

Madanapalle Institute of Technology & Science

Department of Mechanical Engineering

Program Assessment Committee (PAC) Minutes of meeting held on
27th August 2021, 11:00 AM – 1:00 PM

Agenda:

S. No	Topic	Speaker
1	HoDs Welcome and Introduction of PAC members	Dr. T. V. V. L. N. Rao Professor & Head
2	Brief profile of the Department	Dr. T. V. V. L. N. Rao Professor & Head
3	Assessment of Programme UG Outcomes and subject experts and course coordinators recommendations	Dr. T. V. V. L. N. Rao Professor & Head
	Discussion on attainment and remedial actions	All
4	Review of UG program (R20 II year, R18 IV year and complete structure) and proposed changes	Dr. T. V. V. L. N. Rao Professor & Head
	Discussion	All
12	Concluding Remarks and Department Road Map	Dr. T. N. Sreenivasa Dean and Head
13	Vote of Thanks	Dr. T. V. V. L. N. Rao Professor & Head

Resolutions:

1. Greeting from the chair.
2. Welcome note to following PAC members by HOD
3. Introduction and briefing about the Institute by HOD
4. Presentation about PAC meeting agenda and outline by Head
5. Presentation on highlights of the department, organizational chart at department level, expert board of the institute, faculty introduction, department committees, SWOC of the department etc.
6. Presentation on Review of process and results of outcome attainments by HOD
7. Discussion on Outcome Based Education(OBE)
 - a. Introduction to OBE
 - b. Outcomes of UG programme
 - c. Compliance of curriculum with outcomes
 - d. Assessment of outcomes (Cos and POs)
 - e. Results of Assessment and Actions Taken

- f. Solicitation of Advise
8. Seeking guidance on improving the strategies for improving OBE, suggestions to improve PEOs, PSOs, suggestions for improving attainment of outcomes and review of subject experts and course coordinators recommendations.
 9. Presentation on Review of UG Curriculum (R20 II year, R18 IV year and complete structure) and proposed changes by HOD
 - a. Curriculum is designed based on outcome based education, as recommended by NBA.
 - b. Curriculum preparation, credit distribution
 - c. Scheme of R18 IV year, Discipline Electives, Open Electives
 - d. Scheme of R20 II Year, offering new course which is recommended by AICTE and also APSICHE

CURRICULUM STRUCTURE FOR R18-IV YEAR

IV Year I Semester

Sl. No.	Category	Course Code	Course Title	Hours Per Week				Credits
				L	T	P	Total Contact Hours	
1	Professional Core Course	18ME115	Engineering Metrology and Measurements	3	0	0	4	3
2	Professional Core Course	18ME116	Machine Learning for Mechanical Engineering	2	0	2	4	3
3	Professional Elective Course		Discipline Elective-IV (Refer Annexure – III)	3	0	0	3	3
4	Professional Elective Course		Discipline Elective-V (Refer Annexure – III)	3	0	0	3	3
5	Open Elective Course		Open Elective -III (Refer Annexure –II)	3	0	0	3	3
6	Professional Core	18ME211	Thermal Engineering Laboratory	0	0	2	2	1

	Course							
7	Professional Core Course	18ME212	CAE Laboratory	0	0	2	2	1
8	PROJ-ME	18ME701	Project Work – I	0	0	4	4	2
Total				14	0	10	23	19

IV Year II Semester

Sl. No.	Category	Course Code	Course Title	Hours Per Week				Credits
				L	T	P	Total Contact Hours	
1	Professional Elective Course		Discipline Elective-VI (Refer Annexure – III)	3	0	0	3	3
2	Open Elective Course		Open Elective -IV (Refer Annexure –II)	3	0	0	3	3
3	PROJ-ME	18ME702	Project Work – II	0	0	24	24	12
Total				6	0	24	30	18

R18 Discipline Electives

Discipline Elective – IV		
Sl. No.	Course Code	Course Title
1.	18ME411	Fundamentals of Automobile Engineering Electric Vehicle Technology Hydrogen and Fuel Cell technology
2.	18ME412	Design of Pressure Vessels and Piping Systems
3.	18ME413	Design of Heat Exchangers
4.	18ME414	Non Destructive Testing
5.	18ME415	Total Quality Management
Any advanced courses can be appended in future.		

