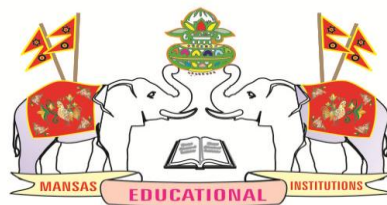


# CURRICULUM

## INFORMATION TECHNOLOGY (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

## 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

$$\text{SGPA (Si)} = \Sigma(\text{Ci} \times \text{Gi}) / \Sigma \text{Ci}$$

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.

$$\text{CGPA} = \Sigma(\text{Ci} \times \text{Si}) / \Sigma \text{Ci}$$

Where Si is the SGPA of the i<sup>th</sup> 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

### (B.TECH. INFORMATION TECHNOLOGY)

<b>Semester I</b>						
<b>S.No</b>	<b>Subject Code</b>	<b>Subject</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>Credits</b>
1	A1MAT001	Engineering Mathematics - I	3	1	-	3
2	A1CYT001	Engineering Chemistry	3	-	-	3
3	A1CET001	Basics of Civil & Mechanical Engineering	3	1	-	3
4	A1CHT001	Environmental Studies	3	-	-	3
5	A1ECT001	Fundamentals of Electronic Circuits & Devices	3	1	-	3
6	A1EHL001	English Language Practice - I	1	-	2	2
7	A1CYL001	Engineering Chemistry Laboratory	-	-	3	2
8	A1MEW001	Basic Engineering Workshop	-	-	3	2
Total Number of Credits						<b>21</b>

<b>Semester II</b>						
<b>S.No</b>	<b>Subject Code</b>	<b>Subject</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>Credits</b>
1	A1MAT002	Mathematical Methods	3	1	-	3
2	A1MED001	Engineering Drawing	1	-	3	3
3	A1PYT002	Applied Physics	3	-	-	3
4	A1XXT1XX	Foundation Elective – I	3	-	-	3
5	A1CIT001	Computer Programming	3	1	-	3
6	A1EHL002	English Language Practice - II	1	-	2	2
7	A1CIL001	Computer Programming Laboratory	-	-	3	2
8	A1PYL002	Applied Physics Laboratory	-	-	3	2
Total Number of Credits						<b>21</b>

<b>Semester III</b>						
<b>S.No</b>	<b>Subject Code</b>	<b>Subject</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>Credits</b>
1	A1CIT201	Data Structures	4	-	-	4
2	A1CIT202	Mathematical Foundations of Computers Science	4	-	-	4
3	A1CIT203	Digital Logic Design	4	-	-	4
4	A1CIT204	UNIX & Shell Programming	4	-	-	4
5	A1CIT205	Data Communications	4	-	-	4
6	A1MST001	Managerial Economics & Financial Analysis	3	-	-	3
7	A1CIL201	Data Structures Lab	-	-	3	2
8	A1CIL202	UNIX & Shell Programming Lab	-	-	3	2
9	A1EHA5XX	Audit Course – I		0		0
<b>Total Number of Credits</b>						<b>27</b>

<b>Semester IV</b>						
<b>S.No</b>	<b>Subject Code</b>	<b>Subject</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>Credits</b>
1	A1CIT206	Object Oriented Programming	4	-	-	4
2	A1CIT207	Operating Systems	3	-	-	3
3	A1CIT208	Database Management Systems	4	-	-	4
4	A1CIT209	Computer Architecture	4	-	-	4
5	A1CIT210	Formal Languages and Automata Theory	4	-	-	4
6	A1XXT1XX	Foundation Elective - II	3	-	-	3
7	A1CIL203	Object Oriented Programming Lab	-	-	3	2
8	A1CIL204	Database Management Systems Lab	-	-	3	2
9	A1EHA5XX	Audit Course - II	2	-	-	-
<b>Total Number of Credits</b>						<b>26</b>

<b>Semester V</b>						
<b>S.No</b>	<b>Subject Code</b>	<b>Subject</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>Credits</b>
1	A1CIT211	Compiler Design	4	-	-	4
2	A1CIT212	Computer Networks	4	-	-	4
3	A1CIT213	Micro-Processors & Interfacing	4	-	-	4
4	A1CIT214	Web Technologies	4	-	-	4
5	A1CIT3XX	Core Elective – I	3	-	-	3
6	AIXXT4XX	Open Elective – I	3	-	-	3
7	A1CIL205	Compiler Design & Computer Networks Lab	-	-	3	2
8	A1CIL206	Web Technologies Lab	-	-	3	2
9	A1EHA5XX	Audit Course – III	2	-	-	
Total Number of Credits						26

<b>Semester VI</b>						
<b>S.No</b>	<b>Subject Code</b>	<b>Subject</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>Credits</b>
1	A1CIT215	Design & Analysis of Algorithms	4	-	-	4
2	A1CIT216	Software Engineering	4	-	-	4
3	A1CIT217	OOAD & Design Patterns	4	-	-	4
4	A1CIT3XX	Core Elective – II	4	-	-	4
5	A1CIT3XX	Core Elective – III	3	-	-	3
6	A1CIT3XX	Core Elective – IV	3	-	-	3
7	A1CIL207	Design & Analysis of Algorithms Lab	-	-	3	2
8	A1CIL208	Software Engineering Lab (Project Oriented)	-	-	3	2
9	A1EHA5XX	Audit Course – IV	2	-	-	
Total Number of Credits						26

