NMAM INSTITUTE OF TECHNOLOGY
(An Autonomous Institution affiliated to VTU, Belagavi)
(NBA Accredited, ISO 9001:2015 Certified)
Nitte – 574110, Karkala, Udupi District, Karnataka, India

Annual Quality Assurance Report (AQAR)

For the Academic year 2016-17

Submitted to

National Assessment and Accreditation Council (NAAC)
P.O.Box: 1075, Nagarbhavi
Bangalore 560 072.

Annual Quality Assurance Report (AQAR)

Contents

Part – A

AQAR for the year ***(for example 2013-14)*** 2016-17

1. Details of the Institution

1.1 Name of the Institution	N.M.A.M.Institute of Technology
1.2 Address Line 1	NITTE
Address Line 2	NITTE, Karkala Taluk, Udupi District
City/Town	NITTE
State	Karnataka
Pin Code	574110
Institution e-mail address	Principal_nmamit@nitte.edu.in
Contact Nos.	08258 281039
Name of the Head of the Institution:	Dr.Niranjan Chiplunkar
Tel. No. with STD Code:	08258 281264
Mobile:	9611266900
Name of the IQAC Co-ordinator:	Dr. Subrahmanya Bhat K
Mobile:	9449258142
IQAC e-mail address:	subrahmanyabhat@nitte.edu.in

1.3 **NAAC Track ID** *(For ex. MHCOGN 18879)* KACOGN21141

1.4 **NAAC Executive Committee No. & Date:**
(For Example EC/32/A&A/143 dated 3-5-2004. This EC no. is available in the right corner- bottom of your institution's Accreditation Certificate) EC(SC)/04/A&A/67 10/12/2014

1.5 Website address: www.nmamit.nitte.edu.in

Web-link of the AQAR: www.nmamit.nitte.edu.in/AQAR2016-17.doc

1.6 Accreditation Details

Sl. No.	Cycle	Grade	CGPA	Year of Accreditation	Validity Period
1	1st Cycle	B	2.70	December 2014	5 years
2	2nd Cycle				
3	3rd Cycle				
4	4th Cycle				

1.7 Date of Establishment of IQAC : 01/02/2001 (Revamped in March, 2016)

1.8 Details of the previous year's AQAR submitted to NAAC after the latest Assessment and Accreditation by NAAC (*(for example AQAR 2010-11submitted to NAAC on 12-10-2011)-NA*

i. AQAR __2014-15 submitted to NAAC on 28/02/2017 (DD/MM/YYYY)
ii. AQAR__2015-16 submitted to NAAC on 05/07/2016 (DD/MM/YYYY)
iii. AQAR_____ _____ (DD/MM/YYYY)
iv. AQAR_____ _____ (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 Yes ✓ No ☐

(eg. AICTE, BCI, MCI, PCI, NCI)

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 ☐ Totally Self-financing ✓

1.10 Type of Faculty/Programme

Arts ☐ Science ☐ Commerce ☐ Law ☐ PEI (Phys Edu) ☐

TEI (Edu) ☐ Engineering ✓ Health Science ☐ Management ✓

Others (Specify)

1.11 Name of the Affiliating University *(for the Colleges)* Visvesvaraya Technological University (VTU), Belagavi

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

Autonomy by State/Central Govt. / University YES

University with Potential for Excellence - UGC-CPE -

DST Star Scheme - UGC-CE -

UGC-Special Assistance Programme - DST-FIST -

UGC-Innovative PG programmes - Any other (*Specify*) -

UGC-COP Programmes -

2. IQAC Composition and Activities

2.1 No. of Teachers	08
2.2 No. of Administrative/Technical staff	01
2.3 No. of students	01
2.4 No. of Management representatives	01
2.5 No. of Alumni	01*
2. 6 No. of any other stakeholder and community representatives	01**
2.7 No. of Employers/ Industrialists	01** (same as community representative)
2.8 No. of other External Experts	01* (same as Alumni)
2.9 Total No. of members	13
2.10 No. of IQAC meetings held	04(during 2016-17)

2.11 No. of meetings with various stakeholders: No. 17 Faculty 4

Non-Teaching Staff Students 5 Alumni 5 Others HoDs-14 (during last 1 year)

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. 2 International ☐ National ☐ State ☐ Institution Level 2 (during 2016-17)

(ii) Themes

1. "Structured Approach in Engineering Education for Quality Enhancement" during July 29-30, 2016

2. "Awareness & Internal Auditor Training Course and Gap Analysis for ISO 9001:2015" during 19 to 23 December 2016.

2.14 Significant Activities and contributions made by IQAC

Activities

- soft skill training for the students
- Support for the faculty to participate in conformance.
- Department budgetary provisions made for attending conformance /FDP/conduct FDP
- Monitoring the academic activities of all programmes by arranging the meeting of HoD's to oversee the attainment of course outcomes.

Contributions

- Streamline of MoUs.
- Selecting students for Japan Exchange program and their visit to Japan
- Timely completion of Academic Audit.
- Monitoring the Accreditation activities(both NBA and NAAC)

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	Achievements
1.Conduction of orientation programme for students.	1. Conducted during the first week of August.
2.Measuring the attainment of course outcomes for all courses of various programmes by the end of the semester	2.HoD's presented the course outcome attainments for odd semester on 28.04.2017 and for even semester on 18.07.2017
3. Faculty to improve the number and quality of research publication in reputed journal/conferences.	3.Publications improved significantly during 2016-17
4. Academic Audit need to be conducted by December 2016.	4.Academic Audit was conducted on 26.12.2016

** Attach the Academic Calendar of the year as Annexure.*

Academic calendar is attached as Annexure-I

2.15 Whether the AQAR was placed in statutory body Yes ✓ No ☐

Management ☐ Syndicate ☐ Any other body ☐

Provide the details of the action taken

Approved by IQAC in the meeting held on 02.08.2017

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	12		all	
PG	13	01	all	
UG	07		all	
PG Diploma				
Advanced Diploma				
Diploma				
Certificate				
Others				
Total	32	01	32	

Interdisciplinary				
Innovative				

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

Pattern	Number of programmes
Semester	all
Trimester	
Annual	

1.3 Feedback from stakeholders* Alumni ✓ Parents ✓ Employers ✓ Students ✓
(On all aspects)

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

Please provide an analysis of the feedback in the Annexure
Analysis of the feedback is provided in the Annexure-II

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

Detailed of BOS meeting is provided in the Annexure-III

Yes,

The syllabus of all programmes has been revised by keeping in mind the industry requirements by involving the experts from industry in BOS and approved in Academic Council. Project based learning and Self study components are introduced.

Department of MBA made following revisions in the syllabus-

Total number of core subjects reduced from 8 to 7 in the I and II semester.
Integration of Statistics with Research Methodology.
Introduction of a new subject -Business Analytics as a General management elective.
Introduction of Simulation games in the III Semester (2 Credits) and IV Semester (I credit).
Introducing Logistics and supply chain management as a Marketing specialization elective in the place of International Marketing.
Similarly the growing importance of business intelligence, a paper has on business analytics has been offered for the first time. The Department has future plans to expand Business Analytics to certificate level courses to cater to the needs of the business and industry. Similarly, in view of the growing use of social media and e-commerce, a specialization paper has been introduced in 'Digital Marketing' and 'Social Media marketing'.

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

The new 3-storey Research and Innovation Center (RIC) of 8000 sq.ft area has a 18-kW roof top-mounted solar PV panels that power highly efficient DC appliances including fans, lights and air conditioners. This unique net-zero energy solar DC Microgrid is being used as a test-bed for validating novel grid integration strategies of advanced distributed energy sources and storage technologies. Focused research on developing next generation of power electronics interfaces for smart grids, power converters for electric vehicles and renewable energy utilization, and solid-state transformers is being carried out at RIC

Criterion – II

2. Teaching, Learning and Evaluation

2.1 Total No. of permanent faculty

Total	Asst. Professors	Associate Professors	Professors	Others
302	211	41	50	--

2.2 No. of permanent faculty with Ph.D. 70

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
31		2		1					

2.4 No. of Guest and Visiting faculty and Temporary faculty 5 | nil | nil

2.5 Faculty participation in conferences and symposia:

No. of Faculty	International level	National level	State level
Attended	**34**	**14**	**29**
Presented papers	**34**	**9**	**-**
Resource Persons	**-**	**2**	**5**

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

Use of ICT –Teaching Aids, Introduction of self study component, Audit courses and non credit mini projects. Use of NPTEL videos.
Every lecture is followed by interactive session. Through Simulations, management games, case studies, presentation, teaching learning is made more effective. Students are also asked to browse the internet to get the updates of the subjects taught in the class. Internal assessment is based on the assignments, presentations, mini projects, viva-voce in addition to internal assessment examination marks. Students are advised to participate in intra and inter collegiate competitions, present papers in seminars, carryout dissertation and project work. Weekly seminars are held to build confidence and to develop reading habits among the students.

2.7 Total No. of actual teaching days during this academic year 200 days

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

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

130	10	20

2.10 Average percentage of attendance of students

91 %

2.11 Course/Programme wise distribution of pass percentage:

N M A M INSTITUTE OF TECHNOLOGY, NITTE
BRANCHWISE RESULT ANALYSIS - UG-AFTER MAKEUP EXAM (SGPA WISE)
CLASS : I SEM (Credit System) EXAMS : DEC.2016-JAN.2017

BRANCH	Appeared	>=7.75	>=6.75<7.75	>=5.75<6.75	>=5<5.75	<5.0/Fail	PASS	%
COM	212	153	25	5	1	28	184	86.79
ELC	181	128	19	10	0	24	157	86.74
ELE	53	28	9	3	0	13	40	75.47
CIV	111	48	9	4	3	47	64	57.66
BTE	55	26	9	0	1	19	36	65.45
MEC	185	84	44	12	0	45	140	75.68
IFS	125	68	22	11	1	23	102	81.60
TOTAL	922	535	137	45	6	199	723	78.42
RESULT IN %		58.03	14.86	4.88	0.65	21.58		

N M A M INSTITUTE OF TECHNOLOGY, NITTE
BRANCHWISE RESULT ANALYSIS - UG-AFTER MAKEUP EXAM (SGPA WISE)
CLASS : III SEM (Credit System) EXAMS : DEC.2016-JAN.2017

BRANCH	Appeared	>=7.75	>=6.75<7.75	>=5.75<6.75	>=5<5.75	<5.0/Fail	PASS	%
COM	234	160	19	2	0	53	181	77.35
ELC	229	104	30	11	3	81	148	64.63
ELE	69	35	10	6	3	15	54	78.26
CIV	148	78	33	11	0	26	122	82.43
BTE	47	33	1	1	0	12	35	74.47
MEC	230	109	33	13	0	75	155	67.39
IFS	82	44	15	0	0	23	59	71.95
TOTAL	1039	563	141	44	6	285	754	72.57
RESULT IN %		54.19	13.57	4.23	0.58	27.43		

N M A M INSTITUTE OF TECHNOLOGY, NITTE
BRANCHWISE RESULT ANALYSIS - UG-AFTER MAKEUP EXAM (SGPA WISE)
CLASS : V SEM (Credit System) EXAMS : DEC.2016-JAN.2017

BRANCH	Appeared	>=7.75	>=6.75<7.75	>=5.75<6.75	>=5<5.75	<5.0/Fail	PASS	%
COM	237	182	22	4	0	29	208	87.76
ELC	208	86	44	17	3	58	150	72.12
ELE	69	38	20	1	0	10	59	85.51
CIV	135	86	26	5	1	17	118	87.41
BTE	42	20	14	2	0	6	36	85.71
MEC	231	106	41	9	1	74	157	67.97
IFS	78	50	7	1	0	20	58	74.36
TOTAL	1000	568	174	39	5	214	786	78.60
RESULT IN %		56.80	17.40	3.90	0.50	21.40		

N M A M INSTITUTE OF TECHNOLOGY, NITTE
BRANCHWISE RESULT ANALYSIS - UG-AFTER MAKEUP EXAM (SGPA WISE)
CLASS : VII SEM (Credit System) EXAMS : DEC.2016-JAN.2017

BRANCH	Appeared	>=7.75	>=6.75<7.75	>=5.75<6.75	>=5<5.75	<5.0/Fail	PASS	%
COM	220	173	32	3	1	11	209	95.00
ELC	225	161	36	5	0	23	202	89.78
ELE	68	36	15	5	1	11	57	83.82
CIV	142	107	11	3	0	21	121	85.21
BTE	42	34	6	0	0	2	40	95.24
MEC	233	147	46	6	1	33	200	85.84
IFS	63	49	7	1	0	6	57	90.48
TOTAL	993	707	153	23	3	107	886	89.22
RESULT IN %		71.20	15.41	2.32	0.30	10.78		

N M A M INSTITUTE OF TECHNOLOGY, NITTE
BRANCHWISE RESULT ANALYSIS - PG - AFTER MAKEUP EXAM
CLASS : I SEM (Credit System) EXAMS : DEC.2016-JAN.2017

BRANCH	Appeared	>=7.75	>=6.75<7.75	>=5.75<6.75	>=5<5.75	<5.0/Fail	PASS	%
MCA	70	17	14	12	2	25	45	64.29
MBA	158	60	71	7	0	20	138	87.34
LEC	8	5	3	0	0	0	8	100.00
SCS	19	15	2	0	0	2	17	89.47
MES	6	2	3	1	0	0	6	100.00
CCT	17	17	0	0	0	0	17	100.00
LVS	6	4	1	1	0	0	6	100.00
MMD	16	13	3	0	0	0	16	100.00
SCN	1	1	0	0	0	0	1	100.00
EPE	3	3	0	0	0	0	3	100.00
CST	17	16	1	0	0	0	17	100.00
TOTAL	321	153	98	21	2	47	274	85.36
RESULT IN %		47.66	30.53	6.54	0.62	14.64		

N M A M INSTITUTE OF TECHNOLOGY, NITTE
BRANCHWISE RESULT ANALYSIS - PG - AFTER MAKEUP EXAM
CLASS : III SEM (Credit System) EXAMS : DEC.2016 - JAN. 2017

BRANCH	Appeared	>=7.75	>=6.75<7.75	>=5.75<6.75	>=5<5.75	<5.0/Fail	PASS	%
MCA	114	41	36	6	0	31	83	72.81
MBA	175	123	39	0	0	13	162	92.57
LEC	21	21	0	0	0	0	21	100.00
SCS	21	21	0	0	0	0	21	100.00
MES	9	8	1	0	0	0	9	100.00
CCT	17	17	0	0	0	0	17	100.00
LVS	18	16	1	0	0	1	17	94.44
MMD	14	14	0	0	0	0	14	100.00
SCN	14	14	0	0	0	0	14	100.00
EPE	14	14	0	0	0	0	14	100.00
IBT	5	5	0	0	0	0	5	100.00
SSE	5	5	0	0	0	0	5	100.00
TOTAL	427	299	77	6	0	45	382	89.46
RESULT IN %		70.02	18.03	1.41	0.00	10.54		

N M A M INSTITUTE OF TECHNOLOGY, NITTE
BRANCHWISE RESULT ANALYSIS - PG - AFTER MAKEUP EXAM
CLASS : V SEM (Credit System) EXAMS : DEC.2016 - JAN. 2017

BRANCH	Appeared	>=7.75	>=6.75<7.75	>=5.75<6.75	>=5<5.75	<5.0/Fail	PASS	%
MCA	99	95	4	0	0	0	99	100.00
TOTAL	99	95	4	0	0	0	99	100.00
RESULT IN %		95.96	4.04	0.00	0.00	0.00		

N M A M INSTITUTE OF TECHNOLOGY, NITTE BRANCHWISE RESULT ANALYSIS - MBA - AFTER MAKEUP EXAM						
Title of the Programme	Total no. of students appeared	Division				
		Distinction %	I %	II %	III %	Pass %
I MBA	158	63	60	1	00	33
II MBA	166	121	41	00	00	13

N M A M INSTITUTE OF TECHNOLOGY, NITTE
BRANCHWISE RESULT ANALYSIS - PG - AFTER MAKEUP EXAM
CLASS : II SEM (Credit System) EXAMS : MAY - JUNE 2017

BRANCH	Appeared	>=7.75	>=6.75<7.75	>=5.75<6.75	>=5<5.75	<5.0/Fail	PASS	%
MCA	70	19	16	8	2	25	45	64.29
MBA	158	79	58	1	0	20	138	87.34
LEC	8	6	2	0	0	0	8	100.00
SCS	19	18	0	0	0	1	18	94.74
MES	6	3	3	0	0	0	6	100.00
CCT	17	17	0	0	0	0	17	100.00
LVS	6	4	0	0	0	2	4	66.67
MMD	16	12	2	1	0	1	15	93.75
SCN	1	1	0	0	0	0	1	100.00
EPE	3	3	0	0	0	0	3	100.00
CST	17	13	2	0	0	2	15	88.24
TOTAL	321	175	83	10	2	51	270	84.11
RESULT IN %		54.52	25.86	3.12	0.62	15.89		

N M A M INSTITUTE OF TECHNOLOGY, NITTE
BRANCHWISE RESULT ANALYSIS - PG - AFTER MAKEUP EXAM
CLASS : IV SEM (Credit System) EXAMS : MAY - JUNE 2017

BRANCH	Appeared	>=7.75	>=6.75<7.75	>=5.75<6.75	>=5<5.75	<5.0/Fail	PASS	%
MCA	113	71	21	0	0	21	92	81.42
MBA	175	135	35	0	0	5	170	97.14
LEC	21	20	0	0	0	1	20	95.24
SCS	21	20	0	0	0	1	20	95.24
MES	9	6	0	0	0	3	6	66.67
CCT	17	17	0	0	0	0	17	100.00
LVS	18	14	0	0	0	4	14	77.78
MMD	14	14	0	0	0	0	14	100.00
SCN	14	14	0	0	0	0	14	100.00
EPE	14	14	0	0	0	0	14	100.00
IBT	5	4	1	0	0	0	5	100.00
SSE	5	5	0	0	0	0	5	100.00
TOTAL	426	334	57	0	0	35	391	91.78
RESULT IN %		78.40	13.38	0.00	0.00	8.22		

N M A M INSTITUTE OF TECHNOLOGY, NITTE
BRANCHWISE RESULT ANALYSIS - PG - AFTER MAKEUP EXAM
CLASS : VI SEM (Credit System) EXAMS : MAY - JUNE 2017

BRANCH	Appeared	>=7.75	>=6.75<7.75	>=5.75<6.75	>=5<5.75	<5.0/Fail	PASS	%
MCA	99	95	3	0	0	1	98	98.99
TOTAL	99	95	3	0	0	1	98	98.99
RESULT IN %		95.96	3.03	0.00	0.00	1.01		

N M A M INSTITUTE OF TECHNOLOGY, NITTE
BRANCHWISE RESULT ANALYSIS - UG-AFTER MAKEUP EXAM (SGPA WISE)
CLASS : II SEM (Credit System) EXAMS : MAY - JUNE 2017

BRANCH	Appeared	>=7.75	>=6.75<7.75	>=5.75<6.75	>=5<5.75	<5.0/Fail	PASS	%
COM	212	155	23	7	1	26	186	87.74
ELC	181	129	21	2	0	29	152	83.98
ELE	51	27	11	5	1	7	44	86.27
CIV	111	47	17	9	1	37	74	66.67
BTE	53	24	8	2	0	19	34	64.15
MEC	185	87	27	9	1	61	124	67.03
IFS	126	74	25	5	1	21	105	83.33
TOTAL	919	543	132	39	5	200	719	78.24
RESULT IN %		59.09	14.36	4.24	0.54	21.76		

N M A M INSTITUTE OF TECHNOLOGY, NITTE
BRANCHWISE RESULT ANALYSIS - UG-AFTER MAKEUP EXAM (SGPA WISE)
CLASS : IV SEM (Credit System) EXAMS : MAY - JUNE 2017

BRANCH	Appeared	>=7.75	>=6.75<7.75	>=5.75<6.75	>=5<5.75	<5.0/Fail	PASS	%
COM	231	153	25	8	1	44	187	80.95
ELC	228	106	33	8	0	81	147	64.47
ELE	69	27	15	5	2	20	49	71.01
CIV	148	72	27	2	0	47	101	68.24
BTE	47	35	3	0	0	9	38	80.85
MEC	230	105	40	13	4	68	162	70.43
IFS	81	47	14	7	0	13	68	83.95
TOTAL	1034	545	157	43	7	282	752	72.73
RESULT IN %		52.71	15.18	4.16	0.68	27.27		

N M A M INSTITUTE OF TECHNOLOGY, NITTE
BRANCHWISE RESULT ANALYSIS - UG - AFTER MAKEUP EXAM (SGPA WISE)
CLASS : VI SEM (Credit System) EXAMS : MAY - JUNE 2017

BRANCH	Appeared	>=7.75	>=6.75<7.75	>=5.75<6.75	>=5<5.75	<5.0/Fail	PASS	%
COM	237	193	15	0	0	29	208	87.76
ELC	207	128	43	8	0	28	179	86.47
ELE	69	60	3	1	1	4	65	94.20
CIV	135	89	25	6	1	14	121	89.63
BTE	42	28	8	1	0	5	37	88.10
MEC	231	118	38	12	2	61	170	73.59
IFS	78	52	12	3	0	11	67	85.90
TOTAL	999	668	143	31	4	153	846	84.68
RESULT IN %		66.87	14.31	3.10	0.40	15.32		

N M A M INSTITUTE OF TECHNOLOGY, NITTE
BRANCHWISE RESULT ANALYSIS - UG - AFTER MAKEUP EXAM (SGPA WISE)
CLASS : VIII SEM (Credit System) EXAMS : MAY - JUNE 2017

BRANCH	Appeared	>=7.75	>=6.75<7.75	>=5.75<6.75	>=5<5.75	<5.0/Fail	PASS	%
COM	220	202	8	1	0	9	211	95.91
ELC	225	175	30	3	0	17	208	92.44
ELE	68	59	4	0	0	5	63	92.65
CIV	142	122	7	0	0	13	129	90.85
BTE	42	41	1	0	0	0	42	100.00
MEC	233	210	10	0	0	13	220	94.42
IFS	63	61	2	0	0	0	63	100.00
TOTAL	993	870	62	4	0	57	936	94.26
RESULT IN %		87.61	6.24	0.40	0.00	5.74		

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

- Conducting regular meeting with HODs to discuss the effectiveness of teaching learning process, analysis of attainment of course outcomes.
- IQAC monitors the feedback analysis of students.
- Performance appraisal of faculty members.

2.13 Initiatives undertaken towards faculty development

Faculty / Staff Development Programmes	*Number of faculty benefitted*
Refresher courses	**29**
UGC – Faculty Improvement Programme	**-**
HRD programmes	**-**
Orientation programmes	**19**
Faculty exchange programme	**4**
Staff training conducted by the university	**30**
Staff training conducted by other institutions	**-**
Summer / Winter schools, Workshops, etc.	**120**
Others	**28**

2.14 Details of Administrative and Technical staff

Category	Number of Permanent Employees	Number of Vacant Positions	Number of permanent positions filled during the Year	Number of positions filled temporarily
Administrative Staff	372		65	
Technical Staff	111		4	

Criterion – III

3. Research, Consultancy and Extension

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

For Faculty of the Institution

- Faculty members are given leave with pay to pursue Ph. D.
- Incentives are given in the form of promotions and monitory benefit for research publications, reviewing research articles, procuring research grants.
- Faculty members are provided with financial assistance towards travel and registration fee to present paper in national/international conference.
- Sabbatical leave is given to faculty members pursuing part- time PhD programme, for completing the crucial part of their Ph.D work
- Short fall in grant given by funding agencies is made up by the management
- Reduction in academic work load is provided for the faculty with external research grants.

3.2 Details regarding major projects

	Completed	Ongoing	Sanctioned	Submitted
Number	-	14	14	-
Outlay in Rs. Lakhs		1,85,35,856	1,85,35,856	-

3.3 Details regarding minor projects

	Completed	Ongoing	Sanctioned	Submitted
Number	16	-	16	-
Outlay in Rs. Lakhs	12,60,330	-	12,60,330	-

3.4 Details on research publications

	International	National	Others
Peer Review Journals	18	-	-
Non-Peer Review Journals	47	8	
e-Journals	-	-	-
Conference proceedings	53	27	-

3.5 Details on Impact factor of publications:

Range 0.233-8.050 Average 2.560 h-index 14(All) Nos. in SCOPUS 123

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	3	DAE, New Delhi	22,13,750	2,11,81,800
	3	MST, New Delhi	18,40,000	
	3	Management	8,53,000	
	3	Management	13,80,000	
	3	Management	19,00,000	
	3	Management	9,50,000	
	3	Management	14,14,701	
	3	Management	1,62,000	
	3	Management	15,00,000	
	3	Management	4,95,000	
	3	Management	1,85,774	

	3	Management	59,575	
	3	Management	5,00,000	
	2	Management	38.64,000	
	2	KCTU	38,64,000	
Minor Projects	01	TEQIP	12,60,330	12,60,330
Interdisciplinary Projects	-	-	-	-
Industry sponsored	3months	PiOctave Bangalore	10,5000	35,000
Projects sponsored by the University/ College	-	-	-	-
Students research projects *(other than compulsory by the University)*	-	-	-	-
Any other(Specify)	-	-	-	--
Total				

3.7 No. of books published i) With ISBN No. 4 Chapters in Edited Books 7

ii) Without ISBN No. 1

3.8 No. of University Departments receiving funds from

UGC-SAP - CAS - DST-FIST ✓

DPE - DBT Scheme/funds ✓

3.9 For colleges Autonomy - CPE - DBT Star Scheme -

INSPIRE - CE - Any Other (specify) -

3.10 Revenue generated through consultancy 23, 40,000

3.11 No. of conferences organized by the Institution

Level	International	National	State	University	College
Number	1	-	-	-	-
Sponsoring agencies	NMAMIT	-	-	-	-

3.12 No. of faculty served as experts, chairpersons or resource persons 52

3.13 No. of collaborations International 05 National 29 Any other 09

3.14 No. of linkages created during this year 26

3.15 Total budget for research for current year in lakhs :

From funding agency 1,85,35,856 From Management of University/College 1, 48, 64,000

Total 3,33,99,856

3.16 No. of patents received this year

Type of Patent		Number
National	Applied	5
	Granted	-
International	Applied	-
	Granted	-
Commercialised	Applied	-
	Granted	-

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
2	2	-	-	-	-	-

3.18 No. of faculty from the Institution who are Ph. D. Guides 69
and students registered under them 110

3.19 No. of Ph.D. awarded by faculty from the Institution 2

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

JRF - SRF - Project Fellows - Any other -

3.21 No. of students Participated in NSS events:

University level 2 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 forum	-	College forum	-		
NCC	-	NSS	4	Any other	-

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

- Nil

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, Acres	119.01	--	Nitte Education Trust	119.01
Class rooms, Sq.m /(Nos.)	8850.05 (94)	--	-do-	8850.05 (94)
Laboratories, Sq.m /(Nos.)	7670.93 (73)	--	-do-	7670.93 (73)
Seminar Halls, Sq.m /(Nos.)	1828.86 (14)	--	-do-	1828.86 (14)
No. of important equipments purchased (≥ 1-0 lakh) during the current year.	9	290	-do-	299

Value of the equipment purchased during the year (Rs. in Lakhs)	206.41	1041	-do-	1247.41
Others (Rs. in Lakhs)	53.77	574.73	-do-	628.5

4.2 Computerization of administration and library

1. **Administration:** i) Employee salary database through Human Resources Management System (HRMS) ii) Employee leave details through Smart Campus.

2. **Library:** i) The library user services are automated ii) Books are Bar Coded. iii) Circulation of books is aided by the computer systems iv) The library information is available for students in smart campus v) The stock verification is through system scanning of bar code vi) availability of online digital library and repository (offline) of learning resources vii) Availability of all syllabus, notes, question papers etc on the college Intranet (moodle). Viii) Full-pledged audio-visual section for self-study.

4.3 Library services:

	Existing		**Newly added**		**Total**	
	No.	**Value (Rs. lakhs)**	**No.**	**Value (Rs. lakhs)**	**No.**	**Value (Rs. lakhs)**
Text Books	76956	236.01	1809	9.38	78765	245.39
Reference Books	5428	Included above	300	2.10	5728	Included above
e-Books	13139	11.00	-	-	13139-	12.00
Journals	278	5.5	32	1.00	278	5.5
e-Journals	6197	11.00	-	-	-	12.00
Digital Database	10	25.37			10	25.37*
CD & Video	2601	52.02	--	--	2601	52.02
Others (specify) DVD (back-up)	135	2.5	17	0.2	152	2.7**

* AICTE-Indest consortium of on-line journals through VTU, Belagavi. *Value included under digital database

** NEI Films Ltd., Mumbai

4.4 Technology up gradation (overall)

	Total Computers	Computer Labs	Internet	Browsing Centres	Computer Centres	Office	Depart-ments	Others
Existing	1460	32	100 mbps	1	7	7	7	-
Added	96	0	210	0	0	0	0	-
Total	1556	32	310 mbps	1	7	7	7	-

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

Nil

4.6 Amount spent on maintenance in lakhs :

i) ICT	2.9
ii) Campus Infrastructure and facilities	67.78
iii) Equipment	7.21
iv) Others	53.48
Total :	131.37

Criterion – V

5. Student Support and Progression

5.1 Contribution of IQAC in enhancing awareness about Student Support Services

College website and Notice board – The college website is regularly updated to provide information about the college facilities, activities and programs, faculty and other facilities available. Student related information are regularly put in the website and notice board, including examination results. Notice boards are regularly made use for providing information on a day to day basis. SMS facility is made use of providing urgent and important information and individual exam result.

- College calendar and magazine – This provides information about the courses offered in different programs, electives, number of credits, rules and regulations etc. College magazine provides yearly report of all activities carried out in the college.
- Grievance Redressal Cell – This cell addresses the grievances of students and parents on a regular basis.
- Placement & Training Centre – This centre provides all support to the students for placement and internships. They are regularly trained on various aspects like written test, group discussion and interviews.
- Library & Information centre – This provides all information about books, e-resources, journals and magazines for academic and other related activities.
- National Service Scheme (NSS) – The college has an active NSS cell, which organizes several activities which are useful to the students, college and the nearby villages. This includes Blood donation camps, planting samplings, awareness about environmental degradation and pollution etc.
- Student associations – Student associations of various departments conduct several programs for the benefit of the students. This is meant to provide a platform to the students to exhibit their talents and skills.
- Hobby clubs – There are a number of hobby clubs, which take up several activities for the benefit of the student community and nearby communities. This includes photography, dance and music, drama, conservation of the environment, utilization of waste food etc.

5.2 Efforts made by the institution for tracking the progression

The progression of a student both academically and otherwise is done regularly through various modes. This helps in keeping track of the growth and development of a student and providing him / her necessary support for the overall development of personality. Some of the systems that are available include are as follows –

- Student monitoring cell – There is an exclusive cell for monitoring the students at the first year level, headed by a First year Coordinator.
- Class Advisors – At the department level, there are class advisors for each class, who help, guide and monitor the students with regard to academic performance which includes attendance and marks.
- Class Committee – This works at the department level for redressing departmental level grievances, which include academic and others.
- Result Analysis – This is done by the faculty at the individual and at the department level and students are counselled to improve their performance.
- IQAC – IQAC monitors all issues related to academics, administration, infrastructure and other student related matters. Student representatives are invited to the IQAC meetings. IQAC tries to improve the quality level in the organization.
- Student feedback – This is collected regularly to improve the teaching-learning process.
- Parent meetings – A parent meeting is held once every semester, particularly for poor performers at the first year level. During this meeting parents interact with the Principal, Deans and teachers to get their feedback.

5.3 (a) Total Number of students

UG	PG	Ph. D.	Others
3954	846	88	-

(b) No. of students outside the state: 540

(c) No. of international students: -

Men	No	%
	3324	68

Women	No	%
	1564	32

Last Year						This Year					
General	SC	ST	OBC	Physically Challenged	Total	General	SC	ST	OBC	Physically Challenged	Total
2612	243	52	1964	4	4875	2189	291	80	2322	06	4888

Demand ratio: 929/108

Dropout %: 0.02%

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

Coaching classes for students to attend UPSC and defence service examinations are arranged from professional trainers.

Department associations arrange Gate coaching classes for the interested students.

Humanities department organizes coaching classes by external recourse persons

No. of students beneficiaries 113

5.5 No. of students qualified in these examinations

NET		SET/SLET		GATE	11	CAT	
IAS/IPS etc		State PSC		UPSC		Others	27

5.6 Details of student counselling and career guidance

- Abhyuday celebrates volunteerism through Abhyuday Diwas
- Focussing on Primary Prevention, conducts Fresher' Orientation with trained senior students' active involvement to help freshers feel comfortable, belong, wipe out ragging and know what engineering is. (900+100)
- 'Mission Prerana for Change' every Wednesday afternoon to march towards our vision of an NMAMITian – a wholesome, world class, caring citizen. 900 in 2 batches over 12 sessions of 110 minutes weekly.
- Help lateral entry students through LOP to boost morale, belong, know where to seek help and work on deficiencies. (200)
- M.Tech. and MCA orientation to guide them towards employability (100+120)
- Preparation for Placements through interaction, Crack the Campus by campus' placed students in Aptitude, Technical, Group Discussions and HR interview preparation.
- 'Pride Abhyuday' by super dream selects to inspire juniors to be very successful.
- Professional Counselling Services to deal with issues personal in nature, mental illnesses, adjustments, growth oriented.
- Guidance to recreational student clubs.
- Use of Peers to help the academically needy.
- Employing community service to deal with serious misdemeanours.
- Prevention of Sexual harassment at all levels.

No. of students beneficiaries 4500

5.7 Details of campus placement

On campus			*Off Campus*
Number of Organizations Visited	Number of Students Participated	Number of Students Placed	Number of Students Placed
58+37(MBA)	967+175(MBA)	782+115(MBA)	-

5.8 Details of gender sensitization programmes

The Institution has an Anti Sexual harassment committee. The Institution celebrated International Women's Day on 27.03.2017.

5.9 Students Activities

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

State/ University level 349 National level 21 International level 01

No. of students participated in cultural events

State/ University level 176 National level 105 International level

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

Sports : State/ University level 174 National level 04 International level 01

Cultural: State/ University level 03 National level - International level -

5.10 Scholarships and Financial Support

	Number of students	Amount
Financial support from institution	587	4,28,92,954
Financial support from government	1111	2,26,64,035
Financial support from other sources	-	-
Number of students who received International/ National recognitions	10	Rs. 6,60,268/-

5.11 Student organised / initiatives

Fairs	: State/ University level	02	National level	-	International level	-
Exhibition: State/ University level		02	National level	-	International level	-

5.12 No. of social initiatives undertaken by the students | 2 |

5.13 Major grievances of students (if any) redressed: __ No major grievances are received from students in this academic year.

Criterion – VI

6. Governance, Leadership and Management

6.1 State the Vision and Mission of the institution

Vision: Pursuing Excellence, Empowering people, Partnering in Community Development.

Mission: To develop NMAM Institute of Technology, Nitte, as Centre of Excellence by imparting Quality Education to generate Competent, Skilled and Human Manpower to face emerging Scientific, Technological, Managerial and Social Challenges with Credibility, Integrity, Ethics and Social Concern.

6.2 Does the Institution has a management Information System

YES

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

6.3.1 Curriculum Development

Every year, the Curriculum is upgraded and modified looking at the needs of Industry and latest technological developments. For this, the BoS members of all UG and PG programs in engineering and management drawn from Industry, Alumni and leading Institutes, brainstorm and formulate a curriculum which is in line with the current trends. Course outcomes, course learning objectives, program outcomes and program educational objectives are clearly spelt and their attainments are evaluated. From the academic year 2017-18, for the students of 2nd year, flexible choice based credit system will be implemented wherever possible.

6.3.2 Teaching and Learning

Teaching and learning is more student oriented. Efforts are being made to use different concepts like project based learning, active learning etc. Faculty and students are encouraged to use E-resources like NPTEL, EDUSAT, E-learning tools like MOOCs for the teaching-learning process. Faculty are encouraged to produce video lectures, which are made available to the students to support 'self directed learning'. Students and faculty make use of the Youtube videos and resources available in the digital library of the college. Efforts are being made to give credits for courses registered and completed through MOOCs.

6.3.3 Examination and Evaluation

Questions in the question papers are formed strictly based on Bloom's taxonomy. Proper rubrics are developed and used for seminar and project evaluation. Equal weightage is given both for Continuous Internal Evaluation (CIE) and Semester End Examinations (SEE). Evaluation involves both internal and external components. Question papers are set by both internal and external setters. Evaluation of few of the courses is regularly subjected to moderation, to improve the standards of evaluation. Coding of the answer scripts are being implemented to bring in secrecy. The marks scored by the students in SEE in various courses are being provided to individual departments for calculation of CO attainment.

6.3.4 Research and Development

Separate Centre for Research and innovation has been established. A Director (R&D) with more than 30 years of research experience and having International patents has been appointed on full time basis. The Dean (R&D) manages the regular R & D activities of the institution. Research incentives are provided to the faculty for publications, application and obtaining patents, obtaining external funding, review of technical papers of reputed journals and conferences. Full time research scholars are now being admitted. Interdisciplinary research is being encouraged. A number of funded projects from leading govt. agencies like AICTE, New Delhi, DST, New Delhi, VGST, Bangalore, DBT, New Delhi etc. are being implemented successfully. Efforts are being made to encourage faculty to publish their research papers in Scopous indexed journals and conferences.

6.3.5 Library, ICT and physical infrastructure / instrumentation

Membership to all major online research journals (like IEEE, ASME, ACME, Springer online, Taylor & Francis etc.) pertaining to all the programs at an annual subscription of about Rs.23 lakhs has been taken. Institute continues to be a member of DELNET. More than 60000 volumes of engineering books have been stacked in the library. A digital library has been established with all standard E-resources including NPTEL videos, DVDs of lectures from leading repositories of the world etc. A 310Mbps internet leased line and campus wide Wi-Fi has made accessibility to all these e-resources by students very easy, even in hostels.

6.3.6 Human Resource Management

The Institute has a well-defined HR and promotion policy. All the teaching faculty positions have been filled. More than 70 faculty members are with Ph.D. qualifications and about 60 faculty members are pursuing their Ph.D. Faculty members with PG qualification are encouraged to do their Ph.D. This is done either on part-time basis or on full time basis through deputation to well known institutes like IITs and NITs. Regular training for non-teaching staff on topics like communication, interpersonal skills and basic skills of computer is arranged centrally by inviting resource persons from the Nitte University Staff Development College. Faculty and staff of the institution are given free medical facilities. They are also provided with state of the art sports facilities like gymnasium, sports ground etc. for playing sports during the evenings for relaxation. FDPs are regularly arranged for the benefit of the faculty in emerging areas of engineering and technology by inviting external experts and internal resource persons.

6.3.7 Faculty and Staff recruitment

Once in a year, advertisements are given in the leading News papers to fill up vacancies in faculty and staff positions if any. External experts from leading institutions are involved in the recruitment procedure and they are invited based on the specialization of the faculty to be recruited. The recruitment of faculty and staff is done based on a well established procedure. Faculty with Ph.D and research experience are being preferred during recruitment.

6.3.8 Industry Interaction / Collaboration

The Institute has very active MoUs with Industries like Infosys, Span infotech, IBM etc., for faculty and student training. Student internships are being provided for selected students from among the campus placed students. Intel and Nvidia have provided their processor kits, free of cost for the student training. M/s Hexmoto systems Mysore has established its R&D centre at our Institute, which is helping some of our PG students in carrying out their project work in the area of Electrical engineering. We have signed an MoU with Wipro technologies for training in embedded domain. Lamina Foundry and Lamina Suspensions Pvt. Ltd., which are two process oriented companies, run by our own Management help the concerned students to undertake projects and practical training at their facility. Students from MCA department are being given exposure to real time projects from Industries by having the presence of some leading IT companies in the campus.

6.3.9 Admission of Students

Every year since its inception 30 years back, the Institute has been getting almost all its approved seats filled. In the recent years, we have seen an improvement in the quality of student intake. Over the years, the number of UG and PG programs and the sanctioned intake in these various programs have been increasing. Some initiatives taken to encourage students to seek admission in the institution include seats under sports quota and scholarships for meritorious students. Students with more than 85% in the qualifying examinations, selected under management quota are given 25% fee concession as scholarships.

6.4 Welfare schemes for

Teaching	YES
Non teaching	YES
Students	YES

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	YES	NVT QC and External experts	YES	Dean (Academic)
Administrative	YES	NVT QC and External experts	YES	Chairman, GC

6.8 Does the University/ Autonomous College declares re [✓] within [ ]s?

For UG Programmes Yes No

For PG Programmes Yes [✓] No [ ]

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

Evaluation of answer scripts and preparation of question papers include internal as well as external component. Coding of answer scripts are being implemented to maintain secrecy. Bloom's taxonomy levels are included in the QPs to indicate the level of learning. A well drafted examination procedure and manual is in place, which includes pre-examination, examination and post examination, covering all the aspects. Students and faculty are well informed about all the important events in the academic schedule through the academic calendar. Email and SMS is used very effectively to inform the faculty and students of all matters related to examination. Efforts are thus being made to reduce the use and consumption of paper and to adopt environmental conservation measures. The COE conducts orientation program for the newly joined faculty regarding examination process / scheme of evaluation. All PG project reports are subjected to compulsory plagiarism check using TURNITIN software and a similarity index of < 25% is permitted to improve the teaching – learning process and to ensure continuous learning by students, the focus is on CIE and accordingly 50% weightage is given to it in the evaluation.

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

NA

6.11 Activities and support from the Alumni Association

The Institute has a registered Alumni Association called "Wenamitaa" with its Chapters in Middle East and Bangalore. Alumni help our current students by giving them some useful talks and guidance throughout the year. This helps them in getting better placements and also in starting some entrepreneurial activities. Every year, during the graduation day, Alumni association gives silver medals for students of all the programs. One best project from each program of engineering is given project funding from the Alumni Association. Also best Outgoing student Award from each discipline of engineering and also an overall award winner is being instituted and given by a distinguished alumni.

6.12 Activities and support from the Parent – Teacher Association

At present we do not have a Parent-Teacher association. In the days to come, we wish to start one.

6.13 Development programmes for support staff

Every year at least one or two staff development programs are being conducted for the benefit of our nonteaching staff by involving experts from our Staff Development College at Nitte University. About 50 staff members every year get benefited from such programs.

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

The Institute has a "Green Cell" through which some initiatives like keeping the campus green and clean have been taken up. Every year, during the monsoon, about 300 assorted saplings are planted in the campus. Water collected from rain water harvesting is used both in the college and the Hostel. Sewage Treatment Plants have been installed to recycle the used water in garden and for use in wash rooms. Green Audit has been initiated in the campus from 2015.

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.

- The Institution has constituted a committee including external experts to conduct green audit. As per the directions of the committee, new green initiatives/practices are implemented in the campus.
  - The college has given utmost importance to eco-friendly environment in the campus and funds are allocated in the annual budget for proper maintenance and beautification of campus.
  - The college is located in a village which is surrounded by ever green forest and green habitat. The college campus contains large number of trees and plants to give a pleasant feeling to the staff and students. The green area is about 35% of the total area of campus.
  - The college maintains eco–friendly environment and energy conservation in an efficient manner
  - The Institution has appointed gardeners to maintain the greenery in the campus.
  - Every year in the month of July at least 300 to 400 saplings of different varieties of plants are planted in and around the campus.
  - To treat the sewage water, a treatment plants has been installed near boys' hostel premise and treated sewage water is used for flushing the toilets and gardening.

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

- **MicroLABLet**
  - MicroLABLet: The E&E Engineering department has developed a microcontroller study aid kit (MicroLABLet) as an Innovative product.
  - All laboratory experiments can be conducted by interfacing the unit to laptop via USB**.**
- **Active learning Laboratory**
  - Department of Mechanical engineering has initiated an active leaning laboratory to enhance the students' leaning.
  - This laboratory enhances learning based on understanding among students' which consists of leaner activity and faculty connecting activity to abstract concept.

- Conducting orientation programs for the newly joined faculty.
- A course on soft skills, to improve verbal and non-verbal communication skills are conducted.
- Personality development programmes/training programs are conducted as per the plan for second year students. These programs impart training on leadership styles and qualities.
- At the commencement of the third year students undergo soft skills/ technical skills/ numerical aptitude training programs/ etc.

- Audit courses are arranged to bridge the gap between the industry requirements and the subject knowledge acquired in the college.

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

➢ **Best Practice-I**

- **Title:** Bloom's Taxonomy Levels incorporated for Students Learning Evaluation.
- **Objective**:
  To allow educators to evaluate learning of students systematically.

- **Context :**
  The goal of every faculty is to guide students to learn fundamental concepts and also improve thinking skills. Curriculum questionnaires must be framed, which would facilitate students to improve their thinking skills. Improving thinking skill is a difficult task and one of the ways to achieve this is to frame questionnaires using Bloom's Taxonomy. Bloom's Taxonomy helps the faculty to assess the students in a systematic approach which involves students performing successfully at each level in a systematic manner.

- **Practice:**
  The Revised Bloom's Taxonomy is adopted to frame questions for Mid Semester Examination (MSE) and Semester End Examination (SEE). Based on the taxonomy for assessment, questions are mapped with the taxonomy table which shows the various Bloom's Taxonomy Levels (BTL). All faculty members are trained at department levels to practice setting Question papers as per various BTL.

- **Evidence of Success**:
  The implementation of classifying questions based upon BTLs has resulted in improvement in students learning. The students have clearly understood the concept and have taken up academics seriously as they have to improve upon their higher order thinking skills to get good grades in the examinations.

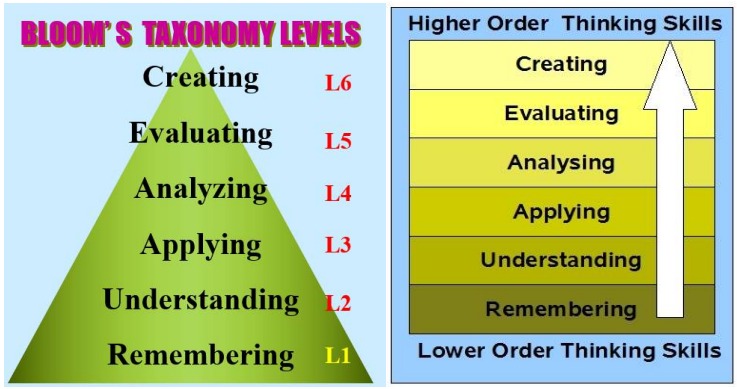

Fig 1 : Bloom's Taxonomy Levels

- **Problems Encountered and Resources Required**
  - Adjusting to new practice (Faculty and students) – Initially both students and faculty had difficulty in adapting to new practice. With constant persuasion, training and by understanding the importance, all are well versed with the system.

➢ **Best Practice-II**

- **Title:** Introduction of Employability Skill Development a mandatory non- credited course.
- **Objective:** To achieve enhancement in success rate of campus placements.
- **Context**: In the present scenario it is extremely important for any individual to have a good communication skill which is important in placement. In addition to the regular course projects, dissertations and extended essays the training in soft skills give a strong plus point when students perform in Job interviews.
- **Practice:** Employability Skills Development (ESD) is introduced for all UG students during 5^{th} and 6^{th} semester and they are trained in soft skills for enhancing success rate of campus placements. The students are given training in attending online tests and practice tests are conducted online for testing the students' capabilities. The students are trained and allowed to take up practice tests. The capability of students has really improved over a period of time during two semesters. Placed final year students train the third year students under the supervision of placement department in a program called "CRACK THE CAMPUS". The course quiz is uploaded on regular basis to the Moodle. The students are allotted a deadline to attempt to the quiz. **The students have attended SEE online and passing in ESD is mandatory in view of registering for campus placement.**
- **Evidence of Success:** All the Efforts in implementing ESD as mandatory non-credited course have resulted enhancing the skill set of students and quickness in attempting the questions in placement tests. The enhancement of Success rate of campus placements is witnessed by way of getting **782 placements** in the academic year 2016-17

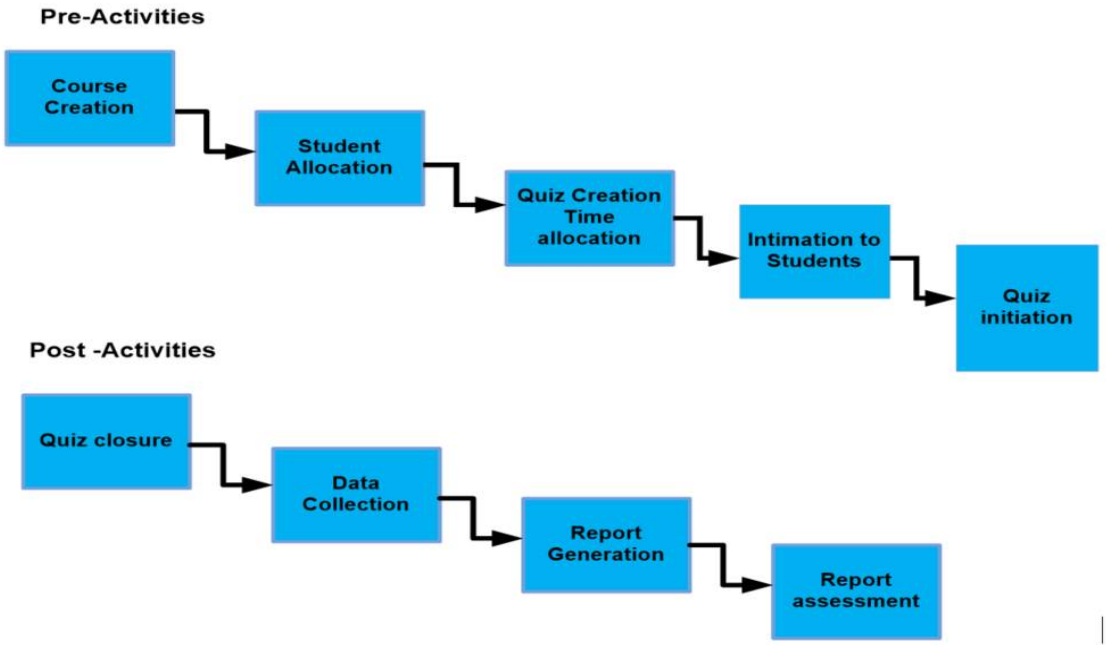

Fig 2. The Process Involved in Employability skill Development

7.4 Contribution to environmental awareness / protection

- The new 3-storey Research and Innovation Center (RIC) of 8000 sq.ft area has a 18-kW roof top-mounted solar PV panels that power highly efficient DC appliances including fans, lights and air conditioners. This unique net-zero energy solar DC Microgrid is being used as a test-bed for validating novel grid integration strategies of advanced distributed energy sources and storage technologies. Focused research on developing next generation of power electronics interfaces for smart grids, power converters for electric vehicles and renewable energy utilization, and solid-state transformers is being carried out at RIC

- From 2015 onward, used cooking oil collected from different hotels of Mangalore area is used for the production of biodiesel.
- Annual planting of 300 biofuel saplings in the college campus is a regular practice. Biofuel plantlets such as Simarouba, Honne, Hippe and Amoora are planted by Biotechnology Engineering Department with the help of Biofuel I & D Centre Nitte

Awareness programmes conducted

Sl No.	Programme Conducted	Date	Participants
1	Training-cum-workshop on "Water Security and Sustainability Issues" Water sustainability and Rainwater harvesting	24-08-2016	60 PDOs & engineers
2	Swachh Bharat Abhiyan Programme was organized on the occasion of Mahatma Gandhiji and Lal Bahuddur Shasthri Jayanthi.	01-10- 2016	NSS Students
3	Vanya-Jeevi Saptaha Cellebration	08-10-2016	NSS Students

Projects works carried out by students:

Sl No.	Programme Conducted	Year	Programme
1	E^3 (Energy efficient, Economical and ecofriendly) Shelter	2017	UG
2	Rejuvination and Replenishment Of 15th Century Ramasamudra Lake For Sustainable Development And Heritage Restoration	2017	UG
3	Conservation of Energy and water in Green Building from Solar Energy and Atmospheric air	2016	UG
4	Coconut Shell Building Blocks Represented in state level Project seminar & Exhibition	2016	UG
5	E^3 (Energy efficient, Economical and ecofriendly) WOBO Shelter	2016	UG
6	"Blue- and grey-water Footprint in Nitte Community, India, **Post-Doctoral Fellowship** (Dr. S.O. Ojoawo)	2015	PDF

- **Environment related research publications:**
  1. Thangamani R. and Radhakrishnan K. (2016) "Water Quality Index of Karkala Municipality, Karnataka" International Journal of Innovative Research in Science, Engineering and Technology, v.05, Spl. Issue 9, pp.155-160.

2. Mr. Kumarswamy T (B.E) secured 3rd place for paper presentation entitled "Conservation of Energy and water in Green Building from Solar Energy and Atmospheric air" at International conference on Sustainable Energy Technologies for Smart & Clean Cities, held on July 27 – 29, 2016, IIT-Thirupathi, Andhra Pradesh, India.
3. Dr. Udayakumar G, Energy performance of a building in Nitte Campus. International Journal of Technical Research and Applications(IJTRA) Volume 4/May-June 2016

7.5 Whether environmental audit was conducted? Yes [✓] No [ ]

The campus has a green cover of about 50.33%

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

Strengths:

- Outstanding students with good academic record and better CET/COMED-K ranking from various parts of the country.
- Over the years, the Institution has become one of the most sought after institutions in the state of Karnataka by its well-structured and relevant teaching learning and evaluating process.
- Committed Faculty: Well qualified, experienced and committed faculty members have helped building the institution to its current status as a reputed institution.
- The academic credentials of the faculty, their involvement with industry, and their approach to continuous quality improvement have helped NMAMIT to receive NBA accreditation for all the applied programs in Engineering and MBA.

Weakness:

- Though autonomous, guidelines of the affiliating university which are common to all autonomous colleges of Karnataka shall have to be followed.
- Lack of 12B status is a disadvantage in getting support from funding agencies of the government
- Absence of UGC Developmental Grants.
- Rural place far away from industries.
- As every major institution in India is facing, NMAMIT is also facing the issue of shortage of doctoral degree holders mainly in the cadre of Associate Professors. 84 faculty members are pursuing research leading to Ph.D. degree and our current efforts to have 100% faculty with Ph.D. in Associate Professors cadre will be achieved by 2020.

Opportunity:

- To expand research output by publications in indexed International Journals and obtaining patents.
- To develop a strong research base, particularly Interdisciplinary, and to get National recognition as a research Institute.
- To maximize the impact of Industry and Institution partnership
- R&D centre and collaborative research are planned
- To Strengthen and Enhance alumni interactions and participation and contribute for institutional development

Challenges:

- Global competitions from well-known Foreign Universities, which may establish their campuses in India.
- To bring the college to a level of an advanced technical Institution like IITs.
- To motivate all faculty to participate in Research and Consultancy in the Institute
- To get MHRD/UGC aid for developmental activities being unaided institute.
- To promote industry consultancy activities

8. Plans of institution for next year

- To submit more number of research project proposals for funding agencies.
- To strengthen Industry-Institution Interaction.
- To obtain NBA Accreditation for the eligible programmes.
- To construct a separate Civil Block of 40,000 Sq.ft.
- Department of Business Administration has started working on the AACSB (Association to Advance Collegiate Schools of Business) Accreditation process.

Name Dr. Subrahmanya Bhat K

24/8/17

Signature of the Coordinator, IQAC

Name Dr. Niranjan N Chiplunkar

24/8

Signature of the Chairperson, IQAC

***

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

****

ANNEXURE- I

NMAM INSTITUTE OF TECHNOLOGY

(An Autonomous Institution affiliated to VTU, Belagavi)
(ISO 9001:2008 Certified)
Nitte – 574110, Karkala, Udupi District, Karnataka, India
☎: 08258 – 281039 (O)
(EPBAX) 281263, 281461, 281248, 281349, 281462
Fax: 08258 – 281265

TENTATIVE

Date: 8-7-2016

ACADEMIC CALENDAR for B.E. 2016 – 2017 - ODD Semester

S.No.	Event	I, III, V, VII Semester B.E.
1	REOPENING OF ODD SEMESTER	July 28, 2016
2	Registration of Courses	July 28 - August 1, 2016
3	**Commencement of Classes**	August 1, 2016
4	**MSE I**	September 7 - 9, 2016
5	Last day for dropping the course	September 21, 2016
6	**MSE II**	October 17 - 19, 2016
7	Last day for withdrawal	November 2, 2016
8	Additional MSE	November 3 - 5, 2016
9	Last Working Day	November 16, 2016
10	**Practical Examination**	November 21 - 29, 2016
11	**Theory Examination**	November 30 - December 19, 2016
12	REOPENING OF EVEN SEMESTER *	December 28, 2016
13	Registration of Courses	December 28, 2016 - January 2, 2017
14	Announcement of Result	December 31, 2016
15	**Commencement of classes**	January 2, 2017
16	Last Date for applying for **Revaluation**	January 2, 2017
17	Last Date for registration of **Make up Examination**	January 3, 2017
18	DUGC Valuation & Paper Seeing	January 10, 2017
19	Revaluation Result	January 14, 2017
20	Make up Examination	January 20 - 28, 2017
21	Announcement of Make up Result	February 10, 2017
22	Last Working Day of Even Semester	April 17, 2017

** Reopening may be advanced by 10 days for Final Year students based on internship opportunities.*

Sd/-
CONTROLLER OF EXAMINATIONS

Sd/-
PRINCIPAL

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TENTATIVE

Date: 9-12-2016

ACADEMIC CALENDAR for B.E. 2016 – 2017 - Even Semester

S.No.	Event		II, IV, VI, VIII Semester B.E.
1	**REOPENING OF EVEN SEMESTER**		**December 28, 2016**
2	Registration of courses		Dec. 28, 2016 – Jan. 2, 2017
3	Commencement of classes		January 2, 2017
4	**MSE I**		February 6 - 8, 2017
5	Last day for dropping the course		February 18, 2017
6	**MSE II**		March 20 - 22, 2017
7	Last day for withdrawal		April 1, 2017
8	Additional MSE		April 3 - 5, 2017
9	Project Exhibition (**Final Year**)		April 7, 2017
10	**Last Working Day**		**April 18, 2017**
11	Practical Examination / Project Viva voce		On or before April 26, 2017
12	**Theory Examination**		April 27 - May 15, 2017
13	**Vacation Break**		May 15 - July 27, 2017
14	Announcement of Result		May 23, 2017
15	**Supplementary Semester (7th and 8th Sem. Lab with exam)**		May 11 - 20, 2017
16	**Supplementary Semester**		May 24 - June 30, 2017
17	Last Date for Registration of Make up Examination / Supplementary Semester		May 25, 2017
18	Last date for applying for Revaluation		May 26, 2017
19	Commencement of Supplementary Semester Classes		May 26, 2017
20	DUGC Valuation & Paper seeing		June 3, 2017
21	Revaluation Result		June 8, 2017
22	**Make up / Supplementary Examination**	Theory	July 1 - 20, 2017
		Lab	July 19 - 24, 2017
23	**Reopening of ODD Semester (2017-2018)**		**July 28, 2017**
24	Registration of Courses		July 28 - August 1, 2017
25	Commencement of Classes		August 1, 2017

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Date: 9-12-2016

Tentative ACADEMIC CALENDAR for PG (M.B.A. / M.C.A. / M.Tech.) - 2016 - 2017 - Second Semester

S.No.	Event		II Semester PG
1.	Reopening of **EVEN** Semester.		January 19, 2017
2.	Registration of Courses		January 19 – 23, 2017
3.	Commencement of Classes		January 23, 2017
4.	**CIE I to CIE VI**		February 6 – April 28, 2017
5.	Last day for dropping the course		March 11, 2017
6.	Last day for withdrawal		April 8, 2017
7.	Last working day		May 10, 2017
8.	**Practical Examination**		On or before May 16, 2017
9.	**Theory Examination**		May 17 – 29, 2017
10.	**Announcement of Result**		June 12, 2017
11.	Supplementary Semester		June 13 – July 12, 2017
12.	**Make up / Supplementary Examination**	**Theory**	July 13 – 20, 2017
		Practical	On or before July 24, 2017

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Date: 1-9-2016

Tentative ACADEMIC CALENDAR for PG (M.B.A. / M.C.A. / M.Tech.) - 2016 - 17 - First Semester

S.No.	Event	I Semester PG
1.	Commencement of **ODD** Semester.	September 1, 2016
2.	Last day for registration	September 10, 2016
3.	**CIE I to VI**	Sept. 20 – Dec. 13, 2016
4.	Last day for dropping the course	October 28, 2016
5.	Last day for withdrawal	December 2, 2016
6.	Last working day	December 21, 2016
7.	**Practical Examination**	On or before Dec. 29, 2016
8.	**Theory Examination**	Dec. 30, 2016 – Jan. 11, 2017
9.	**REOPENING OF SECOND SEMESTER**	January 19, 2017
10.	Registration of Courses	January 19 – 23, 2017
11.	Commencement of Classes	January 23, 2017
12.	**Announcement of Result**	January 23, 2017
13.	Last Date for applying for **Challenge Valuation**	January 24, 2017
14.	**Challenge Valuation Result**	February 1, 2017
15.	Last Date for registration of **Make up Examination**	February 3, 2017
16.	**Make up Examination**	Feb. 13 – Feb. 20, 2017
17.	**Announcement of Make up Result**	March 2, 2017

Sd/-
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PRINCIPAL

Annexure- II
Parents Feedback Survey

	All in percentage				
	Poor	**Less than satisfactory**	**Satisfactory**	**Very good**	**Excellent**
1) How happy are you with the performance of the student?	5.06	5.06	40.5	40.5	8.86
2) Improvement in the student's personality as compared to the same at the time of joining the Institute?	3.00	2	37	31	6
3) Improvement in the student's communication skills as compared to the same at the time of joining the Institute?	3.8	1.27	41.77	45.57	7.59
4) How well did we do in transforming the student into a good and responsible citizen?	5.1	3	39	44	7.6
5) Feedback received by you from the student with regard to teaching	5.1	7.6	47	33	7.59
6) Feedback received by you from the student with regard to extra-curricular activities	8.9	8.9	41	35	6.3
7) feedback received by you from the student with regard to laboratory facilities	5.1	14	43	29	8.9
8) Feedback received by you from the student with regard to computer facilities.	6.3	7.6	42	38	6.3
9)Feedback received by you from the student with regard to general infrastructural facilities	7.596	8.86	44.3	31.65	7.569
10)Feedback received by you from the student with regard to hostel facilities (only if applicable)	7.27	10.91	43.64	23.09	9.09
11) Feedback received by you from the student with regard to the student's ability to cope with other students	6.3	0	43	44	6.3
12. Feedback received by you from the student with regard to the administration of the Institute	6.3	10	41	33	10
13. Given the circumstances under which you admitted the student in the Institute, your level of satisfaction in realising your objectives	5.1	3.8	46	98	7.6
14. How strongly would you consider this Institute for admitting another student, if you have to?	6.33	7.59	97.97	34.18	13.91

Department of Information Science and Engineering

Student Feedback Analysis (Odd Semester 2016-17)

Year	SEM	SUBJECT	Weighted Avg.(In percentage)
2016-17	III	Discrete Mathematical Structures (A Section)	93.24
		Programming with C++(A Section)	96.8
		Computer Organization and Architecture(A Section)	84.72
		Discrete Mathematical Structures(B Section)	96
		Data Structures(B Section)	96.5
		Digital Design	88.35
	V	Information Storage Management	95.5
		Object Oriented Modeling and Design	94..7
		Operating System	77.5
	VII	Advanced Computer Architecture	98
		Compiler Design	94.43
		Business Intelligence and its Application	97
		Mobile Application Development	95
2015-16	IV	Finite Automata and Formal Languages	90.29
	VI	Computer Networks	98
		Object Oriented Modeling and Design	99.5
		Software Architecture	85.88
	VII	Building Enterprise Applications	96.72%
		Operating System(Open elective)	98.91%
	III	Digital Design	84
		Computer Organization	90.9
	V	Operating System	94%
		C# and .NET	95.25%
		Software Engineering	98.4%
		Relational Database Management system	98.3%
		System Software	94%
	VII	Business Intelligence and its Application	99%
		Cloud Computing	97.46%
		Software Testing	99.60%
		Compiler Design	96.1%

Department of Information Science and Engineering
Even Semester 2016-17

Sl. No.	Semester	Subject Name	Weighted Average
1	4A	Data Communication	96%
	4A	Design and analysis of Algorithms	96%
	4A	Finite Automata and Formal Languages	92.05%
	4A	Software Engineering	97%
	4A	Data Communication	94.63%
	4B	Design and analysis of Algorithms	98%
	4A	Unix and Shell Programming	93.6%
	4B	Unix and Shell Programming	99.25%
	4B	Software Engineering	95%
2	6	Computer Networks	90.60%
	6	Computer Graphics and Visualization	88%
	6	Network Management	98.30%
	6	Introduction to Python Programming	95%
3	8	Information Security	92.3%
	8	Management Information System	99.28%
	8	Fundamentals of Operating System	98.3%

Department of Information Science and Engineering

Alumni Exit Survey Analysis (ISE)

	No. of students who marked					
PEOs	**Option 1 (1 point)…A**	**Option 2 (2 points)…B**	**Option 3 (3 points)…C**	**Option 4 (4 points)…D**	**Option 5 (5 points)…E**	**% Score**
PEO1	**0**	**0**	**0**	**6**	**7**	**90.7**
PEO2	**0**	**0**	**0**	**7**	**6**	**89.2**
PEO3	**0**	**0**	**1**	**2**	**10**	**93.8**
PEO4	**0**	**0**	**0**	**5**	**8**	**92.3**

% Score = [(∑A*1)+(∑B*2)+(∑C*3)+(∑D*4)+(∑E*5)] / (No. of students * 5) * 100

Department of Master of Computer Applications

Program Exit Survey

Average Score / Programme Outcomes	2011-14	2012-15	2013-16	2014-17
Ability to apply knowledge of mathematics, science and engineering	4.27	4.33	4.58	4.3
Identify, formulate, research literature and analyse complex engineering problems	4.02	4.59	4.47	4.3
An ability to design a system, component or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability and sustainability	4.62	4.27	4.56	4.4
An ability to design and conduct experiments, as well as to analyse and interpret data	4.22	4.25	4.11	4.3
Apply appropriate techniques, resources and modern engineering and IT tools to complex engineering activities	4.07	4.33	4.55	4.2
Knowledge to assess societal, health, safety, legal and cultural issues	4.35	4.37	4.47	4.5
The broad education necessary to understand the impact of engineering solutions in global, economic environmental and societal context	4.4	4.47	4.6	4.2
An understanding of professional and ethical responsibility	4.09	4.36	4.65	4.5
An ability to function effectively as an individual/member/leader on multidisciplinary teams	4.58	4.31	4.53	4.4
An ability to communicate effectively	4.33	4.28	4.6	4.2
A recognition of the need for and an ability to engage in lifelong learning	4.31	4.35	4.64	4.4
A knowledge of contemporary issues	4.00	4.36	4.65	4.3
Identify real world problems, formulate technical solutions, design, develop and implement.(PSPO)	---	4.33	4.58	4.4

Department of Master of Computer Applications

Employer Survey 2014-15

Programme Educational Objective	Average Score
To think critically, work creatively, communicate effectively and become technologically competent	5.00
To be able to update themselves in areas and technologies relevant to their career.	4.50
To function in supportive/leadership roles with ethical responsibilities and high regard towards societal needs	4.75
To develop team work ability, lead initiatives and manage task effectively	4.50

DEPARTMENT OF MCA

STUDENT FEEDBACK ANALYSIS – 2016 -2017

I SEMESTER MCA :

Sl. No	Subject code	MCA101B	MCA102	MCA103	MCA104	MCA105
1	What is your opinion about the teaching skills of your teacher?	4.46	4.78	4.12	4.27	4.45
2	Does your teacher come well prepared for the class ?	4.68	4.7	4.7	4.68	4.7
3	How do you like his/her presentation of the subject matter?	4.26	4.38	4.72	4.57	4.61
4	How is his/her voice?	4.77	4.79	4.7	4.68	4.7
5	How is his/her black board work?	4.87	4.8	4.65	4.67	4.7
6	Does your teacher come in time for the class?	4.6	4.82	4.92	4.65	4.8
7	Does he/she take the class till the end of the hour?	4.10	3.95	4.15	4.27	4.37
8	Did he/she fully covers the syllabus in the semester?	4.9	4.9	4.78	4.8	4.7
9	Does he/she make you work out problems in the class under his/her supervision?	4.61	4.28	4.62	4.67	4.45
10	Does he/she check your home assignments?	4.56	4.18	4.72	4.74	4.55
11	Does he/she allow you to ask questions in the class?	4.62	4.7	4.65	4.6	4.95
12	Does he/she answer your questions in the class or at least	4.10	3.95	4.15	4.27	4.37
13	Does your teacher make up classes missed during his/her	4.6	4.82	4.92	4.65	4.8
14	In general how is the class atmosphere?	4.6	4.58	4.62	4.7	4.65
15	How much time your teacher spend in dictating notes?	4.5	4.7	4.8	4.6	4.25
16	Does he/she neglect acts of in discipline in the class?	4.87	4.8	4.65	4.67	4.7
17	Does he/she take your attendance regularly ?	4.6	4.38	4.42	4.7	4.15
18	How is his assessment of your Sessional books	3.85	4.7	4.8	4.6	4.95
19	How is his her attitude outside the class ?	4.87	4.85	4.45	4.57	4.73
20	Would you like him/her to be in the next semester too?	4.37	4.81	4.65	4.65	4.18

ANNEXURE-III

BOS meeting held in all Departments during first and second week of May 2016

1. Department of Biotechnology : UG

Major Changes incorporated (Scheme, Course titles)

10.3. The course 17BT120 Biology for Engineers (earlier a MLC) is converted to a 2 credit course without any additional modifications in syllabus.

10.4. There is no change in scheme for 5th & 6th semester (15BT series) and 7th & 8th semester (14BT series) for the academic year 2017-18. The finalized and approved scheme for these two series is enclosed.

10.4. Two Major changes were incorporated in the **scheme of 16BT series** and onwards. The incorporations are based on the recommendation from academic council to bring in the choice based credit system. The modifications in scheme are as follows:

10.4.1 The syllabus content of **courses with 39 lecture hours** are converted to 3 units from 5 units. This was based on the feedback received from question paper setters, BoE and Controller of Examination, who expressed difficulty in setting question papers in the existing question paper scheme. It is difficult to set questions of 40 marks from a unit covered in 6 to 7 hours and not repeating them in consecutive academic years. It was observed over last few years that many questions were redundant for these courses. The examination scheme for these courses will be as follows:

Mid Sem Exam: MSE1 from Unit 1, MSE2 from Unit 2; In each MSE, 3 questions of 10 marks each to be asked of which student has to answer 2 questions.

Sem End Exam: 3 questions of 20 marks from unit 1 & unit 2, and 2 questions of 20 marks from unit 3 to be asked. Of these, 2 questions from Unit 1 & Unit 2, One question from Unit 3 to be answered by the student.

The question paper schemes for other courses remain unchanged.

10.4.2 Rearrangement of Electives for Choice based credit system

The three credit electives are regrouped into 4 categories as Program Elective (Applied Bioscience Domain), Program elective (Applied Engineering Domain), Global Elective, Open Elective.

Elective	Semester	Total No.	Offered by
Group 1 - Program Elective (Applied Bioscience Domain)	5th to 8th	3	Dept. of BTE
Group 2 - Program elective (Applied Engineering Domain)	5th to 8th	3	Dept. of BTE

Group 3 - Open Elective	6th	1	Other Dept.
Group 4 - Global Elective	5th to 8th	1	Other Dept./ Dept. of BTE

The courses under each group of elective and the remarks (if any) are given in the attached scheme for 16BT series. BOS has suggested adding NPTEL and other reputed MOOCs under departmental and global elective list. Since the weighatge of such courses differ, the decision of awarding 3 credits to the opted MOOCs should be approved by DUGC.

Based on the prerequisites for respective electives of applied bioscience domain and applied engineering domain, student will be allowed to choose and register for the elective in the respective semester.

A student can choose **global elective** in any semester between 5th to 8th semester as an alternative to applied bioscience or engineering elective and make up for the total credits required for the completion of degree. All together, a candidate should have completed **8 electives** before graduation, where the candidate has to register for 7 electives offered by the department or **6** electives offered by the department and one **global elective**, and completing the course work of one open elective before graduation is compulsory.

10.5 The scheme of 16BT series was redesigned for 6th and 7th semester in order to address some of the missing components in the curriculum. The changes incorporated are as below:

10.5.1 A 3 credit program core course **16BT601 Fermentation Technology** has been (L-T-P-S : 3-0-0-0, 39 hr) incorporated. This course deals with fermenter, types and operations, heat and mass transfer requirements in a fermenter.

10.5.2 The program core course **Bioprocess Dynamics & Control** was shifted to 7th semester (**16BT704**) without any other changes in its scheme.

10.5.3 The credits of three courses in 7th semester (**16BT701 - Immunology, 16BT702 - Bioethics, Biosafety & IPR, 16BT703 - Plant Design & Economics**) was reduced to 3 from 4 credits. The Lecture hours for these courses is reduced to 39 from 52.

10.5.4 The laboratory course in 6th semester, Bioprocess Control & Instrumentation Lab is withdrawn and in its place a new laboratory course **16BT604 Fermenter Operations & Instrumentation Lab** is introduced.

10.6 This committee has been informed that the Institution level offered core course **16HU311 Enhancing Self Competence** (by Humanities department) the LTPS has been changed to 1-0-2-0 from 2-0-0-0. Credits remain unchanged.

10.7 Following corrections are suggested during the meeting for incorporation in the syllabus content of B.E. Biotechnology program –during academic year 2017-18.

9.2.1. 16BT307 Biochemistry Lab

Experiment 1 on buffer preparation is renamed.

Experiment on estimation of cholesterol is added.

9.2.2. 16BT403 Thermodynamics

Unit 3: Gibbs Duhem equation is removed.

9.2.3. 16BT404 Structural Biology

Unit 4: Topic on glycoinformatics is added.

9.2.4. 16BT406 Cell & Developmental Biology

Five units are restructured into 3 Units. Some topics have been eliminated and updated with new topics in all the units.

9.2.5. 15BT503 Bioinformatics & Applications

Unit 1: Retitled as Introduction to Sequencing, Omics & Genome Projects

Unit 2: Topic on Cn3D & EMP is removed.

9.2.6. 15BT506 Biokinetics Lab

Experiment on Packed Bed reactor is removed.

Experiment on Enzyme extraction and estimation of specific activity is added.

9.2.7. 15BT624 Clinical Studies & Data Management

Unit 3: Ecological study design is removed.

9.2.8. 15BT606 Upstream Processing Lab

Experiment on Induction of invertase enzyme in packed bed reactor using immobilized yeasts is added.

9.2.9. 14BT702 Bioethics, Biosafety & IPR

Unit 2: altering human germline is renamed as germline therapy. Ethics and Environmental Impact is removed.

10.8.1 Approval of Audit Course Curriculum

The curriculum for the Audit courses (June-July 2017) were discussed and approved.

10.8.2 The panel of examiners for UG semester examinations (Academic year 2017-18) was approved by the BOS. The list is enclosed.

10.9 Additional suggestions made during the meeting are as follows:

10.9.1. It is suggested to include online resource materials in the reference for the respective courses

10.9.2. Some BOS members were of the opinion that in 16BT scheme, 7th semester load should be reduced in order to provide ample opportunity to carry out project work. Hence it was suggested to relook into 6th & 7th semester scheme of the said series in the next BOS meeting.

Above mentioned suggestions will be incorporated in the curriculum and same will be sent to BOS members for their perusal. Approved scheme is attached.

Department of Biotechnology : PG

M.Tech. Industrial Biotechnology (Full Time) Program

3.1 As per the instructions of Academic Council, course code was revised as per NMAMIT Autonomous format. The format is 17IBT1XY for 1st semester and thereon.

3.2 The scheme for **M.Tech. Industrial Biotechnology programme** was approved during the B.O.S meeting. Approved scheme is attached.

3.2.1 The first 2 semester have three 5 credit core courses with L-T-P-S = 4-0-2-0 and two 4 credit elective courses with L-T-P-S = 4-0-0-0 in each.

3.2.2 A seminar based course **Research Experience through Practice** is offered in the first two semesters. The student, under the supervision of a faculty, will be reviewing the literature on a given topic and need to come out with a research proposal, a review article and present the same in the open seminar. The student, if interested, may continue this work as minor research project and major research project in the subsequent semesters.

3.2.3 BOS was of the opinion that one or two audit courses need to be offered to students in these semesters to fill the gaps or industry requirements.

3.2.4 3rd semester and 4th semester have only industrial training, seminar and Projects. Details are given in the scheme.

3.3 The syllabus content for **M.Tech. Industrial Biotechnology programme** was reviewed & approved during the B.O.S meeting. Following corrections were incorporated.

3.3.1. 17IBT101 - Applied Statistics & Design of Experiments

Practicals on statistical analysis, experimental design and analysis are incorporated. Hands on training for use of Software are provided during these practical courses.

3.3.2. 17IBT102 - Fermentation Technology-I

Experiments pertaining to Fermentation Technology from earlier laboratory course on Fermentation Technology & Molecular Biology lab (16IBT105) were transferred to this course.

3.3.3. 17IBT103 - Advanced Molecular Biology

Experiments pertaining to Molecular Biology from earlier laboratory course on Fermentation Technology & Molecular Biology lab (16IBT105) were transferred to this course.

3.3.4. 17IBT201 - Food Process Engineering

Experiments pertaining to Food Processing from earlier laboratory course on Food Processing & Downstream Operations Lab (16IBT205) were transferred to this course.

3.3.5. 17IBT202 - Fermentation Technology II

Experiments pertaining to Downstream operations from earlier laboratory course on Food Processing & Downstream Operations Lab (16IBT205) were transferred to this course.

3.3.6. 17IBT202 - Research Methodology, Biosafety & IPR

A topic on Concept of project to product in unit 2 is introduced.

Practical case studies and IPR proposal preparations are introduced to the Practical components of this course. Students are expected to gain hands on experience in IPR related documentation and procedures.

3.3.7. Elective courses are restructured with 3 electives in a group

3.3.8. Elective course Bioprocess Engineering and Bioreaction Engineering are renamed as Advanced Bioprocess Engineering and Advanced Bioreaction Engineering without any changes in their curriculum.

3.3.9. Two courses "**Quality and safety Management"** & "**Project Management"** are offered as audit courses during 1st & 2nd semesters.

Above mentioned suggestions will be incorporated in the curriculum and same will be sent to BOS members for their perusal. Approved scheme is attached.

2. Department of Civil Engineering - UG

Changes incorporated:

1. In the new subject Building Materials and Construction which has been introduced in 3rd semester, BOS members felt that more importance should be given for **Steel** in the topic of other building materials and some topics like vinyl flooring, modern construction technology and well foundation can be introduced in self-study component.
2. BOS members advised to restrict the Course Learning Objectives to five in all the subjects.
3. BOS members agreed to have concrete technology as core subject in 4th semester and they felt that Concrete Technology laboratory should come in early semesters either in 4th or 5th semester.
4. BOS members suggested to swap the concrete and highway lab with 5th semester CAD lab and to add the basic syllabus of CAD drawing in Building Planning and Drawing of 4th semester.
5. BOS members suggested to give more importance on software analysis in CAD Drawing laboratory.

6. BOS members agreed to introduce Design of RCC Structural Elements in 5thSem, Design of Structural Steel elements in 6thSem, Design of RCC and Steel Structures in 7thSem and Detailing of RCC and Steel Structures in 8th semester.
7. BOS members suggested to introduce a new elective on Building Code & Practice in 7th semester.
8. BOS members suggested to include a two week internship programme for UG students and they have to give presentation on it in 8th semester. This can be introduced in scheme by opting between SOCT and Internship.
9. BOS members felt that Detailing of RCC and Steel Structures should be done with CAD software and suggested to implement it.

Department of Civil Engineering – PG

1) M.Tech in Structural Engineering :-

For **2017** admission students the following corrections, additions, deletions and suggestions were proposed by the BOS members.

1. HOD briefed about the change in 2017 scheme for PG to have 3 Core Subjects of 5 Credits and 2 Elective of 4 Credits. Introduction of Research Experience through practice – I during 1st semester and Research Experience through practice – II during 2nd Semester. At the end of the practice students will present a research paper.
2. Members suggested the use of software's for all courses.
3. They also suggested for casting and testing of structural members in structures lab.
4. They insisted to keep an elective on programming skills relevant to structures.
5. Members suggested to keep design of curved beams in advanced RCC design and removal of ductile detailing of RCC structures since it is already explained in Design of Earthquake Resistant Structures.
6. The members insisted to keep PSC as an elective and explained the importance of this course.
7. They insisted to add computational mechanics with plates and shells.

2) M.Tech in Construction Technology :-

For **2017** admission students the following corrections, additions, deletions and suggestions were proposed by the BOS members.

1. HOD briefed about the change in 2017 scheme for PG to have 3 Core Subjects of 5 Credits and 2 Elective of 4 Credits. Introduction of Research Experience through practice – I during 1st

semester and Research Experience through practice – II during 2nd Semester. At the end of the practice students will present a research paper.

2. Construction Planning and Control [17CCT101] to be renamed as "*Construction Planning and Control Management"*, adding topics on Risk Register, introduction to Risk Management, usage of Primavera Software along with MS Project., introduction of Mat Lab were discussed.
3. Syllabus on Advances in Construction Materials [17CCT102] will be renamed as *"Advanced Concrete Technology*" and this course will be offered as elective under Group I during 1st semester.
4. It was discussed that Quantitative Methods in Construction [17CCT116] will be offered as elective and the syllabus to be tailored for the needs of Civil Engineering related topics instead of pure mathematics.
5. For the course on Construction Economics and Finance [17CCT213], it is decided to have this as core instead of elective during 1st Semester. Syllabi of this course has been discussed in detail. Members felt to add the practical component which includes case studies of Balance Sheet Analysis, Site visit, listing of ongoing site activities and CPM Charts.
6. It is discussed to make Unit I, II & III as a single unit in the course Construction Quality and Safety [17CCT202] and to add few topics from Quantitative Methods in constructions from unit I & II to this course. It is decided to include the practical components on case studies on Quality Compliance Requirements, Preparation of Quality Checklist, and Preparation of Quality Manuals. Mr. P K Raghavendra suggested to have a guest Lecture by Er. Vishwanath D N from Shapoorji Pallonji & Co.
7. Mr. P K Raghavendra suggested to include 50% legal case studies and 50% of legal Aspects as a practical component in Construction & Contracts Management [17CCT203]. He also informed to add International Federation of Consulting Engineers (FIDIC) document version 2004.
8. The Chairman informed that for all the courses at least two textbooks are mandatory and relevant reference books are to be added.
9. The members suggested to offer new elective courses such as Human Resource Management, Risk Management, Operation Research along with the existing electives

3. Department of Computer Science & Engineering - UG

Changes incorporated

- The new scheme for ***2016-20 batch*** is as per the Choice Based Flexible Credit System (CBFCS) and were discussed in detail from 3rd semester to 8th semester. This new scheme will be implemented from 2nd year BE onward from the academic year 2017-18.

- It has been recommended and decided to have the following courses in 3rd semester and 4th semester for AY 2017-18, and the syllabus for the same is approved:
    - In **3rd semester**: Generating functions & Combinatorics, Digital Systems Design, Data Structures, Data Communications, Discrete Mathematics, and Computer Organization & Architecture (**Total Credits: 27**).
    - In**4th semester**: Probability theory & Linear algebra, Design & Analysis of algorithms, Programming with Java, Principles & Practices of Software Engineering, and Microprocessors & Peripherals (**Total Credits: 25**).
- It has been suggested to give credits for the ***tutorial and self-study*** components for the work carried under these sections. Also, it has been suggested to have credits for all non-credit mandatory courses.
- It has been felt that the ***number of courses in a semester*** are more and hence it is suggested to increase the credits for courses instead of courses itself.
- ***Flipping of core courses*** between the semesters of the particular year was proposed by HOD, but external experts felt that this flipping will not serve any purpose and also some courses will not satisfy pre-requites completely. Hence, it is decided not to flip the core courses between 3rd& 4th semesters.
- In each of 2nd year, 3rd year, and 4th year, there is one ***crash course*** which is credit-less mandatory courses but these courses will reflect in the student grade card. External experts felt that these courses shall be credited and there must be a well-defined evaluation method for these courses.
- Since Programming with C++ is a crash course during the beginning of 4th semester and Programming with Java is a core subject, so, while teaching C++ course, ***OOP concepts*** are expected to be emphasised instead while teaching Programming with Java.
- In order to satisfy the pre-requisites and for smooth flow of courses in the higher semesters, it has been recommended to shift ***Microprocessor & Peripherals***(MP) core course from5th semesterto4th semester by moving ***Relational Database Management Systems*** (RDBMS)core course from 4th semester to 5th semester.
- In order to have lab component for the course and credit rearrangement, it has been recommended to shift ***Operating System*** core course from 4th semester to 5th semester by adding a Lab component in the place of Cryptography& Network Security in 5th semester.
- Since there is an Advanced UNIX Programming course as an elective in 5th semester, it has been suggested to have ***fundamentals of UNIX*** programming as a part of Operating System lab.

- It has been suggested that ***Employability Skill Development***(ESD) course may be given with ***one credit*** instead of credit-less mandatory course.
- It has been suggested that ***Cryptography & Network Security*** core course to shift from 5th semester to 6th semester in place of ***Introduction to Cyber Security*** core course and shift the Introduction to Cyber security to elective course.
- It has been suggested that ***Web programming*** elective course may be moved to 6th semester elective course and ***Mobile Application Development*** (MAD) elective course to 5th semester.
- It has been suggested that enough care should be taken for possible ***overlapping*** in the ***contents*** of the courses such as Machine Learning, Artificial Neural Network & Deep Learning courses.
- In 7th semester, it has been suggested that ***Object Oriented Modeling Design*** (OOMD) course can be made as core course and ***Human Computer Interaction*** (HCI) may be moved to elective and also Advanced Computer Architecture and Parallelism shall be renamed as ***Advanced Computer Architecture***.
- It has been suggested that the syllabus contents of software project management course shall be carefully designed such that the ***contents*** of engineering management course will not ***overlap*** each other.
- HOD discussed about equivalent ***MOOC courses*** for every elective from 5th semester to 8th semester. That is, student can either register for elective in the department or obtain a certificate from MOOC of equivalent credit course. But external experts suggested to have such courses only for one semester to begin with and at the same time there must be some mechanism for evaluating MOOC courses.
- In 6th semester, it has been recommended that the ***Digital Signal Processing*** (DSP) elective course can be replaced with ***Digital Image Processing*** (DIP)elective course.
- It has been suggested that in the higher semesters, the courses Distributed computing and Advanced DBMS can be introduced as elective subjects.
- It has been suggested to look into the number of ***hours*** allotted for ***projects*** which is not matching with the number of credits.
- The ***technical open elective*** offering in 8th semester is moved to 6th semester, as per the demand by most of the stakeholders and the same is approved.
- The total number of "***Electives***" that will be taken by the students in the new scheme is ***seven*** as given below:

  Departmental Electives (6 Nos.)

  - 5th semester – 1elective

- 6th semester – 1 elective
- 7th semester – 2 electives
- 8th semester – 2 electives
- During 5th to 8th semester – 1 ***Global elective***: This elective is chosen by the student either from set of "***non-technical open elective***" or "***department elective***" during ***5th to 8th semester***. The suggested list of non-technical open electives are : Introduction to Yoga, Physical Education Principles, overview of Indian culture and arts, Foreign languages, Entrepreneurship Development, Research Methodology, Publishing Scopus Indexed papers, Mini projects with/without associating with Technical clubs, and Summer Internship in reputed Companies /Industries / Institutes. The same has been approved.

- For all courses under global elective list, it has been suggested that there must be some well-defined evaluation method. Similarly, publishing research paper by students need to have suitable evaluation parameters.
- It has been discussed about "Biology for Engineers" course for first year will be made 2 credit course, whereas CIPE and Environmental Engineering will be made credit-less mandatory courses and the same has been approved.
- Discussions took place about the number of contact hours for "***Enhancing Self Competence***" course is increased from 2 to 3 hours (L-T-P-S: 1-0-2-0) and the same has been approved.
- Discussions took place about ***three credit courses*** can have only 3 units (instead of 5 units) with 3+3+2 questions asked from each unit in the Semester End Exam. Students must answer 2+2+1 questions respectively. The same has been approved.
- The courses that are designed by industry listed below were discussed and the same has been approved:
    - Business Intelligence
    - Software Testing & Automation
    - Mobile Application Development

FOLLOWING ARE THE MINUTES FOR THE CHANGES RECOMMENDED UNDER THE EXISTING SCHEME:

- The major modifications proposed in the syllabus of the following electives courses in the existing scheme are accepted and is approved:
    - Web 2.0 and Rich Internet Applications is replaced by Advanced Web Technologies, and

- Artificial Intelligence &Machine Learning course is replaced by Machine Learning

- The minor changes in the syllabus of the following courses in the existing scheme are accepted and is approved:
  - Program Verification (in 5th semester as an elective course)
  - Software Architecture (in 7th semester as a core course)
- Introduction of following new electives in the existing scheme are accepted and the syllabus for the same is approved:
  - Internet of Things (in 5th semester)
  - Business Intelligence (in 7th semester)
  - Social & Web Analytics (in 8th semester)
  - Big-Data Analytics (in 8th semester)
- As per the MoU between NMAMIT and IBM, the agreement comes to an end in the year 2017. Hence, removal of the following electives designed by IBM in the existing scheme discussed by HOD and the same is approved:
  - Managing the Cloud (in 7th semester)
  - Virtualization and Cloud (in 7th semester)
  - Cloud Application Development with Lab (in 7th semester)
  - Social & Web Analytics with Lab (in 7th semester)
  - Introduction to IoT (in 8th semester)
  - Big-Data Analytics (in 8th semester)
  - Security in Cloud (in 8th semester)
  - BA for Industries (in 8th semester)
- Introducing Lab component for Python programming in 7th semester and L-T-P-S: (3+0+2+0).
- Revision of Vision, Mission, Program Educational Objectives and Program Specific Outcomes were discussed.
- The panel of examiners for both odd and even semesters of AY 2016-17 is approved.

Department of Computer Science & Engineering - PG

M.Tech. in Computer Science & Engineering:-

1. The new scheme for ***2017-19 batch*** is as per the Choice Based Flexible Credit System (CBFCS) and were discussed in detail from 1st semester to 4th semester. This new scheme has been recommended and hence it is implemented from the academic year 2017-18.
2. In each semester, it is recommended to have ***3 core subjects, 2 Electives***, and a common course of ***Research Experience through Practice-I*** in the first semester and ***Research***

Experience through Practice-II in the second semester. Also, it has been suggested that both for ***Research Experience through Practice-I*** and ***Research Experience through Practice-II*** to focus only on tutorial and practical component and not on self-study component.

a. At the end of Research Experience through Practice-I in the first semester, PG students should be able to identify a research problem, with clear objectives and methodologies backed by extensive literature review. All the PG students may be asked to submit a research proposal and a presentation at the end of the first semester.
b. At the end of Research Experience through Practice-II in the second semester, students are expected to write a full research paper based on the Mathematical modelling / Design calculations / computer simulations / Preliminary experimentation / testing carried out during second semester.

3. ***Allotment of guides*** for individual PG Students to the individual faculty members shall be based on student's area of research interest, specialization of faculty members in the beginning of the first semester.
4. It has been suggested to have recent edition of ***Textbooks*** and ***standard format*** to be followed for specifying the textbook description in syllabus.
5. There has been a suggestion to have '***Bioinformatics and Genetic Algorithm***' course as an elective.
6. It has been recommended that the ***evaluation for lab*** component for a particular course in CIE can be of 30 marks for theory and 20 marks for Lab part so that student will take seriously both theory and lab that follows LTP concept.
7. To give more emphasis on research based learning at PG level, it has been recommended to have ***only two Continuous Internal Evaluation (CIE) Tests*** per semester as Mid Semester Examination-I and Mid Semester Examination-II instead of six CIE tests. Mid Semester Examination-III may be offered for only those who could not appear for MSE-I or MSE-II due to valid reason.
8. Discussions took place about electives in both first and second semester and it has been suggested to have streams of electives so that it helps student to master in one particular stream. To this end, the following ***stream based electives*** have been suggested:

Group – 1	**Group – 2**	**Group – 3**	**Group – 4**
Distributed Systems	Information Theory and Coding / Web Technologies	Big Data Analytics	Social And Web Analytics
Analysis of Computer networks	Cloud computing architecture and Implementation	Cryptography and Network Security	Internet of Things
Graphics, Multimedia and Gaming Techniques	Soft computing	Compiler Optimization & Multi-core Architecture	General Purpose Computation on GPU
Business	VLSI and CAD		

Intelligence			

9. It has been suggested that self-study component in Advanced DBMS can be converted into ***mini project*** or study/present a research paper.
10. There was a suggestion of having a separate lab (computing lab) which includes the experiment from all the subjects to avoid negligence of lab by students.
11. It has been recommended that in Advanced DBMS course, the ***'NOSQL'*** topic could be added as one full unit whereas Object oriented and Distributed databases could be combined as one unit instead of two separate units.
12. Conduction of Project Part-II consists of Project Progress Evaluation-I, Project Progress Evaluation-II, and Project Progress Evaluation-III. It has been felt difficult to conduct ***three Project Progress Evaluations*** in the fourth semester. Hence it has been discussed to have only ***two Project Progress Evaluations*** in the fourth Semester, during third week of February and third week of April.
13. The ***courses*** that are designed by ***industry*** listed below were discussed and the same has been approved:
    a. Business Intelligence (Infosys)
    b. Software Engineering Practices (Infosys)
14. Discussion took place about ***Audit course*** and it has been suggested that the audit course can be done during first week of the second semester begins.
15. The courses related to programming could be added as an elective such as Python programming.
16. It has been suggested that in 3rd semester, ***Mini-project and Seminar topics*** chosen by the student shall not be the same and these topics shall be more on research oriented.
17. Discussions took place to have an ***external examiner*** for the final evaluation of M.Tech. major project in the fourth semester.
18. The ***panel of examiners*** both for odd and even semesters of the academic year 2016-17 is approved in the meeting.

M.Tech. in Software Engineering:-

1. The new scheme for ***2017-19 batch*** is as per the Choice Based Credit System (CBCS) and were discussed in detail from 1st semester to 4th semester. This new scheme has been recommended and hence it is implemented from the academic year 2017-18.
2. In each semester, it is recommended to have ***3 core subjects, 2 Electives***, and a common course of ***Research Experience through Practice-I*** in the first semester and ***Research Experience through Practice-II*** in the second semester. Also, it has been suggested that both for ***Research Experience through Practice-I*** and ***Research Experience through Practice-II*** to focus only on tutorial and practical component and not on self-study component.
    a. At the end of Research Experience through Practice-I in the first semester, PG students should be able to identify a research problem, with clear objectives and methodologies backed by extensive literature review. All the PG students may be asked to submit a research proposal and a presentation at the end of the first semester.

b. At the end of Research Experience through Practice-II in the second semester, students are expected to write a full research paper based on the Mathematical modelling / Design calculations / computer simulations / Preliminary experimentation / testing carried out during second semester.

3. ***Allotment of guides*** for individual PG Students to the individual faculty members shall be based on student's area of research interest, specialization of faculty members in the beginning of the first semester.
4. It has been suggested to have recent edition of ***Textbooks*** and ***standard format*** to be followed for specifying the textbook description in syllabus.
5. In 'Software Engineering Practices' core course, it has been suggested to include the topic 'SCRUM in Agile Methodology'.
6. Discussions took place about electives in both first and second semester and it has been suggested to have streams of electives so that it helps student to master in one particular stream. To this end, the following ***stream based electives*** have been suggested:

Group – 1	**Group – 2**	**Group – 3**	**Group – 4**
Decision support system and ERP	Design patterns	Supply chain management/ Software design	Formal methods in software engineering
Software requirement Engineering	Software design	Software process management	Agile technologies
Distributed OS	Computer system performance analysis	Information retrieval	Software tools for large scale data analysis
Distributed systems	Web services	Data mining and Data warehousing	Software system safety
Mathematical Foundation for Computer Science	Soft computing	General purpose computation on GPU	Adv. storage area networks
Advances in Computer networks	Information and network security	Performance Engineering of Real time Embedded systems	Software Engineering for Internet of Things

7. It has been suggested to add more courses related to Software Engineering under elective courses such as Software Architecture course.
8. To give more emphasis on research based learning at PG level, it has been recommended to have ***only two Continuous Internal Evaluation (CIE) Tests*** per semester as Mid Semester Examination-I and Mid Semester Examination-II instead of six CIE tests. Mid Semester Examination-III may be offered for only those who could not appear for MSE-I or MSE-II due to valid reason.
9. The ***courses*** that are designed by ***industry*** listed below were discussed and the same has been approved:
    a. Software Testing (Infosys)
    b. Security in Cloud (IBM)
    c. Mobile Application Development (Infosys)
10. Conduction of Project Part-II consists of Project Progress Evaluation-I, Project Progress Evaluation-II, and Project Progress Evaluation-III. It has been felt difficult to conduct ***three Project Progress Evaluations*** in the fourth semester. Hence it has been discussed to

have only ***two Project Progress Evaluations*** in the fourth Semester, during third week of February and third week of April.

11. Discussions took place to have an ***external examiner*** for the final evaluation of M.Tech. major project in the fourth semester.

4. Department of Electrical & Electronics Engineering - UG

1. Vision and Mission of the department, Program Educational Objectives (PEO), Program Outcomes (PO) for the undergraduate program B.E (E&E)were presented and approved.
2. CO Attainment analysis for the odd and even semesters of 2015-16 and odd semester of 2016-17 is presented.
3. Department has offered two audit courses 1) Lab VIEW applications 2) Electrical Appliance Repair and Maintenance during July 2017.
4. Panel of examiners for the Semester End Examinations is approved.
5. E Books / MOOC / NPTEL materials related to each course (wherever available) is mentioned in the reference section.
6. The suggestions given by BOS members in advance through email are deliberated and considered for revision of curriculum.
7. 17EE105- Basic Electrical Engineering syllabus is reviewed and it is decided to exclude the introduction of network theorems as dealt in detail in network theory in 3/4 semester for E&E/E&C.
8. The 16EE302- Signal and Systems syllabus is revised to maintain the flow of contents related to continuous time signals and respective transforms, discrete time signals and related transforms.
9. 16EE403 –Microcontroller Syllabus is reviewed and Case Studies are introduced in the 5^{th} Unit. Topic related to MSP430 is excluded.
10. 15EE502 – DSP syllabus is revised to ensure continuity in the syllabus from Signals and Systems. The content of signals and Systems has been removed from UNIT-1 since it is already covered in 15EE302.
11. New elective course “15EE613 - Introduction to ASIC and FPGA Design” is introduced in place of Digital System Design Using VHDL as majority of the contents are covered in 15EE305- Logic Design.
12. 15EE623- Advanced Microprocessor title is renamed as “ARM System Architecture”
13. 14EE715- Micro Electro Mechanical Systems syllabus is revised based on the faculty feedback to match the contents of reference books.

14. New scheme for 2016-20 batch under choice based credit system is proposed. Some of the key features of the scheme are
    a. Two courses i.e "Signals and System" & "Network analysis" are offered in both 3rd and 4th semesters. Students can register for any one course in each semester.
    b. The department will offer one elective each in 5th and 6th semester, two electives each in 7th and 8th Semester
    c. Students can register for a Global Elective of 3 credits anywhere between 5th and 8th Semester which includes Yoga, Physical Education, Foreign Language, Mini Project, Industrial Internship etc. Students can select any one course. If they do not wish to opt Global Elective they can register for Department General Elective.
    d. Open elective course is shifted from 8th semester to 6th semester.

Department of Electrical & Electronics Engineering – PG

M.Tech in Power Electronics :-

1. Vision and Mission of the department, Program Educational Objectives (PEO), Program Outcomes (PO) for M.Tech (Power Electronics) program were presented.

2. Panel of examiners for the Semester End Examinations is approved.

3. As per the common guidelines for M.Tech Courses in the institution, 3 Core courses of 5 credit each and two elective courses of 4 credits each to be included in the first and second semesters. The 5 credit courses will have either a lab component (of two hours) or a self-study component (of 6 hours). These guidelines are implemented as below.
    a. Power Semiconductor Devices, Solid State Power controllers and Switched mode Power Supply are offered as core courses with lab components in the first semester.
    b. "AC and DC Drives", "Modeling & Simulation of Power Electronic Systems", and "Application of Power Electronics to HVDC and FACTS" are offered as core courses with lab components in the second semester.
    c. "Applied Mathematics" and "Advanced Control Systems" which were core courses in 2016-18 scheme will be offered as elective courses in the first semester.
    d. "PWM Converters and Applications", a core course offered in second semester is revised and offered as an elective course in the second semester with a new title "PWM Controlled Power Electronics Converters".
    e. Following New electives are introduced in first and second semester.
        i. 17EPE 114 MPPT in Solar Systems
        ii. 17EPE212Multi-Terminal DC Grids
        iii. 17EPE214 Hybrid Electric Vehicles
        iv. 17EPE 222Converters for Solar and Wind Power Systems
        v. 17EPE 224 Multilevel Converters for Industrial Applications

4. As per the new guidelines framed for all M.Tech courses Research Experience through Practice-I and Research Experience through Practice-II are introduced for 2 credits each in first and second semesters respectively.

   a. At the end of **Research Experience through Practice-I** in the first semester, PG students should be able to identify a research problem, with clear objectives and methodologies backed by extensive literature review. Department specific/PG Programme specific skill sets required for carrying out a research work may be offered to the students like software tools for system/device simulation and analysis, software/ hardware tools for signal acquisition, data processing, control simulation, Testing/measuring equipment used in research and Testing/measuring procedure. All the PG students may be asked to submit a research proposal and a presentation at the end of the first semester.
   b. **Research Experience through Practice-II (In the Second Semester):** In the second semester, the students are expected to carry out Mathematical modeling/Design calculations/computer simulations/Preliminary experimentation/testing of the research problems identified during **Research Experience through Practice-I** carried out in the first semester. At the end of the second semester, students are expected to write a full research paper based on the Mathematical modeling/ Design calculations/computer simulations/Preliminary experimentation/testing carried out during second semester.

5. Suggestions of BoS Members received in advance through email are deliberated for possible incorporation and syllabus is revised accordingly.
6. BoS approved 'Lab VIEW Basics' which was offered as an audit course in Second Semester in the academic year 2016-17 and the same is continued for the academic year 2017-18.

5. Department of Electronics & Communication Engineering - UG

Major Changes incorporated

1. Implementation of Choice Based Flexible Credit System (**CBFCS**) where two core subjects in every semester can be taken either in the Odd Semester or in the Even semester.
2. Proposal for New elective in place of Error Control Coding since it is part of Information Theory and Coding.
3. Any other modifications / suggestions to be incorporated as per the directions / advice of BoS members.

After detailed discussions / deliberations the following decisions were taken (For 2017-2020 batch onwards)

1) Project based Learning is proposed for the following subjects where the students are expected to come out with a project as one of the course outcomes.
   a. **III Semester** : Digital Electronic Circuits (**15EC304**)

b. **IV Semester** : Digital System Design using Verilog (**15EC406**)
c. **V Semester** : Linear Integrated Circuits and Applications (**15EC402**)
d. **VI Semester** : Computer Organization & Architecture (**New Course** in place of System Design Using Microprocessor/Microcontroller **14EC504**)

2) Project based Learning subject associated lab which is of 2 credits will be evaluated based on the project work (3 students per batch) carried out during the semester (50 marks) and the CIE for the lab (50 marks).
3) It was recommended to have simulation experiments in Digital Electronics Circuits Lab (**15EC307**).
4) In Analog Electronic Circuits (**15EC302**) it was suggested to go for MOS analysis instead of BJT. BJT to be dealt only in the first unit.
5) It was recommended to use NG-Spice for circuit simulations in Analog Electronic Circuits Lab (**15EC306**).
6) In Linear Integrated Circuits and applications (**15EC402**), as table and monostable operations may be included without using 555 timer.
7) Digital Signal Processing (**15EC501**) and Digital Signal Processing Lab (**14EC605**) will be shifted to IV semester.
8) Linear Integrated Circuits and Applications (**15EC402**) and Linear Integrated Circuits and Applications (**15EC407**) Lab will be shifted to V semester.
9) It is recommended to replace the subject System Design Using Microprocessor/Microcontroller (**14EC504**) with Computer Organization & Architecture with ARM Processor as a case study followed by ARM Lab.
10) Computer Organization & Architecture (New Course in place of **14EC504**) and ARM Lab (new course in place of **14EC505**) will be shifted to VI semester.
11) Embedded Systems (**15EC601**) will be shifted to VIII Semester.
12) Information Theory and Coding (**14EC801**) will be shifted to VI Semester.
13) Proposed modifications in syllabus for different subjects were approved (2017- 18 onwards).
14) The following new electives are proposed:
    a. Automation using Scripting Language
    b. Advanced VLSI Design & Verification
    c. PIC & ARM Microcontrollers
    d. Introduction to Sensors and Actuators
15) Choice Based Flexible Credit System
    a. Network Analysis (**15EC303**) and Control System(**15EC403**) can be offered under CBFCS in III/IV Semester.
    b. VLSI circuits (**15EC603**) and Information Theory and Coding (**14EC801**) can be offered under CBFCS in V/VI Semester.
    c. Embedded Systems (**15EC601**) and Computer Communication Networks (**14EC701**) can be offered under CBFCS in V/VI Semester.

The BoS decided on the Department offering the following subjects for the 2016-2020 batch :

III Semester

Sl No	Subject Title
1	Vector Calculus and Transform Techniques
2	Network Analysis/ Control Systems
3	Analog Electronic Circuits
4	Digital Electronic Circuits
5	Signals and Systems
6	Analog Electronic Circuits Lab
7	Digital Electronic Circuits Lab
8	Enhancing Self Competence

IV Semester

Sl No	Subject Title
1	Probability Theory and Numerical Methods
2	Control Systems /Network Analysis
3	Analog Communication
4	Digital Signal Processing
5	Digital System Design using Verilog
6	Electromagnetic Theory
7	Digital Signal Processing Lab
8	Digital System Design Lab

V Semester

Sl No	Subject Title
1	Information Theory and Coding/ VLSI
2	Digital Communication
3	Linear Integrated Circuits and Applications
4	Transmission Lines and Waveguides
5	Elective I/II
6	Basic Communication Lab
7	Linear Integrated Circuits and Applications Lab
8	Immersive Group Workshop
9	Employability Skill Development

VI Semester

Sl No	Subject Title
1	VLSI/ Information Theory and Coding
2	Antennas & Wave Propagation
3	Computer Organization and Architecture
4	Microwave Devices and Communication
5	Elective I/II
6	Open Elective
7	Advanced Communication Lab
8	ARM Processor Lab

VII Semester

Sl No	Subject Title
1	Computer Communication Networks/ Embedded Systems
2	Power Electronics
3	Wireless Communication
4	Elective I/II
5	Elective I/II
6	VLSI Lab
7	Seminar
8	Project

VIII Semester

Sl No	Subject Title
1	Computer Communication Networks/ Embedded Systems
2	Elective I/II
3	Elective I/II
4	Power Electronics Lab
5	Project

List of Electives:	
ELECTIVE I	***ELECTIVE II***
1. Object Oriented Programming using C++ 2. Fiber Optics 3. Modern Radar and Navigational aids 4. Embedded Linux 5. Computer Operating Systems 6. Automation using Scripting Language 7. Machine Learning and its Applications 8. Biomedical Instrumentation 9. Spread Spectrum Communication 10. Image Processing 11. Cryptography 12. PIC & ARM Microcontroller 13. Automotive Electronics 14. Low Power VLSI 15. Advanced VLSI Design & Verification 16. Multimedia Communication 17. Speech Processing 18. Real Time Operating Systems 19. Adhoc and Sensor Networks 20. Cognitive Radio	1. DSP Processors and Architecture 2. Project Management 3. Consumer Electronics 4. Fuzzy Logic 5. Advanced Signal Processing 6. Database Management Systems 7. RF Circuit Design 8. Satellite Communication Systems 9. Pattern Recognition 10. Data Structures using C++ 11. Artificial Intelligence 12. Introduction to Sensors and Actuators 13. Object Oriented Programming in Java 14. Analog and Mixed Mode VLSI Design 15. High Performance Communication Networks 16. Biomedical Signal Processing 17. Optical Computing 18. Finance Management 19. Big Data Analytics 20. Optical Communication and Networks

NOTE:

1. Non-Technical Open Elective can be opted from Semester V to Semester VIII.
2. Students may opt for department elective only if pre-requisite is met.

Department of Electronics & Communication Engineering - PG

1) M.Tech. in Digital Electronics& Communication:-

Major Changes incorporated

1. Deliberations 1, 2 and 3 made by the BoS on 21-05-2016 for the 2017 batch cannot be implemented because of the Uniform Scheme to be adopted at the Institution Level.
2. BoS members have suggested the following core subjects for the 2017-18 batch.
3. Core Subjects – Semester 1

1. 17DEC101- Embedded System Design
2. 17DEC102- Statistical Signal Processing
3. 17DEC103- Advanced Digital Communication

4. Core Subjects – Semester 2

1. 17DEC201- Error Control Coding
2. 17DEC202- RF and Microwave Circuit Design
3. 17DEC203- Advanced Wireless Communication

5. Advanced Embedded Systems(16DEC101) has been renamed as Embedded System Design (17DEC101)
6. Advanced Signal Processing (16DEC102) is renamed as Statistical Signal Processing (17DEC102).
7. Advances in VLSI design (16DEC201) is to be removed from II Semester core subject list. In place of which Error Control Coding (17DEC201) is made a core subject in Semester II.
8. Multirate Systems and Filter banks (16DEC202) has been shifted to Elective IV. In place of which RF and Microwave Circuit Design (17DEC202) is made a core subject in Semester II.
9. In Statistical Signal Processing, Unit I is made 10 Hrs. Unit IV is made 12 Hrs.
10. In Advanced Digital Communication, Unit II can be replaced with Advanced Modulation Schemes.
11. Application lab (DEC104) experiments are to be added in the corresponding core courses.
12. BoS members have suggested the following Elective subjects for the 2017-18 batch
13. Elective I list

1. 17DEC111- Advanced Computer Architecture
2. 17DEC112- Linear Algebra
3. 17DEC113- Optical Communication and Networking
4. 17DEC114- Speech and Audio Processing

14. Elective II list

1. 17DEC121- Cryptographic Systems
2. 17DEC122- Detection and Estimation
3. 17DEC123- Digital Signal Compression
4. 17DEC124- Unified Communication

15. Elective III list

1. 17DEC211-Spread Spectrum Communication
2. 17DEC212-Image and Video Processing
3. 17DEC213-Pattern and Voice Recognition
4. 17DEC214- Cloud Computing

16. Elective IV list

1. 17DEC221-Multirate Systems and Filter Bank
2. 17DEC222-MIMO Systems
3. 17DEC223-Software Defined Radio
4. 17DEC224- Wireless and Mobile Networks

17. Synthesis and Optimization of Digital Circuits(16DEC111) to be removed from Elective I list of Semester I in place of which Advanced Computer Architecture has been shifted to Elective I from Elective III

18. Cryptographic systems is to be shifted to Elective II from Elective IV
19. Mixed Signal VLSI design (16DEC122) is to be removed from I Semester Elective II in place of which Detection and Estimation is shifted to Elective II from Elective IV. In place of Detection and Estimation, MIMO Systems has been introduced in Elective IV.
20. Unified communication is introduced in Elective II in place of RF and microwave circuit design which is now a core subject Semester II.
21. Spread Spectrum communication is introduced in Elective III in place of Advanced Computer Architecture
22. Cloud computing is introduced in Elective III in place of Wireless and ATM Networks.
23. Software Defined Radio is introduced in Elective IV in place of Error Control Coding.
24. VLSI System and Architecture (16DEC224)to be removed from Elective IV in place of which Wireless and Mobile Networks has been shifted to Elective IV from Elective III.
25. Wireless and ATM Networks has been renamed as Wireless and Mobile Networks.
26. Modifications in the syllabus proposed for "Embedded System Design", "Statistical Signal Processing", "Error Control Coding", and "Multirate Systems and Filter Bank" were approved.
27. BoS suggested that syllabus has to be framed for Unified Communication (17DEC124), Spread Spectrum Communication (17DEC211), Cloud Computing (17DEC214), MIMO Systems (17DEC222), Software Defined Radio (17DEC223) and reframed for Advanced Computer Architecture (17DEC111), Multirate Systems and Filter Bank (17DEC221), Image and Video Processing (17DEC212), Pattern and Voice Recognition (17DEC213) and Wireless and Mobile Networks(17DEC224).

Observations made by BoS:

- Having lab component along with theory subjects is not appreciated and retaining of application lab is recommended. However if Research Experience through Practice Part I and II are to be included, then the number of credits has to be increased.
- Having lab components in theory may lead to the following difficulties
    - Evaluation of the student on lab component for 10 marks would lead to no scope for the conduction of tasks for theory concepts
    - Also evaluation of the lab concepts for only 10 marks would be inappropriate.
    - As the conduction of task has been completely shifted to lab component from theory, the concept of Continuous Internal Evaluation remains incomplete.
- Thus the BoS has strongly recommended to have separate evaluation for theory and lab.

M.Tech. in Digital Electronics& Communication

List of subjects for 2017-18 Batch

I Semester

Core Subjects:

1. 17DEC101- Embedded System Design
2. 17DEC102- Statistical Signal Processing
3. 17DEC103- Advanced Digital Communication

Elective Subjects:

Elective I:

1. 17DEC111- Advanced Computer Architecture
2. 17DEC112- Linear Algebra
3. 17DEC113- Optical Communication and Networking
4. 17DEC114- Speech and Audio Processing

Elective II:

1. 17DEC121- Cryptographic Systems
2. 17DEC122- Detection and Estimation
3. 17DEC123- Digital Signal Compression
4. 17DEC124- Unified Communication

II Semester

Core Subject:

1. 17DEC201- Error Control Coding
2. 17DEC202- RF and Microwave Circuit Design
3. 17DEC203- Advanced Wireless Communication

Elective Subjects:

Elective III:

1. 17DEC211-Spread Spectrum Communication
2. 17DEC212-Image and Video Processing
3. 17DEC213-Pattern and Voice Recognition
4. 17DEC214- Cloud Computing

Elective IV:

1. 17DEC121- Cryptographic Systems
2. 17DEC122- Detection and Estimation
3. 17DEC123- Digital Signal Compression
4. 17DEC124- Unified Communication

III Semester

17DEC301	Industrial Training / Mini-Project
17DEC302	Seminar on special topics
17DEC303	Project-part I

IV Semester

17DEC401	Project –part II *PPE - I PPE - II PPE - III Report Submission, Evaluation & Viva-voce

2) M.Tech. in VLSI Design and Embedded Systems:-

After detailed discussions/ deliberations the following decisions were taken to be implemented for 2017 Batch:

1. The Ratification taken on Project Part II in the BoS of 2015-2016 stands cancelled because of uniform institutional policy and the institutional scheme to be followed.
2. Application Lab is replaced by Research Experience through Practice and the labs are now integrated labs due to uniform institutional policy.
3. Few of the suggested courses for 2017 batch have been incorporated.
4. Unit scheme cannot be abolished because of uniform institutional policy.
5. Evaluation is conducted with full autonomy. Course outcome for every course is reduced to 5.
6. If the course has an integrated lab then the evaluation pattern to be considered is :
    - Two MSE of 30 marks each reduced to 15 marks.
    - Lab CIE of 20 Marks.
    - The student has to score a total minimum of 20 marks in MSE and Lab CIE to be eligible to write the SEE.
7. Change in title of the subject Advanced Embedded Systems (AES) **(16VDE101)** to Embedded System Design (ESD) **(17VDE101)** was approved.
8. It was proposed that the subject Embedded System Design **(17VDE101)** will have 4 Lecture hours and 2 hours of lab component, no self study component to be included.
9. The syllabus for Embedded System Design **(17VDE101)** was approved.
10. Change in title of the subject Modeling of Digital Systems using VHDL **(16VDE111)** to Modeling of Digital Systems using HDL **(17VDE111)** was suggested**.**

11. BoS suggested modifications in Advances in VLSI Design **(17VDE201).** It was proposed that the subject will have 4 Lecture hours and 2 hours of lab component, no self study component to be included.
12. Title of the subject Design of Analog and Mixed mode VLSI circuits **(16VDE202)** to Design of Analog VLSI circuits **(17VDE202)** was approved. BoS suggested modifications in the syllabus.
13. The syllabus for RTOS was approved and it was proposed that the subject will have an Integrated Lab with 4 Lecture hours and 2 hours of Lab.
14. BoS suggested replacing Advanced Microcontroller **(16VDE211)** with Advanced Computer Architecture **(17VDE211)** since MSP430 under Advanced Microcontroller is now being taught under UG Curriculum.
15. The syllabus for Low Power VLSI Design **(17VDE213)** was approved.
16. The syllabus for System Design using Embedded Processors **(17VDE221)** was approved.
17. The subject ASIC Design is to be introduced under Elective I **(17VDE114).**
18. The subject Synthesis and Optimization of Digital Circuits is to be introduced under Elective II **(17VDE124).**
19. The subject Nanotechnology is to be introduced under Elective III **(17VDE214).**
20. The subject CMOS RF Circuit Design is to be introduced under Elective IV **(17VDE224).**
21. The panel of examiners was approved by the BoS.

6. DEPARTMENT OF INFORMATION SCIENCE & ENGINEERING - UG

- For the AY 2014-2018, following are the modifications

  - VII Semester

    1) Software Testing (3 Credits) is replaced by Information and Network Security (4 Credits)

    2) Business Intelligence and its Applications (3 credits) is moved to elective and it is replaced by Advanced Computer Architecture (4 credits)

    3) Business Intelligence Lab (1 credit) is removed.

    4) Seminar + Technical paper title is modified as Seminar

    5) Due to the removal of L-T-P format from this batch, Compiler Design lab is separated from its theory

    6) New set of Electives are added like Human Computer Interaction, Machine Learning and Software Defined Networks.

- Following are the suggestions proposed by BOS members

  1) In the coming batches an attempt should be made to replace Advanced Computer Architecture with parallel computing and programming

  2) Advanced Computer Architecture title should be renamed as computer architecture.

  3) Multicore Architecture can be offered as an elective in 8 sem.

  4) 2015-19 or 2016-20 can have computer architecture in 3rd year and Multicore in 7th sem.

  5)Mention the Prerequisites with electives.
  6)Machine Learning with R title can be modified as Machine Learning.
  7)Human Computer Interaction and Software Defined Networks groups can be interchanged.

- VIII Semester
  1) Information Security (4 credits) is replaced by Big Data and Analytics(4 credits)
  2) New Electives like Operation Research, Cyber Security and Cyber Laws, Intrusion Detection system is introduced
  3) Major Project Phase II credit is reduced to 9 credits.
- Following are the suggestions proposed by BOS members

  1) Operation Research can be renamed as System Dynamics

  2) In the coming batches, Operation Research should be offered before Machine Learning.

  3) Real Time Systems (Suggested Author Rajib Mall) need to be offered as an elective and it should be made as pre requisite for Embedded Real Time Systems (Suggested Author Shantanu Chattopadyay)

  4) Real Time Systems can be offered in 6th sem.

  5) Due to an overlap of syllabus content of Cyber Security and Cyber Laws and Intrusion Detection System, BOS members suggested the two subjects to be merged into a single subject.

  6) In Cyber Security and Cyber laws, topics related to cyber laws can be reduced.

  7) In Supply Chain Management and Enterprise Resource Planning, topics related to Supply chain management can be removed and subject title can be re-framed as Enterprise Resource Planning.

- For the AY 2015-2019, following are the modifications
  - V Semester
    1) Database and Java Lab are combined to one single lab.
    2) Program Verification, Unix System Programming, Client Server Computing and Operations Research are the new set of electives introduced for 5th semester.

- Following are the suggestions proposed by BOS members
  1) There should be co-relation of DBMS and JAVA lab programs.

  2) External members suggested to have a briefing of Nosql, Mongo DB content in the last unit of Relational Database Management System.

  3) External members suggested to have a lab for Operating System.

  4) Object Oriented Modeling and Design contents should start from SDLC and UML.

  5) Mention pre requisite for electives.

  6) Software Architecture elective should be moved to 7th semester

VI semester.

  1) Software Testing is moved to elective.
  2) Artificial Intelligence is introduced instead of software Testing.
  3) Web Technology, Software Project Management, Fundamentals of Image Processing are the new electives introduced for VI Semester.
  4) Subject Level changes in Software testing was done.
- Following are the suggestions proposed by BOS members
  1) Artificial Intelligence syllabus should be fine tuned to avoid overlapping of Machine Learning Concepts.
  2) Rajib Mall book can be referred for Software Project Management subject.
  3) Real Time Systems can be introduced as an elective.
- VII Semester
  1) Total number of hours for Compiler Design Lab is increased from 2 hours to 4 Hours, to make it a project based learning course.

- For the AY 2016-2020(Choice Based Credit System), following are the modifications
  - III Semester
    1) As a part of choice based credit system, flip subjects are offered between III and IV Semester.
    2) Programming with C++ can be offered as crash course in the beginning of the semester.
    3) Programming with C++ is replaced by Java Programming (4 Credits).
    4) Digital Design Theory and Lab is moved to IV Semester.
    5) Software Engineering (3 Credits) is moved from IV Semester to III Semester in place of Digital Design.
    6) Computer Organization in III Semester and Data Communication in IV Semester are offered as flip subjects.
    7) Discrete Mathematical Structures Credits is changed to 3 credits.
  - Following are the suggestions proposed by BOS members
    1) Programming with C++ should be retained.
    2) Java can be taken up in later semesters.
    3) Software Engineering syllabus can be modified such that SDLC and later topics can be taken up in OOMD . Refer book Fundamentals of Software Engineering by Rajib Mall.

    4) Applications of Discrete Mathematical Structures must be included at the end of each topic.

- IV Semester

  1) UNIX and Shell programming Theory is moved to V Semester.
  2) UNIX Lab is removed.
  3) Digital Design Theory and Lab is introduced in place of UNIX Theory and Lab.
  4) Object Oriented Modeling and Design is introduced instead of Software Engineering.
  5) Probability Theory and Numerical Methods title is renamed as "Linear Algebra and Probability Theory"
  6) The units IV&V dealing with numerical methods of the subject, are replaced by some topics of Linear Algebra like matrix, vector space and linear transformation. These will be units I & II of revised syllabus. Sampling Theory is shifted from unit II to unit V, Curve fitting is included in unit IV and units I, II & III will be units III, IV&V of revised syllabus. The teaching hours for all units are redistributed accordingly.
  7) Data Communication is offered as flip subject.

- V^{th} semester

  1) Number of department electives that will be taken by students
     5th semester – 1 elective
     6th semester – 1 elective
     7th semester – 2 electives
     8th semester – 2 electives

  2) Global Elective or department elective during 5th to 8th semester.
  3) List of Global Electives
     Introduction to Yoga
     Physical Education Principles
     Overview of Indian culture and arts
     Foreign Language Learning
     Entrepreneurship courses
     Mooc courses

  4) Operating System and Data Mining are offered as flip subjects for V^{th} and VI^{th} Semester

- Following are the ssuggestions proposed by BOS members

  1) Java can be retained in V^{th} semester.

  2) Operation Research should be moved to elective.

  3) Multicast communication should be removed.

  4) Computer Aarchitecture subject can be introduced in 5^{th} or 6^{th} sem, which can be given as a base for Advanced Computer Architecture.

  5) Multicore programming can be made core with lab.

  6) Node JS and Angular JS topics can be included in web programming subject.

- Best Practices like paperless labs, challenging programs, Github account were discussed which can be implemented for students.
- UG- panel of examiners was approved by BOS members

DEPARTMENT OF INFORMATION SCIENCE & ENGINEERING – PG

M.Tech. in Computer Networking

- Enhancing Self Competence (ESC), IGW and Audit courses were the new additions to the current 2016-18 batch, which is approved by BOS members.
- BOS External suggested that LaTeX tool learning should be made compulsory in Research experience through practice-1 (17CNE104).
- BOS members recommended Probability Statistics and Queuing Theory (17CNE111) is more relevant course in PG so it should be converted into core subject instead of elective.
- Case studies should be added to the syllabus of Artificial Intelligence (17CNE116) and Multi-Core Architecture and Programming (17CNE126).
- BOS external members feel Network management 17CNE113) subject can be removed since no proper updated textbook is available.
- BOS External member suggested the addition of two new electives to the syllabus namely, "Software Defined Networking" and "Network Algorithmics" by George Varghese, M.K. publishers.
- For the subjects like Advanced Computer Networks and Web Technologies textbook called high performance browser networking by Ilya Grigorik can be introduced.
- BOS members specified renaming of courses like Machine learning (17CNE216) as Applications of Machine learning and Topics in Analysis of Network (17CNE214) as Analysis of Computer Networks.
- In labs more weightage can be given to the assignments and mini projects so that students can learn new things and get placed in good companies.
- Students should be given some inputs on github.

7. DEPARTMENT MECHANICAL ENGINEERING - UG
Scheme 2014

Course/ Course code	Proposed Changes in the syllabus	Remarks/Status
Plastic Part Design & Manufacturing: 14ME728	A new elective on "Introduction of Product Development Process/Skill Development" of KH Designs is planned to be introduced.	**Approved**
IC Engines-	Introduction to Thermodynamic analysis of S.I. Engine combustion is to be	

14ME721	removed in Unit-I and number of hours to be reduced. In Unit-II, Introduction to Thermodynamic Analysis of C.I. Engine combustion to be removed and number of hours to be reduced. Evolution and implementation of **Bharath Stage norms** is to be added in Unit-III and number of hours to be increased. **Bio-diesel** to be added in Unit-IV and hours to be increased. In Unit-V, Stratified charge Engines to be removed and Fuel Cells working, properties, Merits and demerits to be added. Introduction to **Electric drives, hybrids**, Hartridge smoke meter and Future of IC Engines are to be added.	**Approved**
Industrial Robotics-14ME703	In Unit-I, **Introduction to Drones** to be added. In Unit IV, Robot sensors topic is to be removed as the student's study the same under Mechatronics course. Active learning of robot configuration to be added in Unit-I. In Unit-II, Active learning of 3D Transformations and direct kinematics for 3R robot to be added.	In Unit IV, Chapter title to be changed to Machine Vision. In Unit-V, VAL programming language, example, AML and VAL-II to be removed and hands-on robot programming is to be added. Teaching hours has been increased to 5 (3+0+2+0) to balance the total teaching hours. Reference text book for newly added syllabus should be given. **Approved.**
Mechatronics-14ME704		Introduction to IoT (Internet of Things) was suggested to be added to Mechatronics in Unit-V. It was also suggested to add references.
Computer Integrated Manufacturing-14ME723	The entire syllabus has been reframed and an Industrial Visit to automated production lines is to be arranged.	**Approved.**
Heat transfer-14ME801		It was suggested to make it 3+2=5 hours/week.

Human Resource Management-14ME718		It was suggested that the subject can be a departmental elective as well as an open elective.
Operations Management & Entrepreneurship (Open elective) - 14ME8X 28	In Unit-III, Control Charts For Attributes to be removed and Reliability And Life Testing to be added.	**Approved**
Industrial Pollution Control-14ME 8X 08 (Open elective)	In Unit-III Principal of working of thermal power station is to be added. In UNIT-IV Coal firing- Under feed and overfeed stocker to be removed. In UNIT-V problems associated with nuclear reactors to be added.	**Approved**

Scheme 2015

Course/ Course code	Proposed Changes in the syllabus	Status/Remarks
Design for manufacturing-15ME613		It was suggested to change the subject title to **"Design for Manufacturing and assembly",** and to be shifted from 7th semester to 6th semester.
Design of Thermal Systems-15ME616		BOS member Dr. Raviraj Suggested to give detailed syllabus, reference books and text books of Design of thermal systems.
Metrology & measurements-15ME504	In Unit II, advances in metrology is to be added	**Approved.**
Industrial Management and Entrepreneurship-15ME505	Topics on Introduction to Labor laws to be added in Unit-V.	**Approved.**
Metrology & Measurements Lab-15ME507	PART C: Allied measurements has to be added	It was suggested that Part-A can involve Metrology, Part-B can be Mechanical Measurements and Part-C can be Allied Measurements (Demonstration)

		Approved.
Statistical Quality Control-15ME513	Title to be changed to **"Total Quality Management".** ISO-9000, ISO-14000, ISO-18000 series of standards to be added in Unit-I. The chapter on Reliability And Life Testing to be shifted to Operations Management & Entrepreneurship(Open Elective in 8th semester) and a chapter on Design of Experiments is to be added in Unit-V.	However, in Unit V, the design of experiments title was suggested to be changed to **"Introduction to Design of Experiments".** **Approved.**
Computer Aided Design (CAD) (Product Design and Development) Tool: UG NX-15ME516	Introduction of Product Development Process/Skill Development of KH Designs 5th through 7th semester	**Approved.**
Material Selection for Engineering Design -15ME512	In Unit-I, statistical and reliability aspects to be removed and analysis of technical systems, case study and the causes of failure in service to be added. In Unit-II, effects of structure on material properties and Evolution of microstructure change in steel products to be added. In Unit-III, performance based design to be removed. In Unit-IV, topics on assembly, cost to be removed and selection charts, taxonomy of the process kingdom and effect of casting on properties to be added. In Unit-V, Hybrid design to be removed and introduction to hybrids and types to be added.	**Approved.**
Design of Machine Elements-II - 15ME602	In Unit-I, the chapter on "Cylinders and Cylinder heads" and the topic on	**Approved.**

	lever design are to be removed. In Unit-III, numerical problems on single plate clutches and single shoe block brakes are to be removed. In Units I,III and V, the number of teaching hours is to be reduced.	
15ME62X series	2 new electives to be offered namely, **Introduction to Piping Engineering** and **"Skill development in Welding Technology**.	"Skill development in Welding Technology" title to be changed to "**Welding Technology**". It was also suggested that in Unit-V, the chapter title be changed to **Developments and Applications in Welding Technology**. **Approved.**
CAD/CAM - 15ME604	Proposed to add **Introduction to Virtual reality** in Unit-I.	It was suggested to add references to the topic. **Approved.**
Automotive Engineering-15ME603	Syllabus is to be updated to meet the industry needs. There was a proposal to include Automotive lab in Automotive Engg. Course.	The contact hours for the subject to be increased to 5 hours/week. (3+0+2+0) Suggested to give more reference books and text books. It was suggested to shift Automotive Engg from 6th semester to 7th semester for 2016 scheme, and the new course code will be 16ME701. **Approved.**
Product Design & Development-15ME619	Introduction of Product Development Process/Skill Development of KH Designs 5th through 7th semester	**Approved.**

Scheme 2016

Course/Course code	Proposed Changes in the syllabus	Status/Remarks

Material Science & Metallurgy: 16ME302 Mechanics of Materials: 16ME305 Kinematics of Machines with project based learning.: 16ME402 Fluid Mechanics: 16ME405	To give better choice based elective system to the students, Choice based courses are proposed and the students have to select any two of the four in the III and IV semester.	**Approved.**
Material Science and Metallurgy - 16ME302	The syllabus has been reframed such that three credit courses have only 3 units (instead of 5 units).	**Approved.**
Basic thermodynamics-16ME303	The syllabus has been reframed such that three credit courses have only 3 units (instead of 5 units). Unit-II has to be merged with Unit-I. The chapter on Second law of thermodynamics and entropy which were in Units-III, IV is to be shifted to Unit-II. Pure substances from Unit-IV and Ideal and real gas mixtures from Unit-V have to be merged in Unit-III. Introductory topics of Psychrometry have to be shifted from Basic Thermodynamics to Applied Thermodynamics.	Suggested to change to 4 hours/week (2+2+0+0) and total hours to be changed to 52 hours. **Approved.**
Manufacturing Processes-I: 16ME304	The syllabus has to be reframed such that three credit courses have only 3 units (instead of 5 units). In UNIT-II, the topic **Introduction to 3D-printing** has to be added. Self-learning components are added for Units 1 and 3.	Suggested that the evaluation of the Self learning components to be done in tasks. Suggested to give more reference books and text books for newly added syllabus. **Approved.**
Computer Aided Machine Drawing - 16ME306	The syllabus has been reframed such that three credit courses have only 3 units (instead of 5 units). Topics of units-III, IV is to be merged with Unit-II. Unit-V becomes unit-III.	**Approved.**

Foundry, Forging and Welding shop - 16ME309	A compulsory industrial visit to be arranged to one of the foundries.	Dr. C.R. Rajashekhar suggested that the students need to submit a report on the industrial visit. "Conduction and preparation" word to be changed to "**Demonstration of the following tests**". **Approved.**
Enhancing Self Competence - 16HU311	Number of contact hours for "Enhancing Self Competence" subject is to be increased from 2 to 3	**Approved.**
Kinematics of Machines - 16ME402	Project based learning is added. Student teams will do and demonstrate at least one of the mechanism models.	**Approved.**
Applied Thermodynamics - 16ME403	Unit-I and Unit-II has to be merged. Unit-III and Unit-V are merged. Introductory topics of Psychrometry has to be added.	**Approved.**
Engineering Economics - 16ME406	The syllabus has to be reframed such that three credit courses have only 3 units (instead of 5 units).	**Approved.**
Machine Shop - 16ME408	An exercise on surface grinding operation is to be added. The models should be preserved to be used in Metrology & Measurements Lab 16ME507.	**Approved.**
Fluid Machinery - 16ME501		Suggested to change the subject title to **Turbo Machines**.
Dynamics of Machines - 16ME503		Suggested to change the subject title to **Dynamics of Machines** from Dynamics of Machinery (15ME503)
Fluid Mechanics and Machinery Lab- 16ME506		Suggested to change the subject title to **Fluid Mechanics and Machinery lab** from Fluid Machinery lab (15ME506)
Metrology & Measurements Lab - 16ME507	Machine shop models should be preserved to be used in Metrology & Measurements Lab.	**Approved.**
Finite Element Methods - 16ME603		It was suggested by BOS board members to make FEM as a core subject in place of Automotive Engg in 6th semester. Syllabus of FEM has to be reframed such that it is relevant to thermal and thermo-structural

		aspects. Credits were suggested to change to 4. The new code will be 16ME603. Dr. C R Rajashekhar suggested that FEM can also be given as an open elective to other branches and for the branch it can be made as a regular subject.
CNC and Robotics lab - 16ME606		It was suggested to change the title to **CNC lab**.
		It was suggested that Active Learning and Robotics lab is to be added for 2016-20 batch.in 8th sem
Global elective		It was suggested to check the possibilities of involving Management faculty to teach some relevant subjects that can be offered as a global elective.
Power Plant Engineering		It was suggested to make it as an elective in 6th semester and the syllabus to be reframed to 3 units, with 3 Course credits.
Mechanical Vibrations - 16ME702	Dynamics Lab (15ME707) will be merged with Mechanical vibrations.	**Approved.**
Heat Transfer Lab - 16ME707		Heat transfer lab is included in 7th semester
Renewable sources of energy-16ME51X		One of the board members suggested including electives from thermal stream in Vth semester. So Renewable sources of energy has been shifted to Vth sem elective group for 2016 batch.
Introduction to Aircraft Design - 16ME61X	Proposed to revert back to the old syllabus from the current syllabus.	**Approved**
Operations Research-15ME601		It was suggested to shift Operations Research from 6th semester to 8th semester and the new code will be 16ME801 and Heat Transfer is to be shifted from 8th semester to 6th semester. The new code for Heat transfer is 16ME601.

Open Elective-16ME6XX	Open Elective has to be shifted to 6th sem from 8th sem	**Approved**
Global Elective	Students have to take one more additional elective either from set of "nontechnical open elective" or "department elective" during 5 th to 8 th semester.as decided on MoM dated 31st March 2017 by Dean-Academics	**Approved**
Heat Transfer Lab - 16ME802		It was suggested to shift to 7th semester and the new code will be 16ME707

Scheme 2017

Course/Course code	Proposed Changes in the syllabus	Status/Remarks
EME-17ME104	In UNIT-II, the chapter on I.C. engines, - I.C. Engines parts, 2 stroke and 4 stroke Petrol engines, 4 stroke diesel engines to be removed and Introduction to electric vehicles to be added. Unit III is shifted to last and made Unit 5.	2 stroke and 4 stroke diesel engine, four stroke petrol engine to be retained. Two stroke petrol engines to be removed. Demonstration of Machine tools in ESD lab can be done at the end which will go along with theory classes BoS members suggested the topic on introduction to Bharat stage emission norms to be added. **Approved**
ESD LAB-17ME106	In Part B, Demonstration of hand operated power tools and Demonstration of Robot to be added.	**Approved**
		It was also suggested by Dr. Raviraj Adhikari that some concepts of Civil engineering (like the basic concepts of surveying and material testing) could be added in the course on Elements of Civil Engineering.

DEPARTMENT MECHANICAL ENGINEERING – PG

1) M.Tech in Energy Systems Engineering:-

Changes incorporated:

1. **17ESE102: - Applied numerical analysis** title has been changed as **Applied Mathematics**– Unit IV and Unit V have been modified with a focus on applications.
2. **17 ESE 223:** The title of subject has been changed from **POLLUTION CONTROL FROM THERMAL POWER STATIONS' to 'POLLUTION CONTROL IN THERMAL POWER STATIONS'. Also,** thefourth course outcome 'The student should be knowledgeable about some pollution control acts and legal aspects associated with pollution control' has been changed to 'Students should be able to read, analyze and interpret latest research information on various types of pollution'.

   10 marks questions have been decided to be asked from research papers in SEE wherein a research book containing various papers will be given to students and they have to answer appropriately finding answer from the book (open book), thus the book serves as data base, however this is possible with prior permission of the controller of examinations.
3. **17ESE 203: ENERGY SYSTEM MODELING AND ANALYSIS course:** The following topics **have been removed**: **"**Thermodynamic Properties-Need for mathematical modeling, Criteria or fidelity of representation, Linear regression analysis, Internal energy and enthalpy, Pressure temperature relationship at saturated `conditions, Specific heat, P- V- T equations,

   Overview of various technologies and conventional methods of energy conversion, Power cycles' **and replaced with** 'Recent Research work on application of dynamic programming, Lagrange multiplier method, LPP, geometric programming and Fibonacci search method".

   This is to give more impetus to the study of field application of various methods of simulation and optimization of design, study of research papers has been included in the fifth unit.
4. **17ESE 123: ADVANCED I.C ENGINES Course**: The topics 'Ideal air standard Otto, Diesel and dual combustion cycles' has been modified as 'Brief review of Ideal air standard cycles & their comparison' in order to keep the topic brief. The topic "Alternative Fuels for Combustion Engines" has been moved from Unit III to Unit V for proper matching of topics. The topic "Exhaust emission" is removed from Unit V as it is already present in Unit IV.

5. **17ESE 201: UTILIZATION OF SOLAR ENERGY:**The topic on Photovoltaics**has been removed** as it has already been present in the course "Alternative Energy Systems 17ESE101".
6. **17ESE212: ENERGY STORAGE:** Topics from Unit I 'Testing of storage systems, Thermal modeling of energy storage systems, Total energy systems' **have been replaced** with topics like "Electrical energy characteristic's and basic load calculations, Performance characteristics of energy storage systems, &Types of load curves". **This is in order to have basic ideas of electrical quantity and understand load graphs.**
7. **17ESE 214:ELECTRICAL DRIVES**course **is replaced** as 17ESE 217 AC & DC Drives
8. Alternative fuels laboratory (16ESE104) of 2 credits **is removed** from first semester M-Tech syllabus and "Research Experience Through Practice-I (17 ESE104)" with 2 credits **is included** in the **first semester**with CIE 50 & SEE50 marks
9. Energy Systems Modeling &Analysis Laboratory (16ESE204) with 2 credits**is removed** and "Research Experience Through practice-I (17ESE 204)" with 2 credits **is included** in **second semester**with CIE 50 & SEE 50 marks
10. **17ESE104:** The Laboratory experiments in "Alternative Fuels Laboratory(16ESE104)"**is to be included** as active Learning component in the "Alternative Energy Systems& Combustion Engineering" courses and Laboratory experiments in "Energy Systems modeling & Analysis Laboratory" should be included as the active Learning Component in the "Utilization of Solar Energy(17ESE201), Energy Conservationand Management (17ESE202)&Energy SystemModeling and Analysis(17ESE203)" Courses.
11. CFD Fluent laboratory experiments & MATLAB will be introduced as active Learning component under "Energy System Modeling and Analysis course(17ESE203)".
12. Six Continuous Internal Evaluation (CIE) tests out of which four are considered for evaluation (CIE test each of 20marks) which was followed in 2016-2017 batch has been discontinued from 2017-2018 and only two mid semester examinations- MSE-I and MSE-II (Each of 20Marks) as used to be the earlier practice have been reintroduced from the academic year 2017-2018 to give more emphasis on research based learning in PG program. The CIE assessment is proposed to be discontinued due to its ineffectiveness based on feedback given by students and faculty members.
13. In the third Semester M-Tech, Industrial Training/Mini Project (16ESE301) of 8 weeks duration with a total credit of 6 is changed to 8 credits. In Project Part-I, the total number of weeks is increased to 10 weeks from the present 8 weeks.

14. In the fourth semester M-tech, three project progress evaluation (PPE-I, PPE-II, and PPE-III (17ESE401) is reduced to 2 project progress evaluations (PPE-I and PPE-II) for 100 marks each with a total of 20 weeks' duration in the fourth semester due to difficulty in conducting three project progress evaluation in five months.
15. Fast learners have opportunities to enroll for Audit course 17AP007 - Acoustic emission science and its applications.
16. The Audit course offered during 2016-17 "Enhancing self competence-16AP008" is discontinued.
17. It was felt by the BOS members that if the students do the industrial projects through MoU with industries/research organizations/professional bodies then there is greater chance of employability for the PG students.
18. The Industry representatives of the BOS committee suggested having "optimization techniques" in the programme, which is already in place.
19. The BoS committee suggested encouraging the PG students to take up Energy Auditor/Energy Manager certification examination through BEE, Government of India.

2) M.Tech in Machine Design:-

Changes incorporated:

1. Dynamics laboratory (16MMD104) and Seminar (16MMD105) each of 1 credit was removed from first semester M-Tech syllabus and Research experience through practice-I (17MMD104) with 2 credits was included in the **first semester** with CIE-100 marks
2. Advanced Modeling, Analysis and Simulation Laboratory (16MMD204) with 1 credit and Research Experience through practice (16MMD205) with 1 credit and CIE-10 marks, SEE-40 marks were removed and Research Experience through practice-II(17MMD204) with 2 credits was included in **second semester** with CIE-100 marks.
3. The Laboratory experiments in "Dynamics laboratory" (16MMD104) is to be included as active Learning component in the "Theory of Vibrations" course and Laboratory experiments in "Advanced Modeling, Analysis and Simulation Laboratory" should be included as the active Learning Component in the "Finite Element Methods" Course
4. Active learning Experiments was included in Mechatronics System Design (17MMD123) syllabus in Unit- 1, 2, 3 and 5.

5. Inclusion of Active learning lab Experiments in Robotics (17MMD223) in Unit- 1, 2, and 3 syllabus
6. **Change in syllabus of Robotics (17MMD223).** Newton-Euler formulations from has been removed from UNIT-IV (Robot dynamics) and Force Control Strategies, Hybrid Force-Position Control Strategies, Impedance Force Torque Control Strategies from UNIT-V (Robot Trajectory Planning and Control) has been removed. More case studies are added on Legrange-Euler Formulations like **derivation of dynamic equation of motion for different 2DOF and 3DOF robot configurations.**
7. Audit course "Enhancing Self Competence" (16AP008) which was included in 2016-17 scheme in second semester has been removed for the academic year 2017-2018.
8. Six Continuous Internal Evaluation tests (CIE test each of 20marks) which was followed in 2016-2017 batch has been discontinued from 2017-2018 and only two mid semester examinations- MSE-I and MSE-II (Each of 20Marks) have been proposed from the academic year 2017-2018 because of feedback received from students and faculties and to give more emphasis on research based learning in PG program.
9. In the third Semester M-Tech, Industrial training/mini project (16MMD301), total credit of 6 was changed to 8. In project part-I, the total number of weeks was increased to 10 weeks from 8 weeks.
10. It was felt by the BOS members that if the students do the industrial projects through MoU then there is greater chance of employability for the PG students.
11. The Industry representatives of the BOS committee suggested the PG students to undergo Certification courses on Condition Monitoring provided by **Vibration Institute, MOBIUS, BINDT and other institutes.**
12. In the fourth semester M-tech, three project progress evaluation (PPEI, PPEII, and PPEIII (17MMD401) is reduced to 2 project progress evaluation (PPE-I and PPE-II) for 100 marks each with a total of 20 weeks duration in the fourth semester due to difficulty in conducting three project progress evaluation in five months.
13. As per the suggestion of the industry experts, **an optimization technique is** included as an active learning component in FEM Subject.
14. The Panel of Examiners for PG Examinations of both odd and even semester has been approved.

8. DEPARTMENT OF PHYSICS

Changes incorporated:

- **Engineering Physics PH102**
    - Some corrections were made in course objectives and course outcomes.
    - Ambiguity in the some topics has been corrected, i.e. in **unit II**, *Quartz* has been changed to *Quartz (HCP).* In **unit III**; *Fermi energy and Fermi factor for metals* has been corrected to *Fermi energy and Fermi factor.* In **unit V**; *Ultrasonic waves – generation* has been changed to *Ultrasonic waves – methods of generation (Qualitative)* and *Nano materials – preparations* has been changed to *Nano materials – preparations (Milling and PVD).*
    - In **unit III**, repetition of *Fermi factor and Fermi energy in semiconductors* has been removed.
    - In **unit III**, *Experimental determination of carrier concentration* has been removed.
- **Engineering Physics Lab PH109**
    - One experiment on 'I-V Characteristics of Solar Cell' has been added/ substituted.
    - Ten experiments are to be performed in the regular lab classes for the year 2017-18.
    - It was also approved that, in Engineering Physics Lab manual is to be brought for continuous evaluation. At the time of Final Lab Exams (MSE &SEE) submission of Lab Manuals, as a proof of completion of Labs is mandatory.
- **Open electives**
    - The syllabi of the following open electives courses approved without any changes.
        1. **Advanced Materials Technology (PH 8X04)**
        2. **Optoelectronic Devices (PH8X19)**
        3. **Physics of Semiconductor Devices (PH8X29)**
    - **For the 2016-2020 batch, above 3 credit open elective courses with 5 units will be made into 3 units by redistribution of the topics was approved.**

- **Audit course**
    - Syllabus of the "Modern Optics" has been approved without any changes.

9. DEPARTMENT OF HUMANITIES

Course contents of the subjects:

- English and Communication Skills : 17HU114
- Constitution of India and Professional Ethics : 17HU107
- Intellectual Property Rights : 14HU8X03
- Professional & Cognitive Communiqué : 14HU8X24
- Enhancing Self Competence : 16HU311/16HU411

were presented to the board. After thorough discussion, the course contents were approved by the board and decided to retain the existing content with no major changes. The BOS also approved the

two audit courses offered by the Department to the students from all engineering programmes and semesters.

1. **Speak Up** – Offered by Mr. Vishwanatha

2. **Fundamental Writing Skills** – Offered by Mr. Joy Elvine Martis.

The board has also approved the evaluation pattern in course - Enhancing Self Competence (HU311/HU411) conducting four tasks for 20 marks and one mid-semester examination for 30 marks. This proposal for approval was made by the course owners with a due approval of the Principal to consider positively by the BOS.

The BOS also agreed to continue the course – 17HU107 with a changing status from credit to compulsory non-credit course.

10. DEPARTMENT OF MATHEMATICS

Changes incorporated:

a. The units IV&V dealing with numerical methods of the subject, Probability Theory& Numerical Methods, sub. Code: 15CS401/15IS401 are replaced by some topics of Linear Algebra like matrix, vector space and linear transformation. These will be units I & II of revised syllabus. Sampling Theory is shifted from unit II to unit V, Curve fitting is included in unit IV and units I, II & III will be units III, IV&V of revised syllabus. The teaching hours for all units are redistributed accordingly. The subject is entitled as "Linear Algebra & Probability Theory" with sub. Code: 16CS401/16IS401.

b. Five units of the open elective, Graph Theory, MA8X01 has been brought down to three units and teaching hours are redistributed.

c. Five units of the open elective, Linear Algebra, MA8X02 has been brought down to three units and teaching hours are redistributed.

d. These modified open electives are to be offered in the VI semester for the 2016-2020 batch and onwards.

e. List of panel of examiners for both UG&PG for the academic year 2016-17 have been approved.

11. DEPARTMENT OF CHEMISTRY

Changes incorporated:

- **Engineering Chemistry - CY110** has been approved with following modifications.

  Unit I - Polymers- Synthesis of Teflon removed, Synthesis of polyurethane added.

  Unit II- Electrochemical Cells**-** Classification of electrodes removed.

  Battery Technology-Li-MnO_2 removed.

Unit III- Corrosion – Anodic Protection removed.

Unit IV- Water Technology-Priming and foaming removed.

- **Engineering Chemistry lab CY117** contains twelve experiments out of which only 10 experiments are to be performed in the regular lab classes for the year 2017-18.
- Open Electives CH8X21 and CH8X31 offered to VIII Semester students have been confined to only three units against previous five units.
- The title of the open elective **CH8X21-Natural Products Chemistry'** changed as **Chemistry of Natural Products** for VIII Semester B.E. (Biotechnology) student has been approved without any modifications.
- Open elective - '**CH8X31 Corrosion Science'** for VIII Semester B.E. (Mechanical, Biotechnology and Civil Engineering) students has been approved with slight modification.
- An audit course '**Paint technology'** has been approved without any changes.

12. DEPARTMENT OF MCA

Changes incorporated:

The following points were discussed and approved by the members of the Board of Studies in the BOS meeting held on 13.05.2017

1. Database Systems along with the lab is moved from II semester to I semester to replace Object Oriented Programming with C++ and its lab.
2. Web Technologies and Applications along with the lab is moved from IV semester to II semester to replace Database Systems and its lab.
3. Enterprise Java along with the lab is moved from IV semester to III semester to replace .Net Framework and C# and its lab.
4. Cryptography and Security is moved from Problem Based Electives and replace Enterprise Java in the IV semester along with lab.
5. Lab component of Cryptography and Security is added to IV Semester.
6. Data Warehousing and Data Mining is moved from Project Based Electives to IV semester to replace Web Technologies and Applications.
7. Lab component of Data Warehousing and Data Mining is added to IV Semester.
8. Bioinformatics, Distributed Computing Systems, .Net Framework and C# and Semantic Web Technologies are added to Project Based Electives.

9. Software Architecture, Storage Technologies and Managerial Economics are added to General Electives.

10. Accountancy and Financial Management is added to Problem Based Electives.

11. Contents of Web 2.0 and Rich Internet Applications syllabus is modified to include Server side technologies and revisit on the Flash content.

12. Multimedia course is moved from General Electives to Project Based Electives.

13. Elaborate further on the top three Network layers in Data Communication and Computer Networks.

14. Changes in the contents of Web Technologies and Applications, Cryptography and Security.

15. Principles of User Interface course renamed as Human Computer Interaction.

16. Changes to the choice based selection

    - 1st semester – Unix Concepts and Programming, Professional Communication and Ethics.
    - 2nd semester – Web Technologies and Applications, Fundamentals of Computer Organization.

17. Changes to the choice based selection

    - 3rd semester – Data Communication and Computer Networks.
    - 4th semester – Data Warehousing and Data Mining.

18. Review of Credit allotment.

19. Mandatory Credit allotment to EEC.

20. CO, PO, PEO, Vision and Mission mapping.

21. Approval of Panel of Examiners for 2017-18.

13.DEPATMENT OF MBA

The Department practices revision of syllabus at the beginning of every academic year. There is a structured process for developing the content of each paper involving a process of consultation with faculty members, functional area heads and the Director.
Changes in the allocation of credits.
Total number of core subjects reduced from 8 to 7 in the I and II semester.
Integration of Statistics with Research Methodology.
Changes in the orientation of subjects like Financial Accounting, Managerial Economics, International Business Environment.
General Management Electives in the III and IV Semester.
Introduction of a new subject -Business Analytics as a General management elective.
Shifting of Strategic Management to II Semester and Business Ethics and Corporate Governance to IV Semester.

Introduction of Simulation games in the III Semester (2 Credits) and IV Semester (I credit).
Introducing Logistics and supply chain management as a Marketing specialization elective in the place of International Marketing.

Similarly the growing importance of business intelligence, a paper has on business analytics has been offered for the first time. The Department has future plans to expand Business Analytics to certificate level courses to cater to the needs of the business and industry. Similarly, in view of the growing use of social media and e-commerce, a specialization paper has been introduced in 'Digital Marketing' and 'Social Media marketing'.

5. Approval for participating in AICTE initiated programme GE-GE (Global Exposure for Global Explorers

AICTE has initiated a programme for providing international exposure for meritorious Indian students at affordable cost - Global Exposure for Global Explorers - GE-GE.

This programme is being organised in partnership with NetIIT and GE-GE. Four Universities in Taiwan have been already been identified. During Sep 2017 / Feb 2018, selected students from 5th (Sep 2017) and 6th semester (Feb 2018) will be sent to Taiwan for one semester. Similar arrangements are also being made with Universities of other countries.

6. Approval for the Audit Course offered during the academic year.

During this academic year totally 63 audit courses are offered from different department

Sl. No.	Dept.	Name of Audit Course	Course Code
1.	E&E	Repair of Home Appliances & Electrical Wiring	AU005
2.		Lab View Basics	AU015
3.		Industries and Entrepreneur's consent Management: (Lectures with Case Studies)	AU020
4.		Tree senses of the campus to know the Bio Diversity of Plants	AU021

5.	**BT**	Evaluation of growth and EPS production by Lactobacillus rhamnosus	**Mini Projects**	**AU019**
6.		Synthesis of Cellulose nanofibers as bioadsorbents for the removal of pollutants from waste water		
7.		Rational antibody Designing for the Clearance of Endotoxin		
8.		Chemical and biological synthesis of silver Nanoparticles – A comparative study		
9.		Process Improvement in microwave assisted acid digestion of oil cake		
10.		Production of lactic acid from biodiesel industry residues using Lactobacillus rhamnosus		
11.		Co-utilization of Pongamia seed cake hydrolysate and glycerol for bio-oil production		
12.	**CSE**	Java Design Patterns		**AU009**
13.		Visual Cryptography		**AU022**
14.		HTML & Web Programming PHP (with Lab)		**AU023**
15.		Computer Graphics Using Open GL		**AU024**
16.		Data Analytics using R Programming		**AU025**
17.		Python Programming		**AU026**
18.		Mobile Application Development using Android &PhoneGap – (MAD Lab)		**AU012**
19.		Data Structures		**AU027**
20.		Analysis & Design of Algorithms		**AU028**
21.		CUDA Programming		**AU029**
22.		Data Mining and knowledge Discovery		**AU030**

23.		Aurdino Applications & Dummies	**AU031**
24.		Advanced Algorithms	**AU032**
25.		NS_2 Programming	**AU066**
26.	**ISE**	Cyber Security	**AU033**
27.		Steganography : Fundamentals & Techniques	**AU034**
28.		Machine Learning using R	**AU035**
29.		Introduction to programming with Matlab	**AU036**
30.		Data Analytics	**AU037**
31.		Software testing using selenium	**AU038**
32.		Business Intelligence	**AU039**
33.		Arduino for Dummies	**AU040**
34.		Fundamentals of Virtualization & Cloud Computing	**AU041**
35.		Network Security	**AU042**
36.		Mobile Application development using Android	**AU043**
37.		Wireless Sensor Networks (WSN): Introduction to Architecture, Design Goals & Research Challenges	**AU044**
38.	**E&C**	Physical and Datalink layer Simulation of wireless sensor networks	**AU045**
39.		A laboratory course on Arduino	**AU016**
40.		Probability & Random Processes for Communication	**AU046**
41.		Pre Project Training on sensors, Actuators and Motor driver Interface- Laboratory course	**AU047**

42.		Schematic and PCB Layout Design using KiCad (open source EDA software)	**AU048**
43.		Machine Learning	**AU049**
44.		Microstrip Antenna Design Technique	**AU050**
45.	**MECH**	Research Methodology	**AU051**
46.		Advanced Welding Technology	**AU052**
47.		Design for Manufacturing	**AU053**
48.		Advanced NDT Methods	**AU054**
49.		Nano-Technology	**AU055**
50.		Industrial Ergonomics	**AU056**
51.		Refrigeration & Air Conditioning	**AU057**
52.		Industrial (steam) Energy Audit	**AU058**
53.		Surface Engineering	**AU059**
54.		MEMS	**AU003**
55.		Introduction to Piping Engineering	**AU060**
56.	**CIVIL**	Land Surveying using Total Station	**AU001**
57.		Landscape Designing	**AU014**
58.		Introduction to Ancient Indian Technology	**AU061**
59.	**MCA**	Machine Learning – Case Study	**AP004**
60.		Android App Development	**AP003**
61.		Image Processing Techniques	**AP005**
62.		Internet of Things	**AP006**

63.		Python Concepts and Programming	**AP001**
64.		Big Data Management - Basics	**AP007**
65.		Web Application Development Using PHP	**AP008**
66.	**Mathematics**	Graphs, Trees and Counting	**AU062**
67.		Mathematical Modelling	**AU063**
68.	**Chemistry**	Paint Technology	**AU064**
69.	**Physics**	Modern Optics	**AU065**
70.	**EC**	Fundamentals of low power VLSI design	**AU066**

7. Open Electives Offered in VIII Semester for the year 2017-18

MA8X 01 Graph Theory (Except CS & IS)

MA8X 02 Linear Algebra (for all)

HU8X 03 Intellectual Property Rights (for all)

PH8X 04 Advanced Materials Technology (for CV& ME)

BT8X 05 Nano Technology (for all)

BT8X 06 Instrumental methods of Analysis (for CV & ME)

CV8X 07 Environmental Impact Assessment (for all)

ME8X 08 Industrial Pollution Control (for all)

EE8X 10 Non-Conventional Energy Systems (for all)

EE8X 11 Linear Systems Theory for ME &EC

EC8X 12 Information and Electronic Communication Technology (for all)

EC8X 13 Robotics (for all)

CS8X 14 Object Oriented Prog. with C++ (for all)

CS8X 15 Essentials of Information Technology (for all)

EC8X 18 Consumer Electronics (for all)

PH8X 19 Opto Electronic Devices (For EC,EE, CSE & ISE)

CH8X 21 Chemistry of Natural Products (for Bio-Tech)

CS8X 22 Essentials of IT Service Industry (for all)

HU8X 24 Professional & Cognitive Communique (for all)

IS 8X 27 Operating Systems

ME8X 28 Operations Management & Entrepreneurship (for all)

PH8X 29 Physics of Semiconductor Devices (for EE, EC, CSE & ISE)

CV8X30 Introduction to Geoinfomatics (For all)

CH8X 31 Corrosion Science (for CIV & Mech.)

EC8X 32 Application of Signal Processing (For all)

ME8X33 Human Resourse Management

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