ANNAMACHARYA INSTITUTE OF TECHNOLOGY AND SCIENCES, TIRUPATI
(Autonomous)
Course structure for Four Year Regular B.Tech. Degree Program
(Effective for the batches admitted from 2020-21)
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

Semester I (First year)

Sl. No.	Category	Course Code	Course Title	Hours per week			Credits	Scheme of Examination (Max. Marks)		
				L	T	P	C	CIE	SEE	Total
1	Basic Science course	20ABS9901	Algebra and Calculus	3	0	0	3	30	70	100
2	Basic Science courses	20ABS9903	Engineering Physics	3	0	0	3	30	70	100
3	Engineering Science Courses	20AES0202	Basics of Electrical & Electronics Engineering	3	0	0	3	30	70	100
4	Engineering Science Courses	20AES0301	Engineering Graphics	1	0	4	3	30	70	100
5	Engineering Science Courses	20AES0501	Problem Solving and Programming	3	0	0	3	30	70	100
6	Engineering Science Courses (LAB)	20ABS9910	Engineering Physics Lab	0	0	3	1.5	30	70	100
7	Basic Science course (LAB)	20AES0204	Basics of Electrical & Electronics Engineering Lab	0	0	3	1.5	30	70	100
8	Engineering Science Courses (LAB)	20AES0503	Problem Solving and Programming Lab	0	0	3	1.5	30	70	100
			Total credits				**19.5**	**240**	**560**	**800**

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Semester II (First year)

Sl. No.	Category	Course Code	Course Title	Hours per week			Credits	Scheme of Examination (Max. Marks)		
				L	T	P	C	CIE	SEE	Total
1	Basic Science courses	20ABS9906	Differential Equations and Vector Calculus	3	0	0	3	30	70	100
2	Basic Science course	20ABS9905	Engineering Chemistry	3	0	0	3	30	70	100
3	Humanities and Social science	20AHS9901	Communicative English	3	0	0	3	30	70	100
4	Engineering Science Courses	20AES0509	Basics of Python Programming	3	0	0	3	30	70	100
5	Engineering Science Courses	20AES0304	Engineering Workshop Practice	1	0	4	3	30	70	100
6	Humanities and Social science LAB	20AHS9902	Communicative English Lab	0	0	3	1.5	30	70	100
7	Basic Science course (LAB)	20ABS9910	Engineering Chemistry Lab	0	0	3	1.5	30	70	100
8	Engineering Science Courses/Prof Core (Interdisciplinary) (LAB)	20AES0510	Basics of Python Programming Lab	0	0	3	1.5	30	70	100
	Mandatory course (AICTE suggested)	20AMC9902	Constitution of India	2	0	0	0	30	-	30
			Total credits				**19.5**	**270**	**560**	**830**

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Semester III (Second year)

Sl. No.	Category	Course Code	Course Title	Hours per week			Credits	Scheme of Examination (Max. Marks)		
				L	T	P	C	CIE	SEE	Total
1	Basic Science courses	20ABS9913	Probability & Statistics, PDE	3	0	0	3	30	70	100
2	Professional Core Course	20APC0308	Thermodynamics	3	0	0	3	30	70	100
3	Professional Core courses	20APC0301	Engineering Mechanics	3	0	0	3	30	70	100
4	Professional Core courses	20APC0306	Material Science and Engineering	3	0	0	3	30	70	100
5	Professional Core courses	20APC0303	Machine Drawing	3	0	0	3	30	70	100
6	Professional Core courses (LAB)	20APC0307	Material Science and Engineering Lab	0	0	3	1.5	30	70	100
7	Professional Core courses (LAB)	20APC0313	Mechanical Engineering Workshop Practice	0	0	3	1.5	30	70	100
8	Professional Core courses (LAB)	20APC0324	CAD Lab	0	0	3	1.5	30	70	100
	Skill oriented course*	20ASC0301	CATIA Lab	1	0	2	2	100	-	100
	Mandatory course (AICTE suggested)	20AMC9903	Environmental Studies	2	0	0	0	30	-	30
			Total credits				**21.5**	**370**	**560**	**930**

