

प्रज्ञानं ब्रह्म



Manipal

INSPIRED BY LIFE

# Annual Quality Assurance Report (AQAR)

**2013 -14**

**Manipal Institute of Technology  
Manipal**



Submitted to

**Manipal Academy of Higher Education**

Manipal 576104, Karnataka

# Vision

Excellence in Technical Education through Innovation and Teamwork

# Mission

Educate students professionally to face societal challenges by providing a healthy learning environment grounded well in the principles of engineering, promoting creativity, and nurturing teamwork

# Values

- Discipline
- Integrity and Trust
- Holistic Learning
- Ethics and Professionalism
- Concern for Society and Environment

## The Annual Quality Assurance Report (AQAR) of the IQAC

All NAAC accredited institutions will submit an annual self-reviewed progress report to NAAC, through its IQAC. The report is to detail the tangible results achieved in key areas, specifically identified by the institutional IQAC at the beginning of the academic year. The AQAR will detail the results of the perspective plan worked out by the IQAC. (Note: The AQAR period would be the Academic Year. For example, July 1, 2012 to June 30, 2013)

### Part – A

**AQAR for the year (for example 2013-14)**

2013-14

### 1. Details of the Institution

1.1 Name of the Institution	MANIPAL INSTITUTE OF TECHNOLOGY
1.2 Address Line 1	MADHAVA NAGAR
City/Town:	MANIPAL, UDUPI
State:	KARNATAKA
Pin Code:	576 104
Institution e-mail address:	<a href="mailto:office.mit@manipal.edu">office.mit@manipal.edu</a>
Contact Nos.	0820-2925522
Name of the Head of the Institution:	DR. G. K. PRABHU
Tel. No. with STD Code:	0820-2924030
Mobile:	NA
Name of the IQAC Co-ordinator:	Prof. Rajesh Gopakumar
Mobile:	+91 9482520247
IQAC e-mail address:	<a href="mailto:gmr.isomit@manipal.edu">gmr.isomit@manipal.edu</a>
1.5 Website address:	<a href="http://www.manipal.edu/mit">www.manipal.edu/mit</a>
Web-link of the AQAR:	<a href="http://manipal.edu/mit/about/AQAR-MIT.html">http://manipal.edu/mit/about/AQAR-MIT.html</a>

For ex. <http://www.ladykeanecollege.edu.in/AQAR2012-13.doc>

## 1.6 Accreditation Details

Sl. No.	Cycle	Grade	CGPA	Year of Accreditation	Validity Period
1	1 <sup>st</sup> Cycle	B+		2002	5 yrs

1.7 Date of Establishment of IQAC : DD/MM/YYYY	30.12.2013
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1.8 Details of the previous year's AQAR submitted to NAAC after the latest Assessment and Accreditation by NAAC (*for example AQAR 2010-11 submitted to NAAC on 12-10-2011*)

- i. AQAR 2013-14 submitted to University on 01/05/2016 (DD/MM/YYYY)

## 1.9 Institutional Status

University      State       Central       Deemed       Private

Affiliated College      Yes       No

Constituent College      Yes       No

Autonomous college of UGC      Yes       No

Regulatory Agency approved Institution  
(eg. **AICTE**, BCI, MCI, PCI, NCI)      Yes       No

Type of Institution      Co-education       Men       Women

   Urban       Rural       Tribal

Financial Status      Grant-in-aid       UGC 2(f)       UGC 12B

   Grant-in-aid + Self Financing       Total self-financing

## 1.10 Type of Faculty/Programme

Arts	<input type="checkbox"/>	Science	<input type="checkbox"/>	Commerce	<input type="checkbox"/>	Law	<input type="checkbox"/>	PEI (Phys. Edu)	<input type="checkbox"/>
TEI (Edu)	<input type="checkbox"/>	Engineering	<input checked="" type="checkbox"/>	Health Science	<input type="checkbox"/>	Management	<input type="checkbox"/>		
Others (Specify)	NA								

**1.11 Name of the Affiliating University (for the Colleges)**

MANIPAL UNIVERSITY, MANIPAL

**1.12 Special status conferred by Central/ State Government-- UGC/CSIR/DST/DBT/ICMR etc.**

Autonomy by State/Central Govt. / University	<input type="checkbox"/>		
University with Potential for Excellence	<input type="checkbox"/>	UGC-CPE	<input type="checkbox"/>
DST Star Scheme	<input type="checkbox"/>	UGC-CE	<input type="checkbox"/>
UGC-Special Assistance Programme	<input type="checkbox"/>	DST-FIST	<input type="checkbox"/>
UGC-Innovative PG programmes	<input type="checkbox"/>	Any other (Specify)	<input type="checkbox"/>
UGC-COP Programmes	<input type="checkbox"/>		

## **2. IQAC Composition and Activities**

2.1 No. of Teachers	18
2.2 No. of Administrative/Technical staff	15
2.3 No. of students	3
2.4 No. of Management representatives	1
2.5 No. of Alumni	2
2.6 No. of any other stakeholder and community representatives	1
2.7 No. of Employers/ Industrialists	2
2.8 No. of other External Experts	1
2.9 Total No. of members	43
2.10 No. of IQAC meetings held	2

<b>2.11 No. of meetings with various stakeholders:</b>	No.	2	Faculty	2	
Non-Teaching Staff Students:	2	Alumni	1	Others	1

**2.12 Has IQAC received any funding from UGC during the year?**    yes     No

If yes, mention the amount

### **2.13 Seminars and Conferences (only quality related)**

(i) No. of Seminars/Conferences/ Workshops/Symposia organized by the IQAC

Total Nos	<input type="text" value="0"/>	International	<input type="text" value="0"/>	National	<input type="text" value="0"/>	State	<input type="text" value="0"/>	Institution Level	<input type="text" value="0"/>
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(ii) Themes

## 2.14 Significant Activities and contributions made by IQAC

- ✓ The academic performance of all departments reviewed and suggested steps to improve overall teaching learning process.
- ✓ Monitors the activities throughout the year, makes suggestions and incorporates the remedial measures
- ✓ Interaction with Heads and faculties of each and every department for maintaining and sustaining quality teaching learning process.
- ✓ Framing of quality objectives for institution and departments (programme outcomes). Action plan, monitoring and assessment of quality objectives.

## 2.15 Plan of Action by IQAC/Outcome

The plan of action chalked out by the IQAC in the beginning of the year towards quality enhancement and the outcome achieved by the end of the year \*

	Plan of Action		2013-2014	Achievement status
1	Enhance Student Progression Percentage of eligible students progressing to higher levels	Improve compared to previous benchmark	90.15%	Achieved
2	Number of students involved in social responsibility projects and extension activities	Improve on previous benchmark	400	Achieved
3	Graduation rate	% of students completing the programme on time, target can be 1% better than average of previous three batches	89%	Achieved
4	Student feedback of faculty	Minimum of 3 on a scale of 5	3.56	Achieved
5	Student feedback on infrastructure *	Minimum of 3 on a scale of 5	4	Achieved
6	Student feedback on academic program	Minimum of 3 on a scale of 5	3.5	Achieved
7	Faculty student ratio as per statutory and regulatory requirements	--	1:15	--

8	Student attrition rate	Reduce as compared to previous benchmark (< 5%)	<5%	Achieved
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**\* Attach the Academic Calendar of the year as Annexure.**

2.15 Whether the AQAR was placed in statutory body

Yes

No

Management

Syndicate

Any other body

**Provide the details of the action taken**

TWO IQAC meetings were held on 30.12.2013 and 25.07.2014.



