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DEPARTMENT OF MECHANICAL ENGINEERING

CIRCULAR

Date: 29-06-2022

It is hereby informed to all the members of program assessment committee that program assessment committee meeting is scheduled on 02-07-2022 at 03:00 pm, at the Seminar Hall B, MITS Madanapalle, for reviewing the course structure and syllabus for third year (I semester & II semester) R20 syllabus.

Agenda:

- 1. Discuss about the PO/PSO attainment of 2017-21 batch
- 2. Reviewing third year R-20 syllabus
- 3. Discussion on fourth year R-20 course structure
- 4. Discussion on department vision and mission
- 5. Any other matter with the permission of the chair

The following PAC faculty members are requested to attend the meeting.

1. Dr. M. Lakshmana Rao

2. Dr. G. Harinath Gowd /

3. Dr. I. Arun

4. Dr. Ram Krishna 🌡 🗸

5. Dr. S. Baskaran

6. Dr. R. Prithivi Rajan

7. Dr. K. V. Nagesha

8. Dr. P. Sivaiah

9. Dr. Muralidhar Singh. M

10. Dr. Shince V. Joseph 🗫

11. Dr. Pradeep Gupta

12. Dr. Subodh Kumar & Ku

13. Dr. Kamlesh Kumar

14. Dr. Shanmukhasundaram V. R.

15. Dr. Bageerathan T -

16. Dr. Suresh kannan.V

17. Dr. Arun Kumar.D D.

18. Dr. Anantha Raman L - LA-

19. Dr. Satyajit Pattanayak

20. Dr. Rahul Singh

Dr. M. Lakshmana Rao

Professor & Head, Department of MErmen

chanical Engineering ille institute of Technology & Science

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Copy to

- The Principal
- The Vice-Principal (Academics)
- PAC & Department file





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Date: 29-06-2022

COMPOSITION AND APPROVAL OF PROGRAM ASSESSMENT COMMITTEE (PAC)

The following members are nominated and approved for constitutions of Program Assessment Committee (PAC).

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1.	Dr. M. Lakshmana Rao	Professor & Head, Mechanical Engineering, MITS
2.	Dr. G. Harinath Gowd	Professor, Mechanical Engineering, MITS
3.	Dr. I. Arun	Professor, Mechanical Engineering, MITS
4.	Dr. Ram Krishna	Assoc. Professor, Mechanical Engineering, MITS
5.	Dr. S. Baskaran	Assoc. Professor, Mechanical Engineering, MITS
6.	Dr. R. Prithivi Rajan	Assoc. Professor, Mechanical Engineering, MITS
7.	Dr. K. V. Nagesha	Assoc. Professor, Mechanical Engineering, MITS
8.	Dr. P. Sivaiah	Assoc. Professor, Mechanical Engineering, MITS
9.	Dr. Muralidhar Singh. M	Sr. Asst. Professor, Mechanical Engineering, MITS
10.	Dr. Shince V. Joseph	Asst. Professor, Mechanical Engineering, MITS
11.	Dr. Pradeep Gupta	Asst. Professor, Mechanical Engineering, MITS
12.	Dr. Subodh Kumar	Asst. Professor, Mechanical Engineering, MITS
13.	Dr. Kamlesh Kumar	Asst. Professor, Mechanical Engineering, MITS
14.	Dr. Shanmukhasundaram V. R.	Asst. Professor, Mechanical Engineering, MITS
15.	Dr. Bageerathan T	Asst. Professor, Mechanical Engineering, MITS
16.	Dr. Suresh kannan.V	Asst. Professor, Mechanical Engineering, MITS
17.	Dr. Arun Kumar.D	Asst. Professor, Mechanical Engineering, MITS
18.	Dr. Anantha Raman L	Asst. Professor, Mechanical Engineering, MITS
19.	Dr. Satyajit Pattanayak	Asst. Professor, Mechanical Engineering, MITS
20.	Dr. Rahul Singh	Asst. Professor, Mechanical Engineering, MITS
20.	2	3

Responsibilities of the committee:

- 1. Monitors attainment of COs, POs & PSOs.
- 2. Evaluate program effectiveness and process necessary changes.
- 3. Preparation of periodic reports, records on program activities, progress, and status reports.

