	2009-10
01	1-20000	410	436	411	367
02	20000-40000	136	137	130	105
03	40000-60000	49	30	47	29
04	60000-80000	48	38	38	36
05	80000-100000	27	37	29	22
06	100000-150000	21	19	26	25
07	150000-200000	8	12	10	14
08	200000-300000	9	6	4	11
09	300000-400000	1	3	4	1
10	400000-500000	1	2	3	0
11	500000-600000	2	1	2	0
12	600000-700000	1	1	0	0
13	Admitted without AIEEE ranks (foreign nationals)	48	15	45	53
	Total	**761**	**737**	**749**	**663**

List of faculty members teaching first year courses

Sr. No.	Name of the faculty	Qualification	Designation	Date of joining the institution	Department with which associated	Distribution of teaching load (%)		
						1st year	UG	PG
1.	Dr. S.S. Umare	Ph.D/M. Sc./M.Phil	Professor	23/8/96	Chemistry	--	30	70
2.	Dr. J.D. Ekhe	Ph.D/M. Sc../M.Phil	Associate Professor	24/7/96	Chemistry	--	53.3	46
3.	Dr. (Mrs.) Anupama Kumar	Ph.D/M. Sc./M.Phil	Associate Professor	7/1/2000	Chemistry	--	50	50
4.	Dr. Sujit Kumar Ghosh	Ph.D/M. Sc.	Associate Professor	4/7/12	Chemistry	21	--	79
5.	Dr. (Mrs.) Ramani V. Motghare	Ph.D/M. Sc.	Assistant Professor	17/05/06	Chemistry	18	82	--
6.	Dr. Chayan Das	Ph.D/M. Sc./Net	Assistant Professor	30/05/06	Chemistry	28	10	62
7.	Prof. Atul V. Wankhede	M.Sc./Net	Assistant Professor	26/05/09	Chemistry	88	--	12
8.	Dr. Sangesh P. Zodape	Ph.D/M. Sc.	Assistant Professor	02/04/12	Chemistry	--	--	100
9.	Dr. Umesh Rohidas Pratap	Ph.D/M. Sc.	Assistant Professor	25/5/12	Chemistry	88	--	12
10	Dr. (Mrs.) Sonali Umre	Ph.D/M. Sc.	Assistant Professor		Chemistry	91.67	--	8.33
11	Shri Parag Panse	M.Tech.	Assistant Professor		Chemistry	89.66	--	10.34
12	Dr. V.K. Deshpande	Ph.D/M. Sc.	Professor & Head	03/08/88	Applied Physics	68.6	15.7	15.7
13	Dr. R.S. Gedam	Ph.D/M. Sc.	Associate Professor	28/08/98	Applied Physics	40	30	30

			14	Dr. B.R. Snkapal	Ph.D/M. Sc.	Associate Professor	10/05/12	Applied Physics	37	--	63	
			15	Dr. G. Hemachandra	Ph.D/M. Sc.	Associate Professor	22/05/12	Applied Physics	84	--	16	
			16	Dr. (Mrs.) S.R. Patrikar	Ph.D/M. Sc.	Assistant Professor	16/05/06	Applied Physics	74	--	26	
			17	Dr. (Mrs) A. V. Deshpande	Ph.D.	Assistant Professor	16/05/06	Applied Physics	52	12	36	
			18	Dr. (Mrs.) S.M. Giripunje	Ph.D/M. Sc.	Assistant Professor	07/10/08	Applied Physics	53	--	47	
			19	Dr. K. Mohan Kant	Ph.D/M. Sc./M.Tech	Assistant Professor	14/06/12	Applied Physics	71.5	--	28.5	
			20	Dr. G.P. Singh	Ph.D.	Professor	27/03/95	Mathematics	15	35	50	
			21	Dr. P. Pramod Chakravarthy	Ph.d.	Associate Professor	31/05/06	Mathematics	25	25	50	
			22	Dr. M. Devakar	Ph.D.	Assistant Professor	24/11/08	Mathematics	25	25	50	
			23	Dr. Pallavi Mahale	Ph.D.	Assistant Professor	27/11/08	Mathematics	--	50	50	
			24.	Dr. G. Naga Raju	Ph.D.	Assistant Professor	1/7/10	Mathematics	25	25	50	
			25.	Dr. R. P. Pant	Ph.D.	Assistant Professor	25/6/12	Mathematics	25	25	50	
			26	Dr. Pradip Roul	Ph.D.	Assistant Professor	13/8/12	Mathematics	25	25	50	
			27	Dr. Malabika Adak	Ph.D.	Teaching Assistants	16/7/13	Mathematics	40	20	40	
			28	Mrs. Shweta Jain	M.Phil	Teaching Assistants	17/7/13	Mathematics	40	20	40	
			29	Mr. Mohd.	M.Sc.	Teachin	18/7/13	Mathemati	50	50	--	

				Ahmed		g Assistants		cs			
			30	Mr. Pravin Sayre	M.Sc.(Net Qualified)	Teaching Assistants	16/7/13	Mathematics	75	25	--
			31	Mr. Samala Ratan	M.Sc.	Teaching Assistants	22/7/13	Mathematics	100	--	--
			32	Mr. S. R. Bhide	Ph.D.	Associate Professor	12/7/84	Electrical Engg.	12	56	32
			33	Mr. Prasad Venikar	(Research Scholar)		09/07/12	Electrical Engg.	46.15	53.84	--
			34	Mr. S. S. Bhatt	Ph.D.	Associate Professor	01/04/87	Electrical Engg.	33.33	48.15	18.51
			35	Mr. M. Irfan	(Research Scholar)		01/07/11	Electrical Engg.	21.43	78.57	--
			36	Mr. V. B. Borghate	Ph.D.	Associate Professor	01/08/85	Electrical Engg.	25.93	55.56	18.52
			37	B. S. Umre	Ph.D.	Associate Professor	02/07/84	Electrical Engg.	14.82	74.7	11.11
			38	M. A. Choudhary	Ph.D.	Associate Professor	17/07/08	Electrical Engg.	14.82	55.56	29.63
			39	P. S. Kulkarni	Ph.D.	Associate Professor	16/03/95	Electrical Engg.	32.14	53.57	10.71
			40	M. R. Ramteke	Ph.D.	Associate Professor	05/03/95	Electrical Engg.	33.33	55.56	11.11
			41	A. S. Junghare	Ph.D.	Associate Professor	07/03/95	Electrical Engg.	16.00	84.00	--
			42	S. R. Tambay	Ph.D.	Associate Professor	03/08/81	Electrical Engg.	7.41	2.96	29.62
			43	V. S. Kale	Ph.D.	Associate Professor	01/12/99	Electrical Engg.	14.82	62.96	22.22
			44	N. R. Patne	Ph.D.	Lecturer	18/05/06	Electrical Engg.	31.03	68.96	--

			45	H. M. Suryawanshi	Ph.D.	Professor	11/07/89	Electrical Engg.	11.11	33.33	55.55	
			46	M. V. Aware	Ph.D.		17/12/90	Electrical Engg.	00.00	72.22	27.78	
			47	S. Patnaik	Ph.D.	Associate Professor	01/06/12	Electrical Engg.	25.93	62.96	11.11	
			48	R. J. Satputaley	M.Tech.		18/07/08	Electrical Engg.	31.03	58.62	10.34	
			49	A. Dhabaley	M.Tech.		16/05/05	Electrical Engg.	27.59	44.83	27.59	
			50	M. S. Ballal	Ph.D.	Associate Professor	04/04/12	Electrical Engg.	14.82	85.19	--	
			51	Sathyan	Ph.D.		09/07/12	Electrical Engg.	46.15	53.84	--	
			52	D. Khare	Ph.D.		01/01/13	Electrical Engg.	61.54	38.46	--	
			53	Amarendra	Ph.D.		01/07013	Electrical Engg.	76.92	23.08	--	
			54	M. Thakre	Ph.D.		03/01/12	Electrical Engg.	61.54	38.46	--	
			55	M. Pandey	Ph.D.			Electrical Engg.	66.62	33.33	--	
			56	Rambabu	M.Tech.		16/07/13	Electrical Engg.	64.5	35.5	--	
			57	Ashok Kumar	M.Tech.		16/07/13	Electrical Engg.	64.5	35.5	--	
			58	Chandra Sekhar	M.Tech.		16/07/13	Electrical Engg.	00	100	--	
			59	Dr. S. V. Bopshetty	Ph.D	Associate Professor	18/07/80	Mech. Engg.	30	30	30	
			60	Dr. A. B. Andhare	Ph.D.	Associate Professor	31/07/08	Mech. Engg.	0	0	30	
			61	Mr. M. S. Kotambkar	M.Tech.	Assistant Professor	27/7/06	Mech.Engg.	55	55	55	
			62	Mr. A. A. Thakre	M.Tech.	Assistant Professor	03/08/06	Mech. Engg.	50	50	50	
			63	Mr. P. V. Kane	M.Tech.	Assistant Professor	02/12/08	Mech.Engg.	45	45	45	
			64	Dr. L. M. Gupta	Ph.D.	Professor	18/10/89	Applied Mechanics	11	47	42	
			65	Dr. M. M. Mahajan	Ph.D.	Professor	17/08/92	Applied Mechanics	0	65	35	
			66	Dr. R. K. Ingle	Ph.D.	Professor	14/09/92	Applied Mechanics	10	30	60	
			67	Dr. G. N. Ronghe	Ph.D.	Professo	01/07/8	Applied	0	32	68	