Discipline Elective -V		
Sl. No.	Course Code	Course Title
1.	18ME416	Mechanical Vibrations
2.	18ME417	Introduction to Gas Turbine Engines
3.	18ME418	Design and Manufacture of Composites (Laminate design)
4.	18ME419	Design of Power Plant Systems
5.	18ME421	Operation Research
Any advanced courses can be appended in future.		

Discipline Elective – VI		
Sl. No.	Course Code	Course Title
1.	18ME421	Automation and Robotics
2.	18ME422	Fundamentals of Automobile Engineering Electric Vehicle Technology
3.	18ME423	Additive Manufacturing
4.	18ME424	Renewable Energy
5.	18ME425	Entrepreneurship and Project Mangement
Any advanced courses can be appended in future.		

R20 Scheme of all IV years

Mechanical Engineering (160 Credits)	Core	Thermal
		Production
		Design
	Basic Science, Humanities & Engineering Science	Humanities, Management
		Basic Sciences
		Engineering Sciences
	Discipline Elective Focus Areas	Design Engineering
		Thermal Equipments
		Industrial Engineering
		Energy science & Technology
		Manufacturing Technology

Credit Distribution R-18 Vs R20 Structure

Year - Semester	Distribution of Credits in R-18 Structure	Distribution of Credits in R-20 Structure
I - I	17	19.5
I - II	21	19.5
II - I	20.5	21.5
II - II	22.5	21.5
III - I	22	21.5
III - II	20	21.5
IV - I	19	23
IV - II	18	12
Total number of Credits	160	160

Scheme of II Year – I Semester

R18

Sl. No.	Category	Course Code	Course Title	Hours Per Week				Credits
				L	T	P	Total Contact Hrs	
1	BSC	18MAT108	Partial Differential Equations And Probability & Statistics	3	1	0	4	4
2	HSMS	18HUM101	Economics and Financial Accounting for Engineers	3	0	0	3	3
3	ESC	18ME103	Engineering Mechanics	3	0	0	3	3
4	PCC	18ME104	Basic Thermodynamics	3	0	0	3	3
5	PCC	18ME105	Materials Science and Engineering	3	0	0	3	3
6	PCC Lab	18ME203	3-D Modelling Laboratory	0	0	3	3	1.5
7	HSMS	18ENG201	Speaking through Listening Laboratory	0	0	3	3	1.5
8	PCC Lab	18ME202	Materials Science and Engineering Laboratory	0	0	3	3	1.5
9	MC-I	18CHE901	Environmental Science	2	0	0	2	0
Total Credits								20.5

R20

S. No.	Category	Course Code	Course Title	Hours Per Week				Credits
				L	T	P	Total	
1	BSC		Partial Differential Equations And Probability & Statistics	3	0	0	3	3
2	ESC		Engineering Mechanics	3	0	0	3	3
3	PCC		Basic Thermodynamics	3	0	0	3	3
4	PCC		Materials Science and Engineering	3	0	0	3	3
5	PCC		Manufacturing Process	3	0	0	3	3
6	PCC		Materials Science and Engineering Lab	0	0	3	3	1.5
7	PCC		Manufacturing Process Laboratory	0	0	3	3	1.5
8	PCC		3-D Modelling Laboratory	0	0	3	3	1.5
9	SC-I		Skill Oriented Course	2/0	0	0/4	2	2
10	MC-I		Environmental Science	2	0	0	2	0
Total				19/17	0	9/13	28	21.5

Scheme of II Year – II Semester

R18

Sl. No.	Category	Course Code	Course Title	Hours Per Week				Credits
				L	T	P	Total Contact Hrs	
1	BSC	18BIO101	Biology for Engineers	3	0	0	3	3
2	HSMS	18HUM102	Principles of Management	3	0	0	3	3
3	PCC	18ME106	Mechanics of Solids	3	0	0	3	3
4	PCC	18ME107	Manufacturing Process	3	0	0	3	3
5	PCC	18ME108	Theory of Machinery	3	0	0	3	3
6	PCC	18ME109	Fluid Mechanics & Hydraulic Machinery	3	0	0	3	3
7	PCC Lab	18ME204	Mechanics of Solids Laboratory	0	0	3	3	1.5
8	PCC Lab	18ME205	Dynamics & Electrical Machines Laboratory	0	0	3	3	1.5
9	PCC Lab	18ME206	Manufacturing Process Laboratory	0	0	3	3	1.5
10	MC-II	18HUM902	Indian Constitution	2	0	0	2	0
Total Credits								22.5
Summer Internship								

