

RAJEEV GANDHI MEMORIAL COLLEGE OF ENGG. & TECH.

Department of Electrical and Electronics Engineering



NBA

EXPERT COMMITTEE VISIT

22-10-2021 to 24-10-2021

Presentation by

Dr. V. Naga Bhaskar Reddy

Professor and Head

HEARTY WELCOME TO

**NBA
EXPERT COMMITTEE**

Part-I

Introduction



- Year of Establishment: 1995
- Names of Programmes / Courses offered

S.No.	Course Name	Programme Name	Year of Start
1	UG(B.Tech)	Electrical & Electronics Engineering	1995
2	PG(M.Tech)	Power Electronics	2002
3.	Ph.D	Full time Doctoral Degree	2015

B.TECH (EEE)

- Started in 1995 with an intake of 60
- Intake increased to 90 in the A-Y 2001-2002
- Intake increased to 120 in the A-Y 2002-2003
- Intake increased to 180 in the A-Y 2014-2015
- Intake increased to 240 in the A-Y 2015-2016
- Intake decreased to 120 in the A-Y 2018-2019

M.TECH (POWER ELECTRONICS)

- Started in 2002 with an intake of 18
- Intake increased to 25 in the A-Y 2003-2004
- Intake increased to 36 in the A-Y 2011-2012
- Intake decreased to 18 in the A-Y 2018-2019

Department Level-Achievement:

- RGM-R-19 is revised as per the AICTE Guidelines without exemption of credits, it also introduced Mandatory learning courses and internships. HONORs introduced from this regulations.
- RGM-R-20 -The curriculum and syllabus is designed in tune with the guidelines of AICTE and APSCHE and introduced more Skill Development Programs, MOOCs, Mandatory Learning subjects, apart from mandatory Internships for all the students. IV year second semester is completely dedicated for project work only.
- Dedicated and High qualified faculty including **11 doctorates** from prestigious Institutions with 309 journals (**57 SCI/ESCI** and 133 Scopus) and 141 conference papers. (Total publication- 450)
- Department is having **well equipped labs** with a worth of **1.89 Crores**.
- Department has a credit **1.69 Crores of sanctioned funds** : SERB (41.0 Lakhs), AICTE-RPS (9.0 Lakhs), AICTE-MODROBS (14.8 Lakhs), AICTE-MODROBS (7.0 Lakhs), AICTE-SG (1.0 Lakhs), AICTE-GOC (15.0 Lakhs), AICTE-STTP(3.0 Lakhs), AICTE-STTP(2.5 Lakhs), DST-FIST (16.0 Lakhs of 60.0 Lakhs for EEE)
- Achieved **placements** of 76 for 2020-21, 74 in 2019-20 and 85 in 2018-19
- **NBA-AICTE** accreditation four times i.e.; in the years 2003, 2007, 2013 and 2017.
- Accredited by **NAAC** in two cycles with 'A' Grade in the year 2012 and A+ in the year 2017.
- **NIRF Ranking** 251-300 band in 2020 and 201-250 band in 2021

Faculty Level-Achievement:

- **Dr. D. V. Ashok Kumar** received **BHISMA ACHARYA Award** on 05-09-2021 from National Institute Education & Management, New Delhi.
- **Dr.V.Naga Bhaskar Reddy** received **“Uttama Acharya Puraskar”** on 02.10.2019 from Indian servers Pvt.Ltd.
- **Dr.Santosh Kumar Singh** has completed **Post doc from ZJU-UIUC** China (On lien for 2 years)
- **Mr.B.M.Manjunatha** awarded **Doctoral degree** by JNTU Anantapur on 01.10.2018
- **Mr.A.Suresh Kumar** awarded **Doctoral degree** by JNTU Anantapur on 15.09.2021
- **IEEE-Senior members** elevation for **Dr.V.Naga Bhaskar Reddy , Dr.D.Lenine & Mr.V.Narasimhulu.**
- **Dr.V.Naga Bhaskar Reddy & Dr.Santosh Kumar Singh** awarded as mentors for **Smart India Hackathon award in the year 2018.**
- **Mr.Y.Vijaya Suresh & Mr.E.Narasimhulu** mentors for the award of **UTKRAANTI-2018**, a National Students' Space Challenge (NSSC), IIT Kharagpur.
- **Mr.J.Nagarjuna Reddy** mentor for the project of Champion ship in TECH FEST organized by **JNTUA.**

Student Level-Achievement:

- Outstanding **Volunteer Award** is presented to **Pinjari Gouse Peera** of III-year by IEEE Hyderabad Section for the year 2020.
- **Ms.M.Rajini** of III-year by IEEE Hyderabad Section for the year 2021 has been **selected as IEEE Day 2021 ambassador.**
- Four Students are received **PRATIBHA Award** winners from Govt. of A.P.
- Department of EEE is proud to announce that the students has awarded in National Technical champion ships such as **SMART INDIA HACKATHON-2018** .
- **UTKRAANTI-2018** National Students' Space Challenge (NSSC), IIT Kharagpur.
- They stood first in achieving District level Champion ship in **TECH FEST** organized by JNTUA, Anantapuramu.
- The Department **has established student chapter of IE(I) and IEEE** to motivate the student community to organize events such as Paper Presentations, Guest lectures, Group Discussions etc.

Vision

- To nurture the students on the fundamentals of Electrical Engineering with a strong focus on applications in technical developments.
- To improve the curriculum of Electrical and Electronics Engineering to meet the changing technological needs of society and industry at the global level.
- To contribute plug-ins for the betterment of humankind by providing value based education with a noble goal of 'Education for Peace and progress.

Mission

- To produce intellectual and social responsible electrical engineers with sound theoretical knowledge blended with state of the art skills for global development.
- To inculcate knowledge in production, maintenance of electrical power generation through smart innovations to meet the power demand of the society.
- To motivate the student towards research and entrepreneurship in the field of Electrical Engineering.

Programmable Educational Objectives

PEO-1: Graduates will have intra-disciplinary comprehension and skills to design and develop products and systems in the field of Electrical and Electronics Engineering.

PEO-2: Graduates will acquire knowledge to meet the needs of operation and continuance of electrical tools used in various industries

PEO-3: Graduates will be proficient to meet the tasks in public and private sectors of Electrical Engineering

PEO-4: Graduates will possess the knowledge and motivation to pursue successful professional career for the betterment of humankind

Consistency of PEOs with Mission of the Department

M1- To produce intellectual and social responsible electrical engineers with sound theoretical knowledge blended with state of the art skills for global development.

M2 -To inculcate knowledge in production, maintenance of electrical power generation through smart innovations to meet the power demand of the society.

M3- To motivate the student towards research and entrepreneurship in the field of Electrical Engineering.

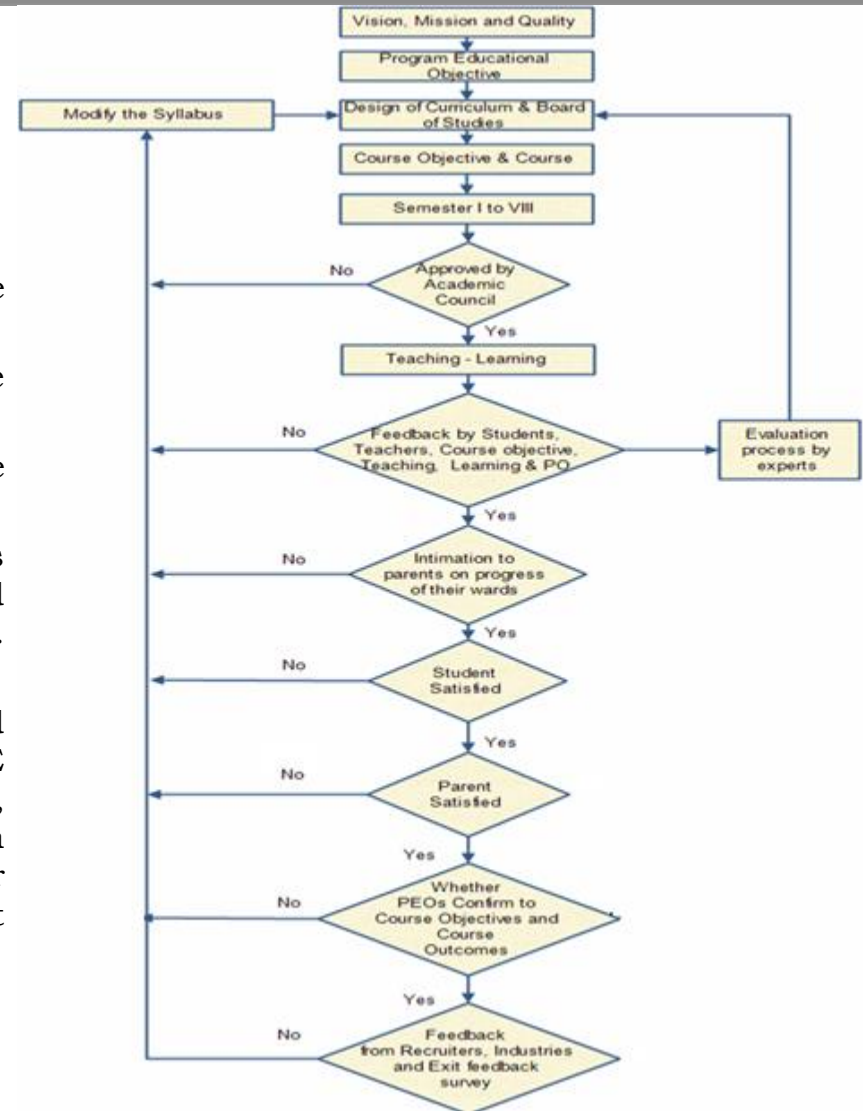
PEO Statements	M1	M2	M3
PEO-1: Graduates will have intra-disciplinary comprehension and novel skills to design and develop the products and systems in their discipline	2	3	3
PEO-2: Graduates will acquire the knowledge to do well in the operation and continuance of electrical tools in various industries	3	2	3
PEO-3: Graduates will be proficient to meet the tasks in public and private sectors of Electrical Engineering	3	2	3
PEO-4: Graduates will possess the knowledge and motivation to pursue successful professional career for the betterment of humankind	3	3	3

Criteria 2- Program Curriculum and Teaching Learning Process



Program Curriculum

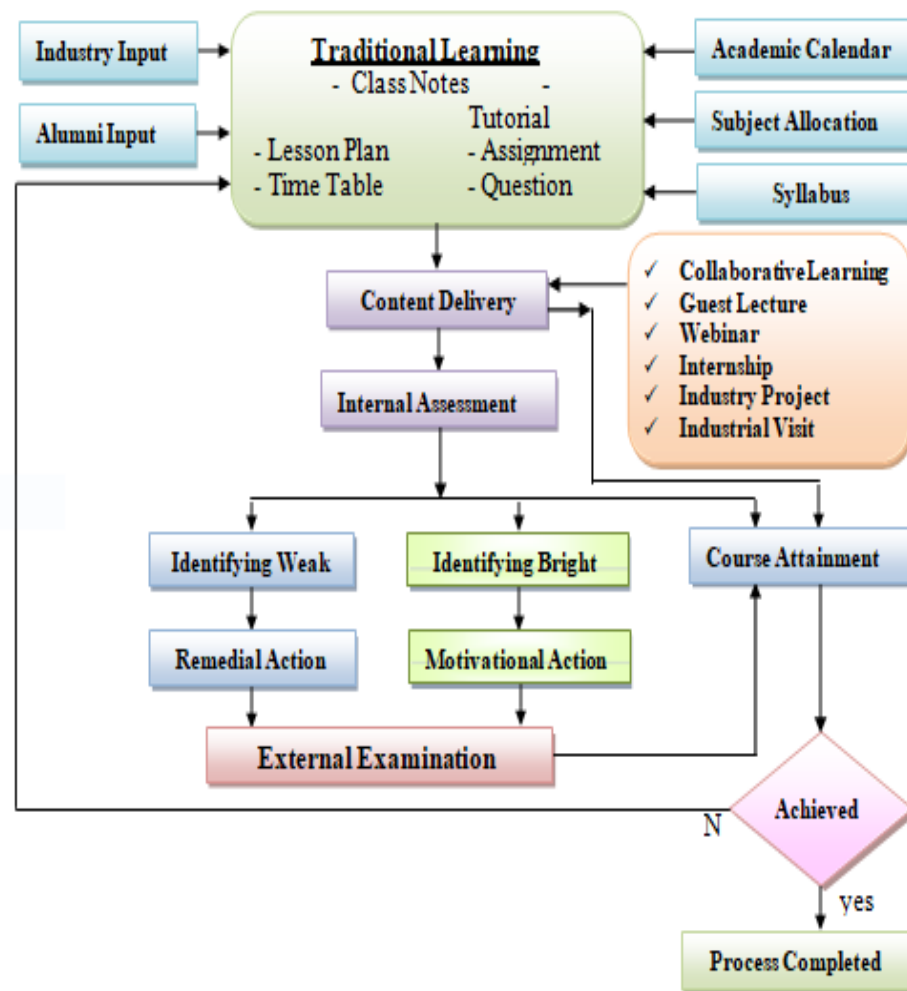
- During **CAY (2020-21)** I-B.Tech comes under the regulations of R20.
- II-B.Tech follows R19 and III and IV-B.Tech come under the regulations of R15.
- Structure of curriculum reflects as per the corresponding regulations.
- RGM-R-19 is revised as per the AICTE Guidelines without exemption of credits, it also introduced Mandatory Learning courses and internships. HONORs introduced from this regulations.
- RGM-R-20 -The curriculum and syllabus is designed in tune with the guidelines of AICTE and APSCHE and introduced more Skill Development Programs, MOOCs, Mandatory Learning subjects, apart from Mandatory internships for all the students. IV year second semester is completely dedicated for project work only.