Dr. M. Lakshmana Rapesament

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The Principal

• The Vice-Principal (Academics)

PAC & Department file

Dr. C. YuvarajPrincipal, MITS

Principal

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DEPARTMENT OF MECHANICAL ENGINEERING

Date: 02-07-2022

Program Assessment Committee (PAC) Minutes of meeting held on 02-07-2022, 03:00 PM – 05:00 PM & Action taken report Venue: Seminar Hall 'B' - MITS

Agenda:

- 1. Discuss the PO/PSO attainment of the 2017-21 batch
- 2. Reviewing third year R-20 syllabus
- 3. Discussion on fourth-year R-20 course structure
- 4. Discussion on department vision and mission
- 5. Any other matter with the permission of the chair

Minutes:

- The Head of the Department, Dr. M. Lakshmana Rao welcomes all members to the PAC meeting.
- 2. Dr. M. Lakshmana Rao presented the agenda of the PAC meeting.
- 3. Dr. M. Lakshmana Rao handed the session to Dr. Anantha Raman L., academic coordinator to present PO/PSO attainment of 2017-2021 B.Tech. Mechanical batch.
- 4. Dr. Anantha Raman L. presented the overall and subject-wise PO/PSO attainment of 2017-2021 B.Tech. Mechanical batch.
- 5. PO6, PO9, PO10, and PO10 have attainment levels "3" and the remaining PO attainment levels were "2".
- 6. It has been observed that the PO/PSO attainment levels were low for PO/PSOs mapped with analytical subjects with higher bloom levels.
- 7. The PO/PSO as well CO levels of 46 subjects were presented and discussed.
- 8. The mapping procedure and calculations involved in direct, indirect, and overall attainment levels were also discussed.
- 9. The PO/PSO levels of 2015-19, 2016-20, and 2017-20 were compared.
- 10. The members suggested improving attainment levels by taking measures to increase the marks scored by students in internal and external examinations, especially for analytical subjects like Differential Equations and Laplace Transform, Mechanics of Solids, Thermodynamics, Dynamics of Machinery, etc.,
- 11. The PO/PSO attainment levels for the 2017-2021 batch are mentioned below:



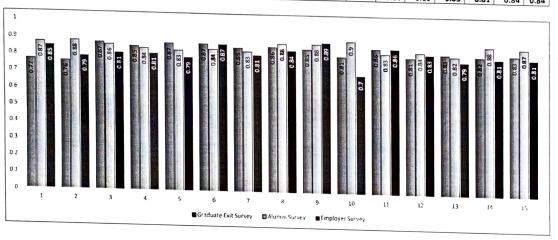
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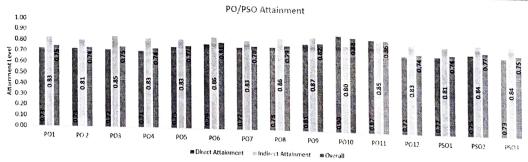
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		0.81	0.81	0.79	0.87	0.81	0.84	0.89	0.7	0.86	0.83			
0.83	0.81	0.85	0.83	0.83	0.86	0.83	0.96		4				0.81	0.8
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2017/21

