Jawaharlal Nehru Technological University Anantapur College of Engineering Pulivendula –516 390 (A.P) India

B.Tech. in Mechanical Engineering Course Structure and Syllabi under R19 Regulations

MECHANICAL ENGINEERING

S.No	Course Name	Category	L-T-P-C
1	Physical Activities -- Sports, Yoga and Meditation, Plantation	MC	0-0-6-0
2	Career Counseling	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

B.Tech I Year I Semester

Semester – 1

S.No	Course No	Course Name	Category	L-T-P	Credits
1	19ABS06	Linear Algebra and Calculus	BS	3-1-0	4
2	19ABS01	Engineering Physics	BS	3-0-0	3
3	19ACS01	Problem Solving and Programming	ES	3-1-0	4
4	19AME01	Engineering Graphics	ES	1-0-3	2.5
5	19AME02	Engineering Workshop	LC	0-0-3	1.5
6	19ABS02	Engineering Physics Lab	BS	0-0-3	1.5
7	19ACS02	Problem Solving and Programming Lab	ES	0-0-3	1.5
				Total	**18**

B.Tech I Year II Semester

Semester - 2

S.No	Course No	Course Name	Category	L-T-P	Credits
1	19ABEE01	Basic Electrical and Electronics Engineering	ES	3-0-0	3
2	19ABS07	Differential Equations and Vector Calculus	BS	3-1-0	4
3	19ABS05	Engineering Chemistry	BS	3-0-0	3
4	19ACS05	Data Structures	ES	3-0-0	3
5	19AHS01	Communicative English -I	HS	2-0-0	2
6	19AHS02	Communicative English Lab-I	HS	0-0-2	1
7	19AME03	Mechanical Engineering Workshop	LC	0-0-2	1
8	19ABEE02	Basic Electrical & Electronics Engineering Lab	ES	0-0-3	1.5
9	19ABS08	Engineering Chemistry Lab	BS	0-0-3	1.5
10	19ACS06	Data Structures Lab	ES	0-0-3	1.5
				Total	**21.5**

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B.Tech II Year I Semester

Semester – 3					
S.No	Course No	Course Name	Category	L-T-P	Credits
1	19ABS11	Complex Variables, Transforms and Applications to PDE	BS	3-0-0	3
2	19AME04	Fluid Mechanics and Hydraulics Machinery	PC	3-0-0	3
3	19AME06	Thermodynamics	PC	3-0-0	3
4	19AME07	Engineering Mechanics	PC	3-0-0	3
5	19AME08	Material Science and Engineering	PC	3-0-0	3
6	19AME10	Manufacturing Processes - I	PC	3-0-0	3
7	19AHS03	Universal Human Values	HS	2-0-0	2
8	19AME05	Fluid Mechanics and Hydraulic Machinery Lab	PC	0-0-2	1
9	19AME09	Material Science and Engineering Lab	PC	0-0-2	1
10	19AME11	Manufacturing Processes - I Lab	PC	0-0-3	1.5
11	19ABS14	Environmental Science	MC	3-0-0	0
				Total	23.5

B.Tech II Year II Semester

Semester - 4					
S.No	Course No	Course Name	Category	L-T-P	Credits
1	19ABS15	Numerical Methods, Probability and Statistics	BS	3-0-0	3
2	19ACS18	Internet of Things	ES	2-0-0	2
3	19AME14	Design Thinking and Product Innovation	ES	2-0-0	2
4	19AME15	Mechanics of Materials	PC	3-0-0	3
5	19AME17	Theory of Machines	PC	3-0-0	3
6	19AME18	Manufacturing Processes – II	PC	3-0-0	3
7	19AME19	Computer Aided Machine Drawing	LC	0-0-3	1.5
8	19AME16	Mechanics of Materials Lab	PC	0-0-3	1.5
9	19ACS19	Internet of Things (IOT)Lab	ES	0-0-3	1.5
10	19AME20	Design Thinking & Product Innovation Lab	ES	0-0-2	1
11	19AHS04	Constitution of India	MC	3-0-0	0
				Total	21.5