Process of Designing curriculum

Teaching Learning Process

- First day of student starts with the orientation program of welcoming by the institution and department.
- The academic calendar provides dates of commencement of the academic session, duration of semester, dates of Internals, final semester examinations etc.
- The Lesson plan is prepared by the individual faculty member under the guidance and resolutions of faculty members who taught earlier for the respective courses.
- Course file includes lesson plans, teaching aids such as subject notes, presentation files and their respective COs and POs.
- Adequate equipment in laboratories supports the students to enrich in more practical environment in duration of their graduation, usage of equipment is recorded in log registers.
- Seminars, Library and Student Counseling hours are incorporated in the time table in order to improve the student's presenting skills, improving of knowledge by spending time in Library and to discuss the issues personally.



Process for Teaching – Learning Processes

- Department has made parents of students as the stake holders by sending SMS about the absence of the individual student daily and monthly report. Student assessment in internals and end exams are also informed to parents.
- Student mentors are allotted for a group of 5-10 students so that keen observation can be maintained.
- Outstanding students who secured 90% and above marks are rewarded with cash prize.
- Remedial classes are arranged for the academically weak students beyond the working hours.
- Student feedback is considered in every semester after commencement of class work and the resolutions are incorporated.
- Evaluation of Assignments are made part of finalizing the internal marks Seminars, conferences, workshops, visiting faculty lectures etc. are arranged in regular intervals by various academicians and subject experts.
- Furthermore, individual teachers are given freedom to conduct assessment tests.
- Project Expo is organized in the campus, which demonstrates all the project models of the students.
- Fare well function will end up the graduation by exchanging the ideas and feedback of the final years with juniors.
- Alumni details and regular interaction is maintained in the department office so as to arrange alumni meet further.

Criteria 3- Program Outcomes and Course Outcomes



Program Specific outcomes are designed to enrich the students at the end of program:

PSO – I: Students are able to analyze and design the electrical and electronic circuits with the knowledge of courses related circuits, networks, linear digital circuits and power electronics

PSO-II: Student can explore the scientific theories, ideas, methodologies in operation and maintenance of electrical machines to bridge the gap between academics and industries.

PSO-III: Students are able to work professionally with new cutting edge Technologies in the fields of power system, generation, operation, and maintenance.

Course	Course Outcome Statements	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
FIELD THEORY (II-B.Tech., I-Sem)	To apply knowledge of basic mathematics and physics for the determination of electric and magnetic quantities	3	3	-	2	-	-	-	-	2	1	-	2	3	-	-
	Application of electrostatic and magneto static theorems to determine electric field intensity and magnetic field intensity	3	3	-	2	-	-	-	-	2	1	-	2			
	To determine the self and mutual inductance of simple practical current carrying systems	3	3	-	2	-	-	-	-	2	1	-	2			
	To solve the problems related to electromagnetic field using dealt theorems	1	2	-	2	-	-	-	-	2	1	-	2			
	To understand time varying electromagnetic fields as governed by the maxwell's equations	2	2	-	2	-	2	-	-	2	1	-	2			
	To analyze the behavior of the conductors using ohms law, inductors using Faraday's law and capacitors using dielectric principles.	1	3	-	2	-	-	-	-	2	1	-	2			
Average P.O		2.2	2.2 4	-	2.2 4	-	2.2 6	-	-	2.2	2.24	-	2.2 4	3	-	-

Criteria 3- Program Outcomes and Course Outcomes contd...



Program Articulation Matrix:

Set PO's of the Program (Department of the Electrical & Electronics Engineering) Program core courses of each semester (at least one) are considered for mapping of Program Outcomes.

Table 3.1 Program Articulation Matrix

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
Field Theory (II B. Tech I sem)	2.2	2.24	-	2.24	-	2.26	-	-	2.2	2.24	-	2.24	-	-	-
Network Theory (II B. Tech II sem)	2.59	2.31	2.58	2.45	-	2.59	-	-	-	-	-	2.60	2.2	-	-
Control System (II B. Tech II sem)	1.98	1.98	-	1.98	-	-	-	-	1.97	-	-	1.96	-	-	-
Electrical Machines-II (III B. Tech I sem)	2.4	2.13	2.41	2.19	-	2.19	-	-	-	-	-	2.03	-	-	-
Electrical Measurements (III B. Tech I sem)	2.41	2.46	2.46	2.41	2.32	-	-	-	2.41	0	2.41	-	-	-	-
Power Electronics-II (III B. Tech II sem)	2.64	2.65	2.65	2.65	2.64	2.55	-	-	2.67	-	2.64	2.66	-	-	-
Micro Processor and Micro Controllers (III B. Tech II sem)	2.68	-	2.69	2.70	2.68	2.71	-	-	-	-	2.68	-	-	-	-
Environmental Studies (III B. Tech II sem)	2.32	2.20	1.96	2.21	2.12	2.17	2.20	2.28	-	-	2.15	2.15	2.16	1.58	2.19
Managerial Economics and Financial Analysis (III B. Tech II sem)	-	2.83	2.83	2.80	2.67	-	2.90	2.90	2.90	2.92	2.95	-	-	-	-
Power System Analysis (III B. Tech II sem)	2.38	2.39	2.39	2.4	-	2.41	-	-	-	-	-	-	-	-	-
Power Semiconductor Drives (IV B. Tech I sem)	2.22	2.24	-	2.25	-	-	-	-	2.25	-	-	-	-	-	-
Utilization of Electrical Energy (IV B. Tech II sem)	2.8	2.79	2.78	2.78	-	-	-	-	-	-	-	-	-	-	-
Average of SET PO	2.42	2.38	2.53	2.42	2.49	2.41	2.55	2.59	2.40	1.72	2.57	2.27	2.18	1.58	2.19

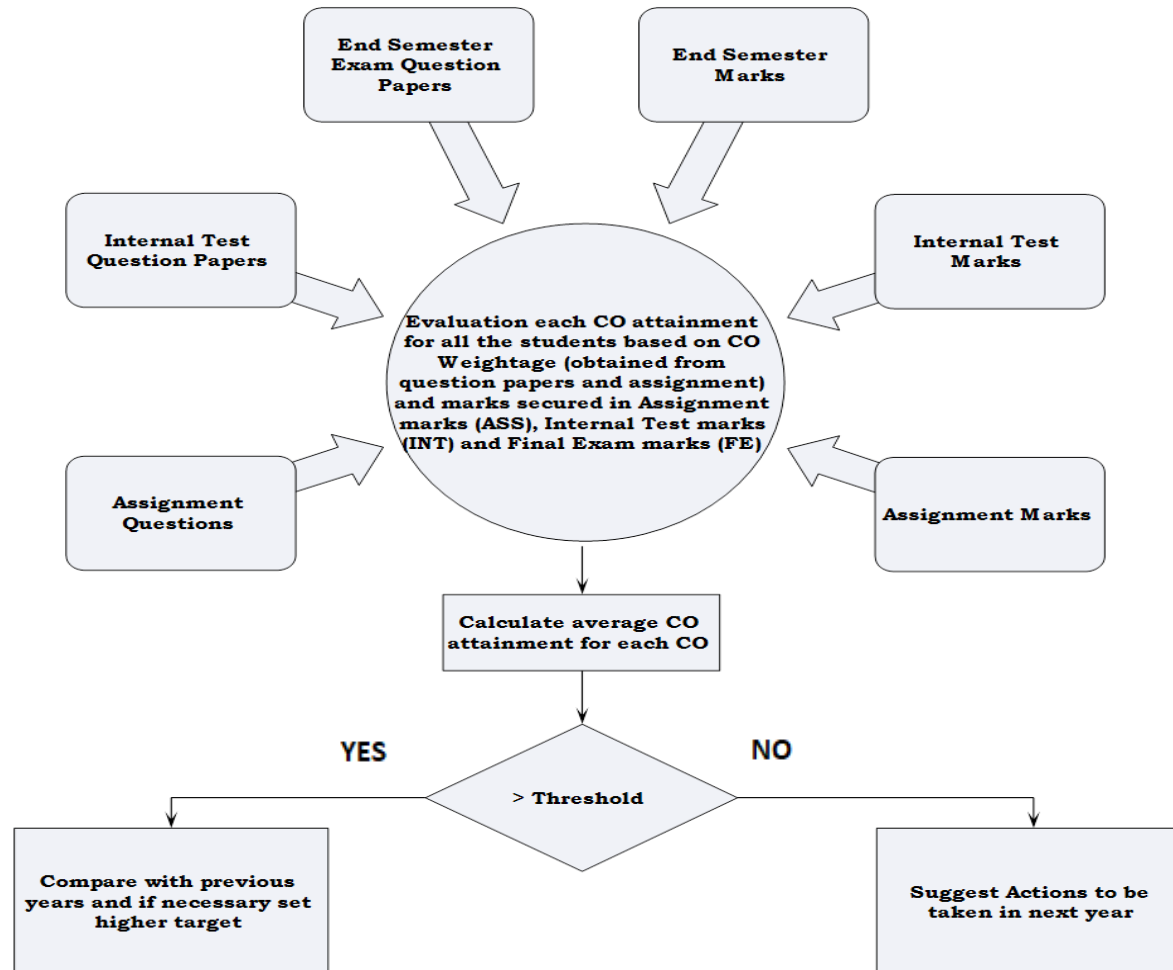
Criteria 3- Program Outcomes and Course Outcomes contd...



Course Articulation Matrix

Table 3.2 Course Articulation Matrix

Course	Course Outcome Statements	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PS O1	PS O2	PS O3
FIELD THEORY (II-B.Tech., I-Sem)	To apply knowledge of basic mathematics and physics for the determination of electric and magnetic quantities	3	3	-	2	-	-	-	-	2	1	-	2	3	-	-
	Application of electrostatic and magneto static theorems to determine electric field intensity and magnetic field intensity	3	3	-	2	-	-	-	-	2	1	-	2			
	To determine the self and mutual inductance of simple practical current carrying systems	3	3	-	2	-	-	-	-	2	1	-	2			
	To solve the problems related to electromagnetic field using dealt theorems	1	2	-	2	-	-	-	-	2	1	-	2			
	To understand time varying electromagnetic fields as governed by the maxwell's equations	2	2	-	2	-	2	-	-	2	1	-	2			
	To analyze the behavior of the conductors using ohms law, inductors using Faraday's law and capacitors using dielectric principles.	1	3	-	2	-	-	-	-	2	1	-	2			
Electrical Machines-II (III-B.Tech., I-Sem)	To apply knowledge of basic engineering for understanding the operation of transformer and induction motor	3	2	1	1	-	-	-	-	2	-	2	2	-	3	-
	To solve problems related to transformers and induction motor	3	3	2	1	-	-	-	-	2	-	2	1			
	To understand the performance of transformer and induction motor by conducting tests	3	2	3	2	-	-	-	-	2	-	2	1			
	To apply the various types of transformers , transformers connections in the field of power systems and various types of induction motors in industries	3	2	2	2	-	-	-	-	2	-	2	2			
	To understand the various starting methods and speed control methods of induction motor	3	3	3	2	-	-	-	-	2	-	2	2			
	To acquire the knowledge of using simulation tools to understand the mathematical modeling of Transformers and Induction motor.	3	3	2	2	-	-	-	-	2	-	2	1			
Power semiconductor drives (IV-B.Tech., I-Sem)	Acquire the knowledge of power electronics converters and their control to drive different AC and DC machines.	3	3	2	1	-	-	-	-	2	-	2	-	-	3	-
	Analyze the working operation and solution to numerical problems of the drives and machines.	3	3	2	2	-	-	-	-	3	-	2	-			
	Understand the characteristics and waveforms related to output voltage of power electronic converters and speed control of machines.	3	3	2	2	-	-	-	-	3	-	2	-			
	Apply the acquired knowledge in implementation and choosing of power electronic converters to their relevant motors.	3	3	2	1	-	-	-	-	2	-	2	-			
	Able to design the appropriate converter power ratings which are suitable to the industries.	2	3	2	-	-	-	-	-	1	-	2	-			
	Inherent to the usage of simulation tools in power electronics and drives.	1	3	1	-	-	-	-	-	-	-	2	-			
Utilization of Electrical Energy (IV-B.Tech., II-Sem)	Distinguish the difference between AC & DC Motors, their usage & speed control techniques.	3	3	-	2	-	-	-	-	2	1	-	2	3	-	-
	Learn fundamental of ILLUMINATION.	3	3	1	2	-	-	-	-	2	1	-	2			
	Study various electrical heating methods.	3	3	-	2	-	-	-	-	2	1	-	2			
	Study various electrical welding methods	1	2	-	2	-	-	-	-	2	1	-	2			
	Analyze the various concept of electrical traction.	3	2	-	2	-	2	-	-	2	1	-	2			
	Evaluate speed-time curve for traction motors.	3	3	1	2	-	-	-	-	2	1	-	2			
Average of SET CO's of all courses		2.3	2.4	2.0	1.8	1.8	1.9	1.9	1.4	2.0	1.4	2.1	1.5	2.4	2.7	2.9



Process of attainment of Course Outcomes

Assignment- Evaluation of assignment is carried out as per course structure and syllabus. This consist of different question which test on analytical skills of the student and average of two Assignment is considered and added to Internal marks

Quiz – Quiz is organized under supervision of Institute of Engineers (IE-Chapter) and respective team or student is awarded, which improves the competitive skills of the student.