R20

S. No.	Category	Course Code	Course Title	Hours Per Week				Credits
				L	T	P	Total	
1	HSMC		Economics and Financial Accounting for Engineers	3	0	0	3	3
2	BSC		Life Sciences for Engineers	2	0	0	2	2
3	PCC		Mechanics of Solids	3	0	0	3	3
4	PCC		Theory of Machinery	3	0	0	3	3
5	PCC		Manufacturing Technology	3	0	0	3	3
6	HSMC		Corporate communication lab	0	0	2	2	1
7	PCC		Manufacturing technology Laboratory	0	0	3	3	1.5
8	PCC		Mechanics of Solids lab	0	0	3	3	1.5
9	PCC		Dynamics & Electrical Machines Laboratory	0	0	3	3	1.5
10	SC-II		Skill Oriented Course –II Dassault systems lab	2/0	0	0/4	2	2
Total				16/14	0	11/15	27	21.5

Scheme of III Year – I Semester

R18

Sl. No.	Category	Course Code	Course Title	Hours Per Week				Credits
				L	T	P	Total Contact Hrs	
1	PCC	18ME110	Engineering Analysis	3	0	0	3	3
2	PCC	18ME111	Design of Machine Elements	3	0	0	3	3
3	PCC	18ME112	Manufacturing Technology	3	0	0	3	3
4	PCC	18ME113	Heat Transfer	3	0	0	3	3
5	PE-I		Discipline Elective – I	3	0	0	3	3
6	OE-I		Open Elective – I	3	0	0	3	3
7		18ENG202	Communication Skills Laboratory	0	0	2	2	1
8	PCC Lab	18ME207	Fluid Mechanics and Hydraulic Machines Laboratory	0	0	3	3	1.5
9	PCC Lab	18ME208	Manufacturing Technology Laboratory	0	0	3	3	1.5
10	MC-III	18HUM903	The Essence of Indian Traditional Knowledge	2	0	0	2	0
Total Credits								22

R20

S. No.	Category	Course Code	Course Title	Hours Per Week				Credits
				L	T	P	Total	
1	PCC		Design of Machine Elements	3	0	0	3	3
2	PCC		Manufacturing Technology	3	0	0	3	3
3	PCC		Heat Transfer	3	0	0	3	3
4	OE		Open Elective-1	3	0	0	3	3
5	PE		Professional Elective-1	3	0	0	3	3
6	PCC		Manufacturing Technology Lab	0	0	3	3	1.5
7	PCC		Heat Transfer Lab	0	0	3	3	1.5
8	SC		Skill Advanced Course (Job Oriented/Inter disciplinary-Theory/Practical)/Soft Skills Course	2/0	0	0/4	2	2
9	MC		Mandatory Course - 3	2	0	0	2	0
10	PROJ		Summer Internship-1*	0	0	0	0	1.5
Total				19/17	0	6/10	25	21.5

Scheme of III Year – II Semester

R18

Sl. No.	Category	Course Code	Course Title	Hours Per Week				Credits
				L	T	P	Total Contact Hrs	
1	HSMS	18ENG102	Proficiency through Reading and Writing	2	0	0	2	2
2	PCC	18ME113	CAD/ CAM	3	0	0	3	3
3	PCC	18ME114	Thermal Engineering	3	0	0	3	3
4	PE-II		Discipline Elective-II	3	0	0	3	3
5	PE-III		Discipline Elective-III	3	0	0	3	3
6	OE-II		Open Elective – II (Refer Annexure –II)	3	0	0	3	3
7	PCC Lab	18ME209	Advanced Manufacturing Laboratory	0	0	3	3	1.5
8	PCC Lab	18ME210	Robotics Laboratory	0	0	3	3	1.5
9	PCC Lab		Virtual Laboratory (Refer Annexure - IV)	0	0	2	2	0
10	MC-IV	18CE904	Disaster Management	2	0	0	2	0
Total Credits								20
Summer Internship								

R20

S. No.	Category	Course Code	Course Title	Hours Per Week				Credits
				L	T	P	Total	
1	PCC		CAD/ CAM	3	0	0	3	3
2	PCC		Automation and Robotics	3	0	0	3	3
3	PCC		Engineering Metrology and Measurements	3	0	0	3	3
4	OE		Open Elective-2	3	0	0	3	3
5	PE		Professional Elective-2	3	0	0	3	3
6	PCC		CAD/ CAM Lab	0	0	3	3	1.5
7	PCC		Robotics Laboratory	0	0	3	3	1.5
8	PCC		Engineering Metrology and Measurements Lab	0	0	3	3	1.5
9	SC		Skill Advanced Course (Job Oriented/Inter disciplinary-Theory/Practical)/Soft Skills Course	2/0	0	0/4	2	2
10	MC		Mandatory Course - 4	2	0	0	2	0
Total				19/17	0	9/13	28	21.5

