ANNAMACHARYA INSTITUTE OF TECHNOLOGY AND SCIENCES, TIRUPATI
(Autonomous)
Course structure for Four Year Regular B.Tech. Degree Program
(Effective for the batches admitted from 2019-20)
MECHANICAL ENGINEERING (ME)

INDUCTION PROGRAM (3 weeks duration)
❖ Physical activity
❖ Creative Arts
❖ Universal Human Values
❖ Literary
❖ Proficiency Modules
❖ Lectures by Eminent People
❖ Visits to local Areas
❖ Familiarization to Dept./Branch & Innovations

I B. Tech – I Semester

S.No	Category	Course Code	Course Title	Contact Hours per week			Credits	Scheme of Examination (Max. Marks)		
				L	T	P		CIE	SEE	Total
THEORY										
1	BS	19ABS9901	Algebra and Calculus	3	1	0	4	30	70	100
2	BS	19ABS9905	Engineering Chemistry	3	0	0	3	30	70	100
3	ES	19AES0501	Problem Solving and Programming	3	1	0	4	30	70	100
PRACTICAL										
4	LC	19ALC0301	Engineering Workshop Practice	0	0	3	1.5	30	70	100
5	ES	19AES0301	Engineering Graphics Lab	1	0	3	2.5	30	70	100
6	BS	19ABS9910	Engineering Chemistry Lab	0	0	3	1.5	30	70	100
7	ES	19AES0503	Problem Solving and Programming Lab	0	0	3	2	30	70	100
			TOTAL	10	2	12	18.5	210	490	700

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MECHANICAL ENGINEERING (ME)
I B. Tech – II Semester

S.No	Category	Course Code	Course Title	Contact Hours per week			Credits	Scheme of Examination (Max. Marks)		
				L	T	P		CIE	SEE	Total
THEORY										
1	ES	19AES0202	Basics of Electrical & Electronics Engineering	3	0	0	3	30	70	100
2	BS	19ABS9906	Differential Equations and Vector Calculus	3	1	0	4	30	70	100
3	BS	19ABS9903	Engineering Physics	3	0	0	3	30	70	100
4	ES	19AES0502	Data Structures	3	0	0	3	30	70	100
5	HS	19AHS9901	Communicative English- I	2	0	0	2	30	70	100
PRACTICAL										
6	HS	19AHS9902	Communicative English – I Lab	0	0	2	1	30	70	100
7	LC	19ALC0302	Mechanical Engineering Workshop	0	0	2	1	30	70	100
8	ES	19AES0204	Basics of Electrical & Electronics Engineering Lab	0	0	3	1.5	30	70	100
9	BS	19ABS9908	Engineering Physics Lab	0	0	3	1.5	30	70	100
10	ES	19AES0504	Data Structures Lab	0	0	3	1.5	30	70	100
			TOTAL	14	1	13	21.5	300	700	1000

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II B. Tech – I Semester

S.No	Category	Course Code	Course Title	Contact Hours per week			Credits	Scheme of Examination (Max. Marks)		
				L	T	P		CIE	SEE	Total
THEORY										
1	BS	19ABS9913	Probability & Statistics, PDE and Complex Variables	3	0	0	3	30	70	100
2	HS	19AHS9903	Communicative English II	2	0	0	2	30	70	100
3	ES	19AES0302	Design Thinking & Product Innovation	2	0	0	2	30	70	100
4	PC	19APC0301	Engineering Mechanics	3	1	0	4	30	70	100
5	PC	19APC0306	Material Science and Engineering	3	0	0	3	30	70	100
6	PC	19APC0308	Thermodynamics	3	0	0	3	30	70	100
7	MC	19AMC9903	Environmental Studies	2	0	0	0	30	-	30
PRACTICAL										
8	HS	19AHS9904	Communicative English II Lab	0	0	2	1	30	70	100
9	ES	19AES0303	Design Thinking & Product Innovation Lab	0	0	2	1	30	70	100
10	PC	19APC0307	Material Science and Engineering Lab	0	0	2	1	30	70	100
11	LC	19ALC0303	Computer Aided Machine Drawing Lab	0	0	3	1.5	30	70	100
			TOTAL	**19**	**1**	**9**	**21.5**	**330**	**700**	**1030**