Tutorial - The tutorial sessions for the students provide a clear assessment of the delivery of course content. This is used by the faculty members for the adoption of new pedagogy which suits the needs of students. This ensures maximum knowledge transfer and hence maximizes the impact of the delivery of course content.

Internals - these kinds of exams are organized twice in a semester and 75% of the best performance and 25% of the least performance are considered for the weightage of internal marks. The questions that can be asked in internal examination should satisfy the Course Outcomes.

Skill Development Courses/Value Added Courses - two Internal examinations shall be conducted one in the middle of the semester and the other at the end of the semester for 30 marks and the marks scored by the student in these exams with a weightage of 0.75 for better score and 0.25 for the other score will be awarded as Internal marks for 30. The remaining 70 marks are based on the end exam performance.

Mini projects are introduced in third year; a latest technical description has to submit by the student which is evaluated by the External examiner for 50 marks and 25 marks by the internal evaluation. This is to keeping them on par with the latest technical know-how

Project topic should be approved by Internal Department Committee (IDC). Out of total 150 marks for the project work, 50 marks shall be for Internal Evaluation and 100 marks for the End Semester Examination. The evaluation of project work shall be conducted at the end of the IV year II semester.

Comprehensive Viva Voce is introduced to assess the student performance in all subjects and it is evaluated for 50 marks by the external examiner. This gives continuous comprehensive evaluation of the student.

End Examinations are validate the student performance to attain course outcomes and hence the program outcomes. In addition examinations ensure that, only those students who have attained the programme outcomes are actually awarded the programme certificate.

Describe assessment tools and processes used for measuring the attainment of each Program Outcome and Program Specific Outcomes:

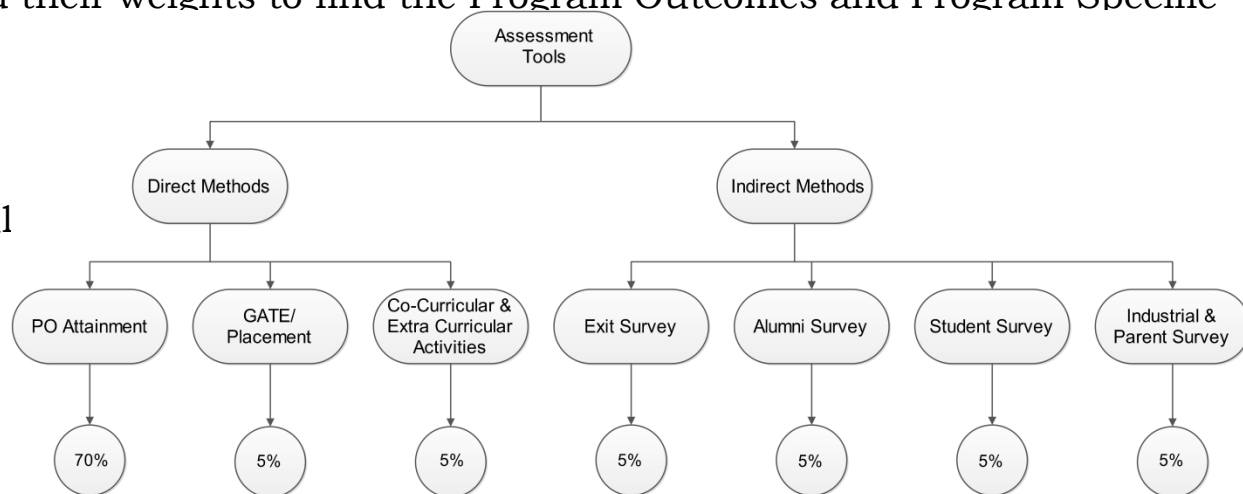
The assessment tools used and their weights to find the Program Outcomes and Program Specific Outcomes is shown in Fig.

Direct Methods:

Overall PO attainment
GATE/GRE Placements
Co-Curricular & Extra Curricul

In-Direct Methods:

Exit Survey
Alumni Survey
Student Survey
Industrial & Parent Survey



Criteria 4- Student's Performance



Admission Details:

Item (Information to be provided cumulatively for all the shifts with explicit headings, wherever applicable)	2020-21	2019-20	2018-19	2017-18
Sanctioned intake of the program (N)	120	120	120	240
Total number of students admitted in first year <i>minus</i> number of students migrated to other programs/ institutions, plus no. of students migrated to this program (N1)	101	89	51	85
Number of students admitted in 2 nd year in the same batch via lateral entry (N2)	--	40	57	44
Separate division students, if applicable (N3)-Rejoined	01	--	02	02
Total number of students admitted in the Program (N1+N2+N3)	102	129	110	131

Enrollment Ratio:

Assessment Year	N1(Admitted)	N (Sanctioned)	Percentage
CAY(2020-21)	100	120	83.33
CAYm1 (2019-20)	89	120	74.16
CAYm2 (2018-19)	51	120	42.5

For CAY 2020-21: AVG. = 66.67 %

Academic Performance Table

Year of Entry	N1+N2+N3 (As defined above)	Number of students who have successfully graduated without backlogs in any semester/year of study			
		I Year	II Year	III Year	IV Year
CAY 2020-21	101				
CAYm1 2019-20	129 (89+40)	46			
CAYm2 2018-19	110 (51+57+02)	24	46		
CAYm3 2017-18	131 (85+44+02)	46	56	45	
CAYm4(LYG) 2016-17	146 (112+31+03)	53	63	48	43
CAYm5 (LYGm1) 2015-16	237 (165+68+04)	90	97	88	75
CAYm6 (LYGm2) 2014-15	215 (162+53)	81	98	76	70

Year of Entry	N1+N2+N3 (As defined above)	Number of students who have successfully graduated			
		I Year	II Year	III Year	IV Year
CAY 2020-21	101				
CAYm1 2019-20	129 (89+40)	57			
CAYm2 2018-19	110 (51+57+02)	38	79		
CAYm3 2017-18	131 (85+44+02)	68	100	93	
CAYm4(LYG) 2016-17	146 (112+31+03)	92	118	114	103
CAYm5 (LYGm1) 2015-16	237 (165+68+04)	143	195	185	159
CAYm6 (LYGm2) 2014-15	215 (162+53)	139	177	168	149

Passed Out Student Details :

S. No.	Batch	Total No. of students registered	Students passed with			Total PC obtained	Percentage %
			FWD	FC	SC		
1	2017-21	118	44	42	06	92	77.90
2	2016-20	133	48	45	10	103	77.4
3	2015-19	211	89	63	49	201	90.9
4	2014-18	200	96	78	10	184	92

Success rate without backlogs in any semester/year of study:

$$SI = \frac{\text{Number of students who have graduated from the program without backlog}}{\text{Number of students admitted in the first year of that batch and admitted in 2nd year via lateral entry and separate division, if applicable}}$$

Average SI=Mean of Success Index (SI) for past three batches

Item	Latest Year of Graduation, LYG (2016-20)	Latest Year of Graduation minus1, LYGm1 (2015-19)	Latest Year of Graduation minus2, LYGm2 (2014-18)
Number of students admitted in the corresponding First Year + admitted in 2nd year via lateral entry and separate division, if applicable	146	237	215
Number of students who have graduated without backlogs in the stipulated period	43	75	70
Success Index(SI)	0.29	0.35	0.32
Average SI	(0.29+0.31+0.32)/3 = 0.30		
Success Rate	15*0.3=4.5		

Success rate in Stipulated Period:

$$SI = \frac{\text{Number of students who graduated from the program in the stipulated period of course duration}}{\text{Number of students admitted in the first year of that batch and admitted in 2nd year via lateral entry and separate division, if applicable}}$$

Average SI=Mean of Success Index (SI) for past three batches:

Item	Latest Year of Graduation, LYG (2016-20)	Latest Year of Graduation minus1, LYGm1 (2015-19)	Latest Year of Graduation minus2, LYGm2 (2014-18)
Number of students admitted in the corresponding First Year + admitted in 2 nd year via lateral entry and separate division, if applicable	146	217	216
Number of students who have graduated in the stipulated period	103	159	149
Success Index(SI)	0.71	0.73	0.69
Average Success Index	$(0.70+0.73+0.69)/3 = 0.71$		
Success rate	$5 \times 0.71 = 3.55$		

Academic Performance in Second Year

Academic Performance=Average API (Academic Performance Index)

Where,

$$API = \frac{\left[\begin{array}{c} \text{Mean of 2}^{nd} \text{ Year Grade Point Average of all successful Students} \\ \text{on a 10 point scale} \\ \text{or} \\ \text{Mean of the percentage of marks of all successful students} \\ \text{in Second Year} \end{array} \right] \times \text{number of successful students}}{\text{number of students appeared in the examination}}$$

Academic Performance	CAYm1 (2019-20) 2018 Batch	CAYm2 (2018-19) 2017 Batch	CAYm3 (2017-18) 2016 Batch
Mean of CGPA or Mean Percentage of all successful students(X)	6.07	6.23	6.86
Total no. of successful students(Y)	79	100	118
Total no. of students appeared in the examination(Z)	97	114	126
API=X*(Y/Z)	4.94	5.46	6.42
Average API=(AP1+AP2+AP3)/3	(4.94+5.46+6.42)/3=5.61		

Placement Higher Studies and Entrepreneurship

Item	CAY 2020-21 2017 batch	CAYm1 (2019-20) 2016 Batch	CAYm2 (2018-19) 2015 Batch	CAYm3 (2017-18) 2014 Batch
Total No. of Final Year Students(N)	118	114	185	168
No. of students placed in companies or Government Sector(x)	75	75	85	74
No. of students admitted to higher studies with valid qualifying scores (GATE or equivalent State or National Level Tests, GRE, GMATetc.) (y)	01	02	02	03
No. of students turned entrepreneur in engineering / technology(z)	--	--	06	05
$x + y + z =$	76	77	93	82
Placement Index: $(x + y + z) / N$	0.64	0.67	0.5	0.49
Average Placement $= (P1 + P2 + P3) / 3$		$(0.64 + 0.67 + 0.5) / 3 = 0.60$		
Assessment Points $= 30 \times \text{average placement}$		$30 \times 0.60 = 18$		

Department Toppers

S. No.	Batch	Regd. No	Name	%
1	2017-21	17091A0269	SANEKOMMU SUCHITRA	8.94
2	2016-20	16091A0276	KANTINENI SANTHAKUMARI	8.82
3	2015-19	15091A0219	Y CHANDRA KALA	9.18
4	2014-18	14091A02C2	J SRILEKHA	88.4%

Placement Details

Academic Year	2020-21	2019-20	2018-19	2017-18
No. of Students	75	75	87	54

Student Publications:

Academic Year	Publications	Achievements
2020-21	6	4
2019-20	10	7
2018-19	16	14

Student Projects:

Academic Year	No. of Working Models
2020-21	25
2019-20	38
2018-19	61

Criteria 5-Faculty Information and Contributions



Faculty Student Ratio :

