Jawaharlal Nehru Technological University Anantapur

(Established by Govt. of A.P., Act. No. 30 of 2008)

Ananthapuramu–515 002 (A.P) India

B.Tech. in Mechanical Engineering

Course Structure and Syllabi under R19 Regulations

	JNTUA Curriculum
	Mechanical Engineering B. Tech Course Structure

S.No	Course Name	Category	L-T-P-C
1	Physical Activities -- Sports, Yoga and Meditation, Plantation	MC	0-0-6-0
2	Career Counselling	MC	2-0-2-0
3	Orientation to all branches -- career options, tools, etc.	MC	3-0-0-0
4	Orientation on admitted Branch -- corresponding labs, tools and platforms	EC	2-0-3-0
5	Proficiency Modules & Productivity Tools	ES	2-1-2-0
6	Assessment on basic aptitude and mathematical skills	MC	2-0-3-0
7	Remedial Training in Foundation Courses	MC	2-1-2-0
8	Human Values & Professional Ethics	MC	3-0-0-0
9	Communication Skills -- focus on Listening, Speaking, Reading, Writing skills	BS	2-1-2-0
10	Concepts of Programming	ES	2-0-2-0

**Semester - I (Theory - 3, Lab - 4)**
S.No	**Course No**	**Course Name**	**Category**	**L-T-P**	**Credits**
1.	19A54101	Algebra and Calculus	BS	3-1-0	4
2.	19A51101T	Engineering Chemistry	BS	3-0-0	3
3.	19A05101T	Problem Solving & Programming	ES	3-1-0	4
4.	19A03102	Engineering Graphics Lab	ES	1-0-4	3
5.	19A03101	Engineering Workshop	LC	0-0-2	1
6.	19A51101P	Engineering Chemistry Lab	BS	0-0-3	1.5
7.	19A05101P	Problem Solving & Programming Lab	ES	0-0-3	1.5
				Total	**18**

S.No	**Course No**	**Course Name**	**Category**	**L-T-P**	**Credits**
**Semester - II (Theory - 5, Lab - 5)**
1.	19A02201T	Basic Electrical & Electronics Engineering	ES	3-0-0	3
2.	19A54201	Differential Equations and Vector Calculus	BS	3-1-0	4
3.	19A56102T	Engineering Physics	BS	3-0-0	3
4.	19A05201T	Data Structures	ES	3-0-0	3
5.	19A52101T	Communicative English 1	HS	2-0-0	2
6.	19A52101P	Communicative English 1 Lab	HS	0-0-2	1
7.	19A03201	Mechanical Engineering Workshop	LC	0-0-2	1
8.	19A02201P	Basic Electrical & Electronics Engineering Lab	ES	0-0-3	1.5
9.	19A56102P	Engineering Physics Lab	BS	0-0-3	1.5
10.	19A05201P	Data Structures Lab	ES	0-0-3	1.5
				Total	**21.5**

Semester - III (Theory - 7, Lab – 3,MC-1)					
S.No	Course No	Course Name	Category	L-T-P	Credits
1.	19A54301	Complex Variables, Transforms and PDE	BS	2-1-0	3
2.	19A05304T	Python Programming	ES	2-1-0	3
3.	19A03301T	Manufacturing Processes	PC	3-0-0	3
4.	19A03302	Engineering Mechanics	PC	3-0-0	3
5.	19A03303T	Material Science and Engineering	PC	3-0-0	3
6.	19A99303T	Design Thinking & Product Innovation	ES	2-0-0	2
7.	19A52301	Universal Human Values	HE	2-0-0	2
8.	19A99303P	Design Thinking & Product Innovation Lab	ES	0-0-3	1.5
9.	19A03301P	Manufacturing Processes Lab	PC	0-0-3	1.5
10.	19A03303P	Material Science and Engineering Lab	PC	0-0-3	1.5
11.	19A99301	Environmental Sciences	MC	3-0-0	0
				Total	23.5

