



Programme and course outcomes for all Programmes offered by the institution are stated and displayed on website and communicated to teachers and students



MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY

(Autonomous Institution – UGC, Govt. of India)

Sponsored by CMR Educational Society

(Affiliated to JNTUH, Hyderabad, Approved by AICTE - Accredited by NAAC – 'A' Grade - ISO 9001:2015 Certified)

Maisammaguda, Dhulapally, Kompally, Secunderabad – 500100, Telangana State, India.

Contact Number: 7207034237, 9133555162, E-Mail ID: mrcet2004@gmail.com, website: www.mrcet.ac.in



Estd : 2004

MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY

(Autonomous Institution – UGC, Govt. of India)

(Sponsored by CMR Educational Society)

Recognized under 2(f) and 12 (B) of UGC ACT 1956

(Affiliated to JNTUH, Hyderabad, Approved by AICTE- Accredited by NBA & NAAC– 'A' Grade - ISO 9001:2015 Certified)



PREAMBLE

PROGRAM OUTCOMES (POs)

Engineering Graduates will be able to:

- 1. Engineering knowledge:** Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
- 2. Problem analysis:** Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
- 3. Design / development of solutions:** Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
- 4. Conduct investigations of complex problems:** Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
- 5. Modern tool usage:** Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.
- 6. The engineer and society:** Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.
- 7. Environment and sustainability:** Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
- 8. Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
- 9. Individual and team work:** Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
- 10. Communication:** Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

MRCET

PRINCIPAL

Malla Reddy College of Engg. & Tech

Maisammaguda, Dhulapally, Secunderabad - 500100, Telangana State, India. **website: www.mrcet.ac.in**
Contact: 7207034237 / 9133555183, E-Mail Id: mrcet2004@gmail.com. **UGC AUTONOMOUS INSTITUTION**
Maisammaguda, Dhulapally, Secunderabad - 500 100. **EAMCET/ICET/PGET Code : MLRD**



Estd : 2004

(Affiliated to JNTUH, Hyderabad, Approved by AICTE- Accredited by NBA & NAAC- 'A' Grade - ISO 9001:2015 Certified)

MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY

(Autonomous Institution – UGC, Govt. of India)

(Sponsored by CMR Educational Society)

Recognized under 2(f) and 12 (B) of UGC ACT 1956



11. Project management and finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multi disciplinary environments.

12. Life- long learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

Mechanism of Communication

Programme Educational Objectives (PEOs) and Programme Outcomes (POs) are prepared for every programme and displayed at various locations as listed below:

- College website
- Academic Calendar
- Classrooms
- Laboratories
- Department building walls
- HOD office

The course outcomes (COs) for all courses are printed in:

- College website
- Academic Regulations book.
- Syllabus Copy
- Laboratory Manuals
- Handouts to Students

Sd/-

PRINCIPAL
Malla Reddy College of Engg. & Tech
UGC AUTONOMOUS INSTITUTION
Maisammaguda, Doolapally, Secunderabad-500 100.