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II B. Tech – II Semester

S.No	Category	Course Code	Course Title	Contact Hours per week			Credits	Scheme of Examination (Max. Marks)		
				L	T	P		CIE	SEE	Total
THEORY										
1	BS	19ABS9915	Transform Techniques and Numerical Methods	3	0	0	3	30	70	100
2	PC	19APC0309	Kinematics of Machines	2	0	0	2	30	70	100
3	ES	19AES0505	Internet of Things (IoT)	2	0	0	2	30	70	100
4	PC	19APC0302	Mechanics of Materials	3	0	0	3	30	70	100
5	PC	19APC0312	Manufacturing Technology	3	0	0	3	30	70	100
6	PC	19APC0314	Fluid Mechanics & Hydraulic Machinery	3	0	0	3	30	70	100
7	MC	19AMC9901	Biology for Engineers	2	0	0	0	30	-	30
PRACTICAL										
8	PR	19APR0301	Socially Relevant Project (15 Hrs/Sem)	0	0	0	0.5	50	-	50
9	PC	19APC0315	Fluid Mechanics & Hydraulic Machinery Lab	0	0	2	1	30	70	100
10	ES	19AES0506	Internet of Things (IoT) Lab	0	0	2	1	30	70	100
11	PC	19APC0303	Mechanics of Materials Lab	0	0	3	1.5	30	70	100
12	PC	19APC0313	Manufacturing Technology Lab	0	0	3	1.5	30	70	100
			TOTAL	16	0	10	21.5	380	700	1080

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III B. Tech – I Semester

S.No	Category	Course Code	Course Title	Contact Hours per week			Credits	Scheme of Examination (Max. Marks)		
				L	T	P		CIE	SEE	Total
THEORY										
1	PC	19APC0325	Dynamics of Machines	3	0	0	3	30	70	100
2	PC	19APC0310	Thermal Engineering – I	3	0	0	3	30	70	100
3	PC	19APC0316	Design of Machine Members - 1	3	0	0	3	30	70	100
4	PC	19APC0324	Machine Tools	3	0	0	3	30	70	100
5	PE		**Professional Elective I**	3	0	0	3	30	70	100
		19APE0304	Nano Technology							
		19APE0305	Composite materials							
		19APE0306	Renewable Energy Technologies							
6	OE		**Open Elective I (Inter disciplinary)**	3	0	0	3	30	70	100
		19AHSMB01	Managerial Economics and Financial Analysis							
		19APE0501	Artificial Intelligence							
		19APE0416	Sensor Networks							
7	MC	19AMC9902	Constitution of India	2	0	0	0	30	-	30
PRACTICAL										
8	PR	19APR0302	Socially Relevant Projects (15 Hrs /Sem)	0	0	0	0.5	50	-	50
9	PC	19APC0311	Thermal Engineering Lab	0	0	2	1	30	70	100
10	PC	19APC0305	Machine Tools Lab	0	0	2	1	30	70	100
11	PC	19APC0315	Computer Aided Drafting Lab	0	0	2	1	30	70	100
			Total	**18**	**0**	**6**	**21.5**	**350**	**630**	**980**

