



**ANNAMACHARYA INSTITUTE OF TECHNOLOGY AND SCIENCES, TIRUPATI  
(Autonomous)**

**Course structure for Four Year Regular B.Tech. Degree Program  
AK-20 (Effective for the batches admitted from 2020-21)  
ELECTRICAL & ELECTRONICS ENGINEERING (EEE)**

<b>INDUCTION PROGRAM (3 weeks duration)</b>	
❖	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
1	Basic Science course	20ABS9901	Algebra and Calculus	3	0	0	3	30	70	100
2	Basic Science course	20ABS9902	Applied Physics	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	20AES0304	Engineering Workshop Practice	1	0	4	3	30	70	100
5	Engineering Science Courses	20AES0501	Problem Solving and Programming	3	0	0	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)	20ABS9907	Applied Physics 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
<b>Total credits</b>							<b>19.5</b>	<b>240</b>	<b>560</b>	<b>800</b>

**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
1	Basic Science courses	20ABS9906	Differential Equations and Vector Calculus	3	0	0	3	30	70	100
2	Basic Science courses	20ABS9904	Chemistry	3	0	0	3	30	70	100
3	Engineering Science Courses	20AES0101	Basics of Civil and Mechanical Engineering	3	0	0	3	30	70	100
4	Engineering Science Courses	20AES0505	Internet of Things (IoT)	3	0	0	3	30	70	100
5	Engineering Science Courses	20AES0301	Engineering Graphics	1	0	4	3	30	70	100
6	Engineering Science Courses (LAB)	20AES0102	Basics of Civil and Mechanical Engineering Lab	0	0	3	1.5	30	70	100
7	Basic Science course (LAB)	20ABS9909	Chemistry Lab	0	0	3	1.5	30	70	100
8	Engineering Science Courses (LAB)	20AES0506	Internet of Things (IoT) Lab	0	0	3	1.5	30	70	100
9	Mandatory course (AICTE suggested)	20AMC9902	Constitution of India	2	0	0	0	30	-	30
<b>Total credits</b>							<b>19.5</b>	<b>270</b>	<b>560</b>	<b>830</b>

### Semester III (Second year)

Sl. No.	Category	Course Code	Course Title	Hours per week			Credits	Scheme of Examination (Max. Marks)		
				L	T	P		CIE	SEE	Total
1	Basic Science courses	20ABS9912	Transform Techniques and Complex Variables	3	0	0	3	30	70	100
2	Professional Core Course	20APC0201	Electrical Circuits - I	3	0	0	3	30	70	100
3	Professional Core courses	20APC0401	Electronic devices and circuits	3	0	0	3	30	70	100
4	Professional Core courses	20APC0202	Power Systems - I	3	0	0	3	30	70	100
5	Professional Core courses	20APC0203	Electrical Machines-I	3	0	0	3	30	70	100
6	Professional Core courses (LAB)	20APC0204	Electrical Circuits-I Lab	0	0	3	1.5	30	70	100
7	Professional Core courses (LAB)	20APC0404	Electronic Devices and Circuits Lab	0	0	3	1.5	30	70	100
8	Professional Core courses (LAB)	20APC0205	Electrical Machines-I Lab	0	0	3	1.5	30	70	100
9	Skill oriented course	20AHE9902	Principles of Effective Public Speaking	2	0	0	2	100	-	100
10	Mandatory course (AICTE suggested)	20AMC9903	Environmental Studies	3	0	0	0	30	-	30
<b>Total credits</b>							<b>21.5</b>	<b>370</b>	<b>560</b>	<b>930</b>

### Semester IV (Second year)

Sl. No	Category	Code	Course Title	Hours			Credits	Scheme of Examination (Max. Marks)		
				L	T	P		CIE	SEE	Total
1	Engineering Science Courses	20AES0509	Basics of Python Programming	3	0	0	3	30	70	100
2	Basic Science Course /Prof core course	20APC0206	Electrical Circuits-II	3	0	0	3	30	70	100
3	Professional Core courses	20APC0207	Electrical Machines-II	3	0	0	3	30	70	100
4	Professional Core courses	20APC0208	Engineering Electromagnetics	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	0	0	3	30	70	100
7	Engineering Science Courses/Prof Core (Interdisciplinary) (LAB)	20AES0510	Basics of Python Programming Lab	0	0	3	1.5	30	70	100
8	Professional Core courses (LAB)	20APC0209	Electrical circuits-II Lab	0	0	3	1.5	30	70	100
9	Professional Core courses (LAB)	20APC0210	Electrical Machines-II Lab	0	0	3	1.5	30	70	100
10	Skill oriented course	20ASC0201	Simulation of circuits using PSPICE	1	0	2	2	100	-	100
<b>Total credits</b>							<b>24.5</b>	<b>370</b>	<b>630</b>	<b>1000</b>
<b>Community service project</b>										
[To visit the selected Community to conduct survey (Socio-economic and Domain survey) and conduct sensitization / awareness program / activities at the end of IV semester and before commencement of V semester and complete immersion program also during V semester and submit report in V semester. Assessment will be done at the end of V semester]										
<b>Honors/Minor courses (The hours distribution can be 3-0-2 or 3-1-0 also)</b>				<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>100</b>		<b>100</b>