## Part – B

### Criterion – I

#### 1. Curricular Aspects

##### 1.1 Details about Academic Programmes

Level of the Programme	Number of existing Programmes	Number of programmes added during the year	Number of self-financing programmes	Number of value added / Career Oriented programmes
PhD	27	-	27	-
PG	23	02	25	-
UG	15	01	16	-
PG Diploma	-	-	-	-
Advanced Diploma	-	-	-	-
Diploma	-	-	-	-
Certificate	-	-	-	-
Others	-	-	-	-
<b>Total</b>	<b>68</b>	<b>03</b>	<b>68</b>	<b>-</b>
Interdisciplinary	-	-	-	-
Innovative	-	-	-	-

##### 1.2 (i) Flexibility of the Curriculum: CBCS/Core/Elective option / Open options

##### (ii) Pattern of programmes:

Pattern	Number of programmes
Semester	44
Trimester	NA
Annual	NA

##### 1.3 Feedback from stakeholders\* (On all aspects)

Alumni  Parents  Employers  Students

Mode of feedback : Online  Manual  Co-operating schools (for PEI)

*\*Please provide an analysis of the feedback in the Annexure*

##### 1.4 Whether there is any revision/update of regulation or syllabi, if yes, mention their salient aspects.

No

##### 1.5 Any new Department/Centre introduced during the year. If yes, give details.

No

## Criterion – II

### 2. Teaching, Learning and Evaluation

2.1 Total No. of permanent faculty	<b>Total</b>	<b>Asst. Professors</b>	<b>Associate Professors</b>	<b>Professors</b>	<b>Others</b>
	633	448	101	84	0

2.2 No. of permanent faculty with Ph.D.

185

2.3 No. of Faculty Positions Recruited (R) and Vacant (V) during the year

Asst. Professors		Associate Professors		Professors		Others		Total	
R	V	R	V	R	V	R	V	R	V
55	24	3	4	1	2	0	0	56	32

2.4 No. of Guest and Visiting faculty and Temporary faculty

2

22

0

2.5 Faculty participation in conferences and symposia:

No. of Faculty	International level	National level	State level
Attended Seminars/ Workshops	318	561	16
Presented papers	558	196	0
Resource Persons	10	10	11

2.6 Innovative processes adopted by the institution in Teaching and Learning:

- Remedial classes for academically poor students.
- Guest Lectures
- Program electives/ open electives
- AMS-Interactive tool for student performance and attendance analysis
- Slot-wise timetable
- Organizing Guest Lecture from Industry experts and site visits, Power point Presentation facility in each class, Continuous Evaluation, QEEE program for students and faculty members
- Open Electives are introduced for IV & V semester students.
- Industry sponsored electives.
- Black board teaching for subjects involving intensive mathematical analysis.
- Power Point Presentations for subjects involving complex diagrams.
- Assignments – All subjects of all semesters involves five assignments which will be evaluated at regular intervals to monitor students' performance.
- Mini-projects and demonstrations – In subjects and labs, students have to work on a mini project and demonstrate its working.
- Industry visits – Industrial visits are carried out by the department for both UG and PG students to near-by Industries for better understanding of theoretical knowledge gained by students. Also, IE student chapter organises Industrial visit. Some of the industries are Canara Lighting

Mangalore, GE Bangalore, Infosys Bangalore, Wipro Bangalore, Shamili Hydel Power Plant Ltd. Sangur Plant, Siddapur, Udupi and other power plants near-by, etc.

- Black board teaching for subjects involving intensive mathematical analysis.
- Case studies – Used in teaching design based and management subjects.
- Assignments – All subjects of all semesters: involves five assignments at regular intervals.
- Mini-projects and demonstrations – In subjects such as Embedded Systems, VLSI design, Electronic Circuit design, Digital design, students have to work on a mini project and demonstrate its working. In subjects such as Circuit design using P-Spice, DSP using MATLAB, teachers demonstrate the concepts through examples.
- Conducted workshop on latest technologies
- Conducted Placement classes
- Guest lectures from Adjunct faculty
- Modern facilities like LCD projection including animations, showing models

2.7 Total No. of actual teaching days during this academic year

176

2.8 Examination/ Evaluation Reforms initiated by the Institution (for example: Open Book Examination, Bar Coding, Double Valuation, Photocopy, Online Multiple Choice Questions)

- Periodic assignments were given to the students where it is required to be submitted by the students within the stipulated time, subsequently corrections were carried out and evaluated assignments were given back to the students
- Internal assessment test (sessional) were conducted as per institution timetable twice a semester.
- Final exam (end sem.) conducted as per centralized timetable from institution.
  - Assignment evaluation: out of 10 marks
  - Sessional Test: 20 + 20= 40 marks
  - Final exam: out of 50 marks
- Through continuous evaluation of students through in-semester tests( two sessional tests , quizzes, assignments and end semester examination
- Continuous evaluations of students will be done through assignments, tests and end semester examination.
- Students are evaluated relatively on a grade scale of 10. Every theory subject will have 50% of in-semester marks (continuous evaluation) and 50% of end semester marks. A minimum of 18 marks out of 50 is necessary in the end semester exam to obtain the credit for the course.
- The student performance in each theory course is evaluated out of 100 marks, of which 50 marks are for in semester assessments and 50 marks are for end semester assessments. In semester assessment in theory courses is based on periodic tests, assignments, quizzes, case presentations, seminars etc, which shall be defined by the course instructor.
- The student performance in the laboratory courses is also evaluated out of 100 marks and is based on in semester assessment out of 60 marks and end semester examination for 40 marks.
- The performance of the student in a course is reflected in the Letter Grade awarded

- Introduction of Two compulsory sessional test
- Assessment techniques comprise of tests, assignments, quizzes and exams. Semester exam questions are set to target different course objectives. Student performance is then mapped to different course outcomes and an analysis of the same reveals the extent to which course outcomes are met. Necessary changes are then implemented accordingly.
- Tests are the preparations for the end semester examination and are conducted in the same manner, except for the duration, which is one hour against that of three hours for the examinations. Two tests will be conducted in each semester and the contents will be announced in the beginning of the semester while course plan is distributed to the students.
- Continuous Evaluation, inclusion of MCQ in the Sessional Question paper.