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B.Tech III Year I Semester

Semester - 5					
S.No	Course No	Course Name	Category	L-T-P	Credits
1	19AME51	Thermal Engineering	PC	3-0-0	3
2	19AME52	Design of Machine Members	PC	3-0-0	3
3	19AME53	Automation and Robotics	PC	3-0-0	3
4	19AME54	Professional Elective 1	PE	3-0-0	3
	19AME54a	Alternative Fuels and Emission Control in Automotives			
	19AME54b	Manufacturing Methods in Precision Engineering			
	19AME54c	Design for Manufacturing (DFM)			
	19AME54d	Power Plant Engineering			
	19AME54e	Non Destructive Testing (NDT)			
	19AME54f	Ergonomics and Human Factors in Engineering			
5	19AME55	Open Elective I (Inter Disciplinary) (ANNEXURE-I)	OE	3-0-0	3
6	19AHS14	Humanities Elective I	HS	3-0-0	3
	19AHS14a	MEFA			
	19AHS14b	Entrepreneurship & Innovation Management			
7	19AME56	Thermal Engineering Lab	PC	0-0-3	1.5
8	19AME57	Manufacturing Processes - II lab	PC	0-0-2	1
9	19AME59	Socially Relevant Projects (30 hours/sem)	PR	---------	1
10	19AHS16	Organizational Behaviors	MC	3-0-0	0
				Total :	21.5

B.Tech III Year II Semester

Semester - 6					
S.No	Course No	Course Name	Category	L-T-P	Credits
1	19AHS12	English Language Skills	HS	2-0-0	2
2	19AME61	Automobile Engineering	PC	2-0-0	2
3	19AME62	Heat Transfer	PC	3-0-0	3
4	19AME63	Operations Research	PC	3-0-0	3
5	19AME64	Professional Elective II	PE	3-0-0	3
	19AME64a	Hybrid and Electric Vehicles			
	19AME64b	Simulation and Modeling of Manufacturing Systems			
	19AME64c	Design of Transmission Systems			
	19AME64d	Solar and Wind Energy Systems			
	19AME64e	Mechanical Behavior of Materials			
	19AME64f	Total Quality Management (TQM)			
6	19AME65	Open Elective II (Inter Disciplinary)(ANNEXURE-II)	OE	3-0-0	3
7	19AHS15	Humanities Elective II	HS	3-0-0	3
	19AHS15a	Management Science			
	19AHS15b	Business Environment			
8	19AHS13	English Language Skills Lab	HS	0-0-3	1.5
9	19AME66	Heat Transfer Lab	PC	0-0-2	1
10	19AHS17	Research Methodology	MC	3-0-0	0
11	Industrial Training/Internship/Research Projects in National Laboratories/Academic Institutions		PR	4 Weeks Summer Internship	
				Total	21.5

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B.Tech IV Year I Semester

Semester - 7

S.No	Course No	Course Name	Category	L-T-P	Credits
1	19AME71	Metrology & Measurements	PC	2-0-0	2
2	19AME72	Introduction to CAD/CAM	PC	3-0-0	3
3	19AME73	Finite Element Analysis	PC	3-0-0	3
4	19AME74	Professional Elective III	PE	3-0-0	3
	19AME74a	Automotive Transmission			
	19AME74b	Additive Manufacturing			
	19AME74c	Mechanical Vibrations			
	19AME74d	Refrigeration & Air Conditioning			
	19AME74e	Material Characterization			
	19AME74f	Production and Operations Management			
5	19AME76	Professional Elective IV	PE	3-0-0	3
	19AME76a	Vehicle diagnosis and control			
	19AME76b	Mechatronics & MEMS			
	19AME76c	Design of Oil Hydraulics and Pneumatics			
	19AME76d	Computational Fluid Dynamics (CFD)			
	19AME76e	Geometric dimensioning and tolerances			
	19AME76f	Product Marketing			
6	19AME75	Open Elective 3	OE	2-0-0	2
ANNEXURE-III					
7	19AME77	CADD and CAM Lab	PC	0-0-3	1.5
8	19AME70	Metrology and Measurements Lab	PC	0-0-2	1
9	19AME78	Industrial Training/Internship/Research Projects in National Laboratories/Academic Institutions	PR	--------	2
10	19AME79	Project Stage - I	PR	---------	2
				Total	**22.5**