					r	9	Mechanics			
			68	Dr. O. R. Jaiswal	Ph.D.	Professor	30/10/98	Applied Mechanics	37	47	16
			69	Dr. R. S. Sonparote	Ph.D.	Associate Professor	11/08/92	Applied Mechanics	9	56	35
			70	Dr. S. V. Bakre	Ph.D.	Professor	16/05/06	Applied Mechanics	23	35	42
			71	Dr. Sangeeta Gadve	Ph.D.	Associate Professor	08/06/12	Applied Mechanics	75	0	25
			72	Dr. D. Datta	Ph.D.	Assistant Professor	15/06/10	Applied Machanics	54	15	31
			73	Dr. Ratnesh Kumar	Ph.D.	Assistant Professor	17/04/12	Applied Machanics	57	14	29
			74	Mr. S. B. Borghate	M.Tech.	Assistant Professor	30/08/98	Applied Machanics	31	54	15
			75	Mr. A. Y. Vyavhare	M.Tech.	Assistant Professor	14/06/06	Applied Machanics	26	59	15
			76	Mr. A. P. Khatri	M.Tech.	Assistant Professor	28/11/08	Applied Machanics	100	0	0
			77	Dr. M. Ghosal	Ph.D.	AssociateProfessor	16/08/88	Humanities & S. Science	11.11	--	88.89
			78	Dr. G. N. Nimbarte	Ph.D.	Associate Professor	24/11/8	Humanities & S. Science	100	--	--
			79	Radhika Sudhir	M.A.	Teaching Assistant	27/07/13	Humanities & S. Science	100	--	--
			80	Navneet Utlawar	M.A.	Teaching Assistant	19/07/13	Humanities & S. Science	100	--	--
			81	Priyanka Bansod	M.A.	Teaching Assistant	15/07/13	Humanities & S. Science	100	--	--
			82	A. S. Mokhade	M.Tech.	Associate Professor	00/08/96	Computer Science & Engineering	50	25	25
			83	Mrs. Deepti Shrimankar	M.Tech.	Assistant Professo	26/11/08	Computer Science & Engineerin	39	61	

			r		g			
84	Mrs. Saroj Bhagchandani	M.E.	Teaching Assistant	00/07/13	Computer Science & Engineering	100	--	--
85	Varsha Dhote (Pandagre)	M.Tech.	Teaching Assistant	00/8/13	Computer Science & Engineering	100	--	--
86	Anita Ahirwar	M.Tech.	Teaching Assistant	00/7/13	Computer Science & Engineering	100	--	--
87	Renuka Gowardhan	M.Tech.	Teaching Assistant	00/7/13	Computer Science & Engineering	100	--	--

7.1. Academic Support Units (35)

7.1.1. Assessment of First Year Student Teacher Ratio (FYSTR) (10)
Data for first year courses to calculate the FYSTR:

Year	Number of students (approved intake strength)	Number of faculty members (considering fractional load)	FYSTR	Assessment = (10x15)/FYSTR (Max. is 10)
CAYm2	696	37.0	18.81	12.54
CAYm1	676	36.18	18.68	12.45
CAY	699	37.18	18.80	12.53
Average	690.33	36.78	18.76	12.507

= 10.00

7.1.2. Assessment of Faculty Qualification Teaching First Year Common Courses (15)

Assessment of qualification = 3 × (5x + 3y + 2z0)/N, where x + y + z0 ≤ N and z0 ≤ Z

x = Number of faculty members with PhD
y = Number of faculty members with ME/M.Tech/NET-Qualified/MPhil
z = Number of faculty members with BE/B.Tech/MSc/MCA/MA
N = Number of faculty members needed for FYSTR of 25

Year	x	y	z	N	Assessment of faculty qualification
CAYm2	53	27	2	27.84	37.70
CAYm1	55	28	1	27.04	40.27
CAY	59	25	3	27.96	40.30
Average Assessment of faculty qualification					39.4

Max = 15

7.1.3. Basic science/engineering laboratories (adequacy of space, number of students per batch, quality and availability of measuring instruments, laboratory manuals, list of experiments) (8)

Lab Description	Space, Number of students	Software used	Type of Experiments	Qualify of Instruments	Lab Manuals
First Year Basic Electrical Engineering Lab. (EEP101)	100 square meters Around 18 students per practical batch	This is a hardware laboratory	Hands-on experiment where students first wire-up and then conduct the experiment. Experiments are designed to verify circuit laws and demonstrate and reinforce concepts taught in theory classes	Good quality instruments are used. Adequate numbers of instruments are available.	Lab manuals are available for all the experiments.
B.Tech First Year General Lab	Two labs For General and optics experiments separately	NIL Demonstration through LCD Projector	Basic General Physics Experiments	Adequate Quality Four SET for each experiment	Yes, for each experiments
B.Tech 1st	One	Nil	Basic	Adequate	Yes, for

		Year General Lab	general Lab covers all experiment		General Applied Chemistry Experiments	& High Quality Ample sets for each experiment	each experiment.
		Engineering Drawing Lab.	Three classrooms (each 400 sq-feet area 18 students in each batch Four batches for each section.	Nil	Sheet Work	Wooden Models	NA
		Computer Programming Lab	2000 Sq.Ft 20	Turbo C	Programming	Available and adequate	Available and adequate
		7.1.4. Language laboratory (2)					

Lab Description	Space, Number of students	Software used	Type of Experiments	Qualify of Instruments	Guidance
Language learning facility	100 licences on Internet	Lingo fx x 25	Language learning 25 foreign languages	Computer	Self learning

7.2. Teaching - Learning Process(40)

7.2.1. Tutorial classes to address student questions: size of tutorial classes, hours per subject given in the timetable (5)

Items	Description	
Provision of tutorial classes in timetable	YES	
Tutorial sheets provided	YES	
Tutorial classes taken by	Faculty/teaching assistants/senior students/ others……..	
Number of tutorial classes per subject per week	Number of students per tutorial class:	
Number of subjects with tutorials	First Year	All Students
	Second Year	All Students
	Third Year	All Students
	Fourth Year	All Students

7.2.2. Mentoring system to help at individual levels (5)

Items	Description
Type of Mentoring	Professional guidance/career advancement/course work specific/laboratory specific/total development
Number of faculty mentors	All faculty members
Number of students per mentor	All students of one year in each programme per faculty
Frequency of meeting	Need based

7.2.3. Feedback analysis and reward / corrective measures taken, if any (5)

Items	Description		
Feedback collected for all courses:	YES for all courses		
Feedback collected process	Online/offline in class		
Feedback receiver	Automations Cell		
Feedback collection time	Before the end of semester		
Percentage of students participating:	100%		
Specify the feedback analysis process	One choice out of five choice		
feedback done manually/online	Online		
Metrics used for calculation	Poor, Satisfactory, Good, Excellent		
Inferred obtained from the metrics	Important of cources,Flow of the courses		
Use of comments	For improving the quality		
Basis of reward/corrective measures, if any:	Correction are done wherever necessary		
Numbers of correction actions taken in the last three years	CAY(2012-13)	CAYm1(2011-12)	CAYm2(2010-11)
	Individually	Individually	Individually

7.2.4. Scope for self-learning (5)

Many e-learning material, e-books, journal and magazines are collected and made available to the students at the Institute Library to help the students to build the habit of self-learning. Moreover, provision of Internet in the hostels is facilitated to help the students to learn beyond what is taught in the classroom. Periodic seminars are also created to encourage the student to know about newly published papers and journals.

Flexibility	Specification
Flexibility in academics with scope for self-learning	1) It is compulsory for every student to carry out project work which expresses his/her creative talents and prepare for his future carer .To encourage creative projects, institute awards Gold Medal (10gms of pure Gold) for Best BTech Project. 2) The course curriculum includes "Short Term industrial/Research Experience" of 8 weeks duration in order to get experience from Industry, Research Laboratories or Institutions of comparable repute. 3) Every Programme provides "Seminar & Technical Writing course where students learn and practice essential writing and presentation skills and attend seminars by reputed engineers and scientists' .They also present seminars and posters. 4) Students are generally encouraged to attend seminars workshops (with institute funding) conducted by reputed Industries/Institutions outside the Institute 5) Research students can take even theory courses in a self-study mode under the guidance of a faculty member.
Flexibility in academics with provisions for advanced level and reading courses	1) UG students can study PG courses as electives 2) Students can study courses of other departments as Open electives

7.2.5. Generation of self-learning facilities, and availability of materials for learning beyond syllabus (5)

1. Laboratories and Library is made available beyond working ours to help the students in self-learning.
2. The Campus is fully residential which enables learning beyond working hours with formal and informal interaction with faculty and peer groups.
3. Students are encouraged to involve themselves in various co-curricular and extra-curricular activities at Institute and Departmental level line Incandescence, Technosis etc.
4. Many eminent personalities are invited to interact with students on many occasions to help students learn recent trends in engineering, technology and practices.

