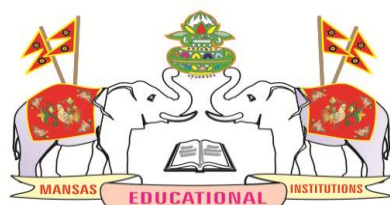


ACADEMIC REGULATIONS & CURRICULAM

ELECTRONICS AND COMMUNICATION ENGINEERING (B.Tech. Programme)

Applicable to the students admitted from the
Academic year 2015-2016



MAHARAJ VIJAYARAM GAJAPATHI RAJ COLLEGE OF ENGINEERING (Autonomous)

(Approved by AICTE, New Delhi, and permanently affiliated to JNTUK, Kakinada)
Re-Accredited by NBA, Re-accredited by NAAC with 'A' Grade,
Listed u/s 2(f) & 12(B) of UGC Act 1956.
Vijayaram Nagar Campus, Chintalavalasa,
Vizianagaram-535005, Andhra Pradesh

The visionaries



Late Dr. P V G Raju
Raja Saheb of Vizianagaram
Founder Chairman-MANSAS
Ex-Minister for Education and Health, Govt. of
AP
Ex Member of Parliament



Late Dr. P. AnandGajapathiRaju
Ex Chairman-MANSAS
Ex-Minister for Education and Health
Govt. of AP
Ex Member of Parliament



P. Ashok GajapathiRaju
Chairman-MANSAS
Union Minister for Civil Aviation,
Govt. of India
Ex-Minister for Finance, Govt. of AP

1. PROGRAM STRUCTURE:

1.1 The total program will consist of the following components.

a)	Foundation Mandatory	FM	39-45 credits
	• Basic Science Core(BSC)		
	• Engineering Science Core(ESC)		
	• Mandatory Learning Core(MLC)		
	• English & Humanities Core(EHC)		
b)	Foundation Elective	FE	06-09 credits
c)	Core Mandatory(Theory)	CM	68-76 credits
d)	Core Mandatory(Lab)	CM(L)	18-22 credits
e)	Core Elective (Theory)	CE(T)	21-27 credits
f)	Open Elective	OE	06-09 credits
g)	Directed Study	DS	02-04 credits
h)	Project	PR	08-12 credits
i)	Audit Courses	AC	S/N

- Open electives offered by the parent department are listed in the course structure and are offered to students of other programs also.
- For audit course a student is expected to meet minimum contact hours, as prescribed by the department and shall also comply with the requirements of submission of assignments/projects.

List of Foundation electives:

1. Professional Communication
2. Business Communication
3. Material Science
4. Engineering Mathematics-II
5. Electro Magnetic Theory
6. Instrumental Methods of Analysis
7. Thermodynamics
8. Applied Analysis
9. Probability & Statistics
10. Complex variables & Statistical Methods

List of Audit courses:

1. Professional Ethics & IPR
2. Soft Skills-I
3. Soft Skills-II
4. General Aptitude
5. NSS/NCC/Sports/Cultural/Yoga
6. Health and Nutrition
7. Entrepreneurship Development
8. Foreign Language (Chinese/Japanese/Korean/German/French)

*For all the programs offered, in the list of courses for electives one of the choices would be “MOOCs”. Each department shall short list MOOCs course/(s) meeting the requirements of course duration, credits, etc., from time to time. The same shall be placed in the immediate BoS meeting for ratification.

2. GRADING SYSTEM:

The UGC recommends the following procedure to compute the Semester Grade Point Average (SGPA) and Cumulative Grade Point Average (CGPA):

Semester Grade Point Average (SGPA) is calculated on the basis of grade points obtained in all courses, except audit courses and courses in which satisfactory or course continuation has been awarded.

The **SGPA** is the ratio of sum of the product of the number of credits with the grade points scored by a student in all the courses taken by a student and the sum of the number of credits of all the courses undergone by a student, i.e

$$\text{SGPA (Si)} = \frac{\sum(\text{Ci} \times \text{Gi})}{\sum \text{Ci}}$$

Where Ci is the number of credits of the ith course and Gi is the grade point scored by the student in the ith course.

The **CGPA** is also calculated in the same manner taking into account all the courses undergone by a student over all the semesters of a programme, i.e.

$$\text{CGPA} = \frac{\sum(\text{Ci} \times \text{Si})}{\sum \text{Ci}}$$

Where Si is the SGPA of the ith semester and Ci is the total number of credits in that semester.

The UGC recommends a 10-point grading system with the following letter grades as given below:

O	(Outstanding)	10
A+	(Excellent)	9
A	(Very Good)	8
B+	(Good)	7
B	(Above Average)	6
C	(Average)	5
P	(Pass)	4
F	(Fail)	0
Ab	(Absent)	0

- iii. A student with Grade F is required to reappear for the examination.