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Semester IV (Second year)

Sl. No.	Category	Course Code	Course Title	Hours per week			Credits	Scheme of Examination (Max. Marks)		
				L	T	P	C	CIE	SEE	Total
1	Engineering Science Courses	20AES0505	Internet of Things (IoT)	3	0	0	3	30	70	100
2	Basic Science Course /Prof core course	20AES0324	Thermal Engineering	3	0	0	3	30	70	100
3	Professional Core courses	20APC0312	Manufacturing Technology	3	0	0	3	30	70	100
4	Professional Core courses	20APC0302	Mechanics of Materials	3	0	0	3	30	70	100
5	Humanities and Social Sciences	20AHSMB01	Managerial Economics and Financial Analysis	3	0	0	3	30	70	100
6	Humanities and Social Sciences	20AHS9905	Universal Human Values	3	1	0	3	30	70	100
7	Engineering Science Courses (LAB)	20AES0506	Internet of Things (IoT) Lab	0	0	3	1.5	30	70	100
8	Professional Core courses (LAB)	20APC0326	Thermal Engineering Lab	0	0	3	1.5	30	70	100
9	Professional Core courses (LAB)	20APC0304	Mechanics of Materials Lab	0	0	3	1.5	30	70	100
10	Skill oriented course*	20ASC0302	Manufacturing Process Lab	1	0	2	2	100	-	100
			Total credits				**24.5**	**370**	**630**	**1000**
Community Service project with credits (To visit the selected community to conduct survey (Socio-economic & domain survey) and conduct sensitization/awareness program/activities at the end of IV- semester before commencement of V-semester and complete immersion Programme also during V-Semester and submit report in V - semester. Assessment will be done at the end of V-Semester)										
Honors/Minor courses (The hours distribution can be 3-0-2 or 3-1-0 also)				**4**		**0**	**4**	**100**	**-**	**100**

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Semester V (Third year)

Sl. No.	Category	Course Code	Course Title	Hours per week			Credits	Scheme of Examination (Max. Marks)		
				L	T	P	C	CIE	SEE	Total
1	Professional Core courses	20APC0327	Machine Tools	3	0	0	3	30	70	100
2	Professional Core courses	20APC0309	Kinematics of Machines	3	0	0	3	30	70	100
3	Professional Core courses	20APC0314	Fluid Mechanics & Hydraulic Machinery	3	0	0	3	30	70	100
4	Open Elective Course/Job oriented elective	20AOEMB02	Entrepreneurship Development	3	0	0	3	30	70	100
		20APE0501	Artificial Intelligence							
		20APE0416	Sensor Networks							
5	Professional Elective courses	20APE0306	Renewable Energy Technologies	3	0	0	3	30	70	100
		20APE0302	Introduction to CAD/CAM							
		20APE0303	Nano Technology							
6	Professional Core courses Lab	20APC0315	Fluid Mechanics & Hydraulic Machinery Lab	0	0	3	1.5	30	70	100
7	Professional Core courses Lab	20APC0329	Machine Tools – 1 Lab	0	0	3	1.5	30	70	100
8	Skill advanced course/ soft skill course*	20ASA0502	Soft skills	1	0	2	2	100	-	100
9	Mandatory course (AICTE suggested)	20AMC9904	Professional Ethics and Human Values	2	0	0	0	30	-	30
10	CSP	20CSP0301	Community Service Project	0	0	0	1.5	100	-	100
Total credits							**21.5**	**440**	**490**	**930**
Honors/Minor courses (The hours distribution can be 3-0-2 or 3-1-0 also)				**4**	**0**	**0**	**4**	**30**	**70**	**100**

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Semester VI (Third year)