Semester - IV (Theory - 6, Lab – 2, MC-1)					
S.No	Course No	Course Name	Category	L-T-P	Credits
1.	19A54304	Numerical Methods and Probability theory	BS	2-1-0	3
2.	19A03401	Thermodynamics	PC	2-1-0	3
3.	19A03402T	Mechanics of Materials	PC	2-1-0	3
4.	19A01407	Fluid Mechanics and Hydraulic Machinery	PC	2-1-0	3
5.	19A05406T	Internet of Things	ES	2-0-2	3
6.	19A03403	Kinematics of Machinery	PC	2-1-0	3
7.	19A03404	Computer Aided Machine Drawing	PC	0-0-3	1.5
8.	19A03402P	Mechanics of Materials Lab	PC	0-0-3	1.5
9.	19A99302	Biology For Engineers	MC	3-0-0	0
				Total	21

S.No	Course No	Course Name	Category	L-T-P	Credits
		Semester - V (Theory - 6, Lab – 3, MC-1)			
1.	19A03501T	Applied Thermodynamics	PC	2-1-0	3
2.	19A03502T	Manufacturing Technology	PC	2-0-0	2
3.	19A03503T	Heat Transfer	PC	2-1-0	3
4.	19A03505	Dynamics of Machinery	PC	2-1-0	3
5.	19A03504a 19A03504b 19A03504c 19A03504d 19A03504e	Professional Elective 1 Automobile Engineering Manufacturing Methods in Precision Engineering Design of Transmission Systems Power Plant Engineering Ergonomics and Human Factors in Engineering	PE	3-0-0	3
6.	19A01506a 19A01506b 19A02506a 19A04506a 19A04506b 19A05506a 19A05506b 19A27506a 19A27506b 19A54506a 19A52506a 19A51506a	Open Elective-I Experimental stress analysis. Building Technology Electrical Engineering Materials Analog Electronics Digital Electronics Free and Open Sources Systems Computer Graphics and Multimedia Animation Brewing Technology Computer Applications in Food Technology Optimization Techniques Technical Communication and Presentation Skills Chemistry of Energy Materials	PE	3-0-0	3
7.	19A03501P	Applied Thermodynamics Lab	PC	0-0-3	1.5
8.	19A03502P	Manufacturing Technology Lab	PC	0-0-3	1.5
9.	19A03403P	Fluid Mechanics & Hydraulic Machinery Lab	PC	0-0-2	1
10.	19A03507	Socially Relevant Projects (15 Hrs/Sem)	PR	0-0-0.5	0.5
11.	19A99501	Mandatory Course: Constitution of India	MC	3-0-0	0
				Total	**21.5**

		Semester - VI (Theory - 6, Lab – 2, MC-1)			
S.No	Course No	Course Name	Category	L-T-P	Credits
1.	19A03601	Design of Machine Elements	PC	2-1-0	3
2.	19A03602T	Introduction to CAD/CAM	PC	3-0-0	3
3.	19A52601T	English Language Skills	BS	3-0-0	3
4.		Professional Elective-II (MOOC)	PE	3-0-0	3
	19A03603a	Introduction to Turbo machinery			
	19A03603b	Fundamentals of Additive Manufacturing			
	19A03603c	Introduction to Composites			
	19A03603d	Computational Fluid Dynamics			
	19A03603e	Engineering Fracture Mechanics			
5.		Open Elective-II	OE	3-0-0	3
	19A01604a	Industrial waste and wastewater management.			
	19A01604b	Building Services & Maintenance			
	19A02604a	Industrial Automation			
	19A02604b	System Reliability Concepts			
	19A04604a	Basics of VLSI			
	19A04604b	Principles of Communication Systems			
	19A05604a	Fundamentals of VR/AR/MR			
	19A05604b	Data Science			
	19A27604a	Food Toxicology			
	19A27604b	Food Plant Equipment Design			
	19A54604a	Wavelet Transforms & its applications			
	19A52604a	Soft Skills			
	19A51604a	Chemistry of Polymers and Its Applications			
6.		Humanities Elective-I	HS	3-0-0	3
	19A52602a	Entrepreneurship & Incubation			
	19A52602b	Managerial Economics and Financial Analysis			
	19A52602c	Business Ethics and Corporate Governance			
	19A52602d	Enterprise Resource Planning			
	19A52602e	Supply Chain Management			
7.	19A03503P	Heat Transfer Lab	PC	0-0-3	1.5
8.	19A52601P	English Language Skills Lab	BS	0-0-3	1.5
9.	19A03605	Socially Relevant Projects (15 Hrs/Sem)	PR	----	0.5
10.	19A99601	Research Methodology	MC	3-0-0	0
11.	19A03606	Comprehensive online examination		-	0
				Total	21.5