## Semester V (Third year)

S. No	Category	Code	Course Title	Hours			Credits	Scheme of Examination (Max. Marks)		
				L	T	P		CIE	SEE	Total
1	Professional Core courses	20APC0211	Electrical Machines-III	3	0	0	3	30	70	100
2	Professional Core courses	20APC0212	Power Electronics	3	0	0	3	30	70	100
3	Professional Core courses	20APC0213	Control Systems	3	0	0	3	30	70	100
4	Open Elective Course /Job oriented elective	20APC0425	Analog and Digital IC Applications	3	1	0	3	30	70	100
5	Professional Elective courses	20APE0201	Power Systems-II	3	0	0	3	30	70	100
6	Professional Core courses Lab	20APC0214	Control Systems Lab	0	0	3	1.5	30	70	100
7	Professional Core courses Lab	20APC0215	Power Electronics Lab	0	0	3	1.5	30	70	100
8	Skill advanced course/ soft skill course	20ASC0202	Introduction to Programming with MATLAB	1	0	2	2	100	-	100
9	Mandatory course (AICTE suggested)	20AMC9901	Biology for Engineers	3	0	0	0	30	-	30
10	Community service project	20CSP0201	Community service project	0	0	0	1.5	100	-	100
<b>Total credits</b>							<b>21.5</b>	<b>440</b>	<b>490</b>	<b>930</b>
<b>Honors/Minor courses (The hours distribution can be 3-0-2 or 3-1-0 also)</b>				<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>100</b>		<b>100</b>

## Semester VI (Third year)

S. No	Category	Code	Course Title	Hours			Credits	Scheme of Examination (Max. Marks)		
				L	T	P		CIE	SEE	Total
1	Professional Core courses	20APC0216	Electrical Measurements and Instrumentation	3	0	0	3	30	70	100
2	Professional Core courses	20APC0217	Power System Analysis	3	0	0	3	30	70	100
3	Professional Core courses	20APC0218	Switch Gear and Protection	3	0	0	3	30	70	100
4	Professional Elective courses	20APC0418	Microprocessors and Microcontrollers	3	0	0	3	30	70	100
5	Open Elective Course/Job oriented elective (MOOCS-NPTEL COURSES)	20AOE0515	The joy of computing using Python	-	-	-	3	-	-	100
		20AOEMB01	Principles of Management							
		20AOEMB02	Entrepreneurship							
6	Professional Core courses Lab	20APC0219	Electrical Measurements Lab	0	0	3	1.5	30	70	100
7	Professional Core courses Lab	20APC0220	Power System Analysis Lab	0	0	3	1.5	30	70	100
8	Professional Core courses Lab	20APC0221	Power systems protection lab	0	0	3	1.5	30	70	100
9	Skill advanced course/ soft skill course	20ASC0203	Numerical techniques using MATLAB	1	0	2	2	100	-	100
10	Mandatory course (AICTE)	20AMC9904	Professional Ethics and Human values	3	0	0	0	30	-	30
<b>Total credits</b>							<b>21.5</b>	<b>340</b>	<b>490</b>	<b>930</b>
<b>Honors/Minor courses (The hours distribution can be 3-0-2 or 3-1-0 also)</b>				<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>100</b>		<b>100</b>
<b>Industrial/Research Internship (Mandatory) 2 Months during summer vacation</b>										

## Semester VII (Fourth year)

S. No	Category	Code	Course Title	Hours			Credits	Scheme of Examination (Max. Marks)		
				L	T	P		CIE	SEE	Total
1	Professional Elective courses	20APE0203	Flexible AC Transmission Systems	3	0	0	3	30	70	100
2	Professional Elective courses	20APE0204	Neural networks and fuzzy logic	3	0	0	3	30	70	100
3	Professional Elective courses (MOOCS-NPTEL COURSES)	20APE0205	Design of photovoltaic systems	-	-	-	3	-	-	100
		20APE0206	Solar Energy Engineering and Technology							
		20APE0207	Physics of Renewable Energy Systems							
4	Open Elective Courses/ Job oriented elective	20APC0427	Embedded systems	3	0	0	3	30	70	100
5	Open Elective Courses/ Job oriented elective	20APE0306	Renewable energy technologies	3	0	0	3	30	70	100
6	Humanities and Social Science Elective	20AHE9903	Professional Communication	3	0	0	3	30	70	100
7	Skill advanced course/ soft skill course	20ASC0204	Electrical CAD	1	0	2	2	100		100
<b>Industrial/Research Internship 2 Months (Mandatory) after third year (to be evaluated during VII semester)</b>				0	0	0	3	100		100
<b>Total credits</b>							<b>23</b>	<b>350</b>	<b>350</b>	<b>800</b>
<b>Honors/Minor courses (The hours distribution can be 3-0-2 or 3-1-0 also)</b>				<b>4</b>		<b>0</b>	<b>4</b>	<b>100</b>		<b>100</b>

## Semester VIII (Fourth year)

Sl. No	Category	Code	Course Title	Hours per week			Credits	Scheme of Examination (Max. Marks)		
				L	T	P		CIE	SEE	Total
1	Major Project	20APRO201	Project work, seminar and internship in industry	0	0	0	12	60	140	200
<b>INTERNSHIP (6 MONTHS)</b>										
<b>Total credits</b>							<b>12</b>	<b>60</b>	<b>140</b>	<b>200</b>
<b>Grand Total</b>							<b>163</b>	<b>2440</b>	<b>3780</b>	<b>6420</b>