MRCET

PROGRAMME OUTCOMES

DEPARTMENT OF INFORMATION TECHNOLOGY	DEPARTMENT OF INFORMATION TECHNOLOGY
<p>PROGRAMME EDUCATIONAL OBJECTIVES (PEOs)</p>	<p>PROGRAM OUTCOMES (POs)</p>
<ul style="list-style-type: none"> • PEO1 – ANALYTICAL SKILLS To facilitate the graduates with the ability to visualize, gather information, articulate, analyse, solve complex problems, and make decisions. These are essential to address the challenges of complex and computation intensive problems increasing their productivity. • PEO2 – TECHNICAL SKILLS To facilitate the graduates with the technical skills that prepare them for immediate employment and pursue certification providing a deeper understanding of the technology in advanced areas of computer science and related fields, thus encouraging to pursue higher education and research based on their interest. • PEO3 – SOFT SKILLS To facilitate the graduates with the soft skills that include fulfilling the mission, setting goals, showing self-confidence by communicating effectively, having a positive attitude, get involved in team-work, being a leader, managing their career and their life. • PEO4 – PROFESSIONAL ETHICS To facilitate the graduates with the knowledge of professional and ethical responsibilities by paying attention to grooming, being conservative with style, following dress codes, safety codes, and adapting themselves to technological advancements. 	<ul style="list-style-type: none"> • Engineering Graduates will be able to: <ul style="list-style-type: none"> • Engineering Knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and emerging technologies to the solution of complex engineering problems. • Problem analysis: Identify, formulate, review research literature, and analyze complex engineering problems involving substantial calculations using first principles of mathematics, natural sciences, and engineering sciences. • Design / development of solutions: Design solution for complex engineering problems and design system components or processes that meet the specified needs with appropriate considerations for the public health and safety, and the cultural, societal, and environmental considerations. • Conduct investigations of complex problems: Use research based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions. • Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations. • The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice. • Environment and sustainability: Understand the impact of the professional engineering solutions societal and environmental constraints, and demonstrate the knowledge of, and need for sustainable development. • Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice. • Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams. • Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions. • Project management and finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multi-disciplinary environments. • Life-long learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.
<p>PROGRAM SPECIFIC OUTCOMES (PSOs)</p>	
<ul style="list-style-type: none"> • PSO1: Fundamentals and critical knowledge of the Computer System: Able to Understand the working principles of the computer system and its components. Apply the knowledge to build, assess, and analyze the software and hardware aspects of it. • PSO2: The comprehensive and Applied knowledge of Software Development: Comprehensive skills of Programming Languages, Software process models, methodologies, and able to plan, develop, test, analyze, and manage the software and hardware intensive systems in heterogeneous platforms individually or working in team. • PSO3: Applications of Computing Domain & Research: Able to use the professional, managerial, interdisciplinary skill set, and domain specific tools in development processes. Identify the research gaps, and provide innovative solutions to them. 	
<p>MALLAREDDY COLLEGE OF ENGINEERING AND TECHNOLOGY (Autonomous Institution - UGC, Govt. of India) (Affiliated to JNTU, Hyderabad, Approved by AICTE - Accredited by NEA & NAAC - 'A' Grade - ISO 9001:2015 Certified)</p>	<p>MALLAREDDY COLLEGE OF ENGINEERING AND TECHNOLOGY (Autonomous Institution - UGC, Govt. of India) (Affiliated to JNTU, Hyderabad, Approved by AICTE - Accredited by NEA & NAAC - 'A' Grade - ISO 9001:2015 Certified)</p>

 **COMPUTER PROGRAMMING LAB**



DEPARTMENT OF INFORMATION TECHNOLOGY
PROGRAM OUTCOMES (PO):

1. **PO1: Analyze and design systems** that meet system requirements, and design software to solve complex engineering problems and design systems to meet the requirements.
2. **PO2: Apply engineering design** to produce innovative solutions to complex engineering problems, and design systems to meet the requirements.
3. **PO3: Conduct investigations** of complex problems, using a combination of theory and experiment, to identify the nature, extent and causes of the problem and to determine effective solutions.
4. **PO4: Create, design and execute** a project or research, and design systems to meet the requirements.
5. **PO5: Engage in life-long learning** in the field of their specialization, and design systems to meet the requirements.
6. **PO6: Communicate effectively** in the workplace, and design systems to meet the requirements.
7. **PO7: Work effectively** in a team or group, and design systems to meet the requirements.
8. **PO8: Demonstrate professional** behavior, and design systems to meet the requirements.

UNIVERSITY COLLEGE OF ENGINEERING AND TECHNOLOGY



DEPARTMENT OF INFORMATION TECHNOLOGY
PROGRAMME EDUCATIONAL OBJECTIVES (PEO):

1. **PEO1: Apply knowledge** of computer science and engineering to solve complex engineering problems and design systems to meet the requirements.
2. **PEO2: Apply engineering design** to produce innovative solutions to complex engineering problems, and design systems to meet the requirements.
3. **PEO3: Conduct investigations** of complex problems, using a combination of theory and experiment, to identify the nature, extent and causes of the problem and to determine effective solutions.
4. **PEO4: Create, design and execute** a project or research, and design systems to meet the requirements.
5. **PEO5: Engage in life-long learning** in the field of their specialization, and design systems to meet the requirements.
6. **PEO6: Communicate effectively** in the workplace, and design systems to meet the requirements.
7. **PEO7: Work effectively** in a team or group, and design systems to meet the requirements.
8. **PEO8: Demonstrate professional** behavior, and design systems to meet the requirements.

UNIVERSITY COLLEGE OF ENGINEERING AND TECHNOLOGY

Lab Manuals



Malla Reddy College of Engineering & Technology
Autonomous Institution - UGC, Govt. of India

EAMCET/ICET/PGECET Code **MLRD**
APPROVED BY AICTE, ACCREDITED BY NEA & NAAC - A GRADE
ISO 9001:2015 CERTIFIED

About Us	Admissions	Academics	Examinations	Departments	Facilities	Training & Placements	R&D/Technology Incubator
EDC/IIPC	International Collaborations	Professional Chapters	Alumni	Gallery	Downloads	Contact Us	

Quick Links
> Department Home
> Vision & Mission
> About Director
> About HOD
> Academics
> Achievements
> Best Practices
> Campus Placements
> Downloads
> Faculty
> Infrastructure
> PEOs & POs
> Photo Gallery
> Professional Associations

Downloads

Department of Information Technology

Academic Calenders & Syllabus:

