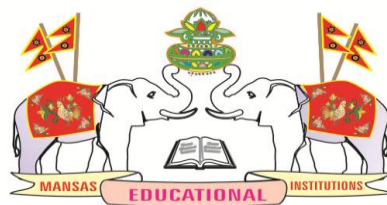


# CURRICULAM

## MECHANICAL ENGINEERING (B.Tech. Programme)

Applicable to the students admitted from the  
Academic year 2015-2016



## MAHARAJ VIJAYARAM GAJAPATHI RAJ COLLEGE OF ENGINEERING (Autonomous)

(Approved by AICTE, New Delhi, and permanently affiliated to JNTUK, Kakinada)

Re-Accredited by NBA, Re-accredited by NAAC with 'A' Grade,

Listed u/s 2(f) & 12(B) of UGC Act 1956.

Vijayaram Nagar Campus, Chintalavalasa,  
Vizianagaram-535005, Andhra Pradesh

## The visionaries



**Late Dr. P V G Raju**  
Raja Saheb of Vizianagaram  
Founder Chairman-MANSAS  
Ex-Minister for Education and Health, Govt. of AP  
Ex Member of Parliament



**Late Dr. P. Anand Gajapathi Raju**  
Ex Chairman-MANSAS  
Ex-Minister for Education and Health  
Govt. of AP  
Ex Member of Parliament



**P. Ashok Gajapathi Raju**  
Chairman-MANSAS  
Union Minister for Civil Aviation,  
Govt. of India  
Ex-Minister for Finance, Govt. of AP

**COURSE STRUCTURE**  
**(B.TECH. MECHANICAL ENGINEERING)**

<b>I Semester</b>						
<b>S.No</b>	<b>Subject Code</b>	<b>Subject</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>Credits</b>
1	A1MAT001	Engineering Mathematics – I	3	1		3
2	A1PYT001	Engineering Physics	3	1		3
3	A1CIT001	Computer Programming	3	1		3
4	A1MED001	Engineering Drawing	1		3	3
5	A1CHT001	Environment Studies	3			3
6	A1EHL001	English Language Practice– I	1		2	2
7	A1PYL001	Engineering Physics Laboratory	-	-	3	2
8	A1CIL001	Computer Programming Laboratory	-	-	3	2
Total No. of Credits						<b>21</b>

<b>II Semester</b>						
<b>S.No</b>	<b>Subject Code</b>	<b>Subject</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>Credits</b>
1	A1MAT002	Mathematical Methods	3	1		3
2	A1CYT001	Engineering Chemistry	3			3
3	A1EET001	Basic Electrical & Electronics Engineering	3			3
4	A1MET001	Engineering Mechanics	3	1		3
5	<u>A1XXT1XX</u>	<b>Foundation Elective – I</b>	3	1		3
6	A1EHL002	English Language Practice – II	1		2	2
7	A1CYL001	Engineering Chemistry Laboratory			3	2
8	A1MEW001	Basic Engineering Workshop			3	2
Total No. of Credits						<b>21</b>

<b>III Semester</b>						
<b>S.No</b>	<b>Subject Code</b>	<b>Subject</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>Credits</b>
1	A1MET201	Metallurgy and Material Science	4			4
2	A1MET202	Engineering Thermodynamics	3	1		4
3	A1MET203	Mechanics of Materials	3	1		4
4	A1MET204	Fluid Mechanics & Hydraulic Machines and Systems	3	1		4
5	A1MST001	Managerial Economics & Financial Analysis	3			3
6	A1MEL201	Material Testing Laboratory			3	2
7	A1EEL202	Basic Electrical & Electronics Engineering Laboratory			3	2
8	A1MEL203	Computer Aided Engineering Drawing Laboratory			3	2
9	A1EHA5XX	Audit Course-1	2			0
Total No. of Credits						<b>25</b>