Items	Description	Specification of self-learning modes and modules
Generation of self-learning facilities	Coerces/projects/Seminars/Workshops	1) Syllabus at VNIT Nagpur is not confined within the boundaries. Teachers here are open minded and incorporate new skills and innovations in their teaching 2) Attending Seminars/Workshops 3) Attending short term courses on a specialized topic
Availability of materials for learning beyond syllabus	Materials from published sources	1) Materials prepared and supplied by the teacher 2)use of Institute Digital Library

7.2.6. Career Guidance, Training, Placement, and Entrepreneurship Cell (5)

Training and Placement (T&P) Centre provides necessary infrastructure for the students to get job placement. Centre offers guidance to the students for career planning and personality development by conducting various short term programs. T & P Centre invites public and private sector organizations for campus recruitment of final year B.Tech, B.Arch and M.Tech students.

During the academic year 2012-13, 84 companies visited the campus and 406 jobs were offered to UG & PG students.

Carrier Guidance:

Effective carrier guidance services including counselling for higher studies	**Facility**	**Management**	**Impact**
	Exist	All Faculties including Faculty advisor	Good number of students are opting for higher studies

Training and Placements:

Training and Placements facility with training and placement officer (TPO),industry interaction for training /internship/placement	**Facility**	**Management**	**Impact**
	Exist	Department of Training Placement	Cent percent on campus recruitment

Entrepreneurship Cell:

Effective carrier guidance services including counselling for higher studies	**Facility**	**Management**	**Impact**
	Exist	Headed by PIC	Encouraging

7.2.7. Co-curricular and Extra-curricular Activities (5)

Co-curricular and extra-curricular activities, eg., NCC/NSS, cultural activities etc.	**Facility**	**Usages**
	Exist	Voluntary activity in slum area Students participation in inter institute cultural meet

7.2.8. Games and Sports, facilities, and qualified sports instructors (5)

Sports and games are essentials components of human resource development, holding to promote good health, comradeship and spirit of healthy competition, which in turn, has positive and deep impact on the holistic development of the personality of the youth who is a potential source of energy, enthusiasm and inspiration for development, progress and prosperity of the nation. Coaching facilities are provided to the selected students (selected by conducting the selection trials of various games). Specialized coaches are appointed to train the students going to participate in various West Zone, All India and Inter-Nit Tournaments. Well qualified sports instructors are regularly instruct the students.

Games and Sports Facilities:-

Sports facilities currently available on the Campus

- One Cricket Ground with six Turf wickets.
- One Football Ground with flood light arrangement.
- Two Volleyball Courts with flood light
- One Badminton Court.
- A Table Tennis Hall
- Three Lawn Tennis Courts.
- One Flood light Basketball Court.
- Well-equipped Gymnasium
- Cricket pavilion with the seating capacity of 500 students

Sports grounds, facilities ad qualified sports instructors	**Facility**	**Management**	**Usages**
	Exist	Headed by VP sports and games	Students particular in inter NIT sports events

8. Governance, Institutional Support and Financial Resources (75)

8.1. Campus Infrastructure and Facility (10)

8.1.A Campus

New 1000 Seat Boys Hostel

The VNIT Campus is spread over an area of 214 acres near Ambazari lake. It presents a spectacle of harmony in architecture and natural beauty. The campus has been organized in three functional sectors;

- Hostels.
- Academic area: Departments, Administrative Buildings, Library and Information
- Centre and various central facilities.
- Residential Sector for staff and faculty.

The academic buildings are located fairly close to both, the hostels and the staff quarters. The campus has a full-fledged computerized branch of State Bank of India with ATM facility, Canara Bank, and a Post Office.

The Institute has its own well equipped Health Centre with a residential Medical Officer. The specialized services of Psychiatric & Psychological Counsellor, Dietician, Physiotherapist, Pathology lab, Yoga centre. Also medical consultants in

		Ayurveda and Homeopathy are available. Patients suffering from serious illness / requiring intensive care are referred to the Govt. Medical College and other Hospital nearby and other Health Care Centres duly approved under the CGHS. An adequately equipped canteen is close to the instruction zone and hostels. Two more cafeterias exist on the campus. The Institute has a well-equipped Gymkhana apart from various playgrounds for Tennis, Badminton, Volleyball, Football, Hockey, and Cricket. NCC unit is also located on campus. Institute is gearing us its infrastructure over the years and is improving its infrastructure. This year, Institute has finished construction of 1000 seat boy's hostel. Construction of classroom complex is in place.
		8.1.B. Administration As per the provisions of the NIT Act, the Board of Governors (BoG) is responsible for superintendence, direction, and control of the Institute. Thus, the BoG is vested with full powers of the affairs of administration / management and finances of the Institute. Members of the Board represent Government of India, Government of Maharashtra, Industries, and faculty of the Institute. The Director is the principal academic and executive officer of the Institute. Besides the BoG, the Senate, the Finance Committee (FC) and the Building and Works Committee (BWC) are statutory committees and therefore important authorities of the Institute. Apart from the above statutory committees, the Board has the power to constitute various sub-committees for smooth and efficient administration. Thus, the Board has constituted the Stores Purchase Committee (SPC), Grievance Committee (GC), and Special Cell. The SPC administers the centralized procurement of equipment and material whereas the GC provides a platform to hear the views of staff and faculty on grievances. The Special Cell functions to protect the interest of backward-class candidates through procedural, institutional, and other safeguards.
		8.1.C. Academic Programmes The Institute offers 9 Under-Graduate programs viz., B. Tech. in Chemical, Civil, Computer Science, Electrical and Electronics, Electronics and Communication, Mechanical, Metallurgical and Materials and Mining Engineering and Bachelor of Architecture. The Institute also offers 16 Post-Graduate Full time programs (2 years duration) viz., M. Tech. in Industrial Engg., Heat Power Engg, CAD-CAM, Materials Engg, VLSI Design, Communication System Engineering, Computer Science Engg., Industrial Engg., Integrated Power System, Power Electronics and Drives, Structural Engineering, Structural Dynamics and Earthquake Engineering, Environmental Engineering, Water Resources Engineering., Construction Technology and Management, Transportation Engineering and Urban Planning.

The Institute also offers M.Tech. by research program in all engineering departments, PhD (Full/Part Time).

Institute has stared M.Sc. programs in Chemistry, Mathematics and Physics from current year.

The Doctoral Research is done in all Engineering and Sciences departments. Institute is a recognized centre under QIP scheme for Ph.D. program in Electrical and Metallurgical & Materials Engineering department and for M. Tech. program in Electrical and Civil Engineering departments.

8.1.1. Maintenance of academic infrastructure and facilities (4)

Maintenance of Infrastructure & facilities :

The college has an extensive Infrastructure spread over 214 acres comprising of Academic Buildings, Departments, Lecture Theatres, Auditorium, Food outlets, student Residences, faculty and staff quarters, Guest House, sport fields, stadia, roads, power supply systems, Roads, Water supply, selvage disposal Network etc. A full-fledged Estate Maintenance section is operational since the inception of the college. For civil maintenance as well as the supervision of new construction, Electrical Maintenance including Back up generation by Diesel Generator Telecom and Data network (ISDN & Optical Fibre) is taken care by independent units. A security section supervises the maintenance of Law & order on the campus and vicinity.

Annual Maintenance contract for academic infrastructures including computing facility, UPS and air-conditioning (facility management at Institute level)

Annual maintenance contract or on-call basis maintenance service is affected for critical level laboratory equipment. Many of the critical equipment are procured with 3 years warranty.

Assistant Engineer has the responsibility to maintain the Institute campus under the supervision of Dean (Planning & Development). Assistant Estate Engineer coordinates and oversees the functions of the buildings, water supply and electrical wings.

8.1.2. Hostel (boys and girls), transportation facility, and canteen (2)

Hostels	No,	No. of Rooms	No. of Students accommodated
Hostel for Boys	9	3508	2986
Hostel for Girls	2	522	555

8.1.3. Electricity, power backup, telecom facility, drinking water, and security (4)

8.1.3.A Electricity:

As a self-sufficient campus which is also a minor township, the entire energy requirements are under own control of the Institute. The Institute is an HT consumer getting supply from the State Electricity Board at 11kv by UG cable/as a high priority expresses Feeder and is exempt from load shedding interruptions. The current maximum load demand is of the order of 1000 KVA while the total connected load is estimated at 1500 Kw at substantially unity power factor. The 200 acre Campus is served by three substation having 3 transformers of 400 KVA each and a smaller transformer of 250 KVA. The Internal distribution to various units of the campus such as Hostel, Academic Bldgs., and Residential area is entirely by underground LT cabling. As a backup to the Electricity Board supply due to unforeseen reasons beyond institute's control, a set of 2 Diesel Generators each of 250 KVA capacity is available for serving essential load such as computer/Network centre Library/Administration Bldg. etc.