B.Tech II, III & IV Academic Calendar For the Academic Year 2019-2020
Academic Regulations(R-18/ R-17/ R15)
Course Structure and Syllabus(R-18/ R-17/ R15)

Time Tables:

Question Banks:

Lab Manuals:

II - I Sem

II - II Sem

III - I Sem

III - II Sem

IV - I Sem

Digital Notes:

B.Tech COURSE COVERAGE SUMMARY(2019-20):

B.Tech Class teachers Contact details

DATA STRUCTURES

LABORATORY MANUAL

**B.TECH
(II YEAR – I SEM)
(2019-20)**



DEPARTMENT OF INFORMATION TECHNOLOGY

MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY
(Autonomous Institution – UGC, Govt. of India)

Recognized under 2(f) and 12 (B) of UGC ACT 1956

(Affiliated to JNTUH, Hyderabad, Approved by AICTE - Accredited by NBA & NAAC – 'A' Grade - ISO 9001:2015 Certified)

Meisammaguda, Dhulapally (Post Via. Hakimpet), Secunderabad – 500100, Telangana State, India

PROGRAMME EDUCATIONAL OBJECTIVES (PEOs)

PEO1 – ANALYTICAL SKILLS

To facilitate the graduates with the ability to visualize, gather information, articulate, analyze, solve complex problems, and make decisions. These are essential to address the challenges of complex and computation intensive problems increasing their productivity.

PEO2 – TECHNICAL SKILLS

To facilitate the graduates with the technical skills that prepare them for immediate employment and pursue certification providing a deeper understanding of the technology in advanced areas of computer science and related fields, thus encouraging to pursue higher education and research based on their interest.

PEO3 – SOFT SKILLS

To facilitate the graduates with the soft skills that include fulfilling the mission, setting goals, showing self-confidence by communicating effectively, having a positive attitude, get involved in team-work, being a leader, managing their career and their life.

PEO4 – PROFESSIONAL ETHICS

To facilitate the graduates with the knowledge of professional and ethical responsibilities by paying attention to grooming, being conservative with style, following dress codes, safety codes, and adapting themselves to technological advancements.

INDEX

S.No	Name of the Program	Page.No
1.	Write a program that uses functions to perform the following operations on singly linked List (i)Creation (ii) Insertion (iii) Deletion (iv) Traversal.	1
2.	Write a program that uses functions to perform the following operations on doubly linked List (i) Creation (ii) Insertion (iii) Deletion (iv) Traversal.	14
3.	Write a program that uses functions to perform the following operations on circular linked List (i)Creation (ii) Insertion (iii) Deletion (iv) Traversal.	26
4.	Write a program that implement stack (its operations) using (i)Arrays (ii)Linked list(Pointers).	38
5.	Write a program that implement Queue (its operations) using (i)Arrays (ii)Linked list(Pointers).	49
6.	(i)Write a program that implement Circular Queue (its operations) using Arrays . (ii)Write a program that use both recursive and non recursive functions to perform the following searching operations for a Key value in a given list of integers: a) Linear search b) Binary search.	59
7.	Write a program that implements the following sorting 1. Bubble sort 2. Selection sort 3. Quick sort.	74
8.	Write a program that implements the following 1. Insertion sort 2. Merge sort 3. Heap sort.	82
9.	Write a program to implement all the functions of a dictionary (ADT)using Linked List.	91
10.	Write a program to perform the following operations: a) Insert an element into a binary search tree. b) Delete an element from a binary search tree. c) Search for a key element in a binary search tree.	97
11.	Write a program to implement the tree traversal methods.	104
12.	Write a program to perform the following operations: a) Insert an element into a AVL tree. b) Delete an element from a AVL tree. c) Search for a key element in a AVL tree.	114

Syllabus



**Malla Reddy College of
Engineering & Technology**
Autonomous Institution - UGC, Govt. of India

EAMCET/ICET/PGEET Code **MLRD**

APPROVED BY AICTE, ACCREDITED BY NBA & NAAC - 'A' GRADE
ISO 9001:2015 CERTIFIED

About Us	Admissions	Academics	Examinations	Departments	Facilities	Training & Placements	R&D/Technology Incubator
EDC/IIPC	International Collaborations	Professional Chapters	Alumni	Gallery	Downloads	Contact Us	
Departments	H&S - Humanities & Sciences						

Quick Links

- » Department Home
- » Vision & Mission
- » About HOD
- » Academics

Downloads

MRCET B.Tech I Year Hand Book (R-20):

B.Tech Academic Calendars & Syllabus:

- I B.Tech Academic Calendar For The Academic Year 2020-2021
- Academic Regulations(R-20)
- Course Structure and Syllabus(R-20)