Assessment Method	PO1	PO 2	PO3	PO4	PO5	P06	PO7	-	secondaria escolusione		*****				
Direct Attainment	0.73	0.73	0.72	0.71	NAMED AND POST OFFICE ADDRESS OF	MARKET STREET, SANSAGE STREET, SANSAGE	BERTANDERS TO SANCE	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
ludirect Attainment	0.83	0.81	THE RESERVE THE PARTY OF THE PA	-	0.75	0.79	0.77	0.78	13.0	0.90	0.87	0.72	0.72	0.75	-
Overall	THE PERSON NAMED IN		0.85	0.83	0.83	0.86	0.83	0.86	0.87	0.80	0.35			-	0.73
	0.75	0.74	0.75	0.74	0.77	0.61	0.78	0.79	OF REAL PROPERTY.	Name of the Owner, where the	menger reconscion	0.83	0.81	0.84	0.84
Average Attainment	2	2	2	2	7	12		0.79	0.82	0.83	0.36	0.74	0.74	0.77	0.75
			-		1-	[3	12	12	3	3	3	12	12	12	-
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- 12. Dr. Anantha Raman L. presented the course structure for R20 3-1, 3-2, 4-1, and 4-2 semesters and presented syllabi for all subjects to be offered in 3-1 & 3-2 semesters.
- 13. The members recommended renaming the lab from "Heat Transfer" to "Thermal Engineering".
- 14. The summer internship is mandatory for all students. Every student must undergo an internship during their 2-2 & 3-2 semesters vacations. They need to submit a report on the internship undergone during the upcoming semester, i.e., 3-1 & 4-1.
- 15. The members recommended replacing the subject "Engineering Metrology and Measurements" with "Machine Learning for Mechanical Engineering"



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- 16. The members were advised to keep 5 experiments in the Thermal category and 5 experiments in the IC engine category for the "Thermal Engineering" Laboratory. Keep other experiments under an additional category.
- 17. The members recommended including the Flexible Manufacturing system in the 5th unit of the CAD/CAM syllabus.
- 18. Dr. M. Lakshmana Rao suggested including renewable energy sources-related subjects in electives for 4-1 / 4-2 semesters.
- 19. The course structure for 3-1 semester is mentioned below:

III Year I Semester

S.				Н	ours	Per \	Veek	
No.	Category	Course Code	Course Title	L	Т	Р	Total	Credits
1	PCC	20ME109	Design of Machine Elements	2	1	0	3	3
2	PCC	20ME110	Manufacturing Technology-II	3	0	0	3	3
3	PCC	20ME111	Heat Transfer	2	1	0	3	3
4	OE		Open Elective-I (Annexure-II)	3	0	0	3	3
5	PE		Professional Elective-I (Annexure-III)	3	0	0	3	3
6	PCC	20ME208	Manufacturing Technology-II Laboratory	0	0	3	3	1.5
7	PCC	20ME209	Thermal Engineering Laboratory	0	0	3	3	1.5
8	sc		Skill Oriented Course-III (Annexure-IV)	1	0	2	3	2
9	МС	20CE901	Disaster Management	2	0	0	2	0
10	PROJ	20ME701	Summer Internship-I *	0	0	3	3	1.5
			Total	16	2	11	29	21.5

^{* 2} Months internship during 2nd-year summer vacation and to be evaluated in III Year I Semester

III Year II Semester

S.		Course		Но	urs	Per \	Week	
No.	Category	Code	Course Title	L	Т	P	Total	Credits
1	PCC	20ME112	CAD/ CAM	3	0	0	3	3



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2	PCC	20ME113	Automation and Robotics	3	0	0	3	3
3	PCC	20ME114	Machine Learning for Mechanical Engineering	3	0	0	3	3
4	OE		Open Elective-II (Annexure-II)	3	0	0	3	3
5	PE		Professional Elective-II (Annexure-III)	3	0	0	3	3
6	PCC	20ME210	CAD/ CAM Laboratory	0	0	3	3	1.5
7	PCC	20ME211	Robotics Laboratory	0	0	3	3	1.5
8	PCC	20ME212	Engineering Metrology and Measurements Lab	0	0	3	3	1.5
9	SC		Skill Oriented Course-IV (Annexure-IV)	1	0	2	3	2
10	МС	20HUM902	Universal Human Values	2	0	0	2	0
			Total	18	0	11	29	21.5

IV Year I Semester

		_		Hot	urs F	er ۱	Neek	
S. No.	Category	Course Code	Course Title	L	Т	Р	Total	Credits
1	PE		Professional Elective-III (Annexure-III)	3	0	0	3	3
2	PE		Professional Elective-IV (Annexure-III)	3	0	0	3	3
3	PE		Professional Elective-V (Annexure-III)	3	0	0	3	3
4	OE		Open Elective-III (Annexure-II)	3	0	0	3	3
5	OE		Open Elective-IV (Annexure-II)	3	0	0	3	3
6	OE- HSMC		Open Elective-V (Taken from Humanities & Social Science) (Annexure-II)	3	0	0	3	3