Sl. No.	Category	Course Code	Course Title	Hours per week			Credits	Scheme of Examination (Max. Marks)		
				L	T	P	C	CIE	SEE	Total
1	Professional Core courses	20APC0317	Heat Transfer	3	0	0	3	30	70	100
2	Professional Core courses	20APC0316	Design of Machine Elements	3	0	0	3	30	70	100
3	Professional Core courses	20APC0318	Dynamics of Machines	3	0	0	3	30	70	100
4	Professional Elective courses	20APE0311	Refrigeration & Air Conditioning	3	0	0	3	30	70	100
		20APE0305	Composite materials							
		20APE0301	Automobile Engineering							
5	Open Elective Course/Job oriented elective	OEC	Introduction to Research Numerical Methods for Engineers Fundamentals of Artificial Intelligence	3	0	0	3			100
6	Professional Core courses Lab	20APC0328	CAM Lab	0	0	3	1.5	30	70	100
7	Professional Core courses Lab	20APC0318	Heat Transfer Lab	0	0	3	1.5	30	70	100
8	Professional Core courses Lab	20APC0330	CAE Lab	0	0	3	1.5	30	70	100
9	Skill advanced course/ soft skill course*	20ASC0303	CNC	1	0	2	2	100	-	100
10	Mandatory course (AICTE)	20AMC9901	Biology for Engineers	2	0	0	0	30	-	30
			Total credits				**21.5**	**370**	**560**	**930**
Honors/Minor courses (The hours distribution can be 3-0-2 or 3-1-0 also)				**4**		**0**	**4**	**100**	**-**	**100**
Industrial/Research Internship (Mandatory) 2 Months during summer vacation										

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Semester VII (Fourth year)

Sl. No.	Category	Course Code	Course Title	Hours per week			Credits	Scheme of Examination (Max. Marks)		
				L	T	P	C	CIE	SEE	Total
1	Professional Elective courses	20APE0307	Alternative Fuels and Emission Control in Automotives	3	0	0	3	30	70	100
		20APE0308	Finite Element Analysis							
		20APE0309	Computational Fluid Dynamics							
2	Professional Elective courses	20APE0310	Power Transmission in Hybrid and Electric Vehicles	3	0	0	3	30	70	100
		20APC0323	Operations Research							
		20APE0312	Optimization Techniques through MATLAB							
3	Professional Elective courses	20APE0313	Total Quality Management	3	0	0	3	30	70	100
		20APE0314	Power Plant Engineering							
		20APE0315	Autotronics (Automobile Electronics)							
4	Open Elective Courses/ Job oriented elective	20APC0515	Operating Systems	2	0	2	3	30	70	100
		20AOEMB03	Intellectual Property Rights							
		20AOE9903	Environmental Waste Management							
5	Open Elective Courses/ Job oriented elective	20AOE9901	Research Writing Skills	2	0	2	3	30	70	100
		20AOE0501	E Commerce							
		20AOE0503	Mobile App development							
6	*Humanities and Social Science Elective		Universal Human Values	3	0	0	3	30	70	100
			Understanding Harmony							
7	Skill advanced course/ soft skill course*	20ASC0305	MATLAB	1	0	2	2	100	-	100
Industrial/Research Internship 2 Months (Mandatory) after third year (to be evaluated during VII semester				0	0	0	3	100	-	100
			Total credits				**23**	**380**	**420**	**800**
Honors/Minor courses (The hours distribution can be 3-0-2 or 3-1-0 also)				**4**	**-**	**0**	**4**	**100**	**-**	**100**

Semester VIII (Fourth year)

Sl. No.	Category	Course Code	Course Title	Hours per week			Credits	Scheme of Examination (Max. Marks)		
				L	T	P	C	CIE	SEE	Total
1	Major Project	PROJ	Project Project work, seminar and internship in industry	0	0	0	12	60	140	200
INTERNSHIP (6 MONTHS)										
			Total credits				**12**	60	140	200