The entire Electrical Installation is maintained in house under the supervision of coordinator – Electrical maintenance who is usually a senior Professor in Electrical Engg. Dept. The Campus roads are also having energy efficient lighting which under automatic timer control device. The entire installation is annually checked by the statutory authority of Electrical Inspector for safety, reliability and Earthing etc. The average Electrical consumption of the campus is around 112000 KWh units over one calendar year with hostels being significant part of the overall load. As a part of the modernisation solar water heaters are installed in all hostels and plan are underway to introduce solar PV as well LED lights to significantly reduce Main Power from Electric supply utility.

8.1.3.B Water Supply Details:

The college campus gets its water supply from Nagpur Municipal Corporation as well as from its own wells. To ensure regular and uninterrupted supply to all users a network of 9 underground sumps (reservoirs) are created having total storage capacity of 12-85 lakh litres of Potable Drinking Water. The average daily consumption is 6.50 lakh litres; mains water supply is limited to daytime hours from 7.45 am to 11.00 a.m. to individual Buildings overhead tanks.

8.1.4 C Campus Security Section:

The VNIT campus has a full-fledged security section having 12 permanent employees. The section is headed by Security Officer assisted by Asstt. Security Officer and 10 permanent cadre service guards. This is supplemented by designated guard units provided by a private security agency supervised by college security personal. All Major Installations such as Entry gates, Hostels (Boys & girls), Library and other sections are provided round the clock security supplemented by walkie-talkie phone system.

8.2.

Organisation, Governance, and Transparency (10)

8.2.1. Governing body, administrative setup, and functions of various bodies (2)

(i) Board of Governors -- Annexure - A
(ii) Senate -- Annexure - B
(iii) Finance Committee -- Annexure - C
(iv) Building & Works Committee -- Annexure – D

(A) Board of Governors

Sr. No	Name	Designation
1.	Dr. S. K. Joshi, Distinguished Scientist, New Delhi-	Chairman
2.	Smt. Amita Sharma (IAS), New Delhi.	Member
3.	Shri A. N. Jha, Jr. Secretary & F., HRD, New Delhi.	Member
4.	Prof. (Mrs.) Joyshree Roy, Prof. DOE, Kolkata	Member
5.	Shri. Pramod Chaudhary, Executive Chairman, PUNE	Member
6.	Prof. S.C . Sahasrabudhe, Director, D.A.I.I.C.T. Gandhinagar	Member
7.	Pfor. A. G. Kothari, Prof. EED, NGPUR	Member
8.	Mr. I. L. Muthreja, Assott. Prof. M.E.D., Ngpur	Member
9.	Dr. T. Srinivasa Rao, Director, VNIT, Napgpur	Member
10.	Dr. B. M. Ganveer, Registrar, VNIT, Nagpur.	Secretary

(B) Senate

1.	Dr. N. S. Chaudhari, Director, VNIT, Nagpur	Chairman
2.	Prof. S. V. Bhat, Deptt. of Physics, IIS, Bangalore – 560 012	Member
3.	Dr. T. S. Sampath Kumar, Asso. Prof., Dept. of M.M.S.	Member
4.	Prof. (Ms.) R. B. Nair, HD,. H & S.S.,IIT, Delhi	Member
5.	Dr. Rajesh Gupta, Dean (Planning & Development), VNIT, Nagpur	Member
6.	Dr. R. K. Ingle, Dean (Faculty Welfare), VNIT, Nagpur	Member
7.	Dr. Animesh Chatterjee, Dean (Research & Consultancy), VNIT, Nagpur	Member
8.	Dr. R. M. Patrikar, Dean (Academics), VNIT, Nagpur	Member
9.	Dr. A. P. Patil, Dean (Students Welfare), VNIT, Nagpur	Member
10.	Dr. S. V. Bakre, Head, Deptt. of Applied Mechanics, VNIT, Nagpur	Member
11.	Prof. L. M. Gupta, Professor of Structural Engineering, VNIT, Nagpur	Member
12.	Prof. O. R. Jaiswal, Professor of Structural Engineering, VNIT, Nagpur	Member
13.	Dr. M. M. Mahajan, Professor of Structural Engineering, VNIT, Nagpur	Member
14.	Dr. G. N. Ronghe, Professor of Structural Engineering, VNIT, Nagpur	Member
15.	Dr. S. A. Mandavgane, Head, Chemical Engg. Dept. , VNIT, Nagpur	Member
16.	Dr. V. A. Mhaisalkar, Head, Civil Engg. Dept., VNIT, Nagpur	Member
17.	Dr. A. D. Pophale, Professor of Civil Engg., VNIT, Nagpur	Member
18.	Dr. Y. B. Katpatal, Professor of Civil Engg., VNIT, Nagpur	Member
19.	Dr. H. M. Suryawanshi, Head, Deptt. of Electrical Engg., VNIT, Nagpur	Member
20.	Dr. A. G. Kothari, Professor of Electrical Engg., VNIT, Nagpur	Member
21.	Dr. M. V. Aware, Professor of Electrical Engg., VNIT, Nagpur	Member
22.	Dr. K. L. Thakre, Professor of Electrical Engg., VNIT, Nagpur	Member
23.	Dr. K. D. Kulat, Head, Deptt. of Electronics Engg., VNIT, Nagpur	Member
24.	Dr. A. G. Keskar, Professor of Electronics & Comm.,	Member

	VNIT, Nagpur		
25.	Dr. R. B. Deshmukh, Professor of Electronics Engineering, VNIT, Nagpur	Member	
26.	Dr. A. S. Gandhi, Professor of Electronics Engineering, VNIT, Nagpur	Member	
27.	Dr. S. R. Sathe, Head, Deptt. of Computer Sc. & Engg., VNIT, Nagpur	Member	
28.	Dr. C. S. Moghe, Professor of Computer Science Engg., VNIT, Nagpur	Member	
29.	Dr. I. K. Chopde, Head, Deptt. of Mechanical Engg., VNIT, Nagpur	Member	
30.	Dr. P. M. Padole, Professor of Mechanical Engg., VNIT, Nagpur	Member	
31.	Dr. A. M. Kuthe, Professor of Mechanical Engg., VNIT, Nagpur	Member	
32.	Dr. S. G. Sapate, Head, Deptt. of Met. & Mat. Engg., VNIT, Nagpur	Member	
33.	Dr. R. K. Paretkar, Professor of Met. & Mat. Engg., VNIT, Nagpur	Member	
34.	Dr. S. U. Pathak, Professor of Met. & Mat. Engg., VNIT, Nagpur	Member	
35.	Dr. D. R. Peshwe, Professor of Met. & Mat. Engg., VNIT, Nagpur	Member	
36.	Dr. R. R. Yerpude, Head, Deptt. of Mining Engg., VNIT, Nagpur	Member	
37.	Prof. S. Shringarputale, Professor of Mining Engg., VNIT, Nagpur	Member	
38.	Ms. Alpana Dongre, Head, Deptt. of Architecture, VNIT, Nagpur	Member	
39.	Dr. V. S. Adane, Professor of Architecture, VNIT, Nagpur	Member	
40.	Dr. (Mrs.) Sujata Patrikar, Head, Deptt. of Appl. Physics, VNIT, Nagpur	Member	
41.	Dr. V. K. Deshpande, Professor of Applied Physics, VNIT, Nagpur	Member	
42.	Dr. (Mrs.) Anupama Kumar, Head, Deptt. of Chemistry, VNIT, Nagpur	Member	
43.	Dr. S. S. Umare, Professor of Chemistry, VNIT, Nagpur	Member	
44.	Dr. G. P. Singh, Head, Deptt. of Mathematics, VNIT, Nagpur	Member	
45.	Dr. (Ms) M. Ghoshal, Head, Deptt. of Humanities, VNIT, Nagpur	Member	
46.	Dr. S. B. Thombre, Professor of Mech. Engg & i/c T&P, VNIT, Nagpur	Member	
47.	Dr. D. H. Lataye, Chief Warden, VNIT, Nagpur	Member	
48.	Dr. B. M. Ganveer, Registrar, VNIT, Nagpur	Secretary	

(C) Finance Committee

1.	**Dr. S. K. Joshi,** Distinguished Scientist (CSIR) & Vikram Sarabhai Professor of JNCASR, New Delhi.	Chairman
2.	Shri Rajesh Singh, Director Deptt. Higher Eduction, New Delhi	Member
3.	Shri Navin Soi, Driector, Ministry HRD, New Delhi.	Member
4.	Prof. S. C. Sahasrabudhe, Director D.A.I.I.C.T., Gandhinagar	Member
5.	**Prof. A. G. Kothari,** Professor, Electrical Engineering Department, VNIT, Nagpur	Member
6.	Dr. N. S. Chaudhari, Director, VNIT, Nagpur	Member
7.	**Dr. B. M. Ganveer** Registrar, VNIT, Nagpur	Member-Secretary

(D) Building & Works Committee

1.	Dr. N. S. Chaudhari, Director, VNIT, Nagpur	Chairman
2.	Shri Rajesh Singh, Director Director HMHRD, New Delhi	Member
3.	Shri Navin Soi, Director IFD, New Delhi	Member
4.	**Prof. S. C. Sahasrabudhe, Director D.A.I.T, Gandinagar**	Member
5.	**Dr. Rajesh Gupta** Dean (P&D), V.N.I.T., Nagpur	Member
6.	**Mr. R. K. Naik,** Superintending Engineer (Civil), Central P.W.D., , Nagpur–440 006	Member
7.	**Shri Arvind Garg,** Suptd. Engineer (Electrical) NAGPUR – 440006	Member
8.	**Chief Engineer,** Public Works Department, NAGPUR – 440001	Member
9.	**Supdt. Engineer (Electrical),** Public Works Department, NAGPUR – 440001	Member
10.	**Dr. B. M. Ganveer** Registrar, VNIT, Nagpur	Member-Secretary

Other information is as under -

Statutory Committees -

Name of the Committee	Frequency of the meetings	Attendance
Board of Governors	4 in a year	Average 70%
Finance Committee	3 in a year	Average 80%
Building & Works Committee	4 in a year	Average 80%
Senate	4 in a year	Average 90%

Other than the above Committees, there is also the Staff Selection Committee (Statutory) for Selection of faculty and non-faculty employees which meets as and when necessary. This is a standard composition of the committee which includes official & Non official members.