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			Total	19	0	8	27	23
8	PROJ	20ME702	Summer Internship-II	0	0	6	6	3
7	SC		Skill Oriented Course-V (Annexure-IV)	1	0	2	3	2

^{* 2} Months' internship during 3rd-year summer vacation and to be evaluated in IV Year I Semester

IV Year II Semester

S.		Course				Hours Per Week				
No.	Category	Code	Course Title	L	Т	Р	Total	Credits		
1	PROJ	20ME703	Project Work, Seminar, and Internship in Industry (6 months)	0	0	24	24	12		
			Total	0	0	24	24	12		

- 20. The list of Open Elective-I subjects offered for 3-1 semester is listed below. These subjects will be offered as MOOCs by SWAYAM NPTEL.
 - a. Management Information system
 - b. Introduction to Research
 - c. Introductory Field Structural Geology
 - d. Plastic Waste Management
 - e. Software Testing
 - f. Software Project Management
 - g. Principles of Human Resource Management
 - h. Introduction to Industry 4.0 and Industrial Internet of Things
 - i. Wastewater Treatment and Recycling
 - j. Automation in Production Systems and Management
 - k. Intellectual Property Rights and Competition Law
- 21. The list of Professional Elective-I subjects offered for 3-1 semester is listed below.

		Professional Elective – I
SI. No.	Course Code	Course Title
1.	20ME401	Production Planning and Control
2.	20ME402	Computational Fluid Dynamics
3.	20ME403	Engineering Analysis
4.	20ME404	Fluid Power Systems



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5.	20ME405	Finite Element Methods
6. 20ME406 Fundamentals of Automobile Engineering		Fundamentals of Automobile Engineering

22. The list of Skill Oriented Course-III subjects offered for 3-1 semester is listed below.

		Skill Oriented Course- III									
Sl. No.	SI. No. Course Code Course Title										
1	1 20ME602A Computer Modeling for Mechanical Engineering-I Laboratory										
2	20ME602B	CNC Machining & Programming									

^{*} Students who opted for Computer Modeling for Mechanical Engineering-I Laboratory as SOC in 3-1 semester must opt for Computer Modeling for Mechanical Engineering-II Laboratory in 3-2 semester.

23. The list of Open Elective-II subjects offered for 3-2 semester is listed below.

		OPEN ELECTIVE – II						
	(To be offered under Conventional mode)							
SI. No.	Course Code Course Title		Course Offered by Department of					
1	20MAT301	Advanced Numerical Methods	Mathematics					
2	20MAT302	Engineering Optimization	Mathematics					
3	20PHY301	Optical Physics and its Applications	Physics					
4	20PHY302	LASER Physics and Advanced LASER Technology	Physics					
5	20CHE301	Introduction to Petroleum Industry	Chemistry					
6	20CHE302	Green Chemistry and Catalysis for Sustainable Environment	Chemistry					
7	20CE301	Ground Improvement Techniques	Civil					
8	20CE302	Environmental Impact Assessment	Civil					
9	20CE303	Watershed Management	Civil					
10	20EEE301	Industrial Electrical Systems	EEE					



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11	20EEE302	Introduction to MEMS	EEE
12	20ECE301	Bio-Medical Electronics	ECE
13	20ECE302	VLSI Design	ECE
14	20CSE301	Database Management Systems	CSE
15	20CSE302	JAVA Programming	CSE

- 24. The list of Professional Elective-II subjects offered for 3-2 semester is listed below. These subjects will be offered as MOOCs by SWAYAM NPTEL.
 - a. Experimental Stress Analysis
 - b. System Design for Sustainability
 - c. Material Characterization
 - d. Design and Analysis of Experiments
 - e. Industrial Safety Engineering
 - f. Non-Conventional Energy Resources
 - g. Operations Management
 - h. Nano Technology Science and Applications
- 25. The list of Skill Oriented Course-IV subjects offered for 3-2 semester is listed below.