<b>IV Semester</b>						
<b>S.No</b>	<b>Subject Code</b>	<b>Subject</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>Credits</b>
1	A1XXT1XX	Foundation Elective-II	3	1		3
2	A1MET205	Kinematics of Machinery	3	1		4
3	A1MET206	IC Engines and Compressors	3	1		4
4	A1MED207	Machine Drawing	2		4	4
5	A1MET208	Manufacturing Processes	4			4
6	A1MET209	Industrial Engineering and Management	4			4
7	A1MEL204	Fluid mechanics & Hydraulic machines Laboratory			3	2
8	A1MEL205	Production / Metallurgy Laboratory			3	2
9	A1EHA5XX	Audit Course-2	2			0
Total No. of Credits						<b>27</b>

V Semester						
S.No	Subject Code	Subject	L	T	P	Credits
1	A1MET210	Dynamics of Machinery	3	1		4
2	A1MET211	Design of Machine Members–I	3	1		4
3	A1MET212	Steam and Gas Turbines	3	1		4
4	A1MET213	Machining Processes	4			4
5	A1MET301	<b>Core Elective – I</b>	3			3
	A1MET302					
	A1MET303					
	A1MET304					
	A1MET305					
6	A1MET306	<b>Core Elective – II</b>	3			3
	A1MET307					
	A1MET308					
	A1MET309					
	A1MET310					
7	A1MEL206	Thermal Engineering Laboratory			3	2
8	AIEHA5XX	Audit Course-3	2			0
9	AIEHA5XX	Audit Course-4	2			0
Total No. of Credits						<b>24</b>

VI Semester						
S.No	Subject Code	Subject	L	T	P	Credits
1	A1MET214	Measurements and Metrology	4			4
2	A1MET215	Heat Transfer	3	1		4
3	A1MET216	Design of Machine Members– II	3	1		4
4	A1MET311	<b>Core Elective – III</b>	3			3
	A1MET312					
	A1MET313					
	A1MET314					
	A1MET315					
5	A1MET316	<b>Core Elective – IV</b>	3			3
	A1MET317					
	A1MET318					
	A1MET319					
	A1MET320					
6	A1XXT4XX	<b>Open Elective – I</b>	3			3
7	A1MEL207	Machine Tools and Metrology Laboratory			3	2
8	A1MEL208	Heat Transfer Laboratory			3	2
9	AIEHA5XX	Audit Course-5	2			0
Total No. of Credits						<b>25</b>

VII Semester						
S.No	Subject Code	Subject	L	T	P	Credits
1	A1MET217	Computer Aided Design	3	1		4
2	A1MET218	Mechatronics and Control Systems	4			4
3	A1MET321	<b>Core Elective – V</b>	3			3
	A1MET322					
	A1MET323					
	A1MET324					
	A1MET325					
4	A1MET326	<b>Core Elective – VI</b>	3			3
	A1MET327					
	A1MET328					
	A1MET329					
	A1MET330					
5	A1MET331	<b>Core Elective – VII</b>	3			3
	A1MET332					
	A1MET333					
	A1MET334					
	A1MET335					
6	A1XXT4XX	<b>Open Elective – II</b>	3			3
7	A1MEL209	CAD Laboratory			3	2
8	A1MEL210	Mechatronics and Instrumentation Laboratory			3	2
9	AIEHA5XX	Audit Course-6	2			0
Total No. of Credits						<b>24</b>

VIII Semester						
S.No	Subject Code	Subject	L	T	P	Credits
1	A1MET336	<b>Core Elective – VIII (MOOCs/Self Study)</b>				3
	A1MET337					
	A1MET338					
	A1MET339					
	A1MET340					
2	A1MEP601	<b>Directed Study</b>				2
3	A1MEP602	<b>Major Project</b>				8
Total No. of Credits						<b>13</b>

**Foundation Elective – I & II**

<b>S.No</b>	<b>Subject Code</b>	<b>Subject</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
1	A1EHT101	Professional Communication	3	-	-	3
2	A1EHT102	Business Communication	3	-	-	3
3	A1MET103	Material Science	3	-	-	3
4	A1MAT104	Engineering Mathematics II	3	-	-	3
5	A1PYT105	Electro Magnetic Theory	3	-	-	3
6	A1CYT106	Instrumental Methods of Analysis	3	-	-	3
7	A1MET107	Thermodynamics	3	-	-	3
8	A1CYT108	Applied Analysis	3	-	-	3
9	A1MAT109	Probability and Statistics	3	-	-	3
10	A1MAT110	Complex Variables & Statistical Methods	3	-	-	3