The last Staff Selection Committee for recruitment of faculty posts was held in 2012 and for non-faculty posts in 2008.

In addition the board has Constituted following Committees for compliance with rules & regulations.

1) Special Cell : To ascertain the Goal reservation policy is observed scrupulously. No meeting of Special Cell held during current year i.e. 2013.

2) Stores Purchase Committee: To assist the Director in procurement of item/equipment/material costing beyond 10 Lakhs.Total 3 meetings are held during current year i.e. 2013

3) Grievance Cell : To address the Grievances of all the employees. No meeting was held during current year 2013.

4) Women's Cell: To address the Grievances of working women. Two meetings held during 2013.

8.2.2. Defined rules, procedures, recruitment, and promotional policies, etc. (2)

(Instruction: List the published rules, policies, and procedures; year of publications; and state the extent of awareness among the employees/students. Also comment on its availability on Internet, etc.)

8.2.3, 8.2.4 Most of the information viz.. Act, Statutes, constitution of various Committees, Academic Programmes, grievance mechanism, and minutes of all Statutory Committees are placed on Institute web-site and updated from time to time.

8.2.3. Decentralisation in working including delegation of financial power and grievance redressal system (3)

(Instruction: List the names of the faculty members who are administrators/decision makers for various responsibilities. Specify the mechanism and composition of grievance redressal system, including faculty association, staff-union, if any.)

LIST OF DELEGATION OF FINANCIAL POWERS

Sr.No	Particulars	Functionaries	Proposed Financial Power
01.	All kinds of expenditure under plan and non-plan budget	Director	Up to 8 Crores
02.	All kinds of expenditure under plan and non-plan budget	Deputy Director	Upto 50 Lakhs
03.	All kinds of purchases & other expenditure from Sponsor Research, Projects, Schemes and Consultancy Funds	Dean (R&C)	Upto 10 Lakhs
04.	For Purchase of Consumables from Projects, Schemes and Consultancy Fund	Principal Investigator	Upto 2 Lakhs (for Consumables only)
05.	1. Stores, spares, accessories under allotted operating grant (Non Plan) 2. Purchases under allotted Plan Grant,	Heads of Deptts. Prof-in-Charge (T&P), Librarian	Upto 2 Lakhs
06.	All Expenditure related to student's activities, including sports.	Dean (St. Welfare)	Upto 2 Lakhs
07.	Purchases, Payments of scholarship & other allied expenditure within approved & allotted grant of the year. All related expenditure of PG students & research scholars within approved budget.	Dean (Academics)	Upto 10 Lakhs
08.	Expenditure related to their operational expenses (Office, small equipment, consumables etc.	All Deans	Upto Rs. 2 Lakhs

09.	Expenditure for campus development, minor repairs, cleaning, minor repair of roads, parks, convocation and miscellaneous for which the administrative approval is accorded and fund is allotted for the purpose.	Dean (P&D)	Upto Rs. 2 Lakhs
10.	Purchases of Journals, consumables, spares and accessories etc. form budgetary allocation of the year	Chairman, Library Committee	Upto Rs. 2 Lakhs
11.	Expenditure for medicine/consumable -es/equipments directly related to Health Service expense.	Medical Officer	MO: upto Rs. 1 Lakhs in each case, with Celling of Rs. 5 lakhs per year
12.	[i] Payment of Telephone bill FAX, Bill Electricity/bill, Water bill etc., [ii] Purchases of equipment, uniform, consumables, stationeries, spares & accessories. for registry/requirement for departments not covered above within allotted grant of the year.	Registrar	Full power of [i] and Upto Rs. 2 Lakh
13.	For contingency expenditure	Dy. Registrar, Ass. Registrar (Independent Charges)	Up to Rs. 10000

List of faculty members who are administrators/decision makers for various jobs –

Deans

* Dean (Planning and Development) -- Dr. S. R. Sathe
* Dean (Faculty Welfare) -- Dr. R. K. Ingle
* Dean (Research and consultancy) -- Dr.H.M. Surywanshi
* Dean (Academics) -- Dr. O. R. Jaiswal
* Dean (Students Welfare) -- Dr. G. P. Singh

The Institute Grievance Redressal Committee is constituted with the following members:-

* Dr. M. M. Mahajan, Prof. of Structural Engg. –Chairman

		* Dr. Aniket M. Deshmukh, Assoc Prof. of Architecture -- Member * Shri Askok Thakur, Senior Assistant -- Member * Shri C. V. Chalpati Rao -- Member * Shri V. S. Kapse, Liaison Officer, SC/ST -- Member * Dr. A. Andhare, Associate Prof. Of Mech. Engg. --Member-Secretary
		8.2.4. Transparency and availability of correct/unambiguous information (3) (Instruction: Availability and dissemination of information through the Internet. Information provisioning in accordance with the Right to Information Act, 2005). All relevant information is made available through website. Information is made available through emails and circulars. The RTI Cell is constituted in accordance with the provisions of Right to Information Act, 2005 as follows- Public Information Officer -- Dr. B. M. Ganveer, Registrar First Appellate Authority -- Dr. S. R. Sathe, Dean, (P&D) Second Appellate Authority -- Dr. N. S. Choudhary, Director
	8.3.	**Budget Allocation, Utilisation, and Public Accounting (10)** Summary of current financial year's budget and the actual expenditure incurred (exclusively for the institution) for three previous financial years. In Rupees

Item	Budgeted in CFY (2013-14)	Expenses in CFY (till 30-09-2013)	Expenses in (2012-13)	Expenses in (2011-12)
Infrastructural built-up	2,65,54,000	36,13,35,022	2,81,64,291	15,95,93,770
Library	1,50,00,000	36,13,208	1,90,18,807	1,29,71,122
Laboratory equipment	7,40,50,000	1,72,15,522	4,32,85,956	3,99,33,386
Laboratory consumables	9,00,000	3,28,380	34,54,624	14,68,336
Teaching and non-teaching staff salary	18,68,00,000	24,03,26,847	44,34,60,400	30,58,08,851

R&D						
Training & travel	3,00,000	8,25,317	11,52,857	12,93,657		
Other, specify	2,76,52,000	3,35,20,388	7,88,07,806	6,16,68,294		
Total	30,47,02,000	65,71,64,684	61,7340,741	58,27,37,416		

8.3.1. Adequacy of budget allocation (4)

The Institute receives grant-in-aid from the Government of India based on the budget formulated by it. There are enough funds made available by the Government of India for Plan and Non-Plan activities. Infrastructure facilities are created on priority basis based on the available fund from the Government of India.

8.3.2. Utilisation of allocated funds (5)
(Instruction: Here the institution needs to state how the budget was utilised during the last three years.)
The utilization of allocated fund is satisfactory as can be seen from above table no. 8.3.

8.3.3. Availability of the audited statements on the institute's website (1)

The account of the Institute is audited by a team of auditors from the Comptroller & Auditor General of India and the Audit Report is prepared by the CAG Office. A copy of the Report is given to the Institute. Under the provision of the National Institutes of Technology Act 2007, the Audit Report of the Institute account is placed before the Parliament every year. Till its placement before both the Houses of Parliament and its considerations, the Report remains confidential.