	Skill Oriented Course- IV							
SI. No.	SI. No. Course Code Course Title							
1.	20ME603A *	Computer Modeling for Mechanical Engineering-II Laboratory						
·		Additive Manufacturing Technology						

^{*} Students who opted for Computer Modeling for Mechanical Engineering-I Laboratory as SOC in 3-1 semester can only opt for Computer Modeling for Mechanical Engineering-II Laboratory in 3-2 semester.

26. The list of courses for Honors in Mechanical Engineering (20 Credits) has been discussed and listed below:



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Honors in Mechanical Engineering

SI. No	Category		Hours Per Week					
		Course Code	Course Code Course Title	L	Т	Р	Total Contact Hours	Credits
		- William	III Year I Semester					
1	Professional Elective Course	18HDME101	Advanced Welding Technology	3	0	0	3	3
2	(Choose any two from	18HDME102	Advanced Optimization Techniques	3	0	0	3	3
3	three courses)	18HDME103	Combustion and Emissions	3	0	0	3	3
		Sub	Total	6	0	0	6	6
			III Year II Semester			10		Y
4	Professional Elective	18HDME104	Ergonomics	3	0	0	3	3
5	Course (Choose any two from	18HDME105	Gas Dynamics	3	0	0	3	3
6	three courses)	18HDME106	Fracture Mechanics	3	0	0	3	3
		Sub	Total	6	0	0	6	6
			IV Year I Semester					
7	Professional Elective	18HDME107	Powder Metallurgy	3	0	0	3	3
8	Course (Choose any one from	18HDME108	Advanced Fluid Mechanics	3	0	0	3	3
9	three courses)	18HDME109	Modeling of SI and CI Engines	3	0	0	3	3
10	Project	18HDME701	Mini Project	0	0	10	10	5
			Sub Total	3	0	10	13	8
			Total	15	0	10	25	2



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27. The list of courses for Minors in Mechanical Engineering (20 Credits) has been discussed and listed below. It has been decided to offer minors in only 2 streams, 1. Digital Manufacturing and 2. Energy Engineering.

Minors in Mechanical Engineering (Applicable to CE, EEE, ECE, CSE, CST & CSIT) Stream Name: Digital Manufacturing

	- 2	Course Code Course Title						
SI. No	Category		Course Title	L	Т	Р	Total Contact Hours	Credits
	and the second		III Year I Semester					
1	Professional Core Course	18MDME106	Computer Aided Manufacturing Process	3	0	0	3	3
2	Professional Core Course	18MDME107	Product Design and Development	3	0	0	3	3
	A par-		III Year II Semester					
3	Professional Core Course	18MDME108	Digital Manufacturing Planning and Control	3	0	0	3	3
4	Professional Core Course	18MDME109	Big Data Analytics for Manufacturing	3	0	0	3	3
5	Professional Core Course	18MDME202	Computer Aided Design and Manufacturing Laboratory	0	0	4	4	2
			IV Year I Semester	de al-				Mala
6	Professional Core Course	18MDME110	Smart Sensors and Industry 4.0	3	0	0	3	3



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7	Project	18MDME701	Mini Project	0	0	6	6	3
			Total	15	0	10	25	20

Minors in Mechanical Engineering (Applicable to EEE, ECE, CSE, CST & CSIT) Stream Name: Energy Engineering

		Course Code Course Title		Hours Per Week				
SI. No	Category		Course Title	L	Т	Р	Total Contact Hours	Credits
	1 100		III Year I Semester				13-4. 5.	
1	Professional Core Course	18MDME121	Fluid Mechanics and Hydraulic Machinery	2	1	0	3	3
2	Professional Core Course	18MDME122	Applied Thermodynamics	2	1	0	3	3
			III Year II Semester			4	1911	
3	Professional Core Course	18MDME123	Heat Transfer	2	1	0	3	3
4	Professional Core Course	18MDME124	Computational Fluid Dynamics	2	1	0	3	3
5	Professional Core Course	18MDME205	Thermal Engineering Laboratory	0	0	4	4	2
		and the second second	IV Year I Semester					
6	Professional Core Course	18MDME125	Design of Gas Turbine	2	1	0	3	3