Scheme of IV Year – I Semester

R18

Sl. No.	Category	Course Code	Course Title	Hours Per Week				Credits
				L	T	P	Total Contact Hrs	
1	PCC	18ME115	Engineering Metrology and Measurements	3	0	0	3	3
2	PCC	18ME116	Machine Learning for Mechanical Engineering	3	0	0	3	3
3	PE-IV		Discipline Elective-IV	3	0	0	3	3
4	OE-III		Open Elective -III	3	0	0	3	3
5	OE-IV		Open Elective-IV	3	0	0	3	3
6	PCC lab	18ME211	Thermal Engineering Laboratory	0	0	2	2	1
7	PCC lab	18ME212	CAE Lab	0	0	2	2	1
8	PROJ-ME	18ME701	Project Work – I	0	0	4	4	2
Total Credits								19

R20

S. No.	Category	Course Code	Course Title	Hours Per Week				Credits
				L	T	P	Total Contact Hours	
1	PE		Professional Elective-3	3	0	0	3	3
2	PE		Professional Elective-4	3	0	0	3	3
3	PE		Professional Elective-5	3	0	0	3	3
4	OE		Open Elective-3	3	0	0	3	3
5	OE		Open Elective-4	3	0	0	3	3
6	OE-HSMC		Open Elective-5 (Taken from Humanities & Social Science)	3	0	0	3	3
7	SC		Skill Advanced Course (Job Oriented/Inter disciplinary-Theory/Practical)	2/0	0	0/4	2	2
8	PROJ		Summer Internship-2*	0	0	0	0	3
Total				20/18	0	0/4	20	23

Scheme of R18-IV Year – II Semester

Sl. No.	Category	Course Code	Course Title	Hours Per Week				Credits
				L	T	P	Total Contact Hrs	
1	PROJ-ME	18ME702	Project Work - II	0	0	24	24	12
2	Professional Elective Course		Discipline Elective-V (Refer Annexure -III)	3	0	0	3	3
3	Professional Elective Course		Discipline Elective-VI (Refer Annexure -III)	3	0	0	3	3
Total Credits								18

R20

S. No.	Category	Course Code	Course Title	Hours Per Week				Credits
				L	T	P	Total Contact Hrs	
1	PROJ		Project Work, Seminar and Internship in Industry (6 months)	0	0	0	0	12
Total				0	0	0	0	12

SOC	Proposed Course contents
SOC-I: Design thinking	<ul style="list-style-type: none"> • Ideation • Collation of Students' Ideas Generation • Automotive Technology (Bharat Stage I vs VI) • Healthcare • Artificial Intelligence • City Management • Transportation Management
SOC-II: Computational modeling for mechanical engineering-I	<ul style="list-style-type: none"> • modeling and meshing
SOC-III: Computational modeling for mechanical engineering-II	<ul style="list-style-type: none"> • modeling • simulation • analysis and optimization
SOC-IV:	Mechatronics/PLC/SCADA/Controls

10. HOD has presented R20 PG Advanced Manufacturing Systems

Sl. No.	R 18 -Name of the Course	Credits	R 20 -Name of the Course Proposed	Credits
1	Advanced Machining Processes	3	Advanced Machining Processes	3
2	Automation in Manufacturing	3	Automation in Manufacturing	3
	Discipline Elective – I			
4	Theory of Metal Cutting and Tool Design	3	Advanced Materials Characterization	3
	Materials Characterization Techniques		Advanced Tool Design Engineering	
	Advanced Casting and Metal Joining		Advanced Casting and Welding Technology	
	Discipline Elective – II			
5	Simulation and Modelling of Manufacturing Systems	3	Theory of Metal Forming	3
	Product Design and Development	3	Industrial Surface Engineering Quality and reliability Engineering	3
	Advanced Machining Laboratory	2	Supply Chain Management	3
	Modelling and Simulations Laboratory	2		2
	Research Methodology and IPR	2	Advanced Machining Laboratory	2
			Modelling and Simulations Laboratory	2
			Research Methodology and IPR	2
	Audit course I		Audit course I	
	Disaster Management	0	Disaster Management	0
	Sanskrit for Technical Knowledge		Sanskrit for Technical Knowledge	0
	Constitution of India		Constitution of India	
	Pedagogy Studies		Pedagogy Studies	
	Total credits	18	Total credits	18

Sl. No.	R 18 -Name of the Courses – Existing	Credits	R 20 -Name of the Course Proposed	Credits
1	Surface Engineering	3	Robotics in Manufacturing	3
2	Advanced Production and Operation Management	3	Advanced Production and Operation Management	3
	Discipline Elective – III			
3	Optimization Techniques and its Applications	3	Advanced Operation Research	3
4	Precision Engineering		Advanced Material Processing	
5	Rapid Prototyping and Tooling		Additive Manufacturing	
			Design and Analysis of Experiments	
	Discipline Elective – IV			
6	FEA in Manufacturing	3	FEA in Manufacturing	3
7	Design and Manufacturing of MEMS and MICRO Systems		Design and Manufacturing of MEMS and MICRO Systems	
8	Flexible Manufacturing Systems		Flexible Manufacturing Systems	
9	Computer Aided Engineering Laboratory	2	Advance Metrology	2
10	Production Tooling Laboratory	2	Computer Aided Engineering Laboratory	2
11	Mini Project	2	Production Tooling Laboratory	2
			Mini Project	2

Sl. No.	R 18 -Name of the Course	Credits	R 20 -Name of the Course Proposed	Credits
	Discipline Elective – V			
1	Design for Manufacturing and Assembly	3	Additive Manufacturing Technology	3
	Industrial Robotics		Manufacturing Informatics	
	Total Quality Management		Micro Nano manufacturing technology	
	Powder Metallurgy		Artificial Intelligence in Manufacturing	
	Advances in Metals Joining		Sensors for Intelligent manufacturing and Condition monitoring	
	Open Electives			
2	Business Analytics	3	Machine vision and its applications	3
	Industrial Safety		Design for Manufacture and Assembly (DFMA)	
	Operations Research		Operation research	
	Cost Management of Engineering Projects		Total Quality Management	
	Composite Materials		Machine learning	

Sl. No.	R 18 -Name of the Course	Credits	R 20 -Name of the Course Proposed	Credits
1	Dissertation Phase I	10	Internet of Things (IOT)	3
2			Project Phase I	
	Total	16	Total	16

Sl. No.	Name of the course	Credit
1	Project Phase II	16

Credit Distribution of PG

Year & Sem	R 18 credits	R 20 credits
I- I	18	18
I- II	18	18
II- I	16	16
II- II	16	16

11. As per the guidelines from the JNTUA Anantapur, introducing five skill oriented courses spanning across the II, III and IV year I semester. Out of five courses, reserved one for the English and as per the subject experts and course coordinators recommendations the first two skill oriented courses are more towards core engineering and another two for inter-disciplinary courses. And also providing flexibility to choose skill oriented courses based upon their interest.
12. As per the university guidelines student should undertake the summer internship-1 (two months) during II year summer and summer internship-2 (two months) during III year summer apart from the IV year full semester internship.
13. Fluid Mechanics & Hydraulic Machinery both theory and lab courses are offered in II year I semester. And also introduced Skill Oriented Course-I in II year I semester.
14. Economics and Financial Accounting for Engineers is offered in II year II semester. Biology for Engineers course is replaced with 2 credits Life Sciences for Engineers course and offered in II year II semester. And also introduced Skill Oriented Course-II in II year II semester.
15. Corporate Communication Lab has been added in II Year II semester. Mandatory course-II is moved to III year I semester.
16. Discussion on result analysis.
17. Faculty feedback to improve curriculum
18. For diploma back ground students need to concentrate more on thermodynamics, physics and Applications-Dr. Kush Kumar D
19. Conduct quiz and objective type questions to students
20. Include tutorial hours for problematic courses-Dr. Kulmani Mehar
21. Include mentor mentee hour in regular time table.

22. If possible, conduct unit wise open book exam instead of assignments.-Dr. Hanmant P

23. Discussion on Engineering analysis evaluation process.

24. Machine learning evaluation process has to be fixed as per rubrics.

25. Vote of Thanks by HOD

- a. Expressed gratitude to Management, MITS, Dr. C Yuvaraj, Principal, PAC members on behalf of Mechanical Engineering Department, MITS for their support, deliberations and valuable suggestions.



Dr. T V V L N Rao

Professor & Head
Department of ME