2.9 No. of faculty members involved in curriculum restructuring/ revision/ syllabus development as member of Board of Study/Faculty/Curriculum Development workshop

23	-	-
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2.10 Average percentage of attendance of students

84%
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## 2.11 Course/Programme wise distribution of pass percentage: 9 Batches

### Undergraduate

Title of the Programme	Total no. of students appeared	Division				
		Distinction %	I %	II %	III %	Pass %
Aeronautical Engineering	40	32.50%	35.00%	12.50%	0.00%	80.00%
Automobile Engineering	39	30.77%	30.77%	7.69%	0.00%	69.23%
Bio-Medical Engineering	48	18.75%	18.75%	8.33%	0.00%	45.83%
Biotechnology	24	54.17%	16.67%	8.33%	0.00%	79.17%
Chemical Engineering	67	29.85%	35.82%	23.88%	0.00%	89.55%
Civil Engineering	84	41.67%	28.57%	14.29%	0.00%	84.52%
Computer Science and Engineering	263	44.49%	24.33%	15.21%	0.38%	84.41%
Electrical and Electronics Engineering	163	33.74%	31.29%	12.88%	0.00%	77.91%
Electronics and Communication Engineering	258	45.35%	26.74%	14.73%	0.00%	86.82%
Industrial and Production Engineering	51	27.45%	37.25%	9.80%	0.00%	74.51%
Information Technology	108	20.37%	35.19%	22.22%	0.00%	77.78%
Instrumentation and Control Engineering	30	36.67%	23.33%	13.33%	0.00%	73.33%
Mechanical Engineering	237	48.52%	23.21%	13.50%	0.00%	85.23%
Mechatronics	64	40.63%	23.44%	15.63%	0.00%	79.69%
Printing Technology	13	23.08%	7.69%	30.77%	0.00%	61.54%

### Postgraduate

Title of the Programme	Total no. of students appeared	Division				
		Distinction %	I %	II %	III %	Pass %
Bio-Medical Engineering	25	72.00	28.00	0.00	0.00	100.00
Computer Science and Engineering	24	70.83	29.17	0.00	0.00	100.00
Construction Engg. and Management	18	52.94	35.29	0.00	0.00	88.24
Digital Electronics and Advanced Communication	25	79.17	20.83	0.00	0.00	96.00
Energy Management, Auditing and Lighting	18	83.33	16.67	0.00	0.00	100.00
Engineering Management	18	55.56	38.89	5.56	0.00	100.00

Structural Engineering	25	60.87	34.78	0.00	0.00	95.65
Computer Aided Mechanical Design and Analysis	18	83.33	5.56	0.00	0.00	94.44
Control Systems	18	72.22	11.11	0.00	0.00	100.00
Manufacturing Engineering and Technology	18	93.75	6.25	0.00	0.00	100.00
Network Engineering	17	31.25	31.25	18.75	0.00	87.50
Software Engineering	15	76.92	23.08	0.00	0.00	100.00
Nuclear Engineering	3	66.67	33.33	0.00	0.00	100.00
Printing and Media Technology	16	40.00	20.00	0.00	0.00	80.00
Microelectronics	19	84.21	10.53	5.26	0.00	100.00
Power Electronic Systems and Control	18	64.71	35.29	0.00	0.00	100.00
Astronomy and Space Engineering	18	72.22	27.78	0.00	0.00	100.00
Printing and Media Technology (Dual Degree)	10	10.00	0.00	0.00	0.00	20.00
Industrial Bio –Technology	16	75.00	25.00	0.00	0.00	100.00
Computer Science and Information Security	18	61.11	38.89	0.00	0.00	100.00
Chemical Engineering	5	80.00	20.00	0.00	0.00	100.00
Environmental Engineering	18	38.89	44.44	5.56	0.00	94.44
Biochemical Engineering	11	81.82	18.18	0.00	0.00	100.00
Industrial Pollution Control	-	-	-	-	-	-
Advanced Thermal Power and Energy System	-	-	-	-	-	-

2.12 How does IQAC Contribute/Monitor/Evaluate the Teaching & Learning processes:

1. All the faculty members are asked to enter the day to day activities in the “Academic Management System-AMS” and the same is monitored.
2. Course coverage is monitored.
3. Audits are done to see all the activities are done on time.
4. Feedbacks are studied and improvements are suggested.

### 2.13 Initiatives undertaken towards faculty development

<b>Faculty / Staff Development Programmes</b>	<b>Number of faculty benefitted</b>
Refresher courses	24
UGC – Faculty Improvement Programme	03
HRD programmes	04
Orientation programmes	37
Faculty exchange programme	01
Staff training conducted by the university	15
Staff training conducted by other institutions	09
Summer / Winter schools, Workshops, etc.	170
Others	0

### 2.14 Details of Administrative and Technical staff

<b>Category</b>	<b>Number of Permanent Employees</b>	<b>Number of Vacant Positions</b>	<b>Number of permanent positions filled during the Year</b>	<b>Number of positions filled temporarily</b>
Administrative Staff	209	13	2	0
Technical Staff	1172	10	4	0

## Criterion – III

### 3. Research, Consultancy and Extension

#### 3.1 Initiatives of the IQAC in Sensitizing/Promoting Research Climate in the institution

- Research incentive policy - Faculty members are allotted with incentive points for publication in indexed journals which they can either encash or utilize for attending conferences in India/abroad with the financial support from the institute.
- Conference Scheme- Faculty members are provided with financial support to attend the conferences in India and abroad (in addition to research incentive) every year.
- Career advancement scheme (promotion) is linked to acquiring Doctoral degree and publications in Journals.

#### 3.2 Details regarding major projects

	Completed	Ongoing	Sanctioned	Submitted
Number	5	20	5	4
Outlay in Rs. Lakhs	89.5700	131.5620	117.71	430.43

#### 3.3 Details regarding minor projects

	Completed	Ongoing	Sanctioned	Submitted
Number	NIL	4	4	4
Outlay in Rs. Lakhs	NIL	25.25	13.52	20

#### 3.4 Details on research publications

	International	National	Others
Peer Review Journals	266	20	0
Non-Peer Review Journals	28	3	0
e-Journals	14	0	0
Conference proceedings	182	97	0

#### 3.5 Details on Impact factor of publications:

Range  Average  h-index  Nos. in SCOPUS



3.6 Research funds sanctioned and received from various funding agencies, industry and other organisations

Nature of the Project	Duration Year	Name of the funding Agency	Total grant Sanctioned	Received
Major projects	2-5 years	Xerox, MU, DST & SERB-DST, DRDO, DAE-BRNS, Govt. of India,	230.8275	134.5520
Minor Projects	1-3 years	DRDO, MU, VGST, Govt of Karnataka	11.90	11.90
Interdisciplinary Projects	-	-	-	-
Industry sponsored	-	-	-	-
Projects sponsored by the University/ College	2-3 years	MU	64.16	15.16
Students research projects <i>(other than compulsory by the University)</i>	-	-	-	-
Any other(Specify)	Travel grants	United Nations, Vienna, Austria; Committee on Space research, France	66.172	66.172
<b>Total</b>	1-5 years	Xerox, MU, DST & SERB-DST, DRDO, DAE-BRNS, Govt. of India, VGST, Govt of Karnataka, United Nations, Vienna, Austria; Committee on Space research, France	<b>373.0595</b>	<b>227.784</b>

3.7 No. of books published

i) With ISBN No.

10

Chapters in Edited Books

14

ii) Without ISBN No.