Year	CAY (2020-21)	CAYm1 (2019-20)	CAYm2 (2018-19)
No. of Students in UG 2 nd Year (u1)	132	132	288
No. of Students in UG 3 rd Year (u2)	132	288	288
No. of Students in UG 4 th Year (u3)	288	288	288
UG1	552	708	864
No. of Students in PG 1 st Year (p1)	18	18	18
No. of Students in PG2nd Year (p2)	18	18	36
PG1	36	36	54
Total No. of Students in the Department (S)	588	744	918
No. of Faculty in the Department (F)	29	36	41
Student Faculty Ration (SFR)	20.28	20.67	22.39
Average SFR	SFR= (SFR1+SFR2+SFR3)/3		21.11

Faculty Cadre Proportion

Year	Professors		Associate Professors		Assistant Professors	
	Required F1	Available	Required F2	Available	Required F3	Available
CAY (2020-21)	3	6	6	4	19	19
CAYm1 (2019-20)	4	5	8	4	24	27
CAYm2 (2018-19)	4	10	10	5	30	32
Average Numbers (2020-21)	RF1=4.00	AF1=5.00	RF2=8.00	AF2=4.33	RF3=24.33	AF3=26.00
Cadre Ratio Marks						20.00

$$\text{Cadre Ratio Marks} = \left\{ \frac{AF1}{RF1} + \left[\frac{AF2 \times 0.6}{RF2} + \frac{AF3 \times 0.4}{RF3} \right] \right\} \times 10$$

Faculty Qualification

	X	Y	F	$FQ = 2.0X[(10X + 4Y)/F]$ (2021-20)
CAY (2020-21)	10	19	29	12.14
CAYm1 (2019-20)	9	27	37	10.70
CAYm2 (2018-19)	10	30	40	9.69
Average Assessment				10.84

Faculty Retention

2018-19 is considered as CAYm2 and the faculty available in this year is referred as base value:

- CAYm2= 91.89 % (40)
- CAYm1= 87.5 % (35)
- CAY=83.33% (27)

Average of 87.56 %

Faculty Competencies in Correlation to PSOs

Name of the Faculty	Specialization	Research Publications	Competency for PSOs
Dr. D.V. Ashok Kumar	RENEWABLE ENERGY SYSTEM	17	1,3
Dr.B.Rami Reddy	ELECTRIC DRIVES & CONTROL	03	1,3
Dr.K.Bramhanandam	POWER QUALITY ISSUE	03	1,2,3
Dr.Suresh S.Rao	POWER QUALITY IMPROVEMENTS	06	1,3
Dr. V. Naga Bhaskar Reddy	POWER QUALITY IMPROVEMENT IN MULTI-LEVEL INVERTORS	52	1,2,3
Dr. D.Lenine	POWER QUALITY IN POWER ELECTRONICS CONVERTORS	63	1,2,3
Dr.Santosh Kumar Singh	POWER SYSTEM & POWER QUALITY	24	1,3
Dr. J. Surya Kumari	RENEWABLE ENERGY SYSTEM	30	1,2,3
Dr. B.M. Manjunath	RENEWABLE ENERGY SYSTEM	25	1,3
Dr.P.Rama Mohan	POWER ELECTRONICS AND DRIVES	12	1,2,3
Mr. G Kumara Swamy	POWER ELECTRONICS AND DRIVES	06	1,2
Mr. Y.Vijaya Suresh	MATRIX CONVERTOR	02	1,2
Mr. J.Nagarjuna Reddy	PHOTOVOLTAIC SYSTEM WITH Z-SOURCE SYSTEM	10	1,2,3
Mr. A. Suresh Kumar	ELECTRIC DRIVE AND CONTROL	08	1,2
Mr.R. Satish Kumar	POWER ELECTRONICS	05	1,2
Mr.P.Sai Sampath Kumar	POWER ELECTRONICS	04	1,2
Mr.E. Narasimhulu	POWER AND ENERGY SYSTEM	04	1,3
Mr.P.Sesi kiran	ELECTRICAL POWER SYSTEM	03	1,3
Mr.V.Narasimhulu	INDUSTRIAL DRIVES	17	1,2,3
Mr.K.Niteesh Kumar	ELECTRIC DRIVE AND CONTROL	01	1,3
Mr.T.Ashok Kumar	POWER ELECTRONICS AND DRIVES	01	1,2
Mr.S.Rahamthulla	ELECTRICAL POWER SYSTEM	02	1,2,3

Academic Research

Publication Details

Year	International Journals	Conferences		Total
		International	National	
CAY (2020-21)	16	03	05	24
CAYm1 (2019-20)	34	06	-	40
CAYm2 (2018-19)	19	10	-	29
Total	69	18	05	93

Ph.D Guiding/Ph. D Awarded

NAME OF FACULTY	2020-21		2019-20		2018-19	
	GUIDING	AWARDED	GUIDING	AWARDED	GUIDING	AWARDED
Dr. D. V. Ashok Kumar	01	-	01	01	01	02
Dr. V. Naga Bhaskar Reddy	02	-	-	01	01	-
Dr. D. Lenine	01	-	01	-	02	-
Dr. J. Surya Kumari	01	-	-	-	-	-
Dr. P. Rama Mohan	01	-	-	-	-	-

Criteria 5-Faculty Information and Contributions continued...



Details of R&D Grants Received

S.No	Title of the Project/MODROBS/GoC/STTP/Seminar	Name of the Investigator	Name of the Co-Investigator	Amount Funded (Rs.)	Funding Agency	Status of the Project (Ongoing / Completed)	Year of Sanction	Grant Total Amount (Rs.)
1.	Challenges in Electric Vehicular Battery Charging & Grid Integration Issues	Dr.D.Lenine	--	250000	STTP/ AICTE Govt. of India	Completed	2019-20	20,65,687
2.	National Conference on Advances in Power Energy & Control	Dr. V. Naga Bhaskar Reddy	--	166667	GoC/AICTE Govt. of India	Completed	2019-20	
3.	MODROBS- Power Systems Lab	Dr. V. Naga Bhaskar Reddy	--	1649020	MODROBS/A ICTE Govt. of India	Ongoing	2019-20	
4.	National Conference on Recent Trends in Electrical & Electronics Engineering	Dr. Santosh Kumar Singh	--	1500000	GoC/AICTE Govt. of India	Completed	2018-19	4,13,1000
5.	MODROBS-Control Systems Lab	Dr.D.V.Ashok Kumar	--	731000	MODROBS/A ICTE Govt. of India	Completed	2018-19	
6.	Advanced Power Electronics Control of Integrated Renewable Energy Systems	Dr.D.Lenine	--	300000	STTP/ AICTE Govt. of India	Completed	2018-19	
7.	DST-FIST Program	Dr.T.Jayachandra Prasad	Dr. V. Naga Bhaskar Reddy	6000000 (16 Lakh allotted to EEE)	FIST/DST Govt. of India	Ongoing	2018-19	
8.	Seminar-Photovoltaic Inverter	Dr.D.V.Ashok Kumar	--	100000	SG/AICTE Govt. of India	Completed	2017-18	4,27,1000
9.	Design, Analysis and Practical Implementation of Digital Controlled Islanding Detection Methods for Grid Connected Photovoltaic Systems.	Dr.J.Surya Kumari	--	4171000	SERB/DST Govt. of India	Ongoing	2017-18	

Consultancy Works during the Assessment Years

Academic year	Consultancy work Title	Name of the Consultant	Amount of Consultancy work (Rs)
2019-20	Design & development of modified SVPWM and offset voltage injected in reference PWM technique for 7-level cascaded H-bridge inverter with solar PV array	JSK Lab Instruments, Chennai	75,000
	Wring and Electrification work for library	Santhiram Medical college, Nandyal	2,45,000
	Electrical Installations Digital class room setup	R G M International School, Nandyal	1,95,000
2018-19	Design of digital controlled islanding detection circuit for grid integration of renewable energy sources under various loading conditions	Sannidhi Systems, Vijayawada	85,000
2017-18	Solar PV Installation and commissioning at SRMC	Santhiram Medical college, Nandyal	75,000

Research Laboratories

Available Software/Equipment for Research Lab	Quantity/User	Product Supplier
PLECS-Power Electronics Simulation Software	10	Cyber Motion Technologies Pvt Ltd.
PSIM 7.0	05	Trident Techlabs Pvt Ltd.
POWER WORLD SIMULATOR 12.0	01	Trident Techlabs Pvt Ltd.
ETAP VERSION 5.5.5	05	KLGSystel Ltd.
DSP BASED Control of 3 Phase Induction Motor	01	Vi Micro Systems Pvt. Ltd.
Speed Control of Single Phase Induction Motor using Cyclo Converter	01	Vi Micro Systems Pvt. Ltd.
Speed Control of Three Phase Induction Motor Using AC Voltage Controller	01	Vi Micro Systems Pvt. Ltd.
DSP Based Static Krammer Drive	01	Vi Micro Systems Pvt. Ltd.
Digital Power Meter	01	Yokogawa Pvt. Ltd.
750 watts Brushless DC Motor with mechanical loading arrangement power module with software (BLDC Motor)	01	Vi Micro Systems Pvt. Ltd.
DSP Trainer	01	Vi Micro Systems Pvt. Ltd.
Spartan 3 FPGA Based Development Kit	01	Vi Micro Systems Pvt. Ltd.
1.2 HP AC Induction Motor with mechanical loading arrangement power module and software	01	Vi Micro Systems Pvt. Ltd.
750 Watts Permanent magnet AC Synchronous motor with mechanical loading arrangement power module and software	01	Vi Micro Systems Pvt. Ltd.
Power Quality & Energy Analyzer Make: Fluke & Model: 434-II	01	Peridot Technologies
dSPACE-ACE Kits Advanced Control Education Kit	01	Dynafusion Technologies Pvt. Ltd.
6 Channel Power Analyzer	01	Yokogawa Pvt. Ltd.
LabView Research Software	01	National Instruments Pvt. Ltd.
Data Acquisition and Source Measurement Unit	01	National Instruments Pvt. Ltd.
Three Phase Seven Level Z-Source based H-Bridge with Nine PV Panels of 3150 Watts Fed to Three Phase IM through 3KVA Transformer	01	JSK Instrumentation Lab

Patents & other Research Information

S.No	Name of Faculty	Title of Patent	Application Number	Year	Status
1.	Dr.V.Naga Bhaskar Reddy	Multifunctional, Carrier Provision to Ease Handling Strain in Laptop.	2020103338	2021	Filed
2.	Dr. Rao, Suresh S	Monitoring and Control of Multiple Wireless Switch and Sensor Board Units using Star Zigbee Network	202141012082	2021	Filed
3.	Dr. Rao, Suresh S	Fan Speed Control Using Capacitors, Triacs, Opto-Isolators, Star Zigbee Network and IoT.	202141014716	2021	Filed

- Dept. of EEE Installed, operating and maintaining of a **500kW Roof Top Solar** plant installed at RGM CET.
- **Incubation Centre (IoT)** developed by Dr.Sures S Rao.

Criteria 6-Facilities and Technical Support



Cost of Laboratories:

S.No.	Name of the Lab	Cost (₹)
1	Control System	25,42,392
2	Electronic Devices and Circuits	7,42,469
3	Electrical Measurements	35,42,990
4	Instrumentation	4,28,580
5	Electrical Machines-I	23,27,526
6	Electrical Machines-II	13,25,103
7	Microprocessors & Microcontrollers	1,91,120
8	Power Systems	6,71,995
9	Power Electronics	43,31,765
10	Electrical Simulation	27,64,306
11	Basic Electrical Engineering	97,058
Total		₹ 1,89,65,303
Rupees One Crore Eighty Nine Lakhs Sixty Five Thousand Three Hundred and Three only		

Equipment Purchased to R&D center :

PSCAD Software (Institute fund)	: 2.065 Lakhs
Power Analyser- Yokogowa-(DST-SERB)	: 18.98 Lakhs
Power Analyser- Fluke- (AICTE-RPS)	: 4.0 Lakhs
DAQ & Source measurement Unit (DST-SERB)	: 2.22 Lakhs
PV-Panels of 7 X 320Watts	: 0.99 Lakhs
Lab view software (DST-SERB)	: 2.48 Lakhs
Hybrid Multilevel Inverter setup (DST-FIST)	: 16.17 Lakhs
Static Krammers Drive (AICTE-MODROB)	: 2.06 Lakhs
D-space kits - (AICTE-RPS)	: 7.0 Lakhs
Digital Storage Oscilloscopes (TEQIP)	: 2.15 Lakhs

Academic Audit and Actions Taken:

- **Academic Audit Committee** is formed in the Department with a group of 3 Members likely Senior Faculty Members, Dean/Directors and responsibilities of the committee is as follows
 - To encourage Department/Programs to evaluate their “education quality process.
 - To produce, assure and regularly improve the quality of teaching and learning.
 - To streamline academic functions and standardize practices.
 - To ensure every faculty member performs his/her best in teaching and research.
 - To provide feedback to faculty members on area which need to improvement.
 - To monitor the progress of Ph.D work of scholars and provide relevant guidance.
- **Outcomes**
 - Improved performance of students in internal and external assessments.
 - Focused on research progress by regular research scholars.
- **Evidence of Success**
 - The Audit mechanism has enhanced faculty members’ contribution and their teaching quality which is reflected in student performance and engaged.
 - The attendance and assessment record maintained by the faculty members is up to the standards
 - Overall performance of the students in written examination is good which exhibits the effective and innovative teaching methodology of the faculty members.
 - Students have excelled in their creative skills and have emerged with outputs such as improved in percentage marks, pass percentage.
 - The assessment pattern especially the components of Quality assessment adopted by the members of Faculty were found to be innovative and unique.