8.4. Programme Specific Budget Allocation, Utilisation (10)

Summary of budget for the CFY and the actual expenditure incurred in the CFYm1 and CFYm2 (exclusively for this programme in the department):

Item	Budgeted in CFY 2013-14	Actual Expenses in CFY (till…)	Budgeted in CFYm1 2012-13	Actual Expenses in CFYm1	Budgeted in CFYm1 2011-12	Actual Expenses in CFYm1
Laboratory equipment		1064654		11347000		1526729
Software		923534		5076923		1216658

		R&D | Plan Grant | | Plan Grant | | Plan Grant | Laboratory consumables | 40 lakhs | 20203 | 50.00 | 51005 | 25.00 | 107574 Maintenance and spares | Non plan | 2146 | Non plan | 40250 | Non plan | 26700 Training & travel | 3.50 | -- | 3.00 | 55503 | 3.00 | 26874 Miscellaneous expenses for academic activities | | 10067 | | 24.32 | | Total | | 2020904 | | 16573113 | | 2904535 *** The amounts shown under expenditure does not include many items of routine expenses met from Centralised Institutional Source 'such as AMC/Computer Consumables and student related travel expenditure which, however, are aggregated in The Institutional Income Expenditure statement in Part I - item I-10.**
		8.4.1. Adequacy of budget allocation (5) (Instruction: Here the institution needs to justify that the budget allocated over the years was adequate.) Budget allocation was sufficient for the maintenance of equipment and purchase of consumables.
		8.4.2. Utilisation of allocated funds (5) (Instruction: Here the institution needs to state how the budget was utilised during the last three years.) Fund provided to the department is properly used to develop the infrastructure of the department to achieve a better programme outcome.
	8.5.	**Library (20)** **8.5.1.** Library space and ambience, timings and usage, availability of a qualified librarian and other staff, library automation, online access, networking, etc. (5) (Instruction: Provide information on the following items.). Carpet area of library (in m2) Reading space (in m2) = 6400 m^2 Number of seats in reading space =150(Night Reading)+200 (Library) = 300 Number of users (issue book) per day = 512 Number of users (reading space) per day =468 Timings: During working day, weekend, and vacation = 360 days, timings 8:30 a.m. to 9:30 p.m. Number of library staff = 23 (08 permanent) Number of library staff with degree in Library Management = 21, Computerisation for search = 21

indexing, issue/return records Bar coding used = yes
Library services on Internet/Intranet INDEST or other similar membership Archives

8.5.2. Titles and volumes per title (4)

	Number of new titles added	Number of new editions added	Number of new volumes added
CAYm2 2010-11	950	4,365	1,08,694
CAYm1 2011-12	2,226	4,034	1,13,806
CAYm 2012-13	1060	6,049	1,27,383

SUBJECT WISE TITLES (TILL 31ST MARCH 2011)

Sr.No.	**Subject**	**Title**	**Volume**
01.	A. M.	281	416
02.	Archi.	5019	8728
03.	Chemical	2386	3989
04.	Che.	3085	6138
05.	Civil	8529	7741
06.	ComSc	7741	10748
07.	Electro	5022	8094
08.	Clectri	6133	13254
09.	Hum	1223	1782
10.	Math	2982	5497
11.	Mech.	6960	13449
12.	Met.	6007	9179
13.	Min.	4648	6422
14.	Phy.	1616	6270
15.	L.S. & H.	99	99
TOTAL		**61711**	**108694**

SUBJECT WISE TITLE (TILL 31ST MARCH 2012)

Sr.No.	Subject	Title	Volume
01.	A. M.	355	605
02.	Archi.	5154	8937
03.	Chemical	2512	4352
04.	Che.	3182	6398
05.	Civil	8667	15016
06.	ComSc	7990	11286
07.	Electro	5093	8347
08.	Electri.	6475	14130
09.	Hum	1476	2307
10.	Math	3176	5911
11.	Mech.	7055	13710
12.	Met.	6193	9526
13.	Min.	4661	6461
14.	Phy.	1793	6665
15.	L.S. & H.	155	155
TOTAL		**63937**	**113806**

SUBJECT WISE TITLES (TILL 31ST MARCH 2013)

Sr.No.	Subject	Title	Volume
01.	A. M.	440	2176
02.	Archi.	5265	9350
03.	Chemical	2634	4986
04.	Che.	3261	8079
05.	Civil	8780	15730
06.	ComSc	8079	14130
07.	Electro	5267	9962
08.	Clectri	6531	15165
09.	Hum	1488	2744
10.	Math	3236	6548
11.	Mech.	7118	14449
12.	Met.	6239	10114
13.	Min.	4676	6856
14.	Phy.	1806	7145
15.	L.S. & H.	177	177
TOTAL		**64997**	**127311**

8.5.3. Scholarly journal subscription (3)

Details		CFY 2013	CFYm1 2012	CFYm2 2011	CFYm3 2010
Science	As soft copy	00	02	02	01
	As hard copy	18	21	20	17
Engg. And Tech.	As soft copy	736	00	04	01
	As hard copy	51	86	106	110
Pharmacy	As soft copy	x			
	As hard copy				
Architecture	As soft copy	00	00	00	00
	As hard copy	16	18	24	24
Hotel Management	As soft copy				
	As hard copy				

(1) 05 Subject collection with 694 titles of Elsevier.
(2) ACS 41 title of Chemical Engg. Web editions for the year 2013.

8.5.4. Digital Library (3)

Availability of digital library contents: Available

If available, then mention number of courses, number of e-books, etc. Availability of an exclusive server: Yes
Availability over Intranet/Internet: Yes
Availability of exclusive space/room: Yes
Number of users per day: (1) Issue counter 512 (2) Reference section 245 (3) Periodical section 167 (4) Reading Room section 468 (5) Stock Room section 182 (6) Reprography section 376 (7) CD-ROM use 098

8.5.5. Library expenditure on books, magazines/journals, and miscellaneous contents (5)

Year	Expenditure				Comments, if any
	Book	Magazines/journals (for hard copy subscription)	Magazines/journals (for soft copy subscription)	Misc. Contents	
CFY m2 2011	41.42 Lacs (4813)	48,49,686.00	2,31,158.00		
CFY m1 2012	53.32 Lacs (5112)	49,73,906.00	1,56,054.00		

		CFY 2013	77.67 Lacs (13505	21,61,376.00	60,62,510.00		

Virtual Class Room:

DETAILS ;-

Money Given By National Informatics Centre (NIC);-

- Total Project Cost of Virtual Class-Room -- Rs. 32,26,524/-
- Civil Work for Virtual Class Room -- Rs.10,00,000/-
- Technical Assistant for Virtual Class Room -- Rs. 1,80,000/-
- Bandwith;-

  Speed for Video only 50 mbps

  Speed for net only 50 mbps

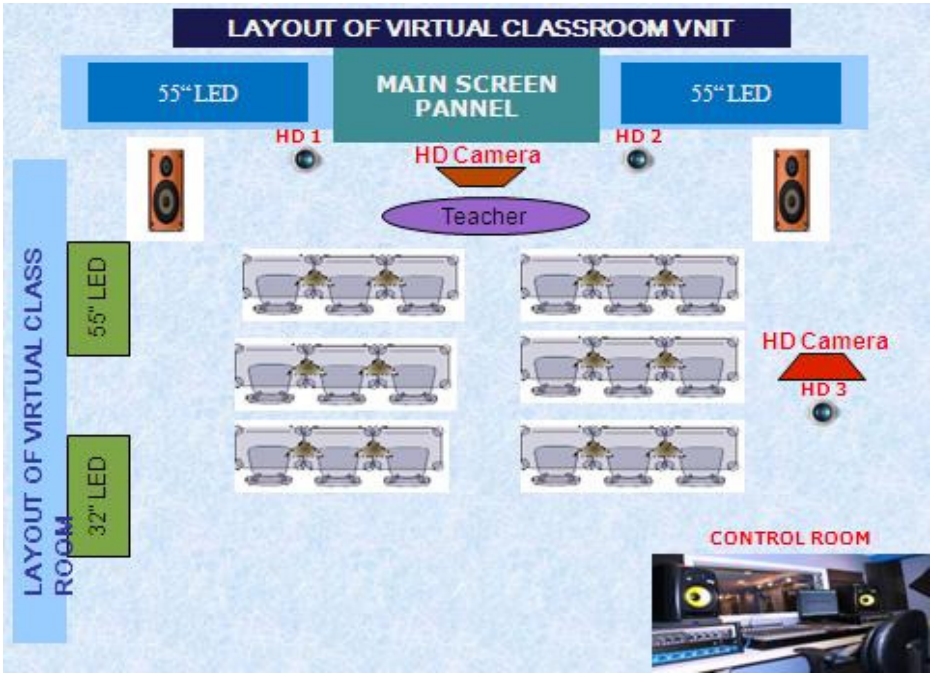
  Total Bandwidth 100 mbps
- Portal of NKH http;/www.nkn.in/
- IP Address for NKN;-
  - 10.119.19.194
  - 10.119.19.192/27 such Range is also allocated
  - Contact Details;-