<b>SNo</b>	<b>Subject Code</b>	<b>Core Elective – I</b>
1	A1MET301	Automobile Engineering
2	A1MET302	Advanced Mechanics of materials
3	A1MET303	Advanced Materials
4	A1MET304	Statistical Quality Control
5	A1MET305	Introduction to programming with MAT lab

<b>SNo</b>	<b>Subject Code</b>	<b>Core Elective – II</b>
1	A1MET306	Alternate Sources of Energy
2	A1MET307	Robotics
3	A1MET308	Non Destructive Testing
4	A1MET309	Supply chain management
5	A1MET310	Control of mobile robots

<b>SNo</b>	<b>Subject Code</b>	<b>Core Elective – III</b>
1	A1MET311	Energy Management
2	A1MET312	Finite Element Methods
3	A1MET313	Advanced Machining Processes
4	A1MET314	Industrial Safety
5	A1MET315	Introduction to aerodynamics

<b>SNo</b>	<b>Subject Code</b>	<b>Core Elective – IV</b>
1	A1MET316	Refrigeration & Air Conditioning
2	A1MET317	Mechanical Vibrations and Condition Monitoring
3	A1MET318	Advanced Manufacturing Systems
4	A1MET319	Total Quality Management
5	A1MET320	Introduction to acoustics

<b>SNo</b>	<b>Subject Code</b>	<b>Core Elective – V</b>
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1	A1MET321	Power Plant Engineering
2	A1MET322	Mechanical Behavior of Materials
3	A1MET323	Automation in Manufacturing
4	A1MET324	Production Planning and Control
5	A1MET325	Advanced Engineering systems in motion-dynamics of 3D motion

<b>SNo</b>	<b>Subject Code</b>	<b>Core Elective – VI</b>
1	A1MET326	Computational Fluid Dynamics
2	A1MET327	Interactive Computer Graphics
3	A1MET328	Product Lifecycle Management
4	A1MET329	Six Sigma
5	A1MET330	Nanotechnology-the basics

<b>SNo</b>	<b>Subject Code</b>	<b>Core Elective – VII</b>
1	A1MET331	Engineering in Motion
2	A1MET332	Design for Manufacturing
3	A1MET333	Surface Engineering
4	A1MET334	Operations Research
5	A1MET335	Ship structural analysis and design

<b>SNo</b>	<b>Subject Code</b>	<b>Core Elective – VIII</b>
1	A1MET336	Energy, environment and our future
2	A1MET337	Applications of Engineering Mechanics
3	A1MET338	Materials and material processing
4	A1MET339	Introduction to operations management
5	A1MET340	Introduction to systems engineering

<b>SNo</b>	<b>Subject Code</b>	<b>Open Electives offered by Mechanical Engineering Department to other departments</b>
1	A1MET401	Introduction to Robotics
2	A1MET402	Condition Monitoring
3	A1MET403	Production & Operations Management
4	A1MET404	Micro Electrical and Mechanical Systems
5	A1MET405	Product Life cycle Management
6	A1MET406	Finite Element Methods



Audit Course Electives		
S. No	Subject Code	Subject Name
1	A1EHA501	NSS
2	A1EHA502	NCC
3	A1EHA503	Sports
4	A1EHA504	Cultural
5	A1EHA505	Yoga
6	A1EHT506	Health & Nutrition
7	A1EHT507	Entrepreneurship Development
8	A1EHT508	Foreign Language (Chinese/Japanese/Korean/German)
9	A1EHT509	Professional Ethics & IPR
10	A1EHT510	Soft Skills - I
11	A1EHT511	Soft Skills - II
12	A1EHT512	General Aptitude
13		MOOC