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DEPARTMENT OF MECHANICAL ENGINEERING

7	Project	18MDME701	Mini Project	0	0	6	6	3
			Total	10	5	10	25	20

- 28. Dr. Anantha Raman L. presented the department's vision and mission.
- 29. The members recommended not to make any changes to the department's vision and mission statements and recommended keeping it as it is.
- 30. Dr. M. Lakshmana Rao concluded the meeting and thanked all the members for attending and contributing to the improvement of the curriculum and syllabus.
- 31. The committee discussed the conduction of the IAAB meeting and has decided to schedule the IAAB meeting on 16-07-2022 via Online mode.
- 32. The subject-wise syllabus of all 3-1 & 3-2 subjects has been attached with the minutes for reference.

Approval:

The above-mentioned meeting minutes have been approved by the following members of the Program Assessment Committee (PAC).

SI. No.	Member Name	Member Designation	Member Signature
1.	Dr. M. Lakshmana Rao	Professor & Head, Mechanical Engineering, MITS	phen
2.	Dr. G. Harinath Gowd	Professor, Mechanical Engineering, MITS	Lhri
3.	Dr. I. Arun	Professor, Mechanical Engineering, MITS	A
4.	Dr. Ram Krishna	Assoc. Professor, Mechanical Engineering, MITS	W.
5.	Dr. S. Baskaran	Assoc. Professor, Mechanical Engineering, MITS	byar
6.	Dr. R. Prithivi Rajan	Assoc. Professor, Mechanical Engineering, MITS	nde
7.	Dr. K. V. Nagesha	Assoc. Professor, Mechanical Engineering, MITS	Mural
8.	Dr. P. Sivaiah	Assoc. Professor, Mechanical Engineering, MITS	P
9.	Dr. Muralidhar Singh. M	Sr. Asst. Professor, Mechanical Engineering, MITS	JA.
10.	Dr. Shince V. Joseph	Asst. Professor, Mechanical Engineering, MITS	Dan.



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DEPARTMENT OF MECHANICAL ENGINEERING

11.	Dr. Pradeep Gupta	Asst. Professor, Mechanical Engineering, MITS	1 Int.
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12.	Dr. Subodh Kumar	Asst. Professor, Mechanical	S. Kung
12.	Dr. Sabbari Kamai	Engineering, MITS	a ·
12	Dr. Karralash Kuman	Asst. Professor, Mechanical	11 000
13.	Dr. Kamlesh Kumar	Engineering, MITS	amis)
	Dr. Shanmukhasundaram	Asst. Professor, Mechanical	201
14.	V. R.	Engineering, MITS	W \$1012
		Asst. Professor, Mechanical	JAR.
15.	Dr. Bageerathan T	Engineering, MITS	***
		Asst. Professor, Mechanical	
16.	Dr. Suresh Kannan V.	Engineering, MITS	11 Muc
		Asst. Professor, Mechanical	1 2
17.	Dr. Arun Kumar.D	Engineering, MITS	D. Wes
10		Asst. Professor, Mechanical	1.00
18.	Dr. Anantha Raman L	Engineering, MITS	to. Ser.
10	Du Catualita Data marra la	Asst. Professor, Mechanical	1 AH
19.	Dr. Satyajit Pattanayak	Engineering, MITS	Sollman
20	Da Bahad Girah	Asst. Professor, Mechanical	and.
20.	Dr. Rahul Singh	Engineering, MITS	
$\overline{}$		-	•

Dr. M. Lakshmana Rao

Professor & Leady Department of ME

Mechanical Engineering

Copy to the data pale Institute of Technology & Science

The Principal

• The Vice-Principal (Academics)

PAC & Department file

Dr. C. Yuvaraj

Principal, MITS
Principal
Madanapalle Institute of

Technology & Science
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