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III B. Tech – II Semester

S. No	Category	Course Code	Course Title	Contact Hours per week			Credits	Scheme of Examination (Max. Marks)		
				L	T	P		CIE	SEE	Total
THEORY										
1	PC	19APC0316	Design of Machine Members – 2	3	1	0	4	30	70	100
2	PC	19APC0317	Heat Transfer	3	0	0	3	30	70	100
3	PC	19APC0319	Thermal Engineering – II	3	0	0	3	30	70	100
4	PE		**Professional Elective II**	3	0	0	3	30	70	100
		19APE0316	Management Science							
		19APE0317	Optimization Techniques							
		19APE0318	Introduction to CAD/CAM							
5	OE		**Open Elective II (Inter disciplinary)**	3	0	0	3	30	70	100
		19APC0513	Machine Learning							
		19APC0216	Neural Networks & Fuzzy Logics							
		19AOE0101	Structural Health Monitoring							
6	HE		**Humanities Elective I**	3	0	0	3	30	70	100
		19AHE9902	Principles of Effective Public Speaking							
		19AHE9904	Advanced Numerical Methods							
		19AHE9908	Electromagnetic Theory							
7	MC	19AMC9904	Professional Ethics and Human Values	2	0	0	0	30	-	30
PRACTICAL										
8	PR	19APR0303	Socially Relevant Projects (15 Hrs / Sem)	0	0	0	0.5	50	-	50
9	PC	19APC0318	Heat Transfer Lab	0	0	2	1	30	70	100
10	PC	19APC0320	Design & Simulation Lab	0	0	2	1	30	70	100
11	PR	19APR0	Industrial Training/ Internship/ Research Projects in National Laboratories/Academic Institutions	0	0	0	0	-	-	-
			Total	18	0	6	21.5	320	560	880

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IV B. Tech – I Semester

S. No	Category	Course Code	Course Title	Contact Hours per week			Credits	Scheme of Examination (Max. Marks)		
				L	T	P		CIE	SEE	Total
THEORY										
1	PC	19APC0321	Metrology and Measurements	3	0	0	3	30	70	100
2	PC	19APC0323	Operations Research	3	0	0	3	30	70	100
3	PC	19APC0326	Automobile Engineering	2	0	0	2	30	70	100
4	PE		**Professional Elective III**	3	0	0	3	30	70	100
		19APE0307	Refrigeration & Air Conditioning							
		19APE0308	Finite Element Analysis							
		19APE0309	Computational Fluid Dynamics							
5	PE		**Professional Elective IV**	3	0	0	3	30	70	100
		19APE0310	Power Plant Engineering							
		19APE0311	Simulation Modelling for Manufacturing Systems							
		19APE0312	Advanced Mechanics							
6	HE		**Humanities Elective II**	2	0	0	2	30	70	100
		19AHE9906	Effective Technical Communication							
		19AHE9901	Technical Writing							
		19AHSMB03	Organizational Behaviour							
PRACTICAL										
7	PC	19APC0322	Metrology and Measurements Lab	0	0	2	1	30	70	100
8	PR	19APR0304	Socially Relevant Project (15 hr/sem)	0	0	0	0.5	50	-	50
9	PR	19APR0305	Industrial Training/Internship/Research Projects in National Laboratories / Academic Institutions	0	0	4	1.5	50	-	50
			Total	18	0	7	19	370	490	800

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IV B. Tech – II Semester

S.No	Category	Course Code	Course Title	Contact Hours per week			Credits	Scheme of Examination (Max. Marks)		
				L	T	P		CIE	SEE	Total
THEORY										
1	OE	OEC	**Open Elective V (MOOC)**	3	0	0	3	30	70	100
			Basic research							
			Research in technical education							
			Research Ethics and Plagiarism							
			Personality development							
2	PE	OEC	**Professional Elective V (MOOC)**	3	0	0	3	30	70	100
			Rapid Manufacturing							
			Laser Based Manufacturing							
			Energy Conservation and Waste Heat Recovery							
PRACTICAL										
3	PR	19APR0307	Project	0	0	14	9	60	140	200
4	PR	19APR0308	Technical Paper Presentation	0	0	0	0	50	-	50
			Total	**6**	**0**	**14**	**15**	**170**	**280**	**450**