Academic Audit and Actions taken

➤ Other Best Practices

- Remedial classes are arranged for academically weak and failed students by respective subject teachers after the college working hours.
- Digital class room facility is provided to meet advancement in technology.
- Laboratory facility is also kept open beyond the college working hours to improve the knowledge of the student.

➤ Adjunct Faculty

- Service of eminent academicians and experts from the industry drafted in to the UGC system through the “Adjunct Professorship” Scheme. A Well laid out policy for the appointment of Adjunct Professors is in place.

➤ Some of the key decisions taken based on academic audit include

- Get feedback from students on examination and evaluation process
- Single question paper for common subjects from multiple set of question papers
- Scrutiny of question papers by subject experts
- Random checking of periodical test papers

➤ Suggestions of AAC

- Better practices can be further adopted in teaching-learning processes
- Flexibility in the syllabus with maximum number of electives and audit courses match towards excellence.
- Teachers Should Further Be Motivated For Attending FDP/Seminar/Symposia/Conferences & Workshops
- Institute being research center, regular Ph D scholar be promoted for registration as a part of early faculty induction program.

Criteria 7-Continuous Improvement contd.....



Improvement in Placement, Higher Studies and Entrepreneurship

Branch	2017-18	2018-19	2019-20	2020-21	Total
EEE	105	154	116	142	325

Improvement in the quality of Students Admitted to the program

Item		2017-18	2018-19	2019-20	2020-21
National Level Entrance Examination GATE (GATE / PGECET)	No. of Students admitted	8	2	1	-
	Opening Score/Rank	334	1434	30096 (GATE)	-
	Closing Score/Rank	2959	2742	-	-
State/Institute/Level Entrance Examination/Others (EAMCET)	No. of Students admitted	71	40	69	90
	Opening Score/Rank	27721	25048	20608	20516
	Closing Score/Rank	88787	47675	89579	63365
Name of the Entrance Examination for Lateral Entry or lateral entry details (ECET)	No. of Students admitted	31	42	52	34
	Opening Score/Rank	232	293	83	-
	Closing Score/Rank	2120	1256	769	-

Internal-Audit Committee(IAC):

Faculty Name	Designation	Academic year
Mr.Y.Vijaya Suresh	Associate Professor	2018-20
Mr.A.Suresh Kumar	Associate Professor	2018-20






They are directed to look after all matters related to stock available in Laboratories. i.e. Invoice/Bills are to be verified for every equipment. They should also verify log register and Register of consumables/service. If found any discrepancy to be brought to the notice of HOD

Internal Academic Audit Committee (IAAC):

Faculty Name	Designation	Academic year
Dr.P.Rama Mohan	Assoc.Professor	2018-20
Mr.V.Narasimhulu	Asst.Professor	2018-20

They are directed to look after all matters related to Internal Tests and Assignments conducted for theory exams and Laboratories.
Random checking of any 5 scripts of each subject,
If found any discrepancy to be brought to the notice of HOD

Professional Activities:

S.No	Institutional Membership	Logo	Regd. No.
1	Institute of Engineers		518502/RGET/EE
2	Institute of Electrical and Electronics Engineers		STB16391
3	Indian Society for Technical Education		AP-64
4	Solar Energy Society of India		-
5	Computer Society of India		-

Criteria 7-Continuous Improvement contd...



(Seminars/Workshops/SC Programs/Conferences/Guest lectures)

Name of Professional Society/ Chapter	Total Number of Events Conducted			
	2017-18	2018-19	2019-20	Total
Institute of Engineers (IE)	02	-	01	03
Institute of Electrical and Electronics Engineers (IEEE)	10	08	03	21
Indian Society for Technical Education (ISTE)	-	-	03	03

List of Workshops Organized by Department

2017-18	2018-19	2019-20	Total
07	04	02	13

List of Seminars Organized by Department

2017-18	2018-19	2019-20	Total
03	02	-	05

List of Guest Lectures Organized by Department

2017-18	2018-19	2019-20	Total
08	05	-	13

List of Conferences Organized by Department

2017-18	2018-19	2019-20	Total
01	03	02	06

Criteria 7-Continuous Improvement contd.....



Scholars Guided/Guiding from the Dept.

S.No.	Name of the Guide (RGM Faculty only)	Name of the Research Scholar	Regular		External		Name of the University	Date of Award	No.of Scholars Guided/Guiding
			Pursuing	Awarded	Pursuing	Awarded			
1.	Dr.D.V.Ashok Kumar	K.Narasimhachari 11PH0220				√	JNTUA	June-2019	04/06
2		B.M.Manjunatha				√	JNTUA	October-2018	
3		R.Hanuma Naik				√	JNTUA	July-2018	
4		S.Nagaraja Rao 12022P0225				√	JNTUK	November - 2019	
5		M.Chiranjeevi 15PH0235	√				JNYUA		
6		V.Narasimhulu 12022P0217			√		JNTUK		
7		B.Mabu Sarif 1479569			√		Vignan University		
8		N.Narasimhulu			√		JNTUA		
9		Vijaya Kumar			√		JNTUK		
10		V.Veera Nagi Reddy 130922P0213			√		JNTUK		
11	Dr.B.Rami Reddy	R.Heerasingh				√	Anna University		01/00
12	Dr.V.Naga Bhaskar Reddy	K.Raja Sekhar Reddy 2014			√		JNTUA		01/04
13		Seetha Chaitanya 2016		√			JNTUA		
14		M.Veeresh 2016			√		JNTUA		
15		L.Baya Reddy			√				
16		G.Bhaskar Rao			√				
17	Dr.D.Lenine	Shamshul Haq			√		KLU		00/05
18		J.Nagarjuna Reddy			√		JNTUA		
19		M.Vasu	√				JNTUA		
20		K.Nagesh			√		JNTUA		
21		S.Krishnarjuna Rao	√				JNTUA		

OBE Philosophy of the Department

Program Outcomes:

Engineering Graduates will be able to:

1. Engineering knowledge: Apply the knowledge of mathematics, science, and engineering specialization to the solution of complex engineering problems.
2. Problem analysis: Identify, formulate, review research literature and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences and engineering sciences.
3. Design/development of solutions: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety and the cultural, societal and environmental considerations.
4. Conduct investigations of complex problems: Use research based knowledge and research methods including design of experiments, analysis and interpretation of data and synthesis of the information to provide valid conclusions.
5. Modern tool usage: Create, select and apply appropriate techniques, resources and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.
6. The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.
7. Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts and demonstrate the knowledge of, and need for sustainable development.
8. Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
9. Individual and team work: Function effectively as an individual and as a member or leader in diverse teams and in multi-disciplinary settings.
10. Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large being able to comprehend and write effective reports and design documentation, make effective presentations and give and receive clear instructions.
11. Project management and finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team to manage projects and in multi-disciplinary environments.
12. Life-Long learning: Recognize the need for and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

Program Specific Outcomes

PSO- 1: Students are able to analyze and design the electrical and electronic circuits with the knowledge of courses related circuits, networks, linear digital circuits and power electronics.

PSO-2: Student can explore the scientific theories, ideas, methodologies in operation and maintenance of electrical machines to bridge the gap between academics and industries.

PSO-3: Students are able to work professionally with new cutting edge Technologies in the fields of power system, generation, operation, and maintenance.

Program Educational Objectives

PEO-1: Graduates will have intra-disciplinary comprehension and skills to design and develop products and systems in the field of Electrical and Electronics Engineering.

PEO-2: Graduates will acquire knowledge to meet the needs of operation and continuance of electrical tools used in various industries

PEO-3: Graduates will be proficient to meet the tasks in public and private sectors of Electrical Engineering

PEO-4: Graduates will possess the knowledge and motivation to pursue successful professional career for the betterment of humankind

Note: Program Outcomes (POs) and Program Specific Outcomes (PSOs) are mapped with Course Outcomes (COs) and they are correlated in following levels

- 1: Slight (Low)
- 2: Moderate (Medium)
- 3: Substantial (High)

Dissemination of Vision, Mission and PEOs

Vision statements are modified in the meeting of all stake holders to maintain consistency with the institute Vision.

Modified Vision statements are displayed in the premises of department and awareness created among all stakeholders during BOS meeting and in regular teaching classes

It is made regular practice to the Faculty and Students to maintain conversation about CO's and PO's mapping along with Vision & Mission Statements

Vision, Mission and PEOs are published and disseminated among stake holders

Communicated to the stakeholders through electronic media and meetings

Published at departmental page of the website
(<https://www.rgmcet.edu.in/departments-of-eee>).

Displayed in classrooms, corridor, department office, department library and laboratories.

Process for Defining the Vision and Mission:

- The HOD with the active participation of faculty members and based on the continuous feedback from stakeholders develops the vision and mission statement of the department in alignment with Vision and Mission of the University.
- These statements are discussed further among faculty members before finalization.
- The new vision and mission statements are sent to the Board of Studies of the department for approval.
- Finally the Vision and Mission are approved by the Academic Council and the Governing Council.

Process for Defining PEOs:

- Process for establishing and revising Program Educational Objectives (PEOs) is depicted in Fig. 1.1, below. Alumni inputs are obtained through extensive alumni surveys with follow-up email and telephone calls by the Department HOD and associated faculty.
- Students' input to our educational objectives is obtained in a number of traditional ways, including presentations at seminars, course and program surveys, and through focus groups conducted with graduating seniors by the Department HOD.
- This feedback is condensed and presented to faculty at the final faculty meeting. Students also participate in a course evaluation process at the end of each course.

Steps to Process the Defining of PEOs

STEP-1: The thrust areas are identified from existing literature from industries, electronic media and interaction with the society before listing of PEOs.

STEP-2: PEOs are stated by the organizing Committee of the department after thorough investigation.

STEP-3: PEOs are communicated to the industry experts, Academician and alumni, their recommendations are incorporated.

STEP-4: PEOs are analytically discussed within the department, feedback is conceded and finalized.

Consistency of PEOs with Mission of the Department

M1- To produce intellectual and social responsible electrical engineers with sound theoretical knowledge blended with state of the art skills for global development.

M2 -To inculcate knowledge in production, maintenance of electrical power generation through smart innovations to meet the power demand of the society.

M3- To motivate the student towards research and entrepreneurship in the field of Electrical Engineering.