Illustration for Computation of SGPA

Course	Credit	Grade Letter	Grade point	Credit Point (Credit x Grade)
Course 1	3	A	8	3 X 8 = 24
Course 2	4	B+	7	4 X 7 = 28
Course 3	3	B	6	3 X 6 = 18
Course 4	3	O	10	3 X 10= 30
Course 5	3	C	5	3 X 5 = 15
Course 6	4	B	6	4 X 6 = 24
	20			139

Thus, **SGPA** =139/20 = 6.95

COURSE STRUCTURE **(Electronics and Communication Engineering)**

I Semester

S.No	Subject Code	Subject	L	T	P	C
1	A1MAT001	Engineering Mathematics - I	3	0	0	3
2	A1PYT002	Applied Physics	3	0	0	3
3	A1CET001	Basics of Civil & Mechanical Engineering	3	0	0	3
4	A1ECT001	Fundamentals of Electronic Circuits and Devices	3	0	0	3
5	A1CHT001	Environmental Studies	3	0	0	3
6	A1EHL001	English Language Practice -I	0	0	3	2
7	A1PYL002	Applied Physics Lab	0	0	3	2
8	A1MEW001	Basic Engineering Workshop	0	0	3	2
		Total				21

II Semester

S.No	Subject Code	Subject	L	T	P	C
1	A1MAT002	Mathematical Methods	3	0	0	3
2	A1MED001	Engineering Drawing	1	0	3	3
3	A1CYT001	Engineering Chemistry	3	0	0	3
4	A1ECT201	Electronic Devices and Circuits	3	0	0	3
5	A1ECT202	Network Analysis	3	0	0	3
6	A1EHL002	English Language Practice -II	0	0	3	2
7	A1CYL001	Engineering Chemistry Lab	0	0	3	2
8	A1ECL201	Electronic Devices and Circuits Lab	0	0	3	2
9	A1EHA5XX	Audit course - 1	2	0	0	0
		Total				21

III Semester

S.No	Subject Code	Subject	L	T	P	C
1	A1MST001	Managerial Economics and Financial Analysis	3	0	0	3
2	A1CIT001	Computer Programming	3	0	0	3
3	A1EET203	Electrical Technology	3	1	0	4
4	A1ECT204	Signals and Systems	3	1	0	4
5	A1ECT205	Switching Theory & Logic Design	3	1	0	4
6	A1XXT1XX	Foundation Elective - I	3	0	0	3
7	A1CIL001	Computer Programming Lab	0	0	3	2
8	A1ECL202	Electrical Technology & Networks Lab	0	0	3	2
9	A1EHA5XX	Audit course – 2	2	0	0	0
Total						25

IV Semester

S.No	Subject Code	Subject	L	T	P	C
1	A1ECT206	EM Waves and Transmission Lines	3	1	0	4
2	A1ECT207	Pulse and Digital Circuits	3	1	0	4
3	A1ECT208	Analog Communications	3	1	0	4
4	A1ECT209	Random Variables and Stochastic Process	3	1	0	4
5	A1ECT3XX	Core Elective – I	3	0	2	4
6	A1XXT1XX	Foundation Elective - II	3	0	0	3
7	A1ECL203	Analog Communications Lab	0	0	3	2
8	A1ECL204	Pulse and Digital Circuits Lab	0	0	3	2
9	A1EHA5XX	Audit course - 3	2	0	0	0
Total						27

V Semester

S.No	Subject Code	Subject	L	T	P	C
1	A1ECT210	Control Systems	3	1	0	4
2	A1ECT211	Digital Communications	3	1	0	4
3	A1ECT212	Antennas and Wave Propagation	3	1	0	4
4	A1ECT213	Linear and Digital IC Applications	3	1	0	4
5	A1ECT214	Microprocessors and Microcontrollers	3	1	0	4
6	A1ECT3XX	Core Elective – II	3	0	2	4
7	A1ECL205	Digital Communications Lab	0	0	3	2
8	A1ECL206	IC Applications Lab	0	0	3	2
9	A1EHA5XX	Audit course – 4	2	0	0	0
Total						28

VI Semester

S.No	Subject Code	Subject	L	T	P	C
1	A1ECT215	Digital Signal Processing	3	1	0	4
2	A1ECT216	VLSI Design	3	1	0	4
3	A1ECT3XX	Core Elective – III	3	0	0	3
4	A1ECT3XX	Core Elective – IV	3	0	0	3
5	A1ECT3XX	Core Elective – V	3	0	0	3
6	A1XXT4XX	Open Elective - I	3	0	0	3
7	A1ECL207	Microprocessors and Microcontrollers Lab	0	0	3	2
8	A1ECL208	Digital System Design Lab	0	0	3	2
9	A1EHA5XX	Audit course - 5	2	0	0	0
Total						24