**Malla Reddy College of
Engineering & Technology**
Autonomous Institution - UGC, Govt. of India

EAMCET/ICET/PGEET Code **MLRD**

APPROVED BY AICTE, ACCREDITED BY NBA & NAAC - 'A' GRAD
ISO 9001:2015 CERTIFIED

About Us	Admissions	Academics	Examinations	Departments	Facilities	Training & Placements	R&D/Technology Incubator
EDC/IIPC	International Collaborations	Professional Chapters	Alumni	Gallery	Downloads	Contact Us	
Syllabus							

Syllabus

B.Tech Programmes

(MRCET-R20) Course Structure and Syllabi for B. Tech 2020 Admitted Batch

- Aeronautical Engineering
- Computer Science and Engineering
- Computer Science and Engineering(Artificial Intelligence and Machine Learning)
- Computer Science and Engineering(Cyber Security)
- Computer Science and Engineering(IOT)
- Computer Science and Engineering(Data Science)
- Electronics and Communications Engineering
- Electrical And Electronics Engineering
- Information Technology
- Mechanical Engineering

MALLA REDDY COLLEGE OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OF AERONAUTICAL ENGINEERING

COURSE STRUCTURE

I Year B. Tech – I Semester

S.No	Subject Code	SUBJECT	L	T	P	C	MAX. MARKS	
							INT	EXT
1	R20A0001	English	2	0	0	2	30	70
2	R20A0021	Mathematics – I	3	1	0	4	30	70
3	R20A0012	Engineering Physics	3	0	0	3	30	70
4	R20A0013	Advanced Material Chemistry	3	0	0	3	30	70
5	R20A0501	Programming for Problem Solving	3	0	0	3	30	70
6	R20A0083	Engineering and IT Workshop	-	0	2	1	30	70
7	R20A0082	Engineering Physics Lab	-	0	3	1.5	30	70
8	R20A0581	Programming for Problem Solving Lab	-	0	3	1.5	30	70
9	R20A0014	Financial Institutions, Markets and Services	1	-	-	1	100	-
		Total	15	1	8	20	340	560

I Year B. Tech – II Semester

S.No	Subject Code	SUBJECT	L	T	P	C	MAX. MARKS	
							INT	EXT
1	R20A0002	Professional English	2	0	0	2	30	70
2	R20A0022	Mathematics – II	3	1	0	4	30	70
3	R20A0261	Basic Electrical and Electronics Engineering	3	0	0	3	30	70
4	R20A0301	Engineering Graphics	2	0	2	3	30	70
5	R18A0502	Python Programming	3	0	0	3	30	70
6	R20A0081	English Language Communication Skills Lab	-	0	2	1	30	70
7	R20A0289	Basic Electrical and Electronics Engineering Lab	-	0	3	1.5	30	70
8	R20A0582	Python Programming Lab	-	0	3	1.5	30	70
9	R20A0003	Human Values and Professional Ethics	1	0	0	1	100	-
		Total	14	1	10	20	340	560

MALLA REDDY COLLEGE OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

COURSE STRUCTURE

I Year B. Tech – I Semester

S.No	Subject Code	SUBJECT	L	T	P	C	MAX. MARKS	
							INT	EXT
1	R20A0001	English	2	0	0	2	30	70
2	R20A0021	Mathematics – I	3	1	0	4	30	70
3	R20A0201	Basic Electrical Engineering	3	0	0	3	30	70
4	R20A0302	Computer Aided Engineering Graphics	2	0	2	3	30	70
5	R20A0501	Programming for Problem Solving	3	0	0	3	30	70
6	R20A0081	English Language Communication Skills Lab	-	0	2	1	30	70
7	R20A0281	Basic Electrical Engineering Lab	-	0	3	1.5	30	70
8	R20A0581	Programming for Problem Solving Lab	-	0	3	1.5	30	70
9	R20A0003	Human Values and Professional Ethics	1	0	0	1	100	-
Total			14	1	10	20	340	560

I Year B. Tech – II Semester

S.No	Subject Code	SUBJECT	L	T	P	C	MAX. MARKS	
							INT	EXT
1	R20A0002	Professional English	2	0	0	2	30	70
2	R20A0022	Mathematics – II	3	1	0	4	30	70
3	R20A0011	Applied Physics	3	0	0	3	30	70
4	R20A0401	Analog and Digital Electronics	3	0	0	3	30	70
5	R20A0502	Python Programming	3	0	0	3	30	70
6	R20A0082	Applied Physics Lab	-	0	3	1.5	30	70
7	R20A0582	Python Programming Lab	-	0	3	1.5	30	70
8	R20A0083	Engineering and IT Workshop	-	0	2	1	30	70
9	R20A0014	Financial Institutions, Markets and Services	1	-	-	1	100	-
Total			15	1	8	20	340	560