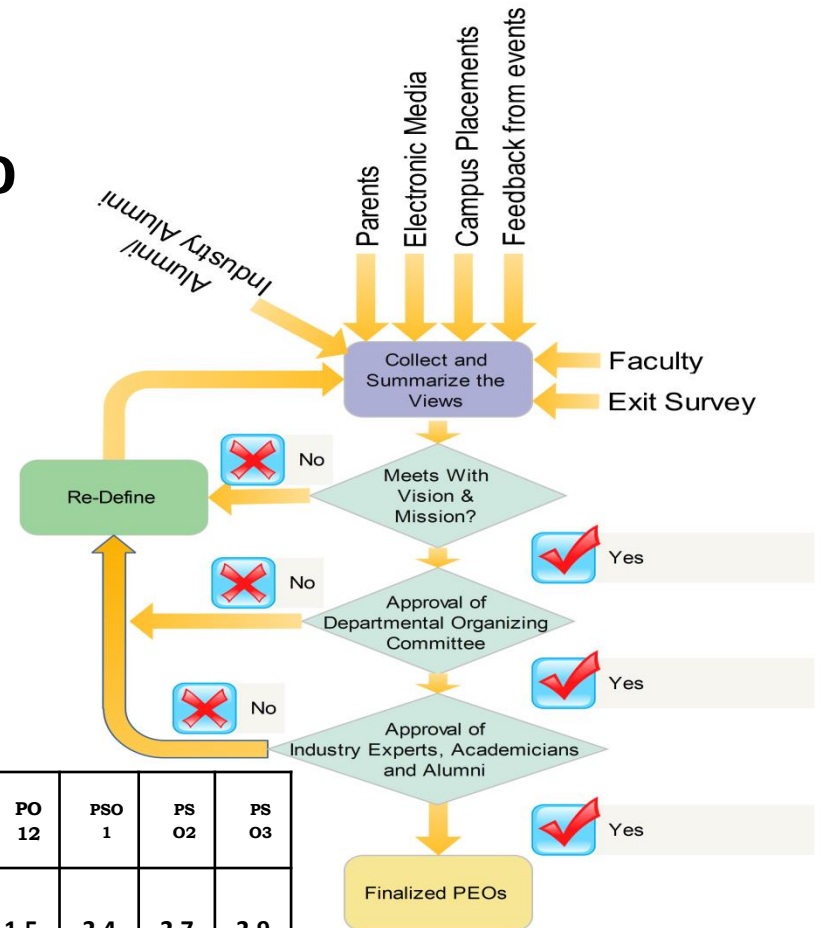
PEO Statements	M1	M2	M3
PEO-1: Graduates will have intra-disciplinary comprehension and novel skills to design and develop the products and systems in their discipline	2	3	3
PEO-2: Graduates will acquire the knowledge to do well in the operation and continuance of electrical tools in various industries	3	2	3
PEO-3: Graduates will be proficient to meet the tasks in public and private sectors of Electrical Engineering	3	2	3
PEO-4: Graduates will possess the knowledge and motivation to pursue successful professional career for the betterment of humankind	3	3	3

Courses are Introduced in the Regulation Revised R-2019 & R-20

- Python Programming
- NPTEL-MOOCs certification courses
- Embedded System & IoT
- Electric Vehicles
- Solar PV Systems
- Training & Placement Activities

Program Articulation Matrix

Course	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PS O2	PS O3
Average of SET PO	2.3	2.4	2.0	1.8	1.8	1.9	1.9	1.4	2.0	1.4	2.1	1.5	2.4	2.7	2.9



Course Articulation Matrix

Course	Course Outcome Statements	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
FIELD THEORY (II-B.Tech., I-Sem)	To apply knowledge of basic mathematics and physics for the determination of electric and magnetic quantities	3	3	-	2	-	-	-	-	2	1	-	2	3	-	-
	Application of electrostatic and magneto static theorems to determine electric field intensity and magnetic field intensity	3	3	-	2	-	-	-	-	2	1	-	2			
	To determine the self and mutual inductance of simple practical current carrying systems	3	3	-	2	-	-	-	-	2	1	-	2			
	To solve the problems related to electromagnetic field using dealt theorems	1	2	-	2	-	-	-	-	2	1	-	2			
	To understand time varying electromagnetic fields as governed by the maxwell's equations	2	2	-	2	-	2	-	-	2	1	-	2			
	To analyze the behavior of the conductors using ohms law, inductors using Faraday's law and capacitors using dielectric principles.	1	3	-	2	-	-	-	-	2	1	-	2			
NETWORK THEORY (II-B.Tech., II-Sem)	Learn various techniques to find electrical parameters for a given electrical circuit	3	3	2	3	-	3	-	-	-	-	-	1	3	-	-
	Distinguish between AC Circuits and DC Circuits	2	3	2	2	-	3	-	-	-	-	-	2			
	Find performance of series and parallel RL, RC & RLC Circuits with the help of Locus diagrams.	3	3	2	2	-	1	-	-	-	-	-	2			
	Learn concept of Resonance.	1	3	1	2	-	1	-	-	-	-	-	2			
	Analyses & design a circuit with the help of theorems.	2	2	2	3	-	2	-	-	-	-	-	2			
	Focus on basics of magnetic circuits and analyses them.	1	3	1	2	-	1	-	-	-	-	-	3			

Rubrics Developed to Validate the POs :

CO-Attainment Method:

(For the course of Neural Network & Fuzzy Systems)

Generally, the approach in evaluating the attainment of CO is using existing data from students' marks, for example final exam, internals and assignments. These assessments are referred as formal/ direct assessment. This method is chosen because of the information is readily available and it is common for most courses. In general, assessment methods used are grouped into 3 categories for theory courses: (1) Final exam (2) Internal Tests and (3) Assignments and for practical courses final exam and internal test only. Each of these categories contributes a certain

Steps followed for the CO-PO Attainment Process:

As a model of explaining the process, it considered about a course called Neural Networks and Fuzzy Systems of IV-B.Tech, I-Sem follows RGM-R-15 Regulations.

1. Initially the End exam Question Paper is properly assessed with the marks weightage including choice questions (Total of 98 marks) for CO1 to CO6, which can be observed in Table B.3.2.1. Similarly Mid1 & MID 2(60 Marks) papers as shown in Table B.3.2.2., as well Assignment1 & Assignment2(10 Marks) are also evaluated as shown in Table B.3.2.3., for their weightage as per the regulations shown in Table B.3.2.4.

2. Accordingly End exam, MID and assignment papers are evaluated for their percentage weightages for each CO as shown in Table B.3.2.5.

3. Based on the overall percentage distribution, the CO-mark needs to be calculated so that the score is normalized accordingly. Using example in Table 3.2.6, the new mark for CO1 will be:

$$\text{Marks CO1} = (0.20 \times \%FEX \times 0.70) + (0.15 \times \%INT \times 0.25) + (0.20 \times \%ASS \times 0.05)$$

Similarly, for CO2:

$$\text{Marks CO2} = (0.1 \times FE \times 0.7) + (0.2 \times INT \times 0.25) + (0.2 \times ASS \times 0.05) \text{ and so on up to CO6.}$$

Where FE is the student's Final Exam mark, INT is the student's mid exam marks ASS is the student's Assignment mark.

4. The students' marks are tabulated according to the assessment groups. These marks are then used to calculate the CO-marks.

5. Normalised CO values are calculated for each CO by dividing each percentage CO weight with the Average value of % weightage of each CO. **Ex: $N.CO1=CO1/Avg.CO1$**

Similarly calculations are done up to N.CO6 as shown in Table B.3.2.6.

6. The categorization is made with the thresh hold value 60% as per the Table B.3.2.7; which explains about the No. of students attained more than 60% normalized values are given 3 weightage points as they have strongly attained. 2 weightage points are given to the normalized values in between 40% to 60% and 1 weightage point is marked for the normalized values below 40%. This Table clearly gives the details about the no. of students attained the weightage points 3, 2 & 1.

7. Attainment CO values are calculated:

$$CO1 = \sum \frac{(No. of students attained) * (the weightage points given)}{(Total No. of students)}$$

As per the Table B.3.2.8, $(88*3+35*2+6*1)/129 = \mathbf{2.64}$

8. PO attainment values are calculated as per the Table B.3.2.8. In this table CO1 to CO6 attained values are tabulated column wise and these values are correlated with the program articulation matrix table, which already available with the curriculum- syllabus for the respective course. PO attainment values are calculated:

$$PO1 = \sum \frac{(CO attainment value) * (the mapping values)}{(Total mapping pints)}$$

$PO1=(22.64*3+2.57*3+2.68*3+2.68*3+2.68*3+2.73*3)/(3+3+3+3+3+3)=\mathbf{2.66}$

Table B.3.2.4 Regulation weightage marks

Final exam	Internal tests	Ass/Quiz
70	25	5
0.7	0.25	0.05

Table B.3.2.5 percentage weightages for each CO

Weightage marks for each CO

	CO1	CO2	CO3	CO4	CO5	CO6	Total
EM	17	32	14	14	14	7	98
IM	9	9	9	10	13	10	60
AM	1	1	2	2	2	2	10

% Weightage of each CO

	CO1	CO2	CO3	CO4	CO5	CO6	Total
EM (%)	17.34	32.65	14.28	14.28	14.28	7.14	100
IM (%)	15	15	15	16.66	21.66	16.66	100
AM (%)	10	10	20	20	20	20	100
Avg	16.39	27.10	14.75	15.16	16.41	10.16	100

Table B.3.2.1 Assessment of End exam Question paper

Q.No.	CO 1	CO 2	CO 3	CO 4	CO 5	CO 6	Total
1 a)	2						2
b)		2					2
c)	2						2
d)		2					2
e)	2						2
f)	2						2
g)	2						2
2 a)		7					7
b)		7					7
c)							0
3 a)			7				7
b)			7				7
c)							0
4 a)					14		14
b)							0
c)							0
5 a)	7						7
b)						7	7
c)							0
6 a)				7			7
b)				7			7
c)							0
7 a)		7					7
b)		7					7
c)							0

Table B.3.2.2 Assessment of MID Exam Question paper

Mid I Marks --> Cos								Mid II Marks --> Cos							
Q.N o.	CO 1	CO 2	CO 3	CO 4	CO 5	CO 6	Total	Q.N o.	CO 1	CO 2	CO 3	CO 4	CO 5	CO 6	Total
1 a)	2						2	1 a)	2						2
b)							0	b)				2			2
c)		2	2				4	c)						2	2
d)					2		2	d)					2		2
e)	2						2	e)						2	2
2 a)				3			3	2 a)				3			3
b)				2			2	b)			2				2
3 a)		3					3	3 a)	3						3
b)		2					2	b)					2		2
4 a)					3		3	4 a)						3	3
b)					2		2	b)			2				2
5 a)			3				3	5 a)					2		2
b)		2					2	b)						3	3
Total	4	9	5	5	7	0	30	Total	5	0	4	5	6	10	30

Total 9 9 9 10 13 10 60

Table B.3.2.3 Assessment of Assignment Question paper

Assignment 1 Marks --> Cos							Assignment 2 Marks --> Cos						
CO 1	CO 2	CO 3	CO 4	CO 5	CO 6	Total	CO 1	CO 2	CO 3	CO 4	CO 5	CO 6	Total
1	1	2	1	0	0	5	0	0	0	1	2	2	5
Total	1	1	2	1	0	5	Total	0	0	0	1	2	5

Total 1 1 2 2 2 2 10

OBE Philosophy of the Department contd....



Table B.3.2.6 percentage weightages for each CO

S.N Q	Reg.No	Internal marks	Assignment marks	Final Internal marks	Total Final Marks	External Marks	% of IM	% of AM	% of EM	CO 1	CO 2	CO 3	CO 4	CO 5	CO 6
1	16091A0202	6.25	4	11	50	39	25	80	55.71	49.43	51.91	49.55	48.88	47.06	45.52
2	16091A0203	19.75	4	24	67	43	79	80	61.43	66.01	64.20	67.15	67.48	68.36	70.46
3	16091A0204	22.5	4	27	77	50	90	80	71.43	75.94	74.16	76.73	77.10	78.08	79.88
4	16091A0205	21.75	5	27	79	52	87	100	74.29	77.98	76.52	79.26	79.47	80.05	82.03
5	16091A0206	19.75	5	25	67	42	79	100	60.00	65.57	63.37	67.54	67.86	68.71	71.72
6	16091A0207	24	5	29	79	50	96	100	71.43	77.92	75.35	79.61	80.06	81.28	84.31
7	16091A0208	19.75	5	25	69	44	79	100	62.86	67.68	65.78	69.48	69.74	70.45	73.13
8	16091A0209	20	5	25	60	35	80	100	50.00	58.39	55.07	61.02	61.54	62.94	67.21
9	16091A0210	17.5	4.5	22	73	51	70	90	72.86	72.73	72.78	73.29	73.20	72.96	73.37
10	16091A0211	15.75	5	21	68	47	63	100	67.14	67.20	67.18	68.32	68.17	67.78	68.68
11	16091A0212	21	5	26	69	43	84	100	61.43	67.77	65.26	69.78	70.17	71.23	74.47
12	16091A0213	24	5	29	77	48	96	100	68.57	75.80	72.95	77.68	78.18	79.54	82.90
13	16091A0214	15.25	5	21	59	38	61	100	54.29	57.22	56.06	59.09	59.14	59.29	61.53
14	16091A0215	24	5	29	84	55	96	100	78.57	83.21	81.38	84.46	84.77	85.63	87.82
15	16091A0217	10.75	4.5	16	58	42	43	90	60.00	57.03	58.20	57.71	57.31	56.22	55.98
16	16091A0218	19.25	5	25	66	41	77	100	58.57	64.05	61.88	66.07	66.37	67.18	70.20
17	16091A0219	20	5	25	63	38	80	100	54.29	61.56	58.69	63.92	64.36	65.55	69.32
18	16091A0221	24	5	29	81	52	96	100	74.29	80.04	77.76	81.55	81.95	83.02	85.71
19	16091A0223	11.75	4.5	17	42	25	47	90	35.71	39.95	38.28	42.26	42.39	42.74	45.68
20	16091A0224	18	4.5	23	53	30	72	90	42.86	50.96	47.76	53.46	53.97	55.34	59.44
21	16091A0225	21.75	5	27	45	18	87	100	25.71	42.00	35.56	46.33	47.45	50.46	58.14
22	16091A0226	17	4.5	22	35	13	68	90	18.57	32.06	26.73	35.98	36.86	39.23	45.85
23	16091A0229	22.5	5	28	61	33	90	100	47.14	58.56	54.05	61.62	62.40	64.50	69.91
24	16091A0230	18	4.5	23	67	44	72	90	62.86	65.78	64.62	67.02	67.16	67.53	69.27
25	16091A0231	23.25	5	29	79	50	93	100	71.43	77.23	74.94	78.85	79.24	80.29	83.08
26	16091A0232	24	5	29	72	43	96	100	61.43	70.51	66.92	72.83	73.47	75.18	79.39
27	16091A0233	11.5	4.5	16	31	15	46	90	21.43	29.14	26.09	32.32	32.70	33.71	38.24
28	16091A0234	24	5	29	87	58	96	100	82.86	86.39	84.99	87.36	87.60	88.24	89.93
29	16091A0235	13	4.5	18	52	34	52	90	48.57	50.62	49.81	52.25	52.24	52.23	54.05
30	16091A0237	15	4.5	20	56	36	60	90	51.43	54.57	53.33	56.22	56.33	56.61	58.74