		Semester – VII (Theory - 5, Lab -2)			
S.No	Course No	Course Name	Category	L-T-P	Credits
1.	19A03701	Operations Research	PC	2-1-0	3
2.	19A03702T	Metrology & Measurements	PC	2-0-0	2
3		Professional Elective-III	PE	3-0-0	3
	19A03703a	Automotive Transmission Systems			
	19A03703b	Simulation and Modelling of Manufacturing Systems			
	19A03703c	Mechanical Behaviour of Materials			
	19A03703d	Solar and Wind Energy			
4.		Open Elective-III	PE	3-0-0	3
	19A01704a	Air pollution and control.			
	19A01704b	Basics of civil Engineering			
	19A02704a	Renewable Energy Systems			
	19A02704b	Electric Vehicle Engineering			
	19A04704a	Introduction to Microcontrollers & Applications			
	19A04704b	Principles of Digital Signal Processing			
	19A05704a	Fundamentals of Game Development			
	19A05704b	Cyber Security			
	19A27704a	Corporate Governance in Food Industries			
	19A27704b	Process Technology for Convenience & RTE Foods			
	19A54704a	Numerical Methods for Engineers (ECE , CSE, IT &CE)			
	19A51704a	Chemistry of Nanomaterials and Applications			
5		Humanities Elective-II	HS	3-0-0	3
	19A52701a	Organizational Behavior			
	19A52701b	Management Science			
	19A52701c	Business Environment			
	19A52701d	Strategic Management			
	19A52701e	E-Business			
6.	19A03702P	Metrology & Measurements Lab	PC	0-0-3	1.5
7.	19A03602P	CAD / CAM Lab	PC	0-0-3	1.5
8.	19A05406P	IOT Lab	PC	0-0-2	1
9.	19A03705	Industrial Training / Skill Development / Research Project	PR	- - -	2
				Total	20

S.No	Course No	Course Name	Category	L-T-P	Credits
		Semester – VIII (Theory - 2)			
1.		Professional Elective-IV	PE	3-0-0	3
	19A03801a	Autotronics			
	19A03801b	Mechanical Vibrations			
	19A03801c	Refrigeration and Air conditioning			
	19A03801d	Total Quality Management (TQM)			
2.		Open Elective-IV	OE	3-0-0	3
	19A01802a	Disaster Management.			
	19A01802b	Global Warming and climate changes			
	19A02802a	IoT Applications in Electrical Engineering			
	19A02802b	Smart Electric Grid			
	19A04802a	Introduction to Image Processing			
	19A04802b	Principles of Cellular and Mobile Communications			
	19A04802c	Industrial Electronics			
	19A04802d	Electronic Instrumentation			
	19A05802a	Block Chain Technology and Applications			
	19A05802b	MEAN Stack Technology			
	19A27802a	Food Plants Utilities & Services			
	19A27802b	Nutraceuticals & Functional Foods			
	19A54802a	Mathematical Modeling & Simulation			
	19A51802a	Green Chemistry and Catalysis for Sustainable Environment			
3.	19A03803	Project	PR	------	7
				Total	**13**

Honours Degree in Mechanical Engineering

S.No.	Course No.	Course Name	L	T	P	Credits
1.	19A03H01	Alternate fuels and Emissions Control in Automotives	3	1	0	4
2.	19A03H02	Robotics and Applications in Manufacturing	3	1	0	4
3.	19A03H03	Product Marketing	3	1	0	4
4.	19A03H04	Additive Manufacturing	3	1	0	4
5.	19A03H05	Mechanics of Composite Materials	3	1	0	4
				Total		**20**

Minor Degree in Mechanical Engineering

S.No.	Course No.	Course Name	L	T	P	Credits
1.	19A03401	Thermodynamics	2	1	0	3
2.	19A03301T	Manufacturing Processes	2	1	0	3
3.	19A03303T	Material Science and Engineering	3	0	0	3
4.	19A03504a	Automobile Engineering	3	0	0	3
5.	19A03601	Design of Machine Element	2	1	0	3
6.	19A03M01	Minor Discipline Project	-	-	-	5
				Total		**20**