B.Tech IV Year II Semester

Semester - 8 (Theory - 2, Lab - 1)

S.No	Course No	Course Name	Category	L-T-P	Credit
1	19AME81	Professional Elective V (MOOC)	PE	3-0-0	3
2	19AME82	Open Elective IV (MOOC)	OE	3-0-0	3
3	19AME89	Project Stage - II	PR	--------	6
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ANNEXURE – I
Open Elective I (Interdisciplinary)

Branch	Subject Code	Subject
Humanities	19AHS10	Campus Recruitment Training & Soft Skills
Mathematics	19ABS20	Mathematical Modeling
	19ABS21	Fuzzy Set Theory, Arithmetic and Logic
	19ABS22	Number Theory
Physics	19ABS31	Sensors and Actuators for Engineering Applications
	19ABS32	Physics of Electronic Materials
Chemistry	19ABS41	Chemistry of Energy Materials
	19ABS42	Advanced Polymers and Their Applications
	19ABS43	Marine Chemistry
CIVIL	19ACE55a	Air Pollution and Control
	19ACE55b	Green Buildings
	19ACE55c	Basics of Civil Engineering Materials and Construction Practice
EEE	19AEE55a	Basics of Non-Conventional Energy Sources
	19AEE55b	Electrical Measurements & Sensors
	19AEE55c	Electric Vehicle Engineering
ECE	19AEC55a	Fundamentals of Electronics and Communication Engineering
	19AEC55b	Transducers and Sensors
	19AEC55c	Principles of Communications
CSE	19ACS55a	Object Oriented Programming Concepts Through Java
	19ACS55b	Introduction to Internet Of Things
	19ACS55c	Introduction to Operating Systems

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ANNEXURE – II
Open Elective II (Interdisciplinary)

Branch	Subject Code	Subject Name
Humanities	19AHS11	Competitive &Spoken English
Mathematics	19ABS23	Integral Transforms And ITS Applications
	19ABS24	Numerical Analysis
	19ABS25	Optimization Techniques
Physics	19ABS33	Functional Nanomaterials For Engineers
	19ABS34	Materials Characterization Techniques
Chemistry	19ABS44	Green Chemistry and Catalysis for Sustainable Environment
	19ABS45	Chemistry of Nanomaterials and Applications
	19ABS46	Environmental Management and Audit
CIVIL	19ACE65a	Remote Sensing and GIS
	19ACE65b	Environmental Impact Assessment
	19ACE65c	Disaster Management and Mitigation
EEE	19AEE65a	Energy Conservation and Management
	19AEE65b	PLC & ITS Applications
	19AEE65c	System Reliability Concepts
ECE	19AEC65a	Introduction to Microcontrollers & Applications
	19AEC65b	Principles of Digital Signal Processing
	19AEC65c	Introduction to Image Processing
CSE	19ACS65a	Introduction to Machine Learning
	19ACS65b	Introduction to Computer Networks
	19ACS65c	Web Design and Management

ANNEXURE – III - Open Elective III

Branch	Subject Code	Subject Name
CIVIL	19ACE75a	Architecture and town planning
	19ACE75b	Experimental stress analysis
	19ACE75c	Finite element methods
EEE	19AEE75a	Electrical engineering materials
	19AEE75b	Digital signal processors and applications
	19AEE75c	IOT applications in electrical engineering
ME	19AME75a	Special types of vehicles
	19AME75b	Six sigma and lean manufacturing
	19AME75c	Reverse engineering
	19AME75d	Energy auditing
	19AME75e	Introduction to composite materials
	19AME75f	Customer relationship management
ECE	19AEC75a	Embedded systems & IOT
	19AEC75b	Electronic instrumentation
	19AEC75c	Basics of VLSI design
CSE	19ACS75a	Mobile application development
	19ACS75b	Real time operating systems and applications
	19ACS75c	Fundamentals of block chain and applications

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