<b>Semester VII</b>						
<b>S.No</b>	<b>Subject Code</b>	<b>Subject</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>Credits</b>
1	A1CIT218	Design of Unix Operating System	4	-	-	4
2	A1CIT4XX	Open Elective – II	3	-	-	3
3	A1CIT3XX	Core Elective – V	3	-	-	3
4	A1CIT3XX	Core Elective – VI	3	-	-	3
5	A1CIT3XX	Core Elective – VII	3	-	-	3
6	A1CIT3XX	Core Elective - VIII (Self-Study)	3	-	-	3
7	A1CIL209	Object Oriented Analysis and Design & Design Patterns Lab	-	-	3	2
8	A1CIL210	Operating Systems Lab	-	-	3	2
9	A1EHA5XX	Audit Course – V	2	-	-	
10	A1EHA5XX	Audit Course – VI	2	-	-	
Total Number of Credits						23

<b>Semester VIII</b>						
<b>S.No</b>	<b>Subject Code</b>	<b>Subject</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>Credits</b>
1	A1CIP601	Directed Study			0	2
2	A1CIP602	Project				8
Total Number of Credits						10

<b>Foundation Electives [Students would do any 2 of these]</b>		
<b>S. No</b>	<b>Subject Code</b>	<b>Subject Name</b>
1	A1EHT101	Professional Communication
2	A1EHT102	Business Communication
3	A1MET103	Material Science
4	A1MAT104	Engineering Mathematics II
5	A1PYT105	Electro Magnetic Theory
6	A1CYT106	Instrumental Methods of Analysis
7	A1MET107	Thermodynamics
8	A1CYT108	Applied Analysis
9	A1MAT109	Probability and Statistics
10	A1MAT110	Complex Variables & Statistical Methods

<b>Open Electives (Offered by CSE/IT to students from other departments)</b>		
<b>S. No</b>	<b>Subject Code</b>	<b>Subject Name</b>
1	A1CIT401	Fundamentals of Data Structures
2	A1CIT402	Basics of Operating Systems
3	A1CIT403	Basics of Computer Networks
4	A1CIT404	Object Oriented Programming with Java
5	A1CIT405	Web Design & Development
6	A1CIT406	Structured Data Storage with DBMS

<b>Audit Course Electives</b>		
<b>S. No</b>	<b>Subject Code (A1EHX500XX)</b>	<b>Subject Name</b>
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 (Chinese/Japanese/Korean/German)
9	A1EHT509	Professional Ethics & IPR
10	A1EHT510	Soft Skills - I
11	A1EHT511	Soft Skills - II
12	A1EHT512	General Aptitude
13		MOOC



<b>Core Elective - I</b>		
<b>S. No</b>	<b>Subject Code</b>	<b>Subject</b>
1	A1CIT301	Data warehousing & Data Mining
2	A1CIT302	Switching & Routing Concepts
3	A1CIT303	Software Testing Methodologies
<b>Core Elective - II</b>		
<b>S. No</b>	<b>Subject Code</b>	<b>Subject</b>
1	A1CIT304	Grid & Cluster Computing
2	A1CIT305	Network Programming
3	A1CIT306	Middleware Technologies
<b>Core Elective - III</b>		
<b>S. No</b>	<b>Subject Code</b>	<b>Subject</b>
1	A1CIT307	Social Networks
2	A1CIT308	Mobile Computing
3	A1CIT309	Service Oriented Architecture
<b>Core Elective - IV</b>		
<b>S. No</b>	<b>Subject Code</b>	<b>Subject</b>
1	A1CIT310	Information Retrieval Systems
2	A1CIT311	Adhoc Networks
3	A1CIT312	Enterprise Java Beans
4	A1CIT313	Computer Forensics & Cyber Security
<b>Core Elective - V</b>		
<b>S. No</b>	<b>Subject Code</b>	<b>Subject</b>
1	A1CIT314	Semantic Web
2	A1CIT315	Internet of Things
3	A1CIT316	.NET Technologies
4	A1CIT317	e-Commerce
<b>Core Elective - VI</b>		
<b>S. No</b>	<b>Subject Code</b>	<b>Subject</b>
1	A1CIT318	Soft Computing
2	A1CIT319	Firewalls & VPN
3	A1CIT320	Enterprise Resource Planning
4	A1CIT321	Storage Technologies
<b>Core Elective - VII</b>		
<b>S. No</b>	<b>Subject Code</b>	<b>Subject</b>
1	A1CIT322	Data Sciences & Analytics

2	A1CIT323	Penetration Testing
3	A1CIT324	Cloud & Utility Computing
4	A1CIT325	Computer Graphics
<b>Core Elective - VIII</b>		
<b>S. No</b>	<b>Subject Code</b>	<b>Subject</b>
1	A1CIT326	Usability Engineering
2	A1CIT327	Bio-Informatics
3	A1CIT328	Computer Vision & Image Processing
4	A1CIT329	Embedded Systems