VII Semester

S.No	Subject Code	Subject	L	T	P	C
1	A1ECT217	Microwave Engineering	3	1	0	4
2	A1ECT218	Electronic Measurements and Instrumentation	3	1	0	4
3	A1ECT3XX	Core Elective – VI	3	0	0	3
4	A1ECT3XX	Core Elective – VII	3	0	0	3
5	A1ECT3XX	Core Elective – VIII	3	0	0	3
6	A1XXT4XX	Open Elective - II	3	0	0	3
7	A1ECL209	Microwave Engineering Lab	0	0	3	2
8	A1ECL210	Digital Signal Processing Lab	0	0	3	2
9	A1EHA5XX	Audit course - 6	2	0	0	0
Total						24

VIII Semester

S.No	Subject Code	Subject	L	T	P	C
1	A1ECP601	Directed Study	0	0	3	2
2	A1ECP602	Project	0	0	12	8
Total						10

Core Elective I

S.No	Subject Code	Subject	L	T	P	C
1	A1CIT201	Data Structures	3	0	2	4
2	A1ECT301	Programming with MAT Lab	3	0	2	4
3	A1ECT302	Computer Organization & Architecture	3	1	0	4

Core Elective II

S.No	Subject Code	Subject	L	T	P	C
1	A1CIT206	Object Oriented Programming	3	0	2	4
2	A1ECT303	Electronic Circuit Analysis	3	0	2	4
3	A1ECT304	VI Using Lab VIEW	3	0	2	4

Core Elective III, IV & V

S.No	Subject Code	Subject	L	T	P	C
1	A1CIT203	Operating systems	3	0	0	3
2	A1ECT305	Computer Networks	3	0	0	3
3	A1ECT306	Electronic Switching Systems	3	0	0	3
4	A1ECT307	Information Theory and Coding	3	0	0	3
5	A1ECT308	Embedded and Real Time Operating Systems	3	0	0	3
6	A1ECT309	Cellular Mobile Communication	3	0	0	3
7	A1ECT310	Wireless Sensors & Networks	3	0	0	3
8	A1ECT311	Artificial Intelligence & Neural Networks	3	0	0	3
9	A1ECT312	Optical Communication	3	0	0	3
10		MOOCs	3	0	0	3

Core Elective VI, VII & VIII

S.No	Subject Code	Subject	L	T	P	C
1	A1ECT313	Radar Systems	3	0	0	3
2	A1ECT314	Satellite Communication	3	0	0	3
3	A1ECT315	Digital Television	3	0	0	3
4	A1ECT316	Digital Image Processing	3	0	0	3
5	A1ECT317	RF Circuit Design	3	0	0	3
6	A1ECT318	Biomedical Instrumentation	3	0	0	3
7	A1ECT319	EMI / EMC	3	0	0	3
8	A1ECT320	Analog IC Design	3	0	0	3
9	A1ECT321	Digital IC Design	3	0	0	3
10		MOOCs	3	0	0	3

Open Electives I & II

S.No	Subject Code	Subject	L	T	P	C
1.	A1ECT401	Microcontrollers and Applications	3	0	0	3
2.	A1ECT402	Biomedical Engineering	3	0	0	3
3.	A1ECT403	Electronic Instrumentation	3	0	0	3
4.	A1ECT404	Principles of Communication Engineering	3	0	0	3
5.	A1ECT405	Transducers and Sensors	3	0	0	3
6.	A1ECT406	Basics of VLSI Design	3	0	0	3

Foundation Elective – I & II

S.No		Subject	L	T	P	C
1	A1EHT101	Professional Communication	3	0	0	3
2	A1EHT102	Business Communication	3	0	0	3
3	A1MET103	Material Science	3	0	0	3
4	A1MAT104	Engineering Mathematics II	3	0	0	3
5	A1PYT105	Electro Magnetic Theory	3	0	0	3
6	A1CYT106	Instrumental Methods of Analysis	3	0	0	3
7	A1MET107	Thermodynamics	3	0	0	3
8	A1CYT108	Applied Analysis	3	0	0	3
9	A1MAT109	Probability and Statistics	3	0	0	3
10	A1MAT110	Complex Variables & Statistical Methods	3	0	0	3

S.No	Subject Code	Subject
1	A1EHA501	NSS
2	A1EHA502	NCC
3	A1EHA503	Sports
4	A1EHA504	Cultural
5	A1EHA505	Yoga
6	A1EHT506	Health & Nutrition
7	A1EHT507	Entrepreneurship Development
8	A1EHT508	Foreign Language
9	A1EHT509	Professional Ethics & IPR
10	A1EHT510	Soft Skills - I
11	A1EHT511	Soft Skills - II
12	A1EHT512	General Aptitude
13		MOOC