Table B.3.2.7 percentage weightages for each CO

	CO 1		CO 2		CO 3		CO 4		CO 5		CO 6	
	No. of students Attained	Weightage Points	No. of students Attained	Weightage Points	No. of students Attained	Weightage Points	No. of students Attained	Weightage Points	No. of students Attained	Weightage Points	No. of students Attained	Weightage Points
>= 60%	88	3	82	3	93	3	93	3	93	3	98	3
40% to 60%	35	2	38	2	31	2	31	2	31	2	27	2
<40%	6	1	9	1	5	1	5	1	5	1	4	1
Total No. of students	129		129		129		129		129		129	
Attainment value		2.64		2.57		2.68		2.68		2.68		2.73
% of Attainment		68.22		63.57		72.09		72.09		72.09		75.97
Attained or not		YES		YES		YES		YES		YES		YES

Table B.3.2.8 percentage weightages for each PO



CO	CO Attainment Value	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	PSO 3
CO 1	2.64	3	3	3	2	1	0	0	0	0	0	0	0	1	0	0
CO 2	2.57	3	3	2	2	2	0	0	0	0	0	0	0	1	0	0
CO 3	2.68	3	3	3	3	2	0	0	0	0	0	0	1	1	0	0
CO 4	2.68	3	3	3	2	3	0	2	0	0	0	0	2	1	0	0
CO 5	2.68	3	3	3	2	1	0	0	0	0	0	0	0	1	0	0
CO 6	2.73	3	3	3	3	2	0	0	0	0	0	0	2	1	0	0
NNFS		2.66	2.66	2.67	2.67	2.67	-	2.68	-	-	-	-	2.70	2.66	-	-

Record the attainment of Course Outcomes of all courses with respect to set attainment levels:

Attained POs Semester wise: AY 2019-20

YEAR	Sem	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
Average of SET PO		2.3	2.4	2.0	1.8	1.8	1.9	1.9	1.4	2.0	1.4	2.1	1.5	2.4	2.7	2.9
II	I	2.41	2.39	2.39	2.38	2.28	2.46	0	0	2.4	2.38	2.56	2.45	2.38	2.22	2.33
	II	2.12	2.06	1.72	1.86	0.32	0.82	0.58	0.64	1.35	0.88	0.61	2.34	1.68	1.13	0.95
III	I	2.51	2.53	2.39	2.48	1.53	1.38	1.86	1.15	2.25	0	1.54	2.55	1.73	2.57	0
	II	2.18	2.41	2.43	2.44	2.39	1.69	1.23	1.74	2.25	1.85	2.43	1.82	2.12	1.26	1.39
IV	I	2.52	2.57	2.53	2.48	2.44	1.96	1.81	1.37	2.09	1.46	2.49	2.5	2.42	2.29	0
	II	2.47	2.71	2.73	2.68	2.83	2.67	2.83	2.83	2.7	2.7	0	1.79	0	0	2.69

Attained POs Semester Wise: AY 2018-19

YEAR	Sem	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
Average of SET PO		2.3	2.4	2.0	1.8	1.8	1.9	1.9	1.4	2.0	1.4	2.1	1.5	2.4	2.7	2.9
II	I	2.17	2.17	1.88	2.26	2.08	2.04	0.00	0.00	1.69	2.14	2.00	2.13	1.69	1.20	0.87
	II	2.40	2.40	2.04	2.49	0.94	1.17	0.00	0.00	2.00	0.94	0.94	2.43	1.87	1.85	1.34
III	I	2.57	2.61	2.49	2.58	2.55	2.49	2.43	2.48	2.58	2.45	2.52	2.56	2.51	2.60	2.54
	II	2.49	2.49	2.45	2.43	2.48	2.13	1.40	1.82	2.28	1.89	2.47	2.02	2.69	2.70	2.43
IV	I	2.53	2.12	2.52	2.47	2.62	2.58	2.71	2.76	2.62	2.34	2.62	2.60	2.46	2.30	2.56
	II	2.70	2.61	2.70	2.60	2.81	2.61	2.89	2.89	2.53	2.53	0.00	2.62	0.00	0.00	2.61

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Attained POs Semester Wise: AY 2017-18

YEAR	Sem	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
Average of SET PO		2.3	2.4	2.0	1.8	1.8	1.9	1.9	1.4	2.0	1.4	2.1	1.5	2.4	2.7	2.9
II	I	2.39	2.38	2.61	2.51	2.41	2.62	0.00	0.00	2.24	2.38	2.66	2.55	1.90	2.09	2.42
	II	2.42	2.39	2.10	2.37	0.96	0.86	0.90	0.93	2.12	1.38	1.51	2.43	1.42	1.69	0.83
III	I	2.61	2.64	2.53	2.60	2.53	2.45	2.62	2.63	2.65	2.35	2.54	2.64	2.52	2.65	2.36
	II	2.75	2.64	2.73	2.60	2.47	2.09	1.47	1.48	2.39	1.63	2.69	2.28	2.60	2.49	2.50
IV	I	2.66	2.60	2.66	2.61	2.73	2.76	2.80	2.82	2.72	1.89	2.27	2.68	2.50	2.50	2.79
	II	2.37	2.52	2.42	2.45	2.34	2.79	2.06	2.06	2.47	2.80	0.00	1.78	0.00	0.00	2.80

YEAR	Sem	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
Average of SET PO		2.3	2.4	2.0	1.8	1.8	1.9	1.9	1.4	2.0	1.4	2.1	1.5	2.4	2.7	2.9
Average of attained PO (2019-20)		2.40	2.44	2.36	2.36	1.91	1.69	1.40	1.35	2.08	1.56	1.87	2.27	2.09	1.84	1.55
Average of attained PO (2018-19)		2.48	2.40	2.35	2.47	2.25	2.17	1.57	1.66	2.28	2.05	1.76	2.39	1.87	1.78	2.06
Average of attained PO (2017-18)		2.53	2.53	2.51	2.52	2.24	2.26	1.64	1.65	2.43	2.07	1.95	2.39	1.82	1.90	2.28

Actions taken based on the results of evaluation of each of the COs, POs & PSOs :

POs & PSOs Attainment Levels and Actions for improvement– CAY: 2019-20

	PO 1	PO 2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO1 0	PO1 1	PO1 2	PSO 1	PSO 2	PSO 3
Set POs	2.3	2.4	2.0	1.8	1.8	1.9	1.9	1.4	2.0	1.4	2.1	1.5	2.4	2.7	2.9
Attained POs	2.40	2.44	2.36	2.36	1.91	1.69	1.40	1.35	2.08	1.56	1.87	2.27	2.09	1.84	1.55

YEA R	Sem	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO 10	PO 11	PO 12
II	I	FMHM 2.16	FMHM 2.2	MM 2.26	FMHM 2.22	-	FMHM 2.27	-	-	FMHM Lab 2.15	FMHM Lab 2.15	-	FMHM 2.21
	II	GDEP 2.09	GDEP 2.07	CT lab 1.88	GDEP 2.06	-	-	CS 2.26	CS 2.52	CMS 2.14	CMS 2.25	-	CT lab 1.14
III	I	MPMC 1.99	LDICA 2.06	MPMC 2.06	MPMC 2.11	MPMC 2.01	MPMC 2.06	E.S 2.28	-	E.S 2.44	-	MPMC 2.01	E.S 2.25
	II	PSA 1.85	PSA 1.85	PSA 1.87	PSA 1.85	PSP 1.68	PSA 1.85	-	PSA 1.85	PSA 1.85	PSA 1.85	PSA 1.88	PSA 1.86
IV	I	MS 1.86	PSCS 2.02	MS 1.86	PSCS 2.06	PSCS 1.74	PSCS 1.96	-	-	-	MS 1.85	MS 1.91	PSCS 2.04
	II	Homer 2.06	-	EDS 2.67	EDS 2.67	-	-	-	-	UEE 2.77	UEE 2.77	-	EDS 2.67

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POs	TargetLevel	AttainmentLevel	Observations
PO1:Engineering knowledge Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems			
PO1	2.3	2.4	<ul style="list-style-type: none"> In related to PO1 during CAY, the following subjects have got least PO attainment level FMHM(2.16), GDEP(2.09), MPMC(1.99), PSA(1.85), M.S(1.86), ESS(2.06)
Action: Tutorial classes are offered for the Diploma students beyond the working hours to enhance their knowledge in application of mathematics.			
PO2: Problem analysis Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences			
PO2	2.4	2.44	<ul style="list-style-type: none"> In a course on problem analysis, the Student performance has been consistently low with respect to electrical measurements. As mentioned above the percentage of students who are passed the courses in relation with analytical skills using of mathematics are consistently low because of diploma students have taken admission in II B. Tech.
Action: Tutorial classes are offered for the Diploma students beyond the working hours to enhance their knowledge in analytical skills using of mathematics.			
PO3:Design/development of solutions Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations			
PO3	2.0	2.36	<ul style="list-style-type: none"> In a course design, the Student performance has been consistently moderate with respect to some CO's In relation to satisfy the MISSION-I statement continuous improvement in curriculum helped the students to attain Design/development of solutions
Action: In view of the need to design solutions for complex engineering problems, students are required to have their project work on proto type development to meet real time needs.			
PO4:Conduct investigations of complex problems: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions			
PO4	1.8	2.36	<ul style="list-style-type: none"> In a course experiment and complex problems, the Student performance has been satisfied.
Action: To keep improve the attainment level, laboratories are remains open beyond working hours.			
PO5:Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations			
PO5	1.8	1.91	<ul style="list-style-type: none"> Attainment level is satisfactory because of the availability of the modern tools such as, MATLAB, PSICE, PSIMPLECS and ETAP
Action: To keep the attainment level with the help of revised regulations the program has adequate IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations			

PO6: The engineer and society			
Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice			
PO6	1.9	1.69	• Attain level is moderate with lagging in PSCS & PSA which emphasis on analytical skills.
Action: To improve the attainment level, tutorial classes are offered beyond the working hours to enhance their knowledge in analytical skills			
PO7:Environment and sustainability			
Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development			
PO7	1.9	1.4	• Attainment level is satisfactory due to alignment with the third mission and vision statement that specifies about producing and maintenance of electrical power generation through for the betterment of human kind using greenhouse environment
PO8: Ethics			
Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice			
PO8	1.4	1.35	• Attainment level is satisfactory due to alignment with third mission and vision.
PO9:Individual and teamwork			
Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings			
PO9	2.0	2.08	• Attainment level is obtained with the constant steps that are included during regular laboratory hours and project work
PO10: Communication			
Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions			
PO10	1.4	1.56	• Attainment level is satisfactory with involvement of English language and communications language skills lab (ELCS).
PO11:Project Management and Finance			
Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments			
PO11	2.1	1.87	• In a course of project in multidisciplinary environments, the student performance has been consistently moderate with respect to some CO's
Action: In order to have continuous improvement and individual involvement size of project batch has been reduced from 5 to 3 members.			
PO12:Life-long learning			
Recognize the need for, and have the preparation and ability to engage in independent and life- long learning in the broadest context of technological change			
PO12	1.5	2.27	• Attainment level is satisfactory
Action: In order to achieve continuous improvement, various guest lectures, seminars and workshops are organized in regular intervals to meet the ability of life- long learning in the broadest context of technological change.			