    1] VNIT Co-ordinator;- Prof. V. J. Abhyankar,

    2] VNIT Technical Assistant;- Mr. Rahul Hepat,

    Mr. A.A. Hardas

8.5.5.1 Layout of Virtual Classroom



		8.6. Internet (5) Name of the Internet provider: BSNL Available bandwidth: Broadband Access speed: Gbps and 16 Mbps: Good Access Speed Availability of Internet in an exclusive lab: Yes Availability in most computing labs: Yes Availability in departments and other units: Yes Availability in faculty rooms: Yes Institute's own e-mail facility to faculty/students: Yes Security/privacy to e-mail/Internet users: Yes (Instruction: The institute may report the availability of Internet in the campus and its quality of service.)
		8.6.1 Network Centre Information;- Network Centre provides a variety of Services. Network Centre administers and manages the entire Campus Computer Network which includes departments, sections computer centre, administrative building, library, Guest house, health centre, NCC Section and Auditorium along with Network Centre and quarters. Network Centre has three leased line (LL) connections 10 Mbps 75 Mbps and 42 Mbps which is distributed all over campus like departments, sections, computer centre, administrative building. Guest house, health centre, NCC Section, Auditorium and quarters along with Network Centre, Currently NKN LL provided by NMEICT for Internet is 50 Mbps. Network Centre monitors bandwidth usage continuously and any problems in usage are rectified with the help of ISP (Internet Service Provider) Network Centre has in-house web server, mail server, proxies and application server along with oracle server. We provide Web-based Email open source that enables all the users to assess their mailbox from anywhere (inside or outside VNIT Nagpur) via the Internet, an institute wide. We mostly encourage use of free and open software like GNU/Linux distributions. Network Centre provides advanced and special purpose soft-wares such as ANSYS, MATLAB, EXATA and AUTOCAD as well as NPTEL Videos for all the inside users in campus. Microsoft OS Software License for servers. Network Centre also host mirrors of freeware softwares for all campus users. The documentation is also provided for special purpose software regarding installation on end user computer. Power lingo language software is available for the benefit of students. The centralized installation of quick Heal Antivirus software is provided for all campus users. Network centre has hardware such as core switch, blade chassis, Blade server, Rack mount server, SAN Storage, Lenovo All in one Desktops, HP Laser jet M

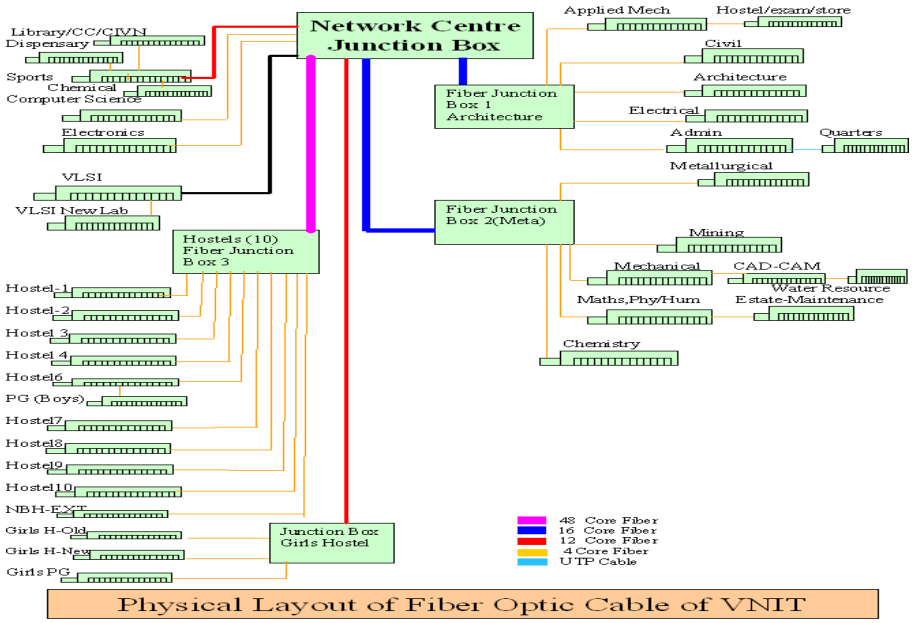
1536 DNF Printer, Lenovo MAKE Desktop, HP Dual CPU Server, Net screen Firewall, Check Point UTM, HP-ML-370 G4 Server Dual Processor.

The approximate cost of hardware is around 1 crore 60 lakhs only (Rs. 1, 60, 00, 000/-) The approximate cost of software is rupees Two Lakh eighty thousand only (Rs. 280000/-) Computer Hardware AMC is outsourced. The cost of annual maintenance charges on computer hardware is approximately two lakhs (Rs. 2,00,000)

The annual charges of Reliance LL is approximately twenty five lakhs (Rs. 25,00,000) and that of BSNL LL is around ten lakhs (Rs.10,00,000/-)
Network Centre has one permanent staff and three adhoc staff - 11 and recurring charges is as under –

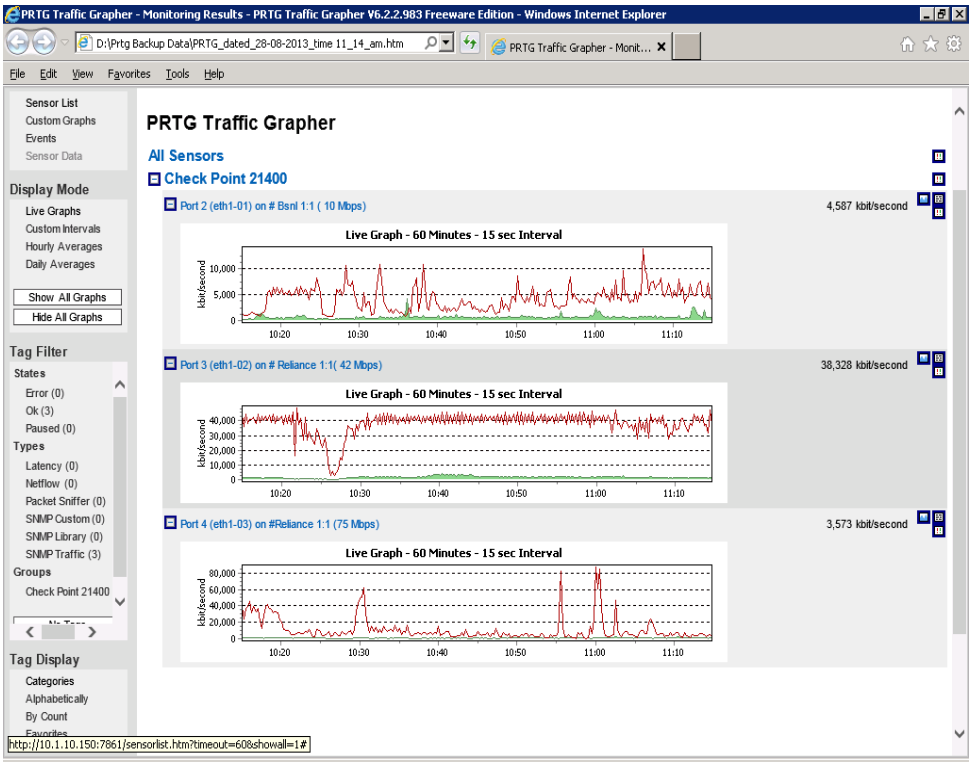
AMC	--	2.0 L
Reliance LL	--	25.0 L
BSNL	--	10.0 L

8.6.2 Physical Layout of Fibre Optic Cable of VNIT



Physical Layout of Fiber Optic Cable of VNIT

8.6.3PRTG Traffic Grapher



8.7. Safety Norms and Checks (5)

8.7.1. Checks for wiring and electrical installations for leakage and earthing (1)

Sr.No.	Particulars	No. of Exits
1	Auditorium	7.00
2	Large Classrooms/Laboratories	2.00
3	Library	2.00

8.7.2. Fire-fighting measurements:

Effective safety arrangements with emergency multiple exits and ventilation/exhausts in auditoriums and large classrooms/laboratories, fire-fighting equipment and training, availability of water, and such other facilities (1)

		Adequate ventilations and multiple exits are provided in all academic buildings, laboratories. 1] We have fire extinguishers (mega mess, hostel blocks, in CAD/CAM, Department, some are still in propose) 2] As per chief advisor of fire audit committee S.T. Chaudhari's advice we have DCP, CO2 pressure extinguishers are placed (fire hydride system is not there) 3] Emergency safety arrangements: No 4] Multiple exits and ventilation/exhausts in auditorium and large labs/classrooms: Yes 5] A number of fire extinguishers are located at various sensitive locations throughout the campus. A total of 16 stations containing different types of Fire fighting media such as Foam, Coz, W/C and DCP are functional and under continuous surveillance for dealing with any fire related emergency.
		8.7.3. **Safety of civil structure (1)** Being publicity funded Institution (Central Govt.), all Infrastructure/construction has to follow CPWD/VNIT. Norms and all buildings are supervised by qualified Engineers during construction. Before the buildings are accepted for use from the construction contractors all checks are done for stability of civil structure. Each structure is specifically certified by the Incharge Engineer from Estate Maintenance section after physical verification. The latest certificate is reproduced below: VISVESVARAYA NATIONAL INSTITUTE OF TECHNOLOGY, NAGPUR PHYSICAL VERFICIATION CERTIFICATE TO WHOM SO EVER IT MAY CONCERN This is to certify that the physical and structural verification of all buildings and connected ancillaries has been carried out during the year 2012-13 and found in order. Date : 10/07/2013 sd/- ENGINEER ESTATE MAINTENANCE SECTION V.N.I.T. NAGPUR
		8.7.4. Handling of hazardous chemicals and such other activities (2) (Instruction: The institution may provide evidence that it is taking enough measures for the safety of the civil structures, fire, electrical installations, wiring, and safety of handling and disposal of hazardous substances. Moreover, the institution needs to show the effectiveness of the measures that it has developed to accomplish these tasks.)