NIL

3.8 No. of University Departments receiving funds from

UGC-SAP

NIL

CAS

NIL

DST-FIST

1

DPE

NIL

DST

1

DBT Scheme/ funds

1

3.9 For colleges

Autonomy

NIL

CPE

NIL

DBT Star Scheme

NIL

INSPIRE

NIL

CE

NIL

Any other (specify)

NIL

3.10 Revenue generated through consultancy

16.45315

**3.11 No. of conferences organized by the Institution**

Level	International	National	State	University	College
Number	3	7	NIL	NIL	NIL
Sponsoring agencies	Mercury Paper Agencies; Vinsak; Tamilnadu Newsprint and Papers Ltd.; Universal Engg. Corporation; Syndicate Bank; Manipal University	DST, CSIR, UPCL, SBI, Syndicate Bank, G. Shankar Family Trust; DRDO; Kamaljeeth Instruments & Service Unit, Bangalore; Manipal University	NA	NA	NA

**3.12 No. of faculty served as experts, chairpersons or resource persons**

52

**3.13 No. of collaborations**

International

8

National

23

Any other

1

**3.14 No. of linkages created during this year**

10

**3.15 Total budget for research for current year in lakhs:**

From Funding agency

54.33

From Management of University/College

168.68

Total

223.01

**3.16 No. of patents received this year**

Type of Patent		Number
National	Applied	1
	Granted	1
International	Applied	4
	Granted	0
Commercialised	Applied	0
	Granted	0

**3.17 No. of research awards/ recognitions received by faculty and research fellows of the institute in the year**

Total	International	National	State	University	Dist	College
13	4	2	1	3	1	2

**3.18 No. of faculty from the Institution who are Ph. D. Guides**  and students registered under them

**3.19 No. of Ph.D. awarded by faculty from the Institution**

**3.20 No. of Research scholars receiving the Fellowships (Newly enrolled + existing ones)**

JRF  SRF  Project Fellow  Any other

**3.21 No. of students Participated in NSS events:**

University level  State Level   
National level  International level

**3.22 No. of students participated in NCC events:**

University level  State Level   
National level  International level

**3.23 No. of Awards won in NSS:**

University level  State Level   
National level  International level

**3.24 No. of Awards won in NCC:**

University level  State Level   
National level  International level

**3.25 No. of Extension activities organized**

University level forum  College forum    
NCC  NSS  Any other

### 3.26 Major Activities during the year in the sphere of extension activities and Institutional Social Responsibility

- Dr. Vibhor Agrawal, Assist. Professor, Dept. of Dept. of Physical Therapy/BME/Miami Vetrenas Affairs Medical Center, University of Miami, Florida 33136, USA. He delivered a lecture to the students and Faculty of the Dept. of BME.
- Prof. Markad V. Kamath, McMaster University, Hamilton, Ontario, Canada visited us to explore the possibility of collaborative projects; a meeting to discuss the same.
- Dr. Lalit K. Mestha, Principal Scientist, Xerox Research Center, Webster, Phillips Rd, MS 128-56E Webster, New York 14580, visited the Dept. to explore the possibilities of collaborating with the Dept., the “Cyber Vitals” Project. A meeting was held with the HOD, and the collaboration was initiated.
- Dr. Sastry Vedam, Assistant Professor, University of Texas M D Anderson, Cancer Center, USA delivered an invited talk “Radiotherapy: An introduction to Biomedical Engineers”.
- Prof. Raymond, NTU, Singapore addressed the final year UG and M.Tech. (Biomedical Engineering) students. He also interacted with the HOD and faculty members.
- Prof. Dr. Kyriacou of the City University, London, UK, visited the department and interacted with students of M.Tech (Biomedical Engineering).
- Organized a National Level Symposium on Sustainable Development Issues & Challenges
- A two day National Workshop on “Energy Efficient Lighting Solutions” was organised by the dept. in association with Society of Energy Engineers and Managers India
- Another Faculty Development Program was organised on “Graphical System Design using LabVIEW” for the benefits of faculty and research scholars
- Collaborative non funded projects such as Bio-signal Processing on clinical and nonclinical data, Radiation study on animals at School of Life Sciences; Gait analysis, Scoliosis study, 3D reconstruction using 2D data, Diabetic retinopathy, Design of compact Electro larynx in association with Kasturba Medical College, Manipal; Electronic interface for dental implants in association with College of Dental Sciences, Manipal. These are a few collaborative inter-institutional projects undertaken by the department.

IEEE student chapter

Technical workshops, seminars, guest lectures.

IE (E & C) student chapter

Technical workshops, seminars, guest lectures.

ISTE student chapter

Technical workshops, seminars, guest lectures.

IAESTE , AIESEC

Student exchange programmes

Major interdisciplinary student Projects such as; PARIKSHIT, FORMULA MANIPAL, SOLAR MOBILE, ROBO MANIPAL, MANIPAL RACING.

Opportunity for the students to work in a large group, execute tasks with tight deadlines, develop leadership qualities and team spirit.

FDP, Guest talks, conferences and Workshops organized within and outside.

Faculty and students are encouraged to participate

- |                                   |  |
|-----------------------------------|--|
| “Tech Tatva” and “REVELS”         | Technical paper presentations, competitions and cultural events. |
| Department of Sports for students | Sports and games   |
| Faculty club                      | Sports, games and cultural events                                |
- Annual conference of the department Control Instrumentation Systems Conference (CISCON)
  - Workshop and Faculty development programme

## Criterion – IV

### 4. Infrastructure and Learning Resources

#### 4.1 Details of increase in infrastructure facilities:

Facilities	Existing	Newly created	Source of Fund	Total
Campus area	162 Acres (Land)	-	Manipal University	162 Acres
Class rooms	141	-	Manipal University	139
Laboratories	92	3	0	83
Seminar Halls	23	-	Manipal University	23
No. of important equipment's purchased ( $\geq$ 1-0 lakh) during the current year.	343	181	DAE-BRNS, Manipal University	07
Value of the equipment purchased during the year (Rs. in Lakhs)	518.6486	230.6044	Manipal University, Schneider Electric, Texas Instruments, PDRP	649.2530
Others	23.72509	98.27200	Manipal University	121.99709

#### 4.2 Computerization of administration and library

- Library is computerized using EASYLIB software and all documents are barcoded
- E-prints software is used for digital library

#### 4.3 Library services:

	Existing		Newly added		Total	
	No.	Value	No.	Value	No.	Value
Text Books	88037	36332646.35	2902	2187794.71	90939	38520441.06
Reference Books	12292	2404562.66	26	82347.29	12318	2486909.95
e-Books	478	99210.00	-	141918.00	478	241128.00
Journals	-	33158757.00	290	3672472.00	-	36831229.00
e-Journals	-	32593405.00	1320	8739704.00	-	41333109.00
Digital Database	1	88000.00	1	400000.00	2	488000.00
CD & Video	CD 4600 Video 764	312591.00	CD 450	-	CD 5050 Video 764	312591.00
Others (specify)		1,50,000.00	-	-	-	1,50,000.00

#### 4.4 Technology up gradation (overall)

	Total Computers	Computer Labs	Internet	Browsing Centres	Computer Centres	Office	Departments	Others
Existing	4082 including 2035 desktops and 2047 Laptops	Departments have computer labs, internet facility, Wi-Fi connectivity. All offices also have access to internet facilities. Laptop is provided to each student and faculty.						
Added	Every year there will be a replacement for a set of old lab computers with latest technology upgradation.							

#### 4.5 Computer, Internet access, training to teachers and students and any other programme for technology up-gradation (Networking, e-Governance etc.)

- All students and faculty are provided laptop for their teaching, learning and research requirements.
- Academic Management System-AMS is used for Teaching Learning monitoring process.

#### 4.6 Amount spent on maintenance in lakhs:

i) ICT	503.95
ii) Campus Infrastructure and facilities	1114.53
iii) Equipment's	281.14
iv) Others (Academic Expenses, Staff Compensation, Office & General)	6888.21
<b>Total</b>	<b>8789.83</b>

## Criterion – V

### 5. Student Support and Progression

#### 5.1 Contribution of IQAC in enhancing awareness about Student Support Services

1. The institution publishes its updated academic handbook and academic calendar every year. The book includes information about the institute, list of teaching and non-teaching staff, details about undergraduate and post graduate programmes, rules and regulation of the college and its library, internal assessment and the pattern of evaluation, the tutorial system, hostel facility etc.
2. The institution facilitates students to avail scholarship & other financial assistance from state government, central government and other authorities.
3. Enrichment of library by adding new books and journals.
4. Builds a culture of social responsibility through extension activities by students.
5. Grievance Redressal Cell is working for student support
6. Provides latest information and communication tools like Wi-Fi Campus, Internet Facility etc.
7. Keeps updating the information on the website on regular basis.

#### 5.2 Efforts made by the institution for tracking the progression

1. Through AMS-Academic Management System by checking attendance and student performance in Internal and External assessments.
2. Through continual assessment of curriculum delivery throughout the semester vide assignments, internal class tests, in semester examinations etc.
3. Interim reviews for Projects and Seminars.

#### 5.3 (a) Total Number of students

UG	PG	Ph. D.	Others
7144	959	33	-

(b) No. of students outside the state

UG	6132	PG	437
----	------	----	-----

(c) No. of international students

UG	108	PG	1
----	-----	----	---

<b>Undergraduate</b>	Men	No.	%
		5604	78

Women	No.	%
	1540	22

<b>Postgraduate</b>	Men	No.	%

Women	No.	%



676	70
-----	----

283	30
-----	----

### Undergraduate

Last Year							This Year						
General	NRI	SC	ST	OBC	Physically Challenged	Total	General	NRI	SC	ST	OBC	Physically Challenged	Total
5944	790	-	-	-	-	6734	6456	688	-	-	-	-	7144

Demand ratio 

18.75
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Dropout % 

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### Post-graduate

Last Year						This Year					
General	NRI	ST	OBC	Physically Challenged	Total	General	NRI	ST	OBC	Physically Challenged	Total
892	24	-	-	-	916	913	46	-	-	-	959

Demand ratio 

---
-----

Dropout % 

---
-----

### 5.4 Details of student support mechanism for coaching for competitive examinations (If any)

- Done at the college level with the support of Education Technology cell / Placement cell

#### Education Technology cell:

- Organizes special classes in personality development skills
- Organizes various foreign language classes, and lectures in soft skills.
- Arranges training on facing the interviews and group discussions.

#### Placement cell: to carry out the placement

- Arranges collaboration between industry and academic and thereby promotes industry institute partnerships.
- Consistently high quality of placements has been achieved through the cell.
- Established a long lasting and fruitful relationship with industries
- Arranges workshops on how to face the interviews and choice of campus

- Wide publicity is given for the competitive exams and skill development is provided through the Guest lecturers in core and allied chemical engineering subjects by academic and industrial experts

- Conducted Placement Training Class for UG and PG students in the department
- Aptitude (Logical Reasoning) and Soft Skills

No. of students beneficiaries

#### 5.5 No. of students qualified in these examinations

NET	<input type="text" value="-"/>	SET/SLET	<input type="text" value="-"/>	GATE	<input type="text" value="32"/>	CAT	<input type="text" value="17"/>
IAS/IPS etc	<input type="text" value="-"/>	State PSC	<input type="text" value="-"/>	UPSC	<input type="text" value="1"/>	Others	<input type="text" value="45"/>

#### 5.6 Details of student counselling and career guidance

Professional counsellors are available on a daily basis for student counselling. The departments take care about any career guidance, on a case to case basis.

No. of students beneficiaries

#### 5.7 Details of campus placement

<i>On campus</i>			<i>Off Campus</i>
Number of Organizations Visited	Number of Students Participated	Number of Students Placed	Number of Students Placed
119	1123	1016	63

#### 5.8 Details of gender sensitization programmes

Gender sensitization programme was conducted in the institute for All Teaching and Non-Teaching staff members in batches.

## 5.9 Students Activities

### 5.9.1 No. of students participated in Sports, Games and other events

State/ University level  National level  International level

### No. of students participated in cultural events

State/ University level  National level  International level

### 5.9.2 No. of medals /awards won by students in Sports, Games and other events

Sports: State/ University level  National level  International level

Cultural: State/ University level  National level  International level

## 5.10 Scholarships and Financial Support

	Number of students	Amount
Financial support from institution	928	7,98,02,648.37
Financial support from government	256	4,84,25,216.00
Financial support from other sources	-	NIL
Number of students who received International/ National recognitions	6	1,56,000.00 <ul style="list-style-type: none"> <li>• Mr. Aneesh Bharadwaj selected as United Nations Scholar for excellence in Science &amp; Engineering</li> <li>• Performed at Prestigious Savai Gandharva Music Festival, Kundgol</li> <li>• Third prize at Smt. Padhke Memorial Festival (National level music)</li> </ul>

## 5.11 Student organised / initiatives

Fairs: State/ University level  National level  International level

Exhibition: State/ University level  National level  International level

**5.12 No. of social initiatives undertaken by the students**

**5.13 Major grievances of students (if any) redressed:**

## Criterion – VI

### **6. Governance, Leadership and Management**

#### **6.1 State the Vision and Mission of the institution**

##### **Vision:**

Excellence in technical education through innovation and team work

##### **Mission:**

Educate students professionally to face societal challenges by providing a healthy learning environment grounded well in the principles of engineering, promoting creativity, and nurturing teamwork.

#### **6.2 Does the Institution has a management Information System**

There are various software systems for different areas as follows

1. SIS- a Student Information System for managing the student profiles.
2. AMS- Academic Management System for monitoring the teaching and learning process.
3. PMS- Performance Analysis System for the faculty performance evaluation.
4. RMS- Research Management System to manage the research processes.
5. PeopleSoft- Human Resource Management System

#### **6.3 Quality improvement strategies adopted by the institution for each of the following:**

##### **6.3.1 Curriculum Development**

- Maintained course plan / lecture plan and respective faculty will follow the same lecture in the class.
- Started conducting class committee meetings to know about the problems from the students in the respective subject in the presence of faculty and solution will be recommended by the department committee headed by the HOD and other members and the corrective measures will be communicated to the students.
- Each member of the faculty entitles for updation of the curriculum as and when required and report it to the course coordinator
- It is further recommended to Department Curriculum Committee (DCC) and forwarded to the Board of Studies (BOS), for suggestions/revisions and later approved by BOS/Academic Senate.
- Once in every 4 years curriculum is revised- Curriculum conclave held in February 2014
- **Class Committee:**

- Separate class committees are constituted by the Head of the department for III to VIII semester of B.Tech programme and for every semester of M.Tech programme. Members: A senior faculty of the department as Chairman, Course Coordinators/Course Instructors of all courses and student representatives.
  - Functions of the Class Committee: The class committee will meet thrice in a semester. The first meeting will be held within two weeks from the commencement of the semester in which the course plan, evaluation plan etc. are discussed. The second meeting will be held two weeks after the first test to collect feedback and improve the effectiveness of the teaching learning process. Performance of the students in the tests may also be analyzed. The chairman of the class committee should send the minutes of the class committee meeting to the Associate Director (Academic) through the Head of the Department after each class committee meeting.
  - The third meeting is to be held to analyze the performance of the students in all courses of study and grade finalization. The Head of the department will declare the result of III to VIII semester B.Tech programme and I to III semester M.Tech programme.
- **Department Curriculum Committee (DCC)**
- DCC consists of Program Coordinator Course Coordinator and faculty representatives.
  - Chaired by Program Coordinator, the committee monitors the attainment of program objectives.
  - Evaluates program effectiveness and proposes necessary changes.
  - Prepares periodic reports, records on program activities, progress, status or other special reports for management key stake holders.
  - Motivates the faculty and students towards attending workshops, developing projects, working models, paper publications and research.
  - Interact with students, faculty, Program Coordinators, Module Coordinator and outside/community agencies (through their representation) in facilitating program educational objectives.
- DCC meets at least once in a Semester to review the program and submits report to BOS at the Institute level.
- Feed-back collected from experts from industry, R & D, alumni and students.
- Through industry initiated electives.
- Department Curriculum Committee looks after the curriculum and takes inputs from the faculty members and if any minor change in the curriculum is required, the same will be put forth in the DCC meetings and if approved will be put forth in the BOS meeting for approval

- The department, being a part of MIT, which is a constituent Institute of Manipal University, enjoys academic freedom. There are regular minor and major course revisions to the programmes. Minor revisions are being carried out at every semester and major revision is carried out once in four years. All faculty members are involved in the curriculum revision at the entry level. The syllabus and the revision will be framed by the senior faculty and discussed at the department meeting attended by all the faculty members. Department Curriculum Committee (DCC) at the entry level should approve the programme revision. The DCC constitutes of department experts, student representatives as-well-as representatives from industries and academic institutions of repute.
- The curriculum approved by the DCC at the Institute level passes through the BOS, which also consists of student representatives as-well-as experts from industries and academic institutions of repute. Final approval is given by the Academic Senate.
- The last major revision of syllabus was implemented from the academic year 2014-2015.
- Semester scheme with 10-point Credit System.
- To appreciate the importance of knowledge existing in other domains, there is a provision of open electives wherein students can opt a set of subjects offered by different departments / Institutions under MU. Some such courses offered by our department are:
  - Consumer Electronics
  - MEMs Technology
  - Neural Networks and Fuzzy Logic etc.
- Consulted the students, industry personnel and member from academia during the framing of syllabus
- Based on the comments of alumni, and industrial experts comments syllabus undergoes a minor revision with the approval of DCC.
- Constant Revision of the Curriculum every few years with due inputs from industry experts and academicians (DCC Meetings, BOS meetings)
- Department curriculum committee has been formed
- Industry experts have been included
- Academicians from other Institute and other departments have been included
- The academic committee is in contact with the alumni and employers consistently and takes feedback during curriculum development. The feedback is incorporated in offering of newer open electives and programme electives during the curriculum revision, introduction of courses, or invited lectures on multi-disciplinary areas.
- Keeping in mind the Graduate attributes: Engineering knowledge, Problem Analysis, Conducting investigations of complex problems

- DCC members meet twice a year to review Curriculum in the department and makes a presentation to the Director, AD and external committee member.

### **6.3.2 Teaching and Learning**

- Mentor is appointed by the department and by Identifying weaker students and counselling them to improve their academics in the successive class.
- Learning is never ending process and faculty have been encouraged to attend faculty development programs, attending conferences, presenting papers, carry out research in their interested engineering field
- Regular black-board teaching supported by power-point presentations, assignments, quizzes, Peer-learning (through Tutors), and Tutorial Sessions. Setting appropriate question papers is also a part of the teaching-learning process
  - Tutorial based learning
  - Remedial classes conducted for identified week students
  - Mentoring system:
    - ❖ Faculty advisor to help at individual level at the department
    - ❖ Faculty advisor for professional activities (BMESI )
    - ❖ Subject coordinators
    - ❖ Placement coordinator for career guidance
  - Class committee meetings to address student issues pertaining to academics and others
  - Provision for psychiatric counseling for students if necessary by experts from KMC
- Induction programme will be conducted for newly joined faculty through Technology & Development cell in the Institute.
- A senior faculty will be a mentor the newly joined faculty in the department.
- Class Committees are formed for each semester comprising faculty members as well as student representatives, which meet to discuss the teaching-learning process and also the result analysis of the sessional and the end semester examinations. Based on the inputs given by the faculty members the counselling of weaker students is taken up.
- We have faculty advisor scheme (for higher semester students), where each faculty member monitors a set of students. The students can approach the faculty advisor regarding their academic problems. Faculty advisor forms an interface between his /her students and the faculty members/administrators concerned in solving students' problems.
- We have class committees represented by both teachers and students. The committee meets twice /thrice a semester to discuss and solve academic problems and other issues. There are section coordinators and lab- in- charges to try and resolve issues related to students in classes



and laboratories. We have a process to address/counsel academically weak students. As per the process, an academically weak student needs to be identified and effort is made to see that they are going to be one in the mainstream.

- Inputs from the above are utilized for counselling teachers as-well-as students by the HOD / senior faculty. With the support of teaching assistants and faculty, additional classes are conducted for academically poor students.
- At the end of the course work, feedback on teaching- learning is collected from the students for further improvement of academic process.
- The newly inducted faculty members are trained on teaching skills. Learning is achieved on attending various workshops within and outside the university
- Introduction of open electives, Remedial classes
- Concept of continuous evaluation is adopted where evaluation of student performance takes place throughout the semester in for of assignments, sessionals, and end semester examinations. Class committee meetings take place at regular intervals every semester where students and faculty members discuss learning objectives and their compliance, matters related to academics. Counseling of under achievers is done
- Maintaining Course plan
- Conducting Tutorials, assignment and sessionals
- Counselling of weak students
- Academic committee has been constituted in the department to discuss matters pertaining to curriculum development and teaching - learning process.
- Illustrative teaching (simulations & animations where ever possible), power point presentations, problem based learning, quizzes, seminars, projects and tutorials
- Implementing various innovative pedagogies in the teaching process through use of audio-visual aids, think-pair strategy, brain storming and small group discussions

### **6.3.3 Examination and Evaluation**

- Periodic assignments were given to the students where it is required to be submitted by the students with in the stipulated time, subsequently corrections were carried out and evaluated assignments were given back to the students
- Internal assessment test (sessional) were conducted as per institution timetable twice a semester.
- Final exam (end sem.) conducted as per centralized timetable from institution.
  - Assignment evaluation: out of 10 marks

- Sessional Test: 20 + 20= 40 marks
- Final exam: out of 50 marks
- Through continuous evaluation of students through in-semester tests( two sessional tests , quizzes, assignments and end semester examination
- Periodic class committee meetings are also conducted to get feedback/suggestions from faculty members as well as students. Feedback from alumni is also taken.
- Result-analysis after examinations
- Counselling of poor-performers after each examination.
- Continuous evaluations of students will be done through assignments, tests and end semester examination.
- Students are evaluated relatively on a grade scale of 10. Every theory subject will have 50% of in-semester marks (continuous evaluation) and 50% of end semester marks. A minimum of 18 marks out of 50 is necessary in the end semester exam to obtain the credit for the course.
- Students have the provision to see their answer script and apply for re-evaluation as per university norms
- The academic performance of a student is assessed by the course instructor /s concerned.
- The student performance in each theory course is evaluated out of 100 marks, of which 50 marks are for in semester assessments and 50 marks are for end semester assessments. In semester assessment in theory courses is based on periodic tests, assignments, quizzes, case presentations, seminars etc, which shall be defined by the course instructor.
- The student performance in the laboratory courses is also evaluated out of 100 marks and is based on in semester assessment out of 60 marks and end semester examination for 40 marks.
- Course instructors are to give the complete course plan approved by the HOD, at the beginning of the semester. Course plan included lesson plan and evaluation plan of the course offered.
- The performance of the student in a course is reflected in the Letter Grade awarded
- Continuous evaluation adopted reducing the strain on the students. Questions are framed so that the range of result forms a Gaussian curve
- Introduction of Two compulsory sessional test
- Assessment techniques comprise of tests, assignments, quizzes and exams. Semester exam questions are set to target different course objectives. Student performance is then mapped to different course outcomes and an analysis of the same reveals the extent to which course outcomes are met. Necessary changes are then implemented accordingly.
- Scrutiny of Tutorial, Sessional and Semester Question paper
- Maintaining the schemes of Tutorial, Sessional and Semester Question paper
- Evaluating and processing the results as per Institute norms

- Tests are the preparations for the end semester examination and are conducted in the same manner, except for the duration, which is one hour against that of three hours for the examinations. Two tests will be conducted in each semester and the contents will be announced in the beginning of the semester while course plan is distributed to the students.
- Periodic Assignments and sessional examinations
- Continuous Evaluation, inclusion of MCQ in the Sessional Question paper.

#### **6.3.4 Research and Development**

- Full time research scholars are screened and selected by the panel of experts after interviewing them.
- Review of research progress by doctoral advisory committee comprising of subject experts specific to research topic once in every six months.
- Every research scholar has to publish two papers in journals in the field of research indexed by Scopus or web of science along with other requirements to become eligible for submission of synopsis/ thesis.
- Thesis of research of each scholar is reviewed by two external examiners in the field of research and thesis defence by the scholar is facilitated only after receiving the satisfactory report received from the examiners.

#### **6.3.5 Library, ICT and physical infrastructure / instrumentation**

- User feedback (online) mechanism is introduced
- Ezproxy technology is used for remote access of e-resources of the library

#### **6.3.6 Human Resource Management**

- PeopleSoft, a human resource management system is used for leave management
- Reduction of time in processing the requests related to conferences, and similar events

#### **6.3.7 Faculty and Staff recruitment**

Faculty Recruitment filling positions on ad hoc basis, pending interviews and regularization to augment the situation.

### 6.3.8 Industry Interaction / Collaboration

- Continuous Increase in internship and placement for UG and PG programmes.
- Continuous Improvement in quality of companies visiting for internship and placement.

### 6.3.9 Admission of Students

- Admission to UG programs and PG programs (majority) done through all India based online entrance exam.
- Students from all over the country and foreign participate in the admission process for UG and PG programs

### 6.4 Welfare schemes for

Teaching	<ul style="list-style-type: none"><li>• EPF</li><li>• Medicare facility to meet medical needs</li><li>• Leave Travel concession (LTC)</li><li>• Reimbursement of children school fee</li><li>• Residential Housing facility</li><li>• Group insurance policy</li><li>• Interest subsidy scheme for home and utility loans</li><li>• Sodexo meal pass scheme</li><li>• MARENA- university central sports facility</li><li>• Incentive schemes for research publications</li><li>• Seed money for research work</li><li>• Support for subscription to professional societies</li><li>• Laptop facility</li><li>• Employee training and development schemes</li></ul>
Non-teaching	<ul style="list-style-type: none"><li>• EPF</li><li>• Medicare facility to meet medical needs</li><li>• Reimbursement of children school fee</li><li>• Group insurance policy</li><li>• MARENA- university central sports facility</li><li>• Employee training and development schemes</li></ul>
Students	<ul style="list-style-type: none"><li>• Medicare facility to meet medical needs</li><li>• Residential Hostel facility</li><li>• MARENA- university central sports facility</li><li>• Incentive schemes for research publications</li><li>• Seed money for research work</li><li>• Laptop facility</li><li>• Student training and development schemes</li><li>• Student counselling facility</li><li>• Teacher guardian scheme for mentoring students</li></ul>

6.5 Total corpus fund generated

6.6 Whether annual financial audit has been done Yes  No

6.7 Whether Academic and Administrative Audit (AAA) has been done?

Audit Type	External		Internal	
	Yes/No	Agency	Yes/No	Authority
Academic				
Administrative	<input checked="" type="checkbox"/>	TUV Rein land Inc.	<input checked="" type="checkbox"/>	Internal ISO Auditors

6.8 Does the University/ Autonomous College declares results within 30 days?

For UG Programmes Yes  No

For PG Programmes Yes  No

6.9 What efforts are made by the University/ Autonomous College for Examination Reforms?

Academic Independence was granted to the institute to conduct and evaluate and publish results.

6.10 What efforts are made by the University to promote autonomy in the affiliated/constituent colleges?

Complete Academic Autonomy was granted to Institute by the University for Design, periodic revision and implementation of curriculum, also to conduct, evaluate and publish results.

6.11 Activities and support from the Alumni Association

The institute is well supported by its alumni contributing as resource persons for technical talks, guest lectures, monetary assistance in building facilities etc.

6.12 Activities and support from the Parent – Teacher Association

NA

6.13 Development programmes for support staff

- Various Training and development programs for support staff

## 6.14 Initiatives taken by the institution to make the campus eco-friendly

Manipal University is a green campus with certification under ISO 14001: 2004 by TUV Rheinland. Continuous efforts are being put into monitoring and constant up gradation to meet the rapidly expanding infrastructure. Best practices and various initiatives have helped the University to develop an unparalleled ambience for students and residents from various countries.

Few areas where the University applies eco-friendly practices are

**Waste Water Management:** In order to treat waste water generated in the campus state of the art sewage treatment plants are installed with a capacity of 55 lakh liters per day. In addition, the distribution system for treated water has also been enhanced to ensure efficient reuse. Treated water is used for gardening and arboriculture reducing the burden on fresh water sources. Additionally grey water treatment plant treats feeds the flush system. Using recycled water lowers groundwater extraction costs and conserves on freshwater which can be used for domestic purposes. Sludge generated is dried and used as manure as soil remediation in the University gardens. Rain water harvesting is a continuous activity being carried out every monsoon. Due to these initiatives MU has been able to plant and develop green cover in the entire campus.

**Raw Water Management:** Keeping in mind the growing urbanization within the campus and increasing demand for water, two approaches have been adapted: Firstly, harvesting rain water from roof tops of buildings and using the same for domestic purposes. RWH units are affixed to down take pipes of roof drains which are in turn connected to underground sumps. Secondly, diverting storm water drains and from roof tops to bore wells. In the case of the first, rainwater is collected from roof tops from existing down takes, connected to a common header and led to a trickling sand filter having individual filtering capacity of 10000 liters /hour. The filtered water is then channeled to a nearby sump and used for domestic purposes. More recently the new version of rainy filters are used.

**Solid Waste Management:** which consists of domestic waste, a part of which is composted using earth worms and rest are recycled, food wastes are sent to piggeries. Biomedical Waste, hazardous waste and e- wastes are segregated and disposed in a scientific manner to minimize impact on the environment.

**Lung spaces:** are constantly created across the campus by planting trees wherever possible. 8000 trees were planted in the last three years on campus. World environment day is celebrated on June 5<sup>th</sup> every year. All the members of the management, students and faculty engaged in a march past with placards carrying messages on environmental conservation. This culminates in a tree planting.

**Air Quality:** In order to minimize the air emissions with in the campus, restricted entry of vehicles is in place. Emission testing center has been set up for staff and public which delivers services at subsidized rates. Ambient air quality is monitored in the campus, stack emission tests are also conducted in house to keep track of emission from all sources.

**Energy Management:** Various initiatives in the areas of power efficient air conditioning systems are constantly being undertaken for all new projects in the campus. As per MU guidelines hot water requirement in all hostels is met with solar energy. Presently the installed capacity is 3.9 lakh liters per day. Replacement with energy efficient light fixtures, pumps, equipment's and appliances is a continuous process.

## Criterion – VII

### 7. Innovations and Best Practices

7.1 Innovations introduced during this academic year which have created a positive impact on the functioning of the institution. Give details.

- Slotted time table
- Open electives

7.2 Provide the Action Taken Report (ATR) based on the plan of action decided upon at the beginning of the year

Sl. No	Objective	Description
1	Enhance Student Progression Percentage of eligible students progressing to higher levels	Improve compared to previous benchmark
2	Number of students involved in social responsibility projects and extension activities	Improve on previous benchmark
3	Graduation rate	% of students completing the programme on time, target can be 1% better than average of previous three batches
4	Student feedback of faculty	Minimum of 3 on a scale of 5
5	Student feedback on infrastructure	Minimum of 3 on a scale of 5
6	Student feedback on academic program	Minimum of 3 on a scale of 5
7	Faculty student ratio as per statutory and regulatory requirements	--
8	Student attrition rate	Reduce as compared to previous benchmark (< 5%)

**7.3 Give two Best Practices of the institution (please see the format in the NAAC Self-study Manuals)**

**\*Provide the details in annexure (annexure need to be numbered as i, ii, iii)**

1. Practice School programme – The UG students will do their final project work in an industry under the guidance of an external and internal guide for 4 to 6 months as part of the B.Tech. degree programme curriculum.

2. Open Elective courses- Elective courses are offered by various departments exclusively for other branch students.

#### 7.4 Contribution to environmental awareness / protection

Awareness is given to staff and students on the need for conservation and measures undertaken. During World environment day students from nearby schools carry out the green march along with placards depicting current issues like global warming, Ozone depletion etc. The heads of Institutions along with the top management and students engage in a tree planting session. This culminates in a formal address by the Universities top management and Institutional Heads.

Trainings are given to all staff members on key aspects like Hazardous / Biomedical / other waste management, University objectives of reduction in paper, water and power consumption etc.

#### 7.5 Whether environmental audit was conducted?

Yes  No

#### 7.6 Any other relevant information the institution wishes to add. (for example SWOT Analysis)

##### Strength

- Rated among the
  - Top 30 leading technical institutions in India
  - Top 5 leading private technical institutions
- 59 years of experience in professional education
- Motivated and committed faculty & staff
- Interdisciplinary & Multidisciplinary research potential
- Proactive governance/leadership
- Residential campus with cultural diversity
- State of the art infrastructure
- Brand image and visibility
- Well placed alumni

##### Weakness

- Far from industrial hub



- Lacks research culture
- Weak postgraduate programs
- Sub optimal utilization of Human resource and facilities
- Inadequate Sponsored projects & Research funds
- Shortage of quality faculty
- Inadequacy of hostel accommodation/ on- campus recreational facilities

### **Opportunities**

- Foster Interdisciplinary and Multidisciplinary research
- Achieve excellence in research and consultancy
- Become a centre for ideation, innovation and incubation
- Tap resources and networking through alumni
- Become recognized hub for entrepreneurship

### **Challenges**

- Quality of intake ( more number of IITs and NITs )
- Attracting and retaining the best human resource
- Industry involvement / interaction
- Collaboration with the foreign universities
  - Faculty exchange
  - Collaborative Research

### **8. Plans of institution for next year**

- |   |
|---|
| <ul style="list-style-type: none"> <li>• Successful Implementation of Academic processes</li> <li>• Improving student Placements</li> </ul> |
|---|

- Supporting Students in career services in your department: this includes both student development and higher education assistance to students.
- Value added courses in every Dept. and every term.
- Conducting and Participating in National / International reputed Technical events
- Organizing STTP/Workshops/FDP/ Seminars/ for faculties and Student
- Development programs.
- Publishing research papers in reputed national/international journals.
- Submitting research proposal to various funding agencies
- New MIT Staff residence – 39 flats
- New MIT boys hostels – 3 blocks with total area/block of 70514 sq ft ( 5 levels) and 240 single occupancy non-ac rooms
- Setting of advanced composite materials laboratory under Aeronautical and Automobile Engineering department.

Name: Prof. Rajesh Gopakumar



Signature of the Coordinator, IQAC

**Prof. Rajesh Gopakumar**  
**QMR & Nodal Officer**  
**Coordinator IQAC**  
**Manipal Institute of Technology**  
**Manipal INDIA - 576 104**

Name: Prof. (Dr.) G. K. Prabhu



Signature of the **DIRECTOR**, IQAC

**MANIPAL INSTITUTE OF TECHNOLOGY**  
**MANIPAL - 576 104**

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**Abbreviations:**

CAS	-	Career Advanced Scheme
CAT	-	Common Admission Test
CBCS	-	Choice Based Credit System
CE	-	Centre for Excellence
COP	-	Career Oriented Programme
CPE	-	College with Potential for Excellence
DPE	-	Department with Potential for Excellence
GATE	-	Graduate Aptitude Test
NET	-	National Eligibility Test
PEI	-	Physical Education Institution
SAP	-	Special Assistance Programme
SF	-	Self Financing
SLET	-	State Level Eligibility Test
TEI	-	Teacher Education Institution
UPE	-	University with Potential Excellence
UPSC	-	Union Public Service Commission

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MRM meeting in progress

# MIT Ranking - 2014

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Survey by

**THEWEEK**

- Hansa Research Survey

Rank Description

25 **Multi-disciplinary University  
- All India**

38 **Top 100 Engineering Colleges**

5 **Top 50 Private Engineering Colleges**

8 **Top 25 Engineering Colleges - South**

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23 **Top 100 Engineering Colleges (Year 2013)**

6 **Top 10 Private Engineering Colleges (Year 2013)**

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