PSOs Attainment Levels and Actions for Improvement-A.Y 2019-20

PSOs	Target Level	Attainment Level	Observations
PSO 1: Students are able to analyze and design the electrical and electronic circuits with the knowledge of courses related circuits, networks, linear digital circuits and power electronics.			
PSO 1	2.4	2.09	FMHM(2.16),CTLab(1.93),MPMC(2.01),PE-II(2.17),MEFA(2.17)
Remedial Classes are initiated accordingly for the respective subjects Labs are kept opened beyond working hours to enhance the practical skills of students Respective mentor faculty is advised accordingly to take care of the failed students in the respective subjects			
PSO 2: Student can explore the scientific theories, ideas, methodologies in operation and maintenance of electrical machines to bridge the gap between academics and industries.			
PSO 2	2.7	2.84	FMHM(2.15),STLD(2.13),CT Lab(1.89), PE-II(2.14),MS(1.84)
Remedial Classes are initiated accordingly for the respective subjects Labs are kept opened beyond working hours to enhance the practical skills of students Respective mentor faculty is advised accordingly to take care of the failed students in the respective subjects			
PSO 3: Students are able to work professionally with new cutting edge Technologies in the fields of power system, generation, operation, and maintenance.			
PSO 3	2.9	1.55	FMHM(2.22),GDEP(2.09),STLD(2.15),CTLAB(1.88),PE-II(2.18),PSA(1.85)
Remedial Classes are initiated accordingly for the respective subjects Labs are kept opened beyond working hours to enhance the practical skills of students Respective mentor faculty is advised accordingly to take care of the failed students in the respective subjects			

Stakeholders Involvement in the Process of Improvement of PEOs and POs:

Overall PO attainment:

For all the 4 years = Average of individual POs over all the Courses during the 4 years

The logic behind this method introduced is that students will achieve Program Outcome if only they achieve the associated Course Outcomes.

All have to agree on the thresholds or scores that will constitute achieving the Course Outcome and Program Outcome. In this example, the set level is that 50% of students get 60% overall mark in order to say the Course Outcome is achieved. Each individual student has to get at least 60% of marks associated with the Course Outcome to be achieved.

Closing the Loop: Reasons for CO non-attainment are to be listed and measures for improvement (say, training the students to solve more design-analysis oriented problems and applications in certain Engineering subjects) of course delivery and problem-solving are to be recorded and implemented. Results will show definite im

Alumni Survey

Placements & Higher Studies	
% Placements	PO & PSO Attainment Level
> 50%	3
Between 30% to 50%	2
< 30%	1

Exit Survey

Each PO or PSO	Response(i)	Weights(WESRi or WASRi)
	Excellent	3
	Very Good	2.5
	Good	2.0
	Satisfactory	1.0
	Not Satisfactory	0

Each PO or PSO	Response(i)	Weights(WESRi or WASRi)
	Excellent	3
	Good	2
	Fair	1
	Poor	0

Industry & Parent Survey :

Each PO or PSO	Response(i)	Weights(WESRi or WASRi)
	Excellent	3
	Very Good	2.5
	Good	2.0
	Satisfactory	1.0
	Not Satisfactory	0

Student Survey:

Each PO or PSO	Response(i)	Weights(WESRi or WASRi)
	Excellent	3
	Very Good	2.5
	Good	2.0
	Satisfactory	1.0
	Not Satisfactory	0

Overall Improvement of the Department From last visit of NBA



Evaluators Report of last NBA Visit

Department/Programme Specific Criteria:

S. No.	Criteria	Max. Marks	Marks Awarded	Grade (Y, C, W, D)	Remarks
1.	Vision, Mission and Program Educational Objectives	50	36	C	
2.	Program Curriculum and Teaching-Learning Processes	100	75	Y	
3.	Course Outcomes and Program Outcomes	175	133	Y	
4.	Students' Performance	100	75	Y	
5.	Faculty Information and Contributions	200	129	C	
6.	Facilities and Technical Support	80	61	Y	
7.	Continuous Improvement	75	47	C	
TOTAL		780	556		

Signature
(Program Evaluator 1)
(Prof. G. Agnihotri)

Signature
(Program Evaluator 2)
(Prof. Brijadhar Subudhi)

Overall Improvement of the Department From last visit of NBA

S.No	Improvement areas	Last NBA Visit	Present NBA Visit
1.	Regulations after conferred Autonomous status	R12,R15	R19,R20
2.	Doctorates in the Department	09	11
3.	Publications	357	450
4.	Grants received from Funding Agencies	17.0 Lakhs	169.37 Lakhs
5.	Placements average salary Package	1.5 Lakh	2.5 Lakh
6.	Dissemination level of OBE	low	High
7.	Teaching-Learning Process	Maintained	
8.	Student Achievements-level of MOOCs implementation with NPTEL courses	low	High
9.	Alumni interaction	low	High
10.	Patents	Nil	02
11.	Incubation center	No	exists

Suggestions by Expert Committee:

- To disseminate Vision, Mission statements
- To Improve Publications and Research abilities
- To Improve Placements

Overall Improvement of the Department

From last visit of NBA



S.No.	Criteria	Observations made by NBA (During the last accreditation visit)	Compliance Status (Action Taken by the institution)
1	Vision, Mission & PEOs		
1.1.	Formulation	<ul style="list-style-type: none"> CO's, PO's & PEO's well defined and consistency of PEO's with Mission of the department established 	Well Defined
1.2.	Dissemination	<ul style="list-style-type: none"> Vision, Mission, PEO's published and displayed but limited awareness among stake holders 	<ul style="list-style-type: none"> Faculty members are creating awareness during their teaching classes of respective courses. Information related to Vision, Mission, PEO's are distributed among all stake holders during Board of Studies meeting and records are maintained. Vision, Mission, PEO's, PSOs, Co's and PO's were published in Syllabus book and distributed to students.
1.3.	Assessment	<ul style="list-style-type: none"> Vision & Mission Statements of Department is not fully consistent with that of the Institute. 	<ul style="list-style-type: none"> Vision statements are modified in the meeting of all stake holders to maintain consistency with the institute Vision. Modified Vision statements are displayed in the premises of department and awareness created among all stakeholders during BOS meeting and in regular teaching classes It is made regular practice to the Faculty and Students to maintain conversation about CO's and PO's mapping along with Vision & Mission Statements
1.4.	Any other observations of the NBA	<ul style="list-style-type: none"> Process exists but execution is not very effective 	<ul style="list-style-type: none"> Efficiently executed, which shows considerable improvement in Criteria 1,5 and 6

Overall Improvement of the Department

From last visit of NBA



2	Course outcome and Program outcomes		
2.1.	Formulation	<ul style="list-style-type: none"> CO's, PO's, PSO's and PEO's are well defined and published but stake holders awareness is limited. 	
2.2.	Mapping	<ul style="list-style-type: none"> No significant invention in teaching & Learning Curricular gap not properly identified. No proper effort made. 	<ul style="list-style-type: none"> No. of Digital classrooms are increased to enhance the quality in teaching methodologies. MOOCs are introduced in the curriculum and followed effectively. In result of this students are attaining more number of NPTEL certificates More exposure created to fill the curriculum gap. So that Smart India Hackathon Awards and other student level champion ships are secured. Industrial visits and Internships are arranged to bridge the gap between Industry and Institute Students are participated in technical challenging platforms such as India Innovation Design Challenge and Rural Innovation Start-up Conclave and Codetantra Educational Resources such as IIT-Bombay remote center, spoken tutorial, Reference Globe and No. of VODs are available for effective course outcomes and program outcomes.
3.	Curriculum Design		
3.1.	Process to identify the gap, if applicable and action taken thereof	<ul style="list-style-type: none"> Teaching-Learning process is good and results are good. 	
3.2.	Curriculum Structure & Component (as applicable)	<ul style="list-style-type: none"> Academic calendar is followed, remedial classes are arranged Class room teaching is good Labs are well equipped and utilized effectively Curriculum is well structured involving all stake holders input. Two skill development centers to train the students Examination is followed seriously. Quality of question papers and examination is satisfactory Industry experts involved teaching but impact analysis is not done effectively Post training assessment is not effectively done Although good number of placements but pay package not good 	<ul style="list-style-type: none"> Impact analysis is done after the training programs of Industry persons and based on that students are guided towards intern ships and industry visits. As a result of improving the industry exposure, and conducting Campus Recruitment Training Programs rigorously good placement record is obtained with good salary packages No. of Senior Faculty and Doctorates are improved.

Overall Improvement of the Department

From last visit of NBA



Details of the Action Taken on the Observation of NBA during last visit:

Curriculum is redesigned in 2019, 2020 by considering the feedback from all stake holders

- There shall be two Open Electives and three inter-disciplinary electives which are Choice Based Credit Courses (CBCC) in IV/V semester onwards, wherein the students have to choose inter-disciplinary electives offered by various other departments. These courses can be pursued in MOOC manner or the Conventional manner.
- MINOR and HONOR degrees are offered

Significant raise in the SCI/SCOPUS publications from the earlier visit:

- Dedicated and High qualified faculty including 11 doctorates from prestigious Institutions with 309 journals (57 SCI/ESCI and 133 Scopus) and 141 conference papers. (Total publication- 450)

Research work is progressively improved from earlier visit

- SERB (41.0 Lakhs), AICTE-RPS (9.0 Lakhs), AICTE-MODROBS (14.8 Lakhs), AICTE-MODROBS (7.0 Lakhs), AICTE-SG (1.0 Lakhs), AICTE-GOC (15.0 Lakhs), AICTE-STTP (3.0 Lakhs), AICTE-STTP (2.5 Lakhs), DST-FIST (16.0 Lakhs of 60.0 Lakhs for EEE)

Considerable number of Ph.D's are produced in the department

- Doctorates also offering full time Ph.D. Recognized as Research center from affiliated University

Student achievements are considerably improved in attaining outside awards in academic and co-curricular activities

- Four PRATIBHA award winners from Govt. of A.P
- National award for best B.Tech best project in Electrical & Electronics is received from ISTE for three consecutive years 2011, 2012 and 2013.
- Department of EEE is proud to announce that the students has participated in National Technical champion ships such as SMART INDIA HACKATHON for 2017 and secured award in the year 2018.
- Bagged award of UTKRAANTI-2018, a National Students' Space Challenge (NSSC), IIT Kharagpur. They stood first in achieving District level Champion ship in TECH FEST organized by JNTUA, Anantapuramu.
- The Department has established student chapter of IE (I) and IEEE to motivate the student community to organize events such as Paper presentations, Guest lectures, Group Discussions etc.

Good number of Placements with salary packages is improved from last two years.

- Students are trained to improve their potentiality to be industry ready. Every academic year six months of training classes organized as a part of regular academics.
- No. of placements in brief 142 in 2020-21, 115 in 2019-20 with average salary package of 2.5 Lakhs. And Maximum of 7.0 Lakh per annum.

Few of Proud Alumni (<https://alumni.rgmcet.edu.in/>)



S.NO	Roll No	Name	Designation	Company
1	08091A0271	M Ram Kishore	Assistant Engineer	Karnataka Power Transmission Corporation Limited
2	05095A0202	amaranath reddy	Executive Trainee	NTPC
3	95091A0249	Prakash Velpula	Assoc.Vice President	Infogain Corporation
4	03091A0230	Meriga Khannasukumar	A.E.E	APSPDCL,AP
5	17095A0203	Talacheeru Dileep	Software engineer	Capgemini
6	08091A02B5	Vijayendra CharY	Train Manager	Indian Railways
7	08091A0230	Hem Kumar	A.E.E	APTRANSCO, AP
8	03095A0202	S Guru Prasad Achari	A.E.E	AP GENCO, AP
9	01091A0286	Vijay Kumar	Dy. CEE	Indian Railways
10	10091A0290	B Samba Siva Naik	A.E.E	APTRANSCO, AP
11	05091A0207	Banu Chandar	A.E.E	APSPDCL,AP
12	08091A0242	OWK Mahesh	Junior Engineer	Bharat Sanchar Nigam Limited
13	08091A0291	Siva Sankar Govindu	National High Speed Rail Corporation Limited	Deputy General Manager/ Rolling Stock- Design
14	08091A0226	Hari Krishna	JUNIOR ENGINEER	Power Grid Corporation of India Limited
15	15091A02B3	Sailatha Gatagari	Associate Technical Engineer Network operations	International Business Machines Corporation
16	16091A02B0	Vinay Kumar Reddy.P	Project Engineer	Wipro Limited
17	15095A0241	Sai Akhil	Junior Engineer	Vijai Electricals Limited
18	15091A0252	Potli Lahari	Software engineer	HCL Technologies Limited
19	14091a0211	Kamthuru Bhagyasree	Application Development Analyst	Accenture
20	14091A0259	A Mahammad Hussain	Field Engineer	Andhra Pradesh State FiberNet Limited
21	16091A02A8	C Venkateswarlu	Soft developed	Deloitte Touche Tohmatsu Limited
22	16095A0229	Shaik Mahammad	Graduate Engineer Trainee	Olectra Greentech Limited
23	16095A0231	Mahesh E	QA Engineer QA Engineer	redBus redBus
24	15091A0275	Nagendra Babu	Analog layout	Qualcomm
25	15091A0280	Nazreen Nahida Shaik	Associate System Engineer	Tata Consultancy Services

Thank You