	8.8.	**Counselling and Emergency Medical Care and First aid (5)** Availability of counselling facility (1) Arrangement for emergency medical care (2) Availability of first-aid unit (2) (Instruction: The institution needs to report the availability of the facilities discussed here.)
		8.8.1 Medical Care: **<u>Availability of medical care and emergency, first-aid facility</u>**: Institute through its health centre provides preventive, promotive & curative health services to the students, employees & their families. Resident doctor on campus & 24 x 7 availability of ambulance services take care of emergency needs. Holistic health services available at health centre include family physician, counsellors, lady doctor, Paediatrician & dental services. Alternative health services like Homeopathy & yoga are available. Referral for Ayurvedic services is available. Physiotherapy services promote fitness & address sports related problems. Speciality Clinics for eyes & skin problems is available. Mental health services are provides though counsellors & Psychiatrist. Availability of dietician addresses menu planning for balanced diet in the mess besides giving dietary advice for modern epidemic of obesity, diabetes & cardiovascular problem. First aid facility is provided at all hostels.
		8.8.2 Physical Education facilities: Sports and Games are essentials components of Human Resource Development, helping to promote good health, comradeship and spirit of healthy competition, which in turn, has positive and deep impact on the holistic development of the personality of the youth who is a potential source of energy, enthusiasm and inspiration for development, progress and prosperity of the nation. The Institute aims at all round development of the students. This can be seen from the importance given to the Physical Education. Classes for Physical Education have been included in regular Time Table so as to ensure development of Physical Fitness of the students. Physical Education programs also include general health and safety information in addition to providing opportunities for students to learn how to cooperate with one another in a team setting. **<u>Participation of students in different games</u>** The Institute encourages the students by exposing them to various Inter University Tournaments such as West Zone Inter University, All India Interuniversity, Inter-NIT tournaments and also in local inter-collegiate tournaments. The institute has won many championships in Football, Cricket, Badminton, Table Tennis, Chess, Volleyball and Kho-Kho events in All India Inter NIT Tournaments since 2009 **Krik Mania:** This is an Invitational Cricket Tournament being organized since last 20 years by the Institute students under the guidance of the Department of Physical Education

at local level.

Intramural and Krida Diwas:
This is a unique program of event inter-section tournaments for different games conducted for first year B.Tech./B.Arch. students which goes round the year. The department celebrates the birth anniversary of the great Hockey legend Major Dhyanchand on 29thof August every year and on the same day the intramural program is also inaugurated.

Medical examination:
The Department of Physical Education coordinates for compulsory Medical Examination for all the first year B. Tech. /B. Arch. Students with our Medical Officer Dr. S. Batra. and his team.

Physical Efficiency Test:
Compulsory for every first year B. Tech./B.Arch. Components of physical fitness such as abdominal strength, respiratory endurance, flexibility of hip joint and hamstring muscles and speed are measured by applying suitable tests of fitness.

Felicitation of the students:
The department of Physical Education recognizes the efforts taken by first year students and felicitates them during the valedictory function of the intramural tournament.

Sports facilities currently available on the Campus

- One Cricket Ground with six Turf wickets.
- One Football Ground with flood light arrangement.
- Two Volleyball Courts with flood light
- One Badminton Court.
- A Table Tennis Hall
- Three Lawn Tennis Courts.
- One Flood light Basketball Court
- Well-equipped Gymnasium
- Cricket pavilion with the seating capacity of 500 students

Planned Sports Infrastructure in near future:
Indoor Badminton Stadium with four Wooden sprung Surfaced Badminton courts, Table Tennis hall, Yoga hall, Class room, Sports Medicine Research Lab.

9. Continuous Improvement (75)

This criterion essentially evaluates the improvement of the different indices that have already been discussed in earlier sections.

From 9.1 to 9.5 the assessment calculation can be done as follows

If a, b, c are improvements in percentage during three successive years, assessment can be calculated as

Assessment = **(b-a)+(c-b)+(a+b+c)*5/3**

9.1. Improvement in Success Index of Students (5)

From 4.1.

(b-a)+(c-b)+(a+b+c)*5/3

Items	LYG-a	LYGm1-b	LYGm2-c	Assessment
Success Index	**0.92**	**0.88**	**0.91**	**5**

9.2. Improvement in Academic Performance Index of Students (5)

From 4.2.

Items	LYG	LYGm1	LYGm2	Assessment
API	**8.01**	**8.00**	**8.00**	**40**

9.3. Improvement in Student - Teacher Ratio (5)

From 5. 1

Items	CAY	CAY m1	CAY m2	Assessment/ Average
STR	**37.37**	**36.50**	**35.50**	**36.50**

9.4. Enhancement of Faculty Qualification Index (5)

From 5.3.

Items	LYG	LYGm1	LYGm2	Assessment/ Average
FQI	**6.11**	**6.11**	**6.11**	**6.11**

9.5. Improvement in Faculty Research Publications, R&D Work and Consultancy Work (10)

From 5.7and 5.9

Items	LYG	LYGm1	LYGm2	Assessment/ Average
FRC	**10.88**	**11.55**	**10.88**	**11.10**
FPPC	**3.33**	**2.22**	**1.11**	**2.22**

9.6. Continuing Education (10)

In this criterion, the institution needs to specify the contributory efforts made by the faculty members by developing the course/laboratory modules, conducting short-term courses/workshops, etc., for continuing education during the last three years.

Module description	Any other contributory institute / industry	Developed/organized	Duration	Resource persons	Target audience	Usage and citation etc.
The Fourth ISSS National Conference on Microsystems, Smart Materials, Structures		VNIT Nagpur	30th Sept. to 1st October 2010	Professors from IITs	VLSI M.Tech student	
Workshop on "Characterization and Simulation Tools for Nano devices"		VNIT Nagpur	29th January 2011	Experts from IITs/Foreign Institutes	VLSI M.Tech Student	
Workshop on Basic Electronics with IITB-ISTE	IIT Bombay	VNIT Nagpur	28 june-08 July 2011	Professors from IITs	Teachers from Engineerin	

							g /Technical Institutes	
			TEQIP sponsored series of lectures on 'Signal Image and Video Processing'	IIT Kharagpur/IIT/Bombay/IIT Delhi	VNIT Nagpur	5th Dec. 2011 to 22 Feb. 2012	Professors from IITs	Teachers from VNIT and other institutes	
			Workshop on LINUX and PYTHON	Resource Person from IIT	VNIT Nagpur	Jan 2012	Professors from IITs	B.tech Students	
			Workshop on PYTHON	Resource Person from IIT	VNIT Nagpur	Feb 2012	Professors from IITs	B.tech Students	
			Conducted workshop AKASH for education for VNIT Faculties	IIT Bombay	VNIT Nagpur	Nov. 2012	Professors from IITs	Teachers from Engineering /Technical Institutes	
			Conducted Workshop on Android application development on Akash for VNIT students	IIT Bombay	VNIT Nagpur	March 2012.	Professors from IITs	B.Tech Students	
			Two weeks ISTE workshop on Analog Electronics	IIT Kharagpur	VNIT Nagpur	4 to 14th June 2013	Professors from IITs	Teachers from Engineering /Technical Institutes	
			One week short term course on communication, RF and microwave technology	IIT Kharagpur & Jadhavpur University	VNIT Nagpur	1 May to 11th May 2013	Professors from IITs & Jadhavpur University	M.Tech and Research Scholars	

Assessment =

	9.7.	**New Facility Created (15)** Specify new facilities created during the last three years for strengthening the curriculum and/or meeting the POs: ➢ Faculty members have become active in submitting research proposals. The Department received two BRNS proposals. Very Recently under TEQIP a Centre of Excellence in "Combedded Systems" has been granted for a value of Rs 5 Crores.
	9.8.	**Overall Improvements since last accreditation, if any, otherwise, since the commencement of the programme (20)** 1. Research output of the faculty members has significantly grown. No of PhD scholars in the department is on the increase. Faculty members present papers only in Tier I and Tier II conferences. Our PhD students are required to publish papers only in indexed journals. There is a significant improvement in citation index of faculty members. 2. The department has regained its position as the most preferable department for the fresh entrants.

Declaration

The head of the institution needs to make a declaration as per the format given below:

This Self-Assessment Report (SAR) is prepared for the current academic year (2013-2014) and the current financial year (2013-2014) on behalf of the institution.

I certify that the information provided in this SAR is extracted from the records and to the best of my knowledge, is correct and complete.

I understand that any false statement/information of consequence may lead to rejection of the application for the accreditation for a period of two or more years. I also understand that the National Board of Accreditation (NBA) or its sub-committees will have the right to decide on the basis of the submitted SAR whether the institution should be considered for an accreditation visit.

If the information provided in the SAR is found to be wrong during the visit or subsequent to grant of accreditation, the NBA has right to withdraw the grant of accreditation and no accreditation will be allowed for a period of next two years or more and the fee will be forfeited.

I undertake that the institution shall co-operate the visiting accreditation team, shall provide all desired information during the visit and arrange for the meeting as required for accreditation as per the NBA's provision.

I undertake that, the institution is well aware about the provisions in the NBA's accreditation manual concerned for this application, rules, regulations and notifications in force as on date and the institute shall fully abide to them.

Signature, Name, and Designation of
the Head of the Institution with seal

Place:
Date: