CMR
ENGINEERING COLLEGE
EXPLORE TO INVENT

CMR ENGINEERING COLLEGE

UGC AUTONOMOUS

Approved by AICTE-New Delhi | Affiliated to JNTUH | Accredited by NAAC & NBA

Dept. of Computer Science and Engineering

Student HANDBOOK

2022-23

NBA NATIONAL BOARD OF ACCREDITATION
nirf NATIONAL INSTITUTIONAL RANKING FRAMEWORK
ARIIA ATAL RANKING OF INSTITUTIONS ON INNOVATION ACHIEVEMENTS

www.cmrec.ac.in

CONTENTS

1. VISION & MISSION OF THE INSTITUTE

Vision:

To be recognized as a premier institution in offering value based and futuristic quality technical education to meet the technological needs of the society

Mission:

1. To impart value based quality technical education through innovative teaching and learning methods
2. To continuously produce employable technical graduates with advanced technical skills to meet the current and future technological needs of the society
3. To prepare the graduates for higher learning with emphasis on academic and industrial research.

2. VISION & MISSION OF THE DEPARTMENT

Vision:

To produce globally competent and industry-ready graduates in Computer Science & Engineering by imparting quality education with the know-how of cutting-edge technology and holistic personality.

Mission:

1. To offer high-quality education in Computer Science & Engineering in order to build core competence for the graduates by laying a solid foundation in Applied Mathematics and program frame work with a focus on concept building.
2. The department promotes excellence in teaching, research, and collaborative activities to prepare graduates for a professional career or higher studies.
3. Creating an intellectual environment for developing logical skills and problem-solving strategies, thus developing, an able and proficient computer engineer to compete in the current global scenario.

3. LIST OF PEO's & LIST PO's

PEO 1: Excel in professional career and higher education by acquiring knowledge of mathematical computing and engineering principles.
PEO 2: To provide an intellectual environment for analyzing and designing computing systems for technical needs.
PEO 3: Exhibit professionalism to adapt current trends using lifelong learning with legal and ethical responsibilities.
PEO 4: To produce responsible graduates with effective communication skills and multidisciplinary practices to serve society and preserve the environment.

Program Outcomes (POs):

Engineering Graduates will be able to satisfy these NBA graduate attributes:

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. **Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice
8. **Individual and team work:** Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings
9. **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
10. **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 multidisciplinary environments
11. **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

Program Specific Outcomes (PSOs):

PSO1: Professional Skills and Foundations of Software development: Ability to analyze, design and develop applications by adopting the dynamic nature of Software developments.
PSO2: Applications of Computing and Research Ability: Ability to use knowledge in cutting edge technologies in identifying research gaps and to render solutions with innovative ideas.

4. DEPARTMENT PROFILE

Introduction: The Department of Computer Science and Engineering was established in the year 2010 and offers both UG and PG programs under the JNTU Hyderabad. The Department has good infrastructural facilities apart from good faculty strength to impart high quality education in the changing technological and social scenario so as to make the students prepare for the students prepare for the global challenges.

Academic Programs: The four year B.Tech CSE program has an intake of 240 and two year M.Tech CSE has an intake of 12.

Faculty: The Department currently has 64 faculty members. Faculty pursuing research has interest which spams a hide range of problems of interest to industry and society. Areas of research interest s DWDM, Grid Computing & Cloud Computing, Department regularly conduct Seminars, workshops for the students to keep them updated under the association staff development programmes are being conducted to keep updated the faculty member.

5. UNIVERSITY REGULATIONS

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABADKUKATPALLY,HYDERABAD, TELANGANA.

Academic Regulations for *B.Tech with Minor* program

1. Introduction

The philosophy behind Engineering as an academic discipline has been to orient the knowledge seekers in a manner that shatters the theoretical boundaries and pushes them into the realms of a practical world view.

The emphasis of JNTUH has always been to orient the students towards the technologies that shall drive the world in the years to come; with this philosophy the University has decided to launch the **Bachelor of Technology in a particular branch with minor in a specified program** (Ex.B.Tech in Mechanical Engineering with Minor in AI&ML)from theAY2021-22onwards.

The **Bachelor of Technology (B. Tech.) with Minor** program focuses on the fundamental principles of multiple Engineering disciplines, critical & analytical thinking and the ability to developedist inctive approach to the interdisciplinary problems.

2. Objectives

The key objectives of offering B.Tech with Minor programare:

- To expand the domain knowledge of the students in one of the other branches of engineering.
- To increase the employability of under graduate students keeping in view of better opportunity in inter disciplinary areas of engineering & technology.
- To provide an opportunity to students to pursue their higher studies in the inter disciplinary areas in addition to their own branch of study.
- To offer the knowledge in the areas which are identified as emerging technologies/thrust areas of Engineering

3. Minor courses and the offering departments

S.No.	Minor Program	Eligible branch of students	@Offering Department	Award of Degree
1.	Artificial Intelligence & Machine Learning	All branches, except B. Tech. in CSE(AI&ML)/B.Tech.(AI& ML)/ B. Tech. (AI)/ B.Tech.CSE(AI)	CSE	"B. Tech. in branch name with Minor in Artificial Intelligence &Machine Learning"
2.	Cyber Security	All branches, except B. Tech. in CSE (Cyber Security)/ B.Tech. (Cyber Security)	CSE	"B. Tech. in branch name with Minor in Cyber Security"
3.	Data Science	All branches, except B.Tech. In CSE(Data Science)/B.Tech.(Data Science)	CSE	"B.Tech.in branch name with Minor in Data Science"
4.	IOT	All branches, except B.Tech.in CSE(IOT)/B.Tech.(IOT)	ECE	"B. Tech. in branch name with Minor in IOT"
5.	Innovation and Entrepreneurship	All branches.	Management Science /MBA	"B. Tech. in branch name with Minor in Innovation and Entrepreneurship"

Note:@As per AICTE guidelines.

4. Academic Regulations for B.Tech.Degree with Minor programs

1. The weekly instruction hours, internal & external evaluation and award of grades are on with regular 4-YearsB. Tech. program.
2. For B. Tech. with Minor, a student needs to earn additional 18 credits (over and above the required 160 credits for B. Tech degree). The list of courses of each Minor program their respective credits weightage and semester-wise break up of the courses are enclosed as Annexure. All these18 credits need to be completed in III year and IV year only.
3. After registering for the Minor programme, if a student is unable to earn all the required18 credits in a specified duration (twice the duration of the course), he/she shall not be awarded Minor degree. However, if the student earns all the required 160 credits of B.Tech., he/she will be awarded only B. Tech degree in the concerned branch.
4. There is no transfer of credits from Minor program courses to regular B. Tech. degree

course & vice versa.

5. These 18 credits are to be earned from the additional Courses offered by the host department in the college as well as from the MOOCS platform.
6. For the course selected under MOOCS platform following guidelines may be followed:
   a) Prior to registration of MOOCS courses, formal approval of the courses, by theUniversityisessential.Universitybeforetheissueofapprovalconsiderstheparameters like the institute / agency which is offering the course, syllabus, credits, duration of the programme and mode of evaluation etc.
   b) Minimum credits for MOOCS course must be equal to or more than the credits specified in the Minor course structure provided by the University.
   c) OnlyPass-grade/marksoraboveshallbeconsideredforinclusionofgradesinminorgradememo.
   d) Any expenses in curred for the MOOCS courses are to be met by the students only.
7. The choice to opt/take a Minor program is purely on the choice of the students.
8. The student shall be given a choice of withdrawing all the courses registered and/or thecreditsearnedforMinorprogramatanytime;andinthatcasethestudentwillbeawardedonly B. Tech. degree in the concerned branch on earning the required credits of160.
9. The student can choose only one Minor program along with his/her basic engineering degree. A student who chooses an Honours program is not eligible to choose a Minor program and vice-versa.
10. TheB.Tech.withaMinorprogramshallbeofferedfromtheAY2021-22onwards.Thestudents who are pursuing their III year I semester in the current academic year can register for the Minor program if they fulfil the eligibility criteria.
11. A student can graduate with a Minor if he/she fulfils the requirements for his/her regular B.Tech. program as well as fulfils the requirements for Minor program.
12. The institute shall maintain a record of students registered and pursuing their Minor programs,minor program-wise and parent branch wise. The same report needs to be sent to the University once the enrolment process is complete.
13. The institute / department shall prepare the time-tables for each Minor course offered at their respective institutes without any overlap/clash with other courses of study in the respective semesters.

5. Eligibility conditions for the student to register for Minor course

a) A student can opt for B.Tech. degree with Minor program if she/he has no active backlogs till II Year I Semester (III semester) at the time of entering into III year I semester.

b) Prior approval of mentor and Head of the Department for the enrolment into Minor program, before commencement of III year I Semester (V Semester), is mandatory

c) If more than 50% of the students in a branch fulfil the eligibility criteria (as stated above),the number of students given eligibility should be limited to 50%.

6. Registration for the courses in Minor Program

a) At the beginning of each semester, just before the commencement of classes, students shall register for the courses which they wish to take in the that semester.

b) The students should choose a course from the list against each semester (from Minors course structure) other than the courses they have studied/registered for regularB.Tech.programme. No course should be identical to that of the regular BTech course. The students should take the advice of faculty mentors while registering for a course at the beginning of semester.

c) The maximum No. of courses for the Minor is limited to two (three in case of inclusion of lab) in a semester along with regular semester courses.

d) The registration fee to be collected from the students by the College is **Rs. 1000/-** per one credit.

e) A fee for late registration may be imposed as per the norms.

6. ACADEMIC CALENDAR

CMR ENGINEERING COLLEGE
UGC AUTONOMOUS
(Approved by AICTE - New Delhi. Affiliated to JNTUH and Accredited by NAAC & NBA)
Kandlakoya (V), Medchal (M), Medchal - Malkajgiri (D)-501401

ACADEMIC CALENDAR
B.Tech II-YEAR: Academic Year (2022-23)

II B.Tech. I – SEMISTER				
S. No.	**EVENT**	**DATE**		**DURATION**
		FROM	**TO**	
1	Commencement of Class Work	**10.10.2022**		-------
2	First Spell of Instructions	10.10.2022	03.12.2022	8 weeks
3	**First Mid Term Examinations (Theory & Practical)**	***05.12.2022***	***10.12.2022***	***1 Week***
4	Submission of First Mid Term Marks to Exam Branch	17.12.2022		--
5	Parents Teacher's Meeting	24.12.2022		--
6	Second Spell of Instructions	12.12.2022	04.02.2023	8 weeks
7	**Second Mid Term Examinations (Theory & Practical)**	***06.02.2023***	***11.02.2023***	***1 Week***
8	Submission of Second Mid Term Marks to Exam Branch	18.02.2023		--
9	Preparation Holidays and Practical Examinations	13.02.2023	18.02.2023	1 week
10	**End Semester & Supplementary Examinations**	***20.02.2023***	***04.03.2023***	***2 Week***

II B.Tech. II – Semester				
S. No.	**EVENT**	**DATE**		**DURATION**
		FROM	**TO**	
1	Commencement of II-SEM Class work	06.03.2023		---
2	First Spell of Instructions	06.03.2023	29.04.2023	8 weeks
3	**First Mid Term Examinations (Theory & Practical)**	***01.05.2023***	***06.05.2023***	***1 Week***
4	Submission of First Mid Term Marks to Exam Branch	13.05.2023		---
5	Parents Teacher's Meeting	20.05.2023		---
6	Second Spell of Instructions	08.05.2023	01.07.2023	8 weeks
7	**Second Mid Term Examinations (Theory & Practical)**	***03.07.2023***	***08.07.2023***	***1 Week***
8	Submission of Second Mid Term Marks to Exam Branch	15.07.2023		---
9	Preparation Holidays and Practical Examinations	10.07.2023	15.07.2023	1 week
10	**End Semester & Supplementary Examinations**	***17.07.2023***	***29.07.2023***	***2 weeks***
11	Summer Vacation	***-----***		
12	**Commencement of Class work for Next A.Y. 2023-24**	***31.07.2023***		

Controller of Examinations **PRINCIPAL**

ACADEMIC CALENDAR (2022-23)

III B.Tech. I – SEMISTER				
S. No.	EVENT	DATE		DURATION
		FROM	TO	
1	First Spell of Instructions	11.07.2022	03.09.2022	8 weeks
2	Submission of first mid Assignments	29.08.2022	03.09.2022	1 week
3	***First Mid Term Examinations (Theory & Practical)***	***05.09.2022***	***10.09.2022***	***1 Week***
4	Submission of First Mid Term Marks to Exam Branch	15.09.2022		--
5	Parents Teacher's Meeting	01.10.2022		--
6	Second Spell of Instructions	12.09.2022	01.10.2022	4 weeks
7	Dusara Vacation*	03.10.2022	08.10.2022	1 week
8	Continuation of Second Spell of Instructions	10.10.2022	19.11.2022	6 weeks
9	***Second Mid Term Examinations (Theory & Practical)***	***21.11.2022***	***26.11.2022***	***1 Week***
10	Submission of Second Mid Term Marksto Exam Branch	03.12.2022		--
11	Preparation Holidays and Practical Examinations	28.11.2022	03.12.2022	1 week
12	***End Semester & Supplementary Examinations***	***05.12.2022***	***17.12.2022***	***2 Week***

III B.Tech. II – Semester				
S. No.	EVENT	DATE		DURATION
		FROM	TO	
1	Commencement of II-SEM Class work	19.12.2022		---
2	First Spell of Instructions	19.12.2022	18.02.2023	9 weeks
3	***First Mid Term Examinations (Theory & Practical)***	***20.02.2023***	***25.02.2023***	***1 Week***
4	Submission of First Mid Term Marks to Exam Branch	04.03.2023		---
5	Parents Teacher's Meeting	11.03.2023		---
6	Second Spell of Instructions	27.02.2023	22.04.2023	8 weeks
7	***Second Mid Term Examinations (Theory & Practical)***	***24.04.2023***	***29.04.2023***	***1 Week***
8	Submission of Second Mid Term Marks to Exam Branch	06.05.2023		---
9	Preparation Holidays and Practical Examinations	01.05.2023	06.05.2023	1 week
10	***End Semester & Supplementary Examinations***	***08.05.2023***	***20.05.2023***	***2 weeks***
11	***Summer Vacation***	***22.05.2023***	***24.06.2023***	***5 weeks***
12	***Commencement of Class work for A.Y. 2023-24***	***26.06.2023***		

*Dusara Vacation (Subjected to declaration by JNTUH & TS Gov.)

Controller of Examinations **PRINCIPAL**

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

ACADEMIC CALENDAR 2022-23

B. Tech./B. Pharm. IV YEAR I & II SEMESTERS

I SEM

S. No	Description	Duration	
		From	To
1	Commencement of I Semester classwork	**29.08.2022**	
2	1st Spell of Instructions (including Dussehra Recess)	29.08.2022	31.10.2022 (9 Weeks)
3	Dussehra Recess	03.10.2022	08.10.2022 (1 Week)
4	First Mid Term Examinations	01.11.2022	07.11.2022 (1 Week)
5	Submission of First Mid Term Exam Marks to the University on or before	12.11.2022	
6	2nd Spell of Instructions	09.11.2022	03.01.2023 (8 Weeks)
7	Second Mid Term Examinations	04.01.2023	10.01.2023 (1 Week)
8	Preparation Holidays and Practical Examinations	11.01.2023	19.01.2023 (1 Week)
9	Submission of Second Mid Term Exam Marks to the University on or before	17.01.2023	
10	End Semester Examinations	*20.01.2023*	02.02.2023(2 Weeks)

Note: No. of Working/instructional days: 94

II SEM

S. No	Description	Duration	
		From	To
1	Commencement of II Semester classwork	**03.02.2023**	
2	1st Spell of Instructions	03.02.2023	31.03.2023 (8 Weeks)
3	First Mid Term Examinations	01.04.2023	08.04.2023 (1 Week)
4	Submission of First Mid Term Exam Marks to the University on or before	15.04.2023	
5	2nd Spell of Instructions	10.04.2023	17.06.2023 (10 Weeks)
6	**Summer Vacation**	15.05.2023	27.05.2023 (2 Weeks)
7	Second Mid Term Examinations	19.06.2023	24.06.2023 (1 Week)
8	Preparation Holidays and Practical Examinations	26.06.2023	01.07.2023 (1 Week)
9	Submission of Second Mid Term Exam Marks to the University on or before	01.07.2023	
10	End Semester Examinations	03.07.2023	15.07.2023 (2 Weeks)

Note: No. of Working/ instructional days: 91

REGISTRAR

7. EVENT PLANNER TENTATIVE EVENT PLANNER A.Y 2022-2023

A.Y:2022-2023, I SEM		
S.No	**DATE AND MONTH**	**EVENT NAME**
1	11.07.2022 to 12.11.2022	**Commencement of B.Tech Class Work III-I**
2	18.07.2022	**Seminar on " Machine Learning" organized under CSI**
3	22.07.2022	**Guest Lecture on Ethical Hacking II, III & IV Year organizing under CSI**
4	08.08.2022	**Technical Essay Writing Competition organized under IEEE**
5	14.08.2022	**Guest Lecture on Machine Learning and Applications II, III & IV Years organizing under CSI**
6	22.08.2022	**One day Workshop on "NBA Accreditation" organizing under IEEE**
7	05/09/2022	**Teachers Day**
8	08/09/2022	**Guest Lecture on Cryptography & Network Security.**
9	15.09.2022	**Engineers Day**
10	17.09.2022	**Guest Lecture on Artificial Intelligence and Applications.**
11	26.09.2022	**Technical Poster Presentation Competition for III,IV year under AI club**
12	10.10.2022 to 31.07.2023	**Commencement of B.Tech Class Work II-I**
13	11.10.2022	**Guest Lecture on " Dynamic Programming"**
14	15.10.2022	**One day Workshop on "Python Programming" organizing under CSI**
15	25.10.2022	**Guest Lecture(Webinar) on "Graph Database"**
16	19.11.2022	**Expert Talk on "A Journey with IEEE from student to Volunteer" under IEEE**
17	26.11.2022	**Guest Lecture on Basics of JAVA Programming.**
18	14.12.2022 to 16.12.2022	**Workshop on Recent Technology for II year.**
19	23.12.2022	**Webinar on Machine Learning Using Python for CSI students**
20	26.12.2022 to 31.12.2022	**FDP- Recent applications on Data Science.**

21	20.01.2023 to 02.02.2023	**End Semester Examinations & Supplementary Examinations for IV Year**
22	**20.02.2023 to 04.03.2023**	**End Semester Examinations & Supplementary Examinations for II Year**

A.Y 2022-23 II SEM		
S.NO	**DATE and MONTH**	**EVENT NAME**
1	19.12.2022	**Commencement of B.Tech class work III-II**
2	01.01.2023	**Holiday-New Year**
3	14.01.2023 to 15.01.2023	**Holiday-Makar Sankranti**
4	26.01.2023	**Happy Republic Day**
5	28.01.2023	**Tek Sparkz-2023**
6	03.02.2023	**Commencement of B.Tech class work IV-II**
7	06.02.2023	**Commencement of B.Tech class work II-II**
8	18.02.2023	**Holiday-Mahashivratri**
9	21.02.2023	**Webinar on RECENT TREND ON CYBER CRIMES**
10	20.02.2023 to 25.02.2023	**I MID Exams for III B.Tech II-Sem**
11	08.03.2023	**Holiday-Holi**
12	11.03.2023	**Parent Teacher Meeting (III-II)**
13	22.03.2023	**Holiday-Ugadi**
14	25.03.2023	**Guest Lecture on "PYTHON" for II year.**
15	28.03.2023	**Webinar on "Block chain Technology" for II & III year .**
16	30.03.2023	**Industrial visit by EDC cell for III year.**
17	30.03.2023	**Holiday-Rama Navami**
18	01.04.2023 to 08.04.2023	**I MID Exams for IV B.TECH II-SEM**
19	05.04.2023	**Holiday-Babu Jagjivan Ram Jayanti**
20	06.04.2023	**Seminar on " Agile Methodology" organized under CSI for III year.**
21	07.04.2023	**Holiday-Good Friday**
22	10.04.2023	**Guest Lecture on " Advanced technology in Machine Learning" for II, III year under IEEE.**
23	13.04.2023	**Guest Lecture on INTERNET ON DRONE TECHNOLOGIES & SECURITY ISSUES**
24	14.04.2023	**Holiday - Ambedkar Jayanthi**
25	17.04.2023	**Guest Lecture on " Startup and innovation" by EDC cell for II & III year.**

26	**20.04.2023**	**Seminar on Soft Skills: A Pathway to Boost Your Career Growth**
27	**22.04.2023**	**Holiday-Ramadan**
28	22.04.2023	**Guest Lecture on "Software Development" for II & III year.**
29	24.04.2023 to 29.04.2023	**II MID Exams for III B.Tech II-Sem**
30	01.05.2023 to 06.05.2023	**I MID Exams for II B.Tech II-Sem**
31	01.05.2023 to 06.05.2023	**III B.TECH II-SEM Preparation Holidays and Practical examination**
32	08.05.2023	**Technical Essay Writing Competition organized under IEEE**
33	08.05.2023 to 12.05.2023	**Faculty Development Plan**
34	12.05.2023	**One day workshop on "Digital Hadoop" for**
35	13.05.2023	**Guest lecture on "Web Technologies" for II year.**
36	08.05.2023 to 20.05.2023	**III B.TECH II-SEM End semester & Supplementary Examinations**
37	18.05.2023	**Guest Lecture on "Devops" for II Year organizing under CSI**
38	19.05.2023	**Webinar on "Machine learning and its application" for II year.**
39	20.05.2023	**Parent Teacher Meeting (II-II)**
40	22.05.2023 to 24.06.2023	**Summer Vacation**
41	15.06.2023	**WEBINAR ON SOFTWARE ENGINEERING- RISK MANAGEMENT**
42	19.06.2023 to 24.06.2023	**II MID Exams for IV B.TECH II-SEM**
43	27-06-2023	**Webinar on " Trends in IoT " for II year.**
44	26.06.2023 to 01.07.2023	**IV B.TECH -II SEM Preparation Holidays and Project Evaluation IV-II**
45	03.07.2023 to 15.07.2023	**IV B.TECH -II SEM End semester & Supplementary Examinations**
46	03.07.2023 to 08.07.2023	**II MID Exams for II B.Tech II-Sem**
47	09-07-2023	**Technical Quiz for II year**

48	10.07.2023 to 15.07.2023	**II B.TECH II-SEM Preparation Holidays and Practical examination**
49	17.07.2023 to 29.07.2023	**II B.TECH II-SEM End semester & Supplementary Examinations**
50	**31.07.2023**	**Commencement of B.Tech class work Next Academic year 2023-24**

ACADEMIC SCHEDULE FOR II,III,IV B.TECH II SEM

S.NO	DAY	DATE	ACTIVITY	REMARKS
1	Monday	19.12.2022	**Commencement of B.Tech class work III-II**	
2	Tuesday	20.12.2022	Academic Classes /Labs	
3	Wednesday	21.12.2022	Academic Classes /Labs	
4	Thrusday	22.12.2022	Academic Classes /Labs	
5	Friday	23.12.2022	Academic Classes /Labs	
6	Saturday	24.12.2022	Academic Classes /Labs	
7	Sunday	25.12.2022	**SUNDAY**	
8	Monday	26.12.2022	Academic Classes /Labs	
9	Tuesday	27.12.2022	Academic Classes /Labs	
10	Wednesday	28.12.2022	Academic Classes /Labs	
11	Thrusday	29.12.2022	Academic Classes /Labs	
12	Friday	30.12.2022	Academic Classes /Labs	
13	Saturday	31.12.2022	Academic Classes /Labs	
14	Sunday	01.01.2023	**SUNDAY / HAPPY New Year**	
15	Monday	02.01.2023	Academic Classes /Labs	
16	Tuesday	03.01.2023	Academic Classes /Labs	
17	Wednesday	04.01.2023	Academic Classes /Labs	
18	Thrusday	05.01.2023	Academic Classes /Labs	
19	Friday	06.01.2023	Academic Classes /Labs	
20	Saturday	07.01.2023	Academic Classes /Labs	
21	Sunday	08.01.2023	**SUNDAY**	
22	Monday	09.01.2023	Academic Classes /Labs	
23	Tuesday	10.01.2023	Academic Classes /Labs	
24	Wednesday	11.01.2023	Academic Classes /Labs	
25	Thrusday	12.01.2023	Academic Classes /Labs	
26	Friday	13.01.2023	Academic Classes /Labs	
27	Saturday	14.01.2023	Holiday-Makar Sankranti	
28	Sunday	15.01.2023	**SUNDAY**	
29	Monday	16.01.2023	Academic Classes /Labs	
30	Tuesday	17.01.2023	Academic Classes /Labs	
31	Wednesday	18.01.2023	Academic Classes /Labs	
32	Thrusday	19.01.2023	Academic Classes /Labs	
33	Friday	20.01.2023	Academic Classes /Labs	
34	Saturday	21.01.2023	Academic Classes /Labs	
35	Sunday	22.01.2023	**SUNDAY**	
36	Monday	23.01.2023	Academic Classes /Labs	

37	Tuesday	24.01.2023	Academic Classes /Labs	
38	Wednesday	25.01.2023	Academic Classes /Labs	
39	Thrusday	26.01.2023	Academic Classes /Labs	
40	Friday	27.01.2023	Academic Classes /Labs	
41	Saturday	28.01.2023	Academic Classes /Labs	Tek Sparkz-2023
42	Sunday	29.01.2023	**SUNDAY**	
43	Monday	30.01.2023	Academic Classes /Labs	
44	Tuesday	31.01.2023	Academic Classes /Labs	
45	Wednesday	01.02.2023	Academic Classes /Labs	
46	Thrusday	02.02.2023	Academic Classes /Labs	
47	Friday	03.02.2023	**Commencement of B.Tech class work IV-II**	
48	Saturday	04.02.2023	Academic Classes /Labs	
49	Sunday	05.02.2023	**SUNDAY**	
50	Monday	06.02.2023	**Commencement of B.Tech class work II-II**	
51	Tuesday	07.02.2023	Academic Classes /Labs	
52	Wednesday	08.02.2023	Academic Classes /Labs	
53	Thrusday	09.02.2023	Academic Classes /Labs	
54	Friday	10.02.2023	Academic Classes /Labs	
55	Saturday	11.02.2023	Academic Classes /Labs	
56	Sunday	12.02.2023	**SUNDAY**	
57	Monday	13.02.2023	Academic Classes /Labs	
58	Tuesday	14.02.2023	Academic Classes /Labs	
59	Wednesday	15.02.2023	Academic Classes /Labs	
60	Thrusday	16.02.2023	Academic Classes /Labs	
61	Friday	17.02.2023	Academic Classes /Labs	
62	Saturday	18.02.2023	**HOLIDAY MAHASHIVARATRI**	
63	Sunday	19.02.2023	**SUNDAY**	
64	Monday	20.02.2023	Academic Classes /Labs	I MID Exams for III B.Tech II-Sem
65	Tuesday	21.02.2023	Academic Classes /Labs	I MID Exams for III B.Tech II-Sem & Webinar on RECENT TREND ON CYBER CRIMES
66	Wednesday	22.02.2023	Academic Classes /Labs	I MID Exams for III B.Tech II-Sem
67	Thrusday	23.02.2023	Academic Classes /Labs	I MID Exams for III B.Tech II-Sem
68	Friday	24.02.2023	Academic Classes /Labs	I MID Exams for III B.Tech II-Sem
69	Saturday	25.02.2023	Academic Classes /Labs	I MID Exams for III B.Tech II-Sem

70	Sunday	26.02.2023	**SUNDAY**	
71	Monday	27.02.2023	Academic Classes /Labs	
72	Tuesday	28.02.2023	Academic Classes /Labs	
73	Wednesday	01.03.2023	Academic Classes /Labs	
74	Thrusday	02.03.2023	Academic Classes /Labs	
75	Friday	03.03.2023	Academic Classes /Labs	
76	Saturday	04.03.2023	Academic Classes /Labs	
77	Sunday	05.03.2023	**SUNDAY**	
78	Monday	06.03.2023	Academic Classes /Labs	
79	Tuesday	07.03.2023	Academic Classes /Labs	
80	Wednesday	08.03.2023	**Holiday-Holi**	
81	Thrusday	09.03.2023	Academic Classes /Labs	
82	Friday	10.03.2023	Academic Classes /Labs	
83	Saturday	11.03.2023	Academic Classes /Labs	Parent Teacher Meeting (III-II)
84	Sunday	12.03.2023	**SUNDAY**	
85	Monday	13.03.2023	Academic Classes /Labs	
86	Tuesday	14.03.2023	Academic Classes /Labs	
87	Wednesday	15.03.2023	Academic Classes /Labs	
88	Thrusday	16.03.2023	Academic Classes /Labs	
89	Friday	17.03.2023	Academic Classes /Labs	
90	Saturday	18.03.2023	Academic Classes /Labs	
91	Sunday	19.03.2023	**SUNDAY**	
92	Monday	20.03.2023	Academic Classes /Labs	
93	Tuesday	21.03.2023	Academic Classes /Labs	
94	Wednesday	22.03.2023	**Holiday-Ugadi**	
95	Thrusday	23.03.2023	Academic Classes /Labs	
96	Friday	24.03.2023	Academic Classes /Labs	
97	Saturday	25.03.2023	Academic Classes /Labs	Guest Lecture on “PYTHON” for II year.
98	Sunday	26.03.2023	**SUNDAY**	
99	Monday	27.03.2023	Academic Classes /Labs	
100	Tuesday	28.03.2023	Academic Classes /Labs	
101	Wednesday	29.03.2023	Academic Classes /Labs	
102	Thrusday	30.03.2023	**Holiday-Rama Navami**	Industrial visit by EDC cell for III year.
103	Friday	31.03.2023	Academic Classes /Labs	
104	Saturday	01.04.2023	Academic Classes /Labs	I MID Exams for IV B.TECH II-SEM
105	Sunday	02.04.2023	**SUNDAY**	

106	Monday	03.04.2023	Academic Classes /Labs	I MID Exams for IV B.TECH II-SEM
107	Tuesday	04.04.2023	Academic Classes /Labs	I MID Exams for IV B.TECH II-SEM
108	Wednesday	05.04.2023	**Holiday-Babu Jagjivan Ram Jayanti**	
109	Thrusday	06.04.2023	Academic Classes /Labs	I MID Exams for IV B.TECH II-SEM & Seminar on " Agile Methodology" organized under CSI for III year.
110	Friday	07.04.2023	**HOLIDAY GOOD FRIDAY**	
111	Saturday	08.04.2023	Academic Classes /Labs	I MID Exams for IV B.TECH II-SEM
112	Sunday	09.04.2023	**SUNDAY**	
113	Monday	10.04.2023	Academic Classes /Labs	Guest Lecture on " Advanced technology in Machine Learning" for II, III year under IEEE.
114	Tuesday	11.04.2023	Academic Classes /Labs	
115	Wednesday	12.04.2023	Academic Classes /Labs	
116	Thrusday	13.04.2023	Academic Classes /Labs	Guest Lecture on INTERNET ON DRONE TECHNOLOGIES & SECURITY ISSUES
117	Friday	14.04.2023	Holiday - Ambedkar Jayanthi	
118	Saturday	15.04.2023	Academic Classes /Labs	
119	Sunday	16.04.2023	**SUNDAY**	
120	Monday	17.04.2023	Academic Classes /Labs	Guest Lecture on " Startup and innovation" by EDC cell for II & III year.
121	Tuesday	18.04.2023	Academic Classes /Labs	
122	Wednesday	19.04.2023	Academic Classes /Labs	
123	Thrusday	20.04.2023	Academic Classes /Labs	**Seminar on Soft Skills: A Pathway to Boost Your Career Growth**
125	Saturday	22.04.2023	**HOLIDAY RAMZAN EID UL FITR**	**Online mode Guest Lecture on "Software Development" for II & III year.**
126	Sunday	23.04.2023	**SUNDAY**	
127	Monday	24.04.2023	Academic Classes /Labs	II MID Exams for III B.Tech II-Sem

128	Tuesday	25.04.2023	Academic Classes /Labs	II MID Exams for III B.Tech II-Sem
129	Wednesday	26.04.2023	Academic Classes /Labs	II MID Exams for III B.Tech II-Sem
130	Thrusday	27.04.2023	Academic Classes /Labs	II MID Exams for III B.Tech II-Sem
131	Friday	28.04.2023	Academic Classes /Labs	II MID Exams for III B.Tech II-Sem
132	Saturday	29.04.2023	Academic Classes /Labs	II MID Exams for III B.Tech II-Sem
133	Sunday	30.04.2023	**SUNDAY**	
134	Monday	01.05.2023	Academic Classes /Labs	**I MID Exams for II B.Tech II-Sem & III B.TECH II-SEM Preparation Holidays and Practical examination**
135	Tuesday	02.05.2023	Academic Classes /Labs	**I MID Exams for II B.Tech II-Sem & III B.TECH II-SEM Preparation Holidays and Practical examination**
136	Wednesday	03.05.2023	Academic Classes /Labs	**I MID Exams for II B.Tech II-Sem & III B.TECH II-SEM Preparation Holidays and Practical examination**
137	Thrusday	04.05.2023	Academic Classes /Labs	**I MID Exams for II B.Tech II-Sem & III B.TECH II-SEM Preparation Holidays and Practical examination**
138	Friday	05.05.2023	Academic Classes /Labs	**I MID Exams for II B.Tech II-Sem & III B.TECH II-SEM Preparation Holidays and Practical examination**
139	Saturday	06.05.2023	Academic Classes /Labs	**I MID Exams for II B.Tech II-Sem & III B.TECH II-SEM Preparation Holidays and Practical examination**
140	Sunday	07.05.2023	**SUNDAY**	
141	Monday	08.05.2023	Academic Classes /Labs	**Technical Essay Writing Competition organized under IEEE & Faculty Development Plan**
142	Tuesday	09.05.2023	Academic Classes /Labs	**Faculty Development Plan**

143	Wednesday	10.05.2023	Academic Classes /Labs	Faculty Development Plan
144	Thrusday	11.05.2023	Academic Classes /Labs	**Faculty Development Plan**
145	Friday	12.05.2023	Academic Classes /Labs	**Faculty Development Plan &One day workshop on "Digital Hadoop" for**
146	Saturday	13.05.2023	Academic Classes /Labs	
147	Sunday	14.05.2023	**SUNDAY**	
148	Monday	15.05.2023	Academic Classes /Labs	
149	Tuesday	16.05.2023	Academic Classes /Labs	
150	Wednesday	17.05.2023	Academic Classes /Labs	
151	Thrusday	18.05.2023	Academic Classes /Labs	**Guest lecture on "Web Technologies" for II year.**
152	Friday	19.05.2023	Academic Classes /Labs	**Webinar on "Machine learning and its application" for II year.**
153	Saturday	20.05.2023	Academic Classes /Labs	**Parent Teacher Meeting (II-II)**
154	Sunday	21.05.2023	**SUNDAY**	
155	Monday	22.05.2023	**SUMMER VACCATION**	
156	Tuesday	24.05.2023		
157	Wednesday	25.05.2023		
158	Thrusday	26.05.2023		
159	Friday	27.05.2023		
160	Saturday	28.05.2023		
161	Sunday	29.05.2023		
162	Monday	30.05.2023		
163	Tuesday	31.05.2023		
164	Wednesday	01.06.2023		
165	Thrusday	02.06.2023		
166	Friday	03.06.2023		
167	Saturday	04.06.2023		
168	Sunday	05.06.2023		
169	Monday	06.06.2023		
170	Tuesday	07.06.2023		
171	Wednesday	08.06.2023		
172	Thrusday	09.06.2023		
173	Friday	10.06.2023		
174	Saturday	11.06.2023		
175	Sunday	12.06.2023		
176	Monday	13.06.2023		
177	Tuesday	14.06.2023		

178	Wednesday	15.06.2023	SUMMER VACCATION	on line mode WEBINAR ON SOFTWARE ENGINEERING-RISK MANAGEMENT
179	Thrusday	16.06.2023	**SUMMER VACCATION**	
180	Friday	17.06.2023	**SUMMER VACCATION**	
181	Saturday	18.06.2023	**SUMMER VACCATION**	
182	Sunday	19.06.2023	**SUNDAY**	
183	Monday	20.06.2023	Academic Classes /Labs	II MID Exams for IV B.TECH II-SEM
184	Tuesday	21.06.2023	Academic Classes /Labs	II MID Exams for IV B.TECH II-SEM
185	Wednesday	22.06.2023	Academic Classes /Labs	II MID Exams for IV B.TECH II-SEM
186	Thrusday	23.06.2023	Academic Classes /Labs	II MID Exams for IV B.TECH II-SEM
187	Friday	24.06.2023	Academic Classes /Labs	II MID Exams for IV B.TECH II-SEM
188	Saturday	25.06.2023	Academic Classes /Labs	
189	Sunday	26.06.2023	**SUNDAY**	
190	Monday	27.06.2023	Academic Classes /Labs	Webinar on " Trends in IoT " for II year. & IV B.TECH -II SEM Preparation Holidays and Project Evaluation IV-II
191	Tuesday	28.06.2023	Academic Classes /Labs	IV B.TECH -II SEM Preparation Holidays and Project Evaluation IV-II
192	Wednesday	29.06.2023	Academic Classes /Labs	IV B.TECH -II SEM Preparation Holidays and Project Evaluation IV-II
193	Thrusday	30.06.2023	Academic Classes /Labs	IV B.TECH -II SEM Preparation Holidays and Project Evaluation IV-II
194	Friday	01.07.2023	Academic Classes /Labs	IV B.TECH -II SEM Preparation Holidays and Project Evaluation IV-II
195	Saturday	02.07.2023	Academic Classes /Labs	
196	Sunday	03.07.2023	**SUNDAY**	
197	Monday	04.07.2023	II MID Exams for II B.TECH II-SEM	IV B.TECH -II SEM End semester & Supplementary Examinations

198	Tuesday	05.07.2023	II MID Exams for II B.TECH II-SEM	IV B.TECH -II SEM End semester & Supplementary Examinations
199	Wednesday	06.07.2023	II MID Exams for II B.TECH II-SEM	IV B.TECH -II SEM End semester & Supplementary Examinations
200	Thrusday	07.07.2023	II MID Exams for II B.TECH II-SEM	IV B.TECH -II SEM End semester & Supplementary Examinations
201	Friday	08.07.2023	II MID Exams for II B.TECH II-SEM	IV B.TECH -II SEM End semester & Supplementary Examinations
202	Saturday	09.07.2023	**Technical Quiz for II year**	IV B.TECH -II SEM End semester & Supplementary Examinations
203	Sunday	10.07.2023	**SUNDAY**	
204	Monday	11.07.2023	II B.TECH II-SEM Preparation Holidays and Practical examination	IV B.TECH -II SEM End semester & Supplementary Examinations
205	Tuesday	12.07.2023	II B.TECH II-SEM Preparation Holidays and Practical examination	IV B.TECH -II SEM End semester & Supplementary Examinations
206	Wednesday	13.07.2023	II B.TECH II-SEM Preparation Holidays and Practical examination	IV B.TECH -II SEM End semester & Supplementary Examinations
207	Thrusday	14.07.2023	II B.TECH II-SEM Preparation Holidays and Practical examination	IV B.TECH -II SEM End semester & Supplementary Examinations
208	Friday	15.07.2023	II B.TECH II-SEM Preparation Holidays and Practical examination	IV B.TECH -II SEM End semester & Supplementary Examinations
209	Saturday	16.07.2023		
210	Sunday	17.07.2023	**SUNDAY**	
211	Monday	18.07.2023	II B.TECH II-SEM End semester & Supplementary Examinations	
212	Tuesday	19.07.2023	II B.TECH II-SEM End semester & Supplementary Examinations	
213	Wednesday	20.07.2023	II B.TECH II-SEM End semester & Supplementary Examinations	
214	Thrusday	21.07.2023	II B.TECH II-SEM End semester & Supplementary Examinations	

215	Friday	22.07.2023	II B.TECH II-SEM End semester & Supplementary Examinations	
216	Saturday	23.07.2023	II B.TECH II-SEM End semester & Supplementary Examinations	
217	Sunday	24.07.2023	**SUNDAY**	
218	Monday	25.07.2023	II B.TECH II-SEM End semester & Supplementary Examinations	
219	Tuesday	26.07.2023	II B.TECH II-SEM End semester & Supplementary Examinations	
220	Wednesday	27.07.2023	II B.TECH II-SEM End semester & Supplementary Examinations	
221	Thrusday	28.07.2023	II B.TECH II-SEM End semester & Supplementary Examinations	
222	Friday	29.07.2023	II B.TECH II-SEM End semester & Supplementary Examinations	
223	Saturday	30.07.2023		
224	Sunday	31.07.2023	**SUNDAY**	
225	Monday	01.08.2023	**Commencement of B.Tech class work Next Academic year 2023-24**	

8. LIST OF SUBJECTS

S.NO	List of Subjects
1	SE
2	PP
3	ADE
4	BEFA
5	COSM
6	ES

9. SUBJECT PLANNERS

ACADEMIC PLANNER

Subject: Software Engineering

S.NO		CONTENT
(1)	-	**Preamble/Introduction**
(2)	-	**Prerequisites**
(3)	-	**Objectives and Outcomes**
(4)	-	**Syllabus** **1. JNTU/R20-CMREC** **2. GATE** **3. IES**
(5)	-	**List of Expert Details**(Local/National/International with Contact details/Profile link/Blogs/their research Contribution towards the subject)
(6)	-	**Journals with min 5 ref paper for literature study**
(7)	-	**Subject -Lesson plan**
(8)	-	**Suggested Books (**prescribed and References)
(9)	-	**Websites for self learning Resources like** *www.geeksforgeeks.org, www.schools.com, Coursera,edX, Udemy, Khan Academy*, NPTEL etc along Registration procedures*)*
(10)	-	**Question Banks** **1. JNTUH/Model papers** **2. GATE**
(11)	-	**Two case study presentations with Project / Product/ Model /prototypes/ Industrial applications.**
(12)	-	**Assignment Question/Innovative Assignments sets.**
(13)	-	**List of topics for students Seminars with Guidelines**
(14)	-	**STEP/Course material in softcopy**
(15)	-	**Expert Lectures with topics &Schedules (if any)**

(1) INTRODUCTION

Software Engineering provides a standard procedure to design and develop software. By studying this subject, a student can understand certain topics of Software Engineering like Software Engineering Models, Software Development Life Cycle, Requirement Engineering, Software Design tools, Software Project Management, Software Testing approaches, Quality Assurance Vs. Quality control.

(2) PREREQUISITES

Awareness about software systems, software development process and computer fundamentals would be beneficial.

(3) Course Objectives & outcomes:

Course Objectives:

- The aimofthe course is to provide an understanding ofthe working knowledge ofthetechniquesforestimation,design,testingandqualitymanagementoflargesoftwaredevelopmentprojects.
- Topics include process models, software requirements, software design, software testing,softwareprocess/productmetrics, riskmanagement, qualitymanagementandUMLdiagrams

Course Outcomes:

- Ability to understand generic view of process, and types of software process models.
- Abilitytotranslateend-userrequirementsintosystemandsoftwarerequirements,usinge.g.UML,andstructuretherequirementsina SoftwareRequirementsDocument(SRD).
- Identifyandapplyappropriatesoftwarearchitecturesandpatternstocarryouthighleveldesignofa systemand beableto critically compare alternativechoices.
- Willhaveexperienceand/orawarenessoftestingproblemsandwillbeabletodevelopasimpletestingreport.
- Ability to understand quality control and how to ensure good quality software.

(4) SYLLABUS

UNIT-1

OBJECTIVES

- Fundamental concepts of software, software engineering
- Objectives of software engineering
- Categories of software
- Challenges in software engineering and
- Basic concepts of process and process models.
- Various generic process models along with their merits and demerits and applicability.

SYLLABUS

Introduction to Software Engineering: The evolving role of software, Changing Nature of Software, legacy software, Software myths.

A Generic view of process: Software engineering- a layered technology, a process framework, The Capability Maturity Model Integration (CMMI), Process patterns, process assessment, personal and team process models.

Process models: The waterfall model, Incremental process models, Evolutionary process models, specialized process models, The Unified process.

UNIT – II

OBJECTIVES

- The concept of user and fundamental requirements.
- Functional and non functional requirements and
- How software requirements may be organized in requirements documents
- Requirements engineering process
- System models

SYLLABUS

Software Requirements: Functional and non-functional requirements, User requirements, System requirements, Interface specification, the software requirements document.

Requirements engineering process: Feasibility studies, Requirements elicitation and analysis, Requirements validation, Requirements management.

System models: Context Models, Behavioral models, Data models, Object models, structured methods.

UNIT - III

OBJECTIVES

- This unit provides the design process and design quality to develop a quality product
- Understand the concept of software architecture.
- conceptualmodelofUML

SYLLABUS

Design Engineering: Design process and design quality, design concepts, the design model.

Creatinganarchitecturaldesign:softwarearchitecture,datadesign,architecturalstylesandpatterns,architecturaldesign,conceptualmodelofUML,basicstructuralmodeling,classdiagrams,sequencediagrams,collaboration diagrams,usecase diagrams,componentdiagrams.

UNIT - IV

OBJECTIVES

- Testing strategies
- Preparation of test cases
- White box testing, black box testing
- Verification and validation
- Software quality

SYLLABUS

TestingStrategies: Astrategicapproachtosoftwaretesting,teststrategiesforconventionalsoftware,black-boxandwhite-box testing,validationtesting,system testing,theartofdebugging.

Productmetrics: Software quality, metrics for analysis model, metrics fordesign model, metrics forsource code,metricsfortesting,metricsformaintenance.

UNIT – V

OBJECTIVES

- Process metrics and software process improvement
- Risk analysis and management process.
- The focus of this unit is quality. In this we will understand some fundamental Aspects of quality such a quality concept, quality assurance and software reliability and quality standard ISO 9000.

SYLLABUS

Metrics for Process and Products: Software measurement, metrics forsoftware quality.

Risk management : Reactive V s proactive risk strategies, software risks, risk identification, risk projection, risk refinement, RMMM, RMMM plan.

Quality Management: Quality concepts, software quality assurance, software reviews formal technical reviews, statistical software quality assurance, software reliability, the ISO9000 quality standards.

TEXT BOOKS

1. Software Engineering, A practitioner's Approach-Roger S.Pressman,6th edition, McGraw Hill International Edition.
2. Software Engineering- Sommerville,7th edition, Pearson Education.
3. The unified modeling language userguide GradyBooch ,James Rambaugh, IvarJacobson,PearsonEducation.

REFERENCEBOOKS:

1. Software Engineering, an Engineering approach-James F.Peters, Witold Pedrycz, JohnWiley.
2. SoftwareEngineeringprinciplesandpractice-WamanSJawadekar,TheMcGraw-HillCompanies.
3. Fundamentals of object-oriented design using UML Meilerpage-Jones: Pearson Education.

SUBJECT Useful Links

1. https://ocw.mit.edu/courses/aeronautics-and-astronautics/16-355j-software-engineering-concepts-fall-2005/lecture-notes/cnotes2.pdf
2. https://ocw.mit.edu/courses/aeronautics-and-astronautics/16-355j-software-engineering-concepts-fall-2005/lecture-notes/cnotes7.pdf

(4.2) SYLLABUS – GATE

- Information gathering
- Requirement and feasibility analysis
- Data flow diagrams
- Process specifications
- Input/output design
- Process life cycle
- Planning and managing the project
- design, coding, testing, implementation, maintenance

(4.3) SYLLABUS - IES

NOT APPLICABLE

5. EXPERT DETAILS

INTERNATIONAL

1. **Timothy Christian Lethbridge**
   Professor of Computer Science and Software Engineering at University of Ottawa
   Dr. Lethbridge is a Professional Engineer, and also an Information Systems Professional. He is a senior member of the IEEE, a senior member of the ACM and a fellow of CIPS.

https://www.linkedin.com/in/tclethbridg

2. **Giuliano Antoniol**

   Prof at Ecole Polytechnique Montreal, Quebec, Canada
   Giuliano Antoniol is professor of Software Engineering in the Department of Computer and Software Engineering of the Polytechnique Montréal. His research interest include software traceability, traceability recovery and maintenance, software evolution, empirical software engineering, search based software engineering, and software testing.

https://ca.linkedin.com/in/giuliano-antoniol-a729b15

NATIONAL

1. Pankaj Jalote, Professor , CSE Dept, IIT Delhi

   Contact:

   Phone: 011-26907499
   Email: jalote@iiitd.ac.in
   Website: http://faculty.iiitd.ac.in/~jalote/
   Office: A-705 (R&D Block)

2. **Dr. Partha Pratim Das (PPD)**

   Professor, Dept. of CSE; Jt-PI, NDL Project; IIT Kharagpur; Editor-in-Chief, IEIB
   https://in.linkedin.com/in/ppdas

REGIONAL

1. Dr.Mohammad Miskeen Ali ,Associate Professor, CSE Dept, Guru Nanak institute of Technology.
   https://in.linkedin.com/in/mohammed-miskeen-ali-42b55b35
2. Dr. Abdul Bari, HOD CSE, ISL, Bandlaguda.
   https://in.linkedin.com/in/dr-abdul-bari-mohammed-a860aa10
3. Name: A.Lalitha,
   E-Mail: a.lalitha@gmail.com
   Contact No:7799874563
   Address: Vellore Institute of Technology(VIT-Chennai)
4. Mr.G.Lingam, Associate Professor, Dept in CSE, Narsimha Reddy Engineering College
   E-mail: lingam.g@gmail.com
   Contact no: 7013748176

6. Journals with min 5 ref paper for literature study

1. https://ieeexplore.ieee.org/document/1674590
2. http://ijarcsms.com/docs/paper/volume4/issue2/V4I2-0019.pdf
3. https://www.irjet.net/archives/V3/i3/IRJET-V3I301.pdf
4. 7-5-94-101.pdf (ijcsi.org)

7. SUBJECT (LESSON) PLAN

S.No	Topic (JNTU syllabus)	Sub-Topic	No.of Lectures	Suggested Books	Remarks
1	**UNIT-I Introduction to Software Engineering & Generic view of process, Process models**	Introduction to Software Engineering & Generic view of process, Process models	L1	T1 T2,R1	M1
2		Evolving Role of Software, Changing nature of software	L2	T1 T2	M1
3		Software myths	L3	T1,R1	M1
4		A Generic view of process: Software engineering- a layered technology, A process framework	L4	T1	M4(ppt)
5		The Capability Maturity Model Integration (CMMI)	L5	T1 T2,R2	M1
6		Process Patterns, Process Assessments,	L6	T1	M1
7		Personal and team process models	L7	T1	M1
8		Water fall model.	L8	T1,R1	M1
9		Incremental Process model	L9	T1	M1
10		Evolutionary Process models	L10	T1	M2
11		Specialized process models	L11	T1 T2	M4(ppt)
12		Unified Process model	L12	T1 T2,R3	M1
		TOTAL	**12**		

13	**UNIT-II Software Requirements, Requirements engineering process& System models**	Functional and non-Functional Requirements	L13	T2,R2	M1
14		User's requirements, System requirements	L14	T2,R1	M1
15		Feasibility Study, Requirements elicitation and Analysis.	L15	T2	M1,M2
16		Requirements validation, Requirements management	L16	T1 T2,R2	M1
17		Context models	L17	T1	M2
18		Behavioral model	L18	T1 T2	M1
19		Data model, object model, Structured models	L19	T1 T2,R1	M1
		TOTAL	**7**		
20	**UNIT-III Design Engineering & Creating an Architectural design**	Design Engineering: Design Process and design quality	L20	T1	M1
21		Design concepts and design model	L21	T1	M1
22		Creating an Architectural design: Software architecture, data design	L22	T1,R1	M1
23		Architectural styles and pattern, Architectural Design	L23	T1	M1
24		Conceptual model of UML	L24	T1	M1
25		Basic structural modeling,	L25		
26		Class diagrams,	L26	T1	M1
27		sequence diagrams	L27		
28		Collaboration diagrams,	L28	T1,R1,R3	M4(ppt)
29		Use case diagrams	L29	T1	M4(ppt)
30		Component diagram	L30	T1	M1
		TOTAL	**11**		
31	**UNIT-IV Testing Strategies &**	**Testing Strategies:** AStrategic approach to software testing	L31	T1,R2,R3	M1
32		Testing strategy for conventional software	L32	T1 T2	M4(ppt)
33		Black box Testing and White box Testing	L33	T1 T2	M1

	Product metrics				
34		Validation testing, system testing,	L34	T1 T2,R1	M1
35		The art of debugging	L35	T1	M4(ppt)
36		Product metrics: Software Quality,	L36	T1 T2.R1	M1
37		metrics for analysis model	L37	T1 T2,R2	M1,M2
38		Metrics for design model, metrics for source code	L38	T1 T2,R1,R3	M1
39		Metrics for testing,	L39	T1 T2,R1	M1
40		Metrics for maintenance	L40	T1	M4(ppt)
		TOTAL	**10**		
41	**UNIT-V** **Metrics for Process and Products ,Risk Management,** **Quality management**	Metrics for Process and Products: Software Measurement, Metrics for Software quality	L41	T1,R1	M1
42		Risk Management: Reactive Vs proactive risk strategies	L42	T1 T2	M4(ppt)
43		Software risks, Risk identification	L43	T1 T2,R1	M2
44		Risk projection, Risk refinement	L44	T1	M1
45		RMMM, RMMM Plan	L45	T1	M1
46		Quality management: Quality concepts, Software quality assurance	L46	T1,R2	M1
47		Software Reviews, Formal technical reviews	L47	T1 T2,R1	M1
48		Statistical Software quality Assurance,	L48	T1 T2,R1	M1
49		Software reliability,	L49	T1	M4(ppt)
50		The ISO 9000 quality standards	L50	T1	M1
		TOTAL	**50**		

NOTE: 1. Any Subject in a Semester is suppose to be completed in 55 to 65 periods.

2. Each Period is of 50 minutes.

3. Each unit duration & completion should be mentioned in the Remarks Column.

4. List of Suggested books can be marked with Codes like T1, T2, R1, R2 etc.

8. SUGGESTED BOOKS

TEXT BOOKS

1. SoftwareEngineering,Apractitioner'sApproach-RogerS.Pressman,6th edition,McGrawHillInternationalEdition.
2. SoftwareEngineering- Sommerville,7th edition,PearsonEducation.
3. TheunifiedmodelinglanguageuserguideGradyBooch,JamesRambaugh,IvarJacobson,PearsonEducation.

REFERENCE BOOKS:

1. SoftwareEngineering,anEngineeringapproach-JamesF.Peters,WitoldPedrycz,JohnWiley.
2. SoftwareEngineeringprinciplesandpractice-WamanSJawadekar,TheMcGraw-HillCompanies.
3. FundamentalsofobjectorienteddesignusingUMLMeilerpage-Jones: PearsonEducation

9. Websites for self learning Resources:

1. **https://www.coursera.org/learn/software-processes**
2. **https://nptel.ac.in/courses/106/105/106105182/**
3. **https://www.tutorialspoint.com/sdlc/sdlc_waterfall_model.htm**
4. **https://www.geeksforgeeks.org/software-engineering-architectural-design/**
5. **https://www.guru99.com/white-box-testing.html**
6. **https://www.javatpoint.com/black-box-testing**

10. QUESTION BANK

Unit-I

1. Elaborate on evolution of software
2. Discuss the attributes of a good software
3. What is CASE? Discuss different types of it.
4. How software engineering is different from hardware engineering?
5. What is CMM? Discuss how various maturity levels of CMM can be measured?
6. Discuss various process maturity levels. Also discuss various KPAs that must be achieved in each level.
7. Discuss the major problems with Capability Maturity Model
8. Explain about capability assessment process
9. Explain the five software process assessment principles
10. Discuss about various phases of assessment
11. A) Explain about classic life cycle model.
    B) What is linear sequential model? Discuss the problems encountered in it.
12. Describe the incremental software development process model
13. Illustrate on RAD process model.
14. Discuss bout prototyping model. Explain it's merits and demerits.
15. Describe the elements of concurrent process model
16. Discuss various evolutionary software process models in detail
17. Explain the unified approach to software development. Discuss the merits and demerits of this approach.

Unit-II

1. Discuss various techniques for requirements elicitation and analysis
2. What are non-functional requirements? Explain the classification
3. Define brainstorming. Explain where it is used with an example.
4. What are viewpoint and service template forms? Explain why they are used.
5. Define a scenario. Write a sample use-case scenario for an article downloading in the library system.
6. Discuss an example of a type of system where social and political factors might strongly influence the system requirements. Explain why these factors are important in your example?
7. What is requirements management? Why is it needed?
8. What is object models with examples

Unit-III

1. Discuss the statement abstraction and refinement are complementary concepts
2. Discuss the advantages and disadvantages of modularization
3. Why should we not over modularize? How would you decompose a software solution to obtain the best set of modules?
4. Define refactoring. Explain its intent. Also explain the advantages and disadvantages of it.
5. Define design class. Describe their purpose. Explain different types of it.
6. Define and explain about coupling and cohesion. Also differentiate between them.
7. What is software architecture? Why is it important?
8. What is meant by transform mapping? Explain the steps involved in mapping data flow diagrams into an architecture.
9. Discuss the design principles that reduce user's memory in user interface
10. State and explain the different models that come into play when a user interface is to be analyzed and designed
11. What are the goals of the user interface design
12. What is meant by user interface? What are the three areas that user interface design focuses? Explain them
13. Explain about user interface analysis
14. State some examples that illustrates why response time variability of user interface can be an issue

Unit-IV

1. List some of the problems that might be associated with the creation of an independent test group
2. The software analysis and design are constructive tasks and software testing is considered to be destructive from the point of view of developer. Discuss
3. What is the overall strategy for software testing? Explain it clearly.
4. Discuss a testing strategy for object-oriented architectures
5. Why is a highly coupled module is difficult to unit testing?
6. What is meant by bottom-up integration test? Explain how it is implemented.
7. Bottom-up integration eliminates the need for complex stubs. Discuss
8. Describe the difference between process and project metrics in your own words
9. Discuss about software tools for project and process metrics
10. What is an indirect measure? And how are such measures common in software metrics work?
11. Explain the size-oriented metrics with an example
12. Discuss the relationship between lines of code and function points
13. What is object oriented metrics and how it is different from LOC and FP metrics?
14. Distinguish between metrics and measurements

Unit-V

1. Discuss the importance of quality assurance
2. What is software quality control
3. What is meant by SQA? Discuss in detail SQA activities
4. Discuss in detail the defect amplification with reviews and without reviews
5. Discuss in detail about Formal Technical Reviews(FTR) performed by software engineers
6. When will be the formal technical reviews are conducted? And what re its objectives?
7. What is meant by software reliability? Discuss the measures of it.
8. Discuss about ISO 9000 quality standards.
9. Discuss the seven principles of risk management which were identified by SEI

1. JNTUH MODEL PAPERS

SE.rar

(11) <u>Two Case Study Presentations With Project / Product/ Model /Prototypes/ Industrial Applications</u>

1. ATTENDANCE MANAGEMENT SYSTEM (CASE STUDY)

Problem Statement:

Based on the observation, there is no available student attendance system is still practicing the manual way of taking daily attendance. Lecturer distributes attendance sheet to be sign by student during class session or personally marked the attendance sheet one by one by calling out student name accordingly. However, the attendance sheet can be lost easily and the whole attendance process is tending to human mistake. Consequently, data loss may happen and the data in attendance list might be inaccurate due to deception. , lecturer needs to manually analyze number of absences and calculate the percentage of present from the attendance list collected or recorded. Lecturer needs to identify number of absentees based on each subject with the respective classes that he or she taught. At the end of the semester, lecturer required to calculate the percentage of present of each student to make sure the student can take their final exam for

the respective subject. In addition, lecturer needs to manually write all the details about the attendance data to the appropriate documents when needed.

To overcome the drawbacks of the existing system, the proposed system has been evolved. This project aims to reduce the paper work and saving time to generate accurate results from the student's attendance. The system provides with the best user interface. The efficient reports can be generated by using this proposed system.

2. Library Management System

Problem Statement:

The system we have currently is a poor manual library system. There is a lot of book in library but no serial number of them. Different writers have different books but no chart of them. Our library supervisor maintains only a register chart. Where there is no information about the book. So it is difficult to find out the book in next time. And it is risky too to give a book. Students are not able to lend a book from the library because library supervisor has no sufficient information about them that she/he can search out the lender.

To reduce these haphazard we decide to make this LMS system automated. In this system a user easily get which books are in the library. How many copies have of them, the name of the writer of the book etc? But now we want to do it automatically. Which will be so easier for Whole University and it has some advantages

- Dynamic System
- Error free
- User Friendly

11. ASSIGNMENT QUESTION SETS ON EACH UNIT

UNIT-1

Set-1

1. Discuss about various phases of assessment
2. Explain various types of evolutionary development
3. What is water fall model? How is it different from other engineering process models?
4. Elaborate on evolution of software
5. Discuss the attributes of a good software

UNIT-II

Set-1

1. Explain about Feasibility studies?
2. Explain the requirement analysis techniques
3. Discuss an example of a type of system where social and political factors might strongly influence the system requirements. Explain why these factors are import ant in your example?
4. Define design class. Describe their purpose. Explain different types of it.
5. Discuss about principal requirements engineering activities and their relationships?

UNIT-III

Set-1

1. Discuss the design principles that reduce user's memory in user interface
2. Define interface. Discuss various types of interfaces. Give examples for each.
3. Explain about designing class based components?
4. Discuss the design principles that reduce user's memory in user interface
5. Define interface. Discuss various types of interfaces. Give examples for each.

UNIT-IV

Set-1

1. What is meant by black box testing? Explain graph-based testing method with example
2. The software analysis and design are constructive tasks, and software testing is considered to be Destructive from the point o view of developer. Discuss.
3. Explain about white box testing?
4. Explain about test strategies for conventional software?
5. Explain about metrics for analysis model?

UNIT-V

Set-1

1. Explain about risk refinement?
2. Explain about RMMM?
3. Discuss these principles of risk management which were identified by SEI.
4. What is software quality assurance (SOA)?
5. Explain about software reliability

INNOVATIVE QUESTIONS

1. Illustrate use case diagram for bank ATM system.

2. Design a UML diagram for college management system.

3. Implement AES algorithm for image encryption.

4. Design UML for traffic monitoring system project.

5. Write about different software techniques for testing methodologies.

6. Solve wireless finger print identification based on unique devices by using software engineering principles.

12. TOPICS FOR STUDENT'S SEMINARS

1. Automated Software Engineering
2. Agile Supply Chain
3. Design quality
4. Testing strategies
5. Software quality
6. Software risks

13. STEP/Course material in softcopy

SE-STEP MATERIAL.rar

14. Expert Lectures with topics & Schedules (if any)

Expert Name	Topic	Date	Time
Mr.G.Lingam, Associate Professor, Dept in CSE,NREC.			
Dr. Miskeen Ahmed,Associate Professor, CSE Dept, Goka Raju Ranga Raju College of Engineering and Technology.			

ACADEMIC PLANNER

Subject: Python Programming

S.NO	CONTENT
(1) -	**Preamble/Introduction**
(2) -	**Prerequisites**
(3) -	**Objectives and Outcomes**
(4) -	**Syllabus** **1. JNTU/R20-CMREC** **2. GATE** **3. IES**
(5) -	**List of Expert Details**(Local/National/International with Contact details/Profile link/Blogs/their research Contribution towards the subject)
(6) -	**Journals with min 5 ref paper for literature study**
(7) -	**Subject -Lesson plan**
(8) -	**Suggested Books (**prescribed and References)
(9) -	**Websites for self learning Resources like** *www.geeksforgeeks.org, www.schools.com, Coursera,edX, Udemy, Khan Academy*, NPTEL etc along Registration procedures*)*
(10) -	**Question Banks** **1. JNTUH/Model papers** **2. GATE**
(11) -	**Two case study presentations with Project / Product/ Model /prototypes/ Industrial applications.**
(12) -	**Assignment Question/Innovative Assignments sets.**
(13) -	**List of topics for students Seminars with Guidelines**
(14) -	**STEP/Course material in softcopy**
(15) -	**Expert Lectures with topics &Schedules (if any)**

1. Preamble/Introduction

Python is a widely used general-purpose, high level programming language. It was created by Guido Van Rossum in 1991 and further developed by the Python Software Foundation. It was designed with an emphasis on code readability, and its syntax allows programmers to express their concepts in fewer lines of code.

2. Prerequisites:

Prerequisites to learn python is having a basic knowledge of any programming language concepts like basic 'C' language and some concepts of OOPS in addition If you have strong command over the basics of any programming language, you can learn Python quickly.

3. Course Objectives:

1. This course will enable students to Learn Syntax and Semantics and create Functions inPython.
2. Handle Strings and Files inPython.
3. Understand Lists, Dictionaries and Regular expressions inPython.
4. Implement Object Oriented Programming concepts inPython.
5. Build Web Services and introduction to Network and Database Programming in Python.

Course Outcomes:

1. The students should be able to Examine Python syntax and semantics and be fluent in the use of Python flow control andfunctions.
2. Demonstrate proficiency in handling Strings and FileSystems.
3. Create, run and manipulate Python Programs using core data structures like Lists, Dictionaries and use RegularExpressions.
4. Interpret the concepts of Object-Oriented Programming as used inPython.
5. Implement exemplary applications related to Network Programming, Web Services and Databases inPython.

4. Syllabus (R20 Autonomous)

UNIT - I

Python Basics, Objects- Python Objects, Standard Types, Other Built-in Types, Internal Types, Standard Type Operators, Standard Type Built-in Functions, Categorizing the Standard Types, Unsupported Types

Numbers - Introduction to Numbers, Integers, Floating Point Real Numbers, Complex Numbers, Operators, Built-in Functions, Related Modules

Sequences - Strings, Lists, and Tuples, Mapping and Set Types

UNIT - II

FILES: File Objects, File Built-in Function [open()], File Built-in Methods, File Built-in Attributes, Standard Files, Command-line Arguments, File System, File Execution, Persistent Storage Modules, Related Modules

Exceptions: Exceptions in Python, Detecting and Handling Exceptions, Context Management,*ExceptionsasStrings, RaisingExceptions, Assertions, StandardExceptions,

*Creating Exceptions, Why Exceptions (Now)?, Why Exceptions at All?, Exceptions and the sys Module, Related Modules

Modules: Modules and Files, Namespaces, Importing Modules, Importing Module Attributes, Module Built-in Functions, Packages, Other Features of Modules

UNIT - III

Regular Expressions: Introduction, Special Symbols and Characters, Res and Python Multithreaded Programming: Introduction, Threads and Processes, Python, Threads, and the Global Interpreter Lock, Thread Module, Threading Module, Related Modules

UNIT - IV

GUI Programming: Introduction, Tkinter and Python Programming, Brief Tour of Other GUIs, Related Modules and Other GUIs

WEB Programming: Introduction, Wed Surfing with Python, Creating Simple Web Clients, Advanced Web Clients, CGI-Helping Servers Process Client Data, Building CGI Application Advanced CGI, Web (HTTP) Servers

UNIT – V

Database Programming: Introduction, Python Database Application Programmer's Interface (DB-API), Object Relational Managers (ORMs), Related Modules

6. Expert Details (Guest Lect. / Seminars)

INTERNATIONAL:

Jen Walraven, data science and engineering manager at Netflix
https://www.linkedin.com/in/jen-walraven

NATIONAL

1. PROF. SUDARSHAN IYENGAR, Department of Computer Science and Engineering IIT Ropar,**Email:** sudarshan@iitrpr.ac.in
2. PROF. YAYATI GUPTA Department: of Computer Science and Engineering IIIT Dharwad
3. R. Kumaraswamy Pantech E Learning
Email: events@antechelearning.com

REGIONAL

1. Mr.A.Prasantha Rao,Assoc.Prof,Dept of IT in CVSR.
(E-mail-id: prasanthraoit@cvsr.ac.in,Ph.No:9490232922)

6. Journals with min 5 ref paper for literature study

http://ijirt.org/master/publishedpaper/IJIRT149340_PAPER.pdf

1. Python: The Programming Language of Future

http://ijaerd.com/papers/special_papers/IT032.pdf

2. Python Programming-Applications and Future

https://www.irjet.net/archives/V4/i12/IRJET-V4I1266.pdf

3. Python – The Fastest Growing Programming Language

http://ijariie.com/AdminUploadPdf/PROGRAMMING_LANGUAGE_PYTHON__A_REVIEW_ijariie11892.pdf

4. PROGRAMMING LANGUAGE PYTHON: A REVIEW

https://www.ijsr.net/archive/v8i2/ART20194929.pdf

5. Python – Using Database and SQL

7. Subject -Lesson plan

S.NO	Topic	Sub-Topic	NO. OF LECTURES REQUIRED	Suggested Books	Teaching Methods
UNIT – I					
1	**Python Objects, Numbers & Sequences**	Python basics	**L1**	**T1,R1**	**M1(Board)**
2		Python Objects, Standard Types	**L2-L3**	**T1**	**M1**
3		Other Built-in Types, Internal Types	**L4**	**T1**	**M1**
4		Standard Type Operators, Standard Type Built-in Functions	**L5-L6**	**T1,R1**	**M1**
5		Categorizing the Standard Types, UnsupportedTypes	**L7**	**T1**	**M1**
6		Introduction to Numbers, Integers, Floating Point Real Numbers	**L8**	**T1**	**M1**
7		Complex Numbers, Operators, Built-in Functions, Related Modules	**L9**	**T1**	**M1**

8		Sequences - Strings, Lists, and Tuples	**L10-L11**	**T1,R1**	**M1**
9		Mapping and Set Types	**L12**	**T1,R2**	**M1**
UNIT – II					
10	**Files, Exceptions & Modules**	File Objects, File Built-in Function [open()]	**L13**	**T1,R3**	**M1**
11		File Built-in Methods, File Built-in Attributes, Standard Files	**L14**	**T1**	**M2(PPT)**
12		Command-line Arguments, File System, File Execution	**L15-L16**	**T1**	**M2**
13		Persistent Storage Modules, Related Modules	**L17**	**T1**	**M2(NPTEL)**
14		Exceptions in Python, Detecting and Handling Exceptions	**L18,L19**	**T1,R3**	**M2(PPT)**
15		Context Management,*Exceptionsas Strings	**L20,L21**	**T1,R3**	**M2**
16		RaisingExceptions,Assertions	**L22**	**T1,R3**	**M2**

17		Standard Exceptions, Creating Exceptions	**L23,L24**	**T1**	**M2(PPT)**
18		Why Exceptions (Now)?, Why Exceptions at All?, Exceptions and the sys Module, Related Modules	**L25,L26**	**T1,R2**	**M2(PPT)**
19		Modules: Modules and Files, Namespaces	**L27**	**T1**	**M2**
20		Importing Modules, Importing Module Attributes	**L28**	**T1**	**M2**
21		Module Built-in Functions, Packages, Other Features of Modules	**L29,L30**	**T1**	**M2**
UNIT-III					
22	**Regular Expressions & Multithreaded Programming**	Introduction to Regular Expressions, Special Symbols and Characters	**L31**	**T1**	**M2**
23		Res and Python	**L32**	**T1**	**M2**
24		Introduction to Multithreaded programming , Threads and Processes	**L33**	**T1,R2**	**M2**
25		Threads, and the Global Interpreter Lock	**L34**	**T1**	**M2(E-resources)**
26		Thread Module, Threading Module, Related Modules	**L35**	**T1**	**M2(NPTEL)**
UNIT-IV					

27	GUI Programming & Web Programming	Introduction GUI, Tkinter and Python Programming	**L36**	**T1,R1**	**M2**
28		Brief Tour of Other GUIs, Related Modules and Other GUIs	**L37**	**T1,R1**	**M2**
29		Introduction to Web Programming, Wed Surfing with Python	**L38,L39**	**T1,R1**	**M2(PPT)**
30		Creating Simple Web Clients, Advanced Web Clients	**L40**	**T1**	**M3(NPTEL)**
31		CGI-Helping Servers Process Client Data	**L41**	**T1**	**M3(NPTEL)**
32		Building CGI Application Advanced CGI	**L42**	**T1**	**M2**
33		Web (HTTP) Servers	**L43**	**T1**	**M2**
UNIT –V					
34	**DATABASE PROGRAMMING**	Introduction	**L44**	**T1**	**M2**
35		Python Database Application Programmer's Interface (DB-API)	**L45**	**T1,R2**	**M2(PPT)**
36		Object Relational Managers (ORMs)	**L46-L47**	**T1**	**M3(NPTEL)**
37		Related Modules	**L48**	**T1**	**M2**

8. Suggested Books (prescribed and References)

Prescribed Book

1. Core Python Programming, Wesley J. Chun, Second Edition, Pearson

Reference Books

1. Core Python Programming by R.Nageshwar Rao, Second Edition, Dreamtech press.
2. Python for Programmers by Paul Deitel ,Harvey Deital
3. Python Programming Using Problem Solving Approach by Reema Thareja

9. Websites for self learning Resources like

1. https://www.python.org/
2. https://nptel.ac.in/courses/106106182
3. https://youtu.be/9kNDT-0yAEM
4. https://www.programiz.com/python-programming
5. https://www.geeksforgeeks.org/python-programming-examples/
6. https://www.w3schools.com/python/default.asp
7. https://www.tutorialspoint.com/python/index.htm
8. https://www.javatpoint.com/python-tutorial

10 .Question Bank.

PART-A

1.a) State any four applications where python is more popular.
b) List out the main differences between lists and tuples.
c) What are the uses of file object?
d) Give a brief description of several built in attributes related to File objects.
e) Summarize the purpose of pipe and dot symbols used for pattern matching
f) Explain the basic functionality of match() function.
g) What is the need of Tkinter module in python?
h) How to Label widget in Python?
i) State the need of persistent storage.

j) Discuss the SQL commands/statements used for creating, using and dropping a database.

PART-B

2. a) How to declare and call functions in python programs? Illustrate with an example script.
   b) List and explain few most commonly used built-in types in python.

OR

3. Summarize various operators, built-in functions and standard library modules that deals with python numeric types.
4. Explain the following file built- in functions and methods with clear syntax, description and illustration:
   a) open() b) file() c) seek() d) tell() e) read()

OR

5.a) How does try-except statement work? Demonstrate with example python code.
b) Illustrate the concept of importing module attributes in python scripts.
6. Examine how python supports regular expressions through the 're' module with brief introduction and various built-in methods related to it.
7. a) What is the motivation behind parallelism and state how python achieves parallelism?

11. Two case study presentations with Project / Product/ Model /prototypes/ Industrial applications.

1. Python – Spell Corrector GUI using Tkinter

Python offers multiple options for developing a GUI (Graphical User Interface). Out of all the GUI methods, Tkinter is the most commonly used method. Python with Tkinter outputs the fastest and easiest way to create GUI applications. In this article, we will learn how to create a GUI Spell Corrector application using Tkinter, with a step-by-step guide.

To create a Tkinter :

- Importing the module – tkinter
- Create the main window (container)
- Add any number of widgets to the main window.
- Apply the event Trigger on the widgets.

2. Python: Age Calculator using Tkinter:

Python offers multiple options for developing a GUI (Graphical User Interface). Out of all the GUI methods, Tkinter is the most commonly used method. It is a standard Python interface to

the Tk GUI toolkit shipped with Python. Python with Tkinter outputs the fastest and easiest way to create GUI applications. Now, it's up to the imagination or necessity of a developer, what he/she wants to develop using this toolkit.

To create a Tkinter :

- Importing the module – Tkinter
- Create the main window (container)
- Add any number of widgets to the main window.
- Apply the event Trigger on the widgets.

12 .Assignment Question/Innovative Assignment Questions:

I -ASSIGNMENT

1. a. Explain Python objects characteristics.
   b. Summarize the primitive data types of the Python with example.
2. a. Compare mutable and immutable data types.
   b. Contrast String and List data structures in Python
3. a. Define the Dictionary data structure in Python
   b. Write Python File Modes in Python
4. a. Explain the usage of Command-Line Arguments in Python with an example.
   b. Write about the errors and exceptions in Python. Give suitable examples.
5. a. Explain the standard exceptions with examples.
   b. Write about modules and import in Python with examples.

II ASSIGNMENT

1. What are regular expressions?
2. How to find whether an email id entered by useris valid or not using Python 're' module.
3. Differentiate thread and threading classes.
4. List web address components and explain them.
5. Explain Persistent Storage.

INNOVATIVE ASSIGNMENT QUESTIONS

1. **How can you generate random numbers in Python ?**

2. **What are negative indexes and why are they used?**
3. **What advantages do NumPy arrays offer over (nested) Python lists?**
4. **Describes anonymous functions examples?**
5. **Write a brief notes on PIP, Explain installing package via PIP.**

Important Question sets on each unit

UNIT-1

1. List the standard type operators in Python with examples.
2. a) Give a note on each of the following constructs in Python language.
   (i) quotes (single, double and triple) (ii) multiline statements (iii) indentation

b) How Python is different from C++.

3. a) Narrate the other built in data types of Python

b) List the unsupported types in Python along with explanation.

4. a)Explain Python bitwise operators with example

b) Compare and contrast the List and Tuple.

5. What is Python? Explain in detail.
6. Explain about the type of operators used in Python?
7. How to declare and call functions in python programs? Illustrate with an example script.
8. List and explain few most commonly used built-in types in python.
9. State any four applications where python is more popular.
10. List out the main differences between lists and tuples.

UNIT-II

1. What is the need of Exception in python. Explain 'Now' exception.
2. Explain the importing module attribute with suitable examples.
3. What are the two ways of importing a module? Which one is more beneficial?
4. a) Explain Briefly discuss about Python packages.
   b) Explain about handling an exception.
5. a) How to handle an exception using try except block? Explain with the help of a program
   b) Why Exceptions (Now) is needed? Discuss with detailed examples.
6. Demonstrate usage of exceptions in Python?
7. Explain in detail about Packages in Python?
8. Give a short note on Python built in functions?

UNIT-III

1. What are regular expressions? How to find whether an email id entered by user is valid or not using Python‘re’ module.
2. Differentiate match () and search ().
3. a) What are the threads in Python?
   b) Differentiate thread and threading classes.
4. a) List special symbols and characters while forming regular expressions.
   b) Explain various String pattern matching functions in Python.
5. a) What is multithreading? Discuss about starting a new thread.
   b) Explain the methods of threading module.
6. Give a short note on Regular Expressions (Res)?
7. Explain threads with Global interpreter lock?

UNIT-IV

1. a) Explain about GUI programming in python
   b) Write a program to implement Turtle Graphics in Python
2. Write a Python program that creates a GUI with a textbox, Ok button and Quit button. On clicking Ok, the text entered in textbox is to be printed in Python shell; on clicking Quit, the program should terminate.
3. a) Explain about GUI programming in python
   b) Explain urllib Module along with the methods in urllib module.
4. a) Explain a procedure to create a static web page using Python.
   b) Explain a procedure to create Web Server in Python.
5. a) Explain a procedure to create a static web page using Python.
   b) Explain a procedure to create Web Server in Python.
6. What is the need of Tkinter module in python?

UNIT-V

1. a) Explain Persistent Storage.
   b) Database Connection Objects in Python.
2. a) Discuss database adapter with examples.
   b) Explain the object relational managers (ORMs)
3. a) Narrate the DB-API Module attributes with description.
   b) List Type Objects and Constructors along with the description.
4. a) Explain the Database connectivity procedure with an example.
   b) Explain the Cursor Object Attributes.

13. List of topics for student's seminars

1. Sequences
2. Regular expressions.
3. Files
4. Exceptions
5. Multi threading.
6. GUI programming.
7. Network application Programming.

14. STEP/Course material in softcopy

Step Material For python programming.rar

15. Expert Lectures with topics &Schedules (if any)

1. Mrs.A.Prasantha Rao,Assoc.Prof,Dept of IT in CVSR.
   (E-mail-id:prasanthraoit@cvsr.ac.in,Ph.No:9490232922)
2. Mrs. A. Sravanthi Assoc, Department of CSE in NREC.
(E-mail-id: sravaanthi.a@nrcmec.org , ph.no. 9628938890)

Real time applications of multi-threading and Database programming –Tentative period: in month of April last week.

ACADEMIC PLANNER

Subject: Analog and Digital Electronics

S.NO		CONTENT
(1)	-	**Preamble/Introduction**
(2)	-	**Prerequisites**
(3)	-	**Objectives and Outcomes**
(4)	-	**Syllabus** **1. JNTU/R20-CMREC** **2. GATE** **3. IES**
(5)	-	**List of Expert Details**(Local/National/International with Contact details/Profile link/Blogs/their research Contribution towards the subject)
(6)	-	**Journals with min 5 ref paper for literature study**
(7)	-	**Subject -Lesson plan**
(8)	-	**Suggested Books (**prescribed and References)
(9)	-	**Websites for self learning Resources like** *www.geeksforgeeks.org, www.schools.com, Coursera,edX, Udemy, Khan Academy*, NPTEL etc along Registration procedures*)*
(10)	-	**Question Banks** **1. JNTUH/Model papers** **2. GATE**
(11)	-	**Two case study presentations with Project / Product/ Model /prototypes/ Industrial applications.**
(12)	-	**Assignment Question/Innovative Assignments sets.**
(13)	-	**List of topics for students Seminars with Guidelines**
(14)	-	**STEP/Course material in softcopy**
(15)	-	**Expert Lectures with topics &Schedules (if any)**

1. PREAMBLE /INTRODUCTION:

This is structured foundation course, dealing with concepts analog electronics , Diodes and its applications, transistors and digital circuit deals with storage elements and registers . This is the basic primer for all electronic communication and engineering subjects and for computer science and engineering subjects .

2. PREREQUISITES

This course should have previous knowledge of semiconductors and diodes.

4. OBJECTIVES AND OUTCOMES

COURSE OBJECTIVES

- To introduce components such as diodes, BJTs and FETs.
- To know the applications of components.
- To give understanding of various types of amplifier circuits
- To learn basic techniques for the design of digital circuits and fundamental concepts used in
  the design of digital systems.
- To understand the concepts of combinational logic circuits and sequential circuits.

COURSE OUTCOMES:

At the end of the course:

- Know the characteristics of various components.
- Understand the utilization of components.
- Design and analyze small signal amplifier circuits.
- Learn Postulates of Boolean algebra and to minimize combinational functions
- Design and analyze combinational and sequential circuits
- Know about the logic families and realization of logic gates

1. SYLLABUS

UNIT - I

Diodes and Applications: Junction diode characteristics: Open circuited p-n junction, p-n junction as a rectifier, V-I characteristics, effect of temperature, diode resistance, diffusion capacitance, diode switching times, breakdown diodes, Tunnel diodes, photo diode, LED.

Diode Applications - clipping circuits, comparators, Half wave rectifier, Full wave rectifier, rectifier with capacitor filter.

UNIT - II

BJTs: Transistor characteristics: The junction transistor, transistor as an amplifier, CB, CE, CC

configurations, comparison of transistor configurations, the operating point, self-bias or Emitter bias, bias compensation, thermal runaway and stability, transistor at low frequencies, CE amplifier response, gain bandwidth product, Emitter follower, RC coupled amplifier, two cascaded CE and multi stage CE amplifiers.

UNIT - III

FETs and Digital Circuits: FETs: JFET, V-I characteristics, MOSFET, low frequency CS and CD amplifiers, CS and CD amplifiers.

Digital Circuits: Digital (binary) operations of a system, OR gate, AND gate, NOT, EXCLUSIVE OR gate, De Morgan Laws, NAND and NOR DTL gates, modified DTL gates, HTL and TTL gates, output stages, RTL and DCTL, CMOS, Comparison of logic families.

UNIT - IV

Combinational Logic Circuits: Basic Theorems and Properties of Boolean Algebra, Canonical and Standard Forms, Digital Logic Gates, The Map Method, Product-of-Sums Simplification, Don't-Care Conditions, NAND and NOR Implementation, Exclusive-OR Function, Binary Adder-Subtractor, Decimal Adder, Binary Multiplier, Magnitude Comparator, Decoders, Encoders, Multiplexers.

UNIT - V

Sequential Logic Circuits: Sequential Circuits, Storage Elements: Latches and flip flops, Analysis of Clocked Sequential Circuits, State Reduction and Assignment, Shift Registers, Ripple Counters, Synchronous Counters, Random-Access Memory, Read-Only Memory.

GATE SYLLABUS

- **NOT APPLICABLE**

IES SYLLABUS

- **NOT APPLICABLE**

5. LIST OF EXPERT DETAILS:

LOCAL:

1. Dr. Mohammad Farukh Hashmi, Assistant Professor, ECE Department, NIT, Warangal
   E-Mail: mdfarukh@nitw.ac.in
   Phone No: 9666740604
2. Dr. T. Kishore Kumar, Professor , ECE Department, NIT, Warangal
   E-Mail: kishoret@nitw.ac.in,kishorefr@gmail.com

Phone No: 8332969353, 9440973318

NATIONAL:

1. Mrs.Avirup Dasgupta, Ph. D. Assistant Professor (Semiconductors)
   ECE Department, IIT Roorkee, Uttarakhand, India. PIN: 247667
   Phone: (+91-1332)28-4967)-Office
   Email: avirup@ece.iitr.ac.in

2 Arnab Datta,Ph.D. Associate Professor (VLSI),

ECE Department, IIT Roorkee, Uttarakhand, India. PIN: 247667

PHONE: (+91-1332-285464)-Office

Email: arnab.datta@ece.iitr.ac.in

INTERNATIONAL:

1. Dr.ROBERT FOX(Analog Integrated Circuit Design), associate professor AND ECE ASSOCIATE CHAIR at the University of Florida.

   Email: fox@tec.ufl.edu

   Phone: 352-392-2543

   Mailing Address: P.O. Box 116130, Gainesville, FL 32611-6130

2. Dr.Abeer Alwan , ECE Department Vice Chair of Undergraduate Affairs was a member of the faculty of the UCLA Samueli School of Engineering
   Email:alwan@ee.ucla.edu
   Phone: (310) 206-2231

5. JOURNALS FOR LITERATURE STUDY:

1. ieeexplore.ieee.org/abstract/document/1335548

   TITLE: Superconducting digital electronics

2. ieeexplore.ieee.org/document/8281936

   TITLE:Design and implementation of logic gate emulator

3. ieeexplore.ieee.org/abstract/document/8357308

TITLE :Low power latch based design with smart retiming

4. ieeexplore.ieee.org/document/9203217

TITLE :Circuit Models of Field Emission Silicon Diode and Transistor with a Nanoscale Vacuum Channel

5. ieeexplore.ieee.org/document/8567008

TITLE:Characteristics of Failure Schottky Barrier Diode and PN Junction Diode for Bypass Diode using Induced Lightning Serge Test

6. SUBJECT - LESSON PLAN

S.NO	TOPIC TO BE COVERED	Suggested Books (Eg: T1,T2,)	NO. OF LECTURES REQUIRED	Teaching methods
	UNIT-I Classes required - 12			
1	Introduction	**T1,R1**	**1**	**White board, PPT**
2	Junction diode characteristics: Open circuited p-n junction,:	**T1**	**1**	**White board, PPT**
3	V-I characteristics	**T1,R1**	**1**	**White board, PPT**
4	Effect of temperature, diode resistance, diffusion capacitance	**T1**	**2**	**White board, PPT**
5	diode switching times	**T1,R1**	**1**	**White board, PPT**
6	Breakdown diodes ,Tunnel diodes, photo diode, LED	**T1**	**1**	**White board, PPT**
7	Diode Applications - clipping circuits	**T1,R1**	**1**	**White board, PPT**
8	Comparators	**T1**	**1**	**White board, PPT**
9	Half wave rectifier, Full	**T1**	**2**	**White board, PPT**

	wave rectifier			
10	capacitor filter	**T1**	**1**	**White board, PPT**
Unit-11 Classes required-13				
11	**BJTs**: Transistor characteristics: The junction transistor	**T1,R1**	**2**	**White board, PPT**
12	transistor as an amplifier	**T1**	**2**	**White board, PPT**
13	CB configurations, CE configurations	**T1**	**1**	**White board, PPT**
14	CC configurations, comparison of transistor configurations	**T1**	**1**	**White board, PPT**
15	the operating point, self-bias or Emitter bias, bias compensation	**T1**	**1**	**White board, PPT**
16	Thermal runaway and stability	**T1**	**1**	**White board, PPT**
17	Transistor at low frequencies, CE amplifier Response	**T1**	**1**	**White board, PPT**
18	Gain bandwidth product	**T1**	**1**	**White board, PPT**
19	Emitter follower, RC coupled amplifier	**T1**	**2**	**White board, PPT**
20	two cascaded CE and multi stage CE amplifiers	**T1**	**1**	**White board, PPT**
UNIT-III Classes required - 10				
21	**FETs and Digital Circuits**: FETs: JFET, V-I	**T1**	**1**	**White board, PPT**

	characteristics			
22	MOSFET	**T1**	**1**	**White board, PPT**
23	low frequency CS and CDamplifiers	**T1**	**1**	**White board, PPT**
24	Digital Circuits: Digital (binary) operations of a system,	**T1**	**1**	**White board, PPT**
25	OR gate, AND gate, NOT, EXCLUSIVE OR Gate	**T1**	**1**	**White board, PPT**
26	De Morgan Laws	**T1**	**1**	**White board, PPT**
27	NAND and NOR DTL gates	**T1**	**1**	**White board, PPT**
28	modified DTL gates	**T1**	**1**	**White board, PPT**
29	HTL and TTL gates output stages, RTL and DCTL,	**T1**	**1**	**White board, PPT**
30	CMOS, Comparison of logic families	**T1**	**1**	**White board, PPT**
UNIT-IV Classes required - 10				
31	**Combinational Logic Circuits:** Basic Theorems and Properties of Boolean Algebra,	**T2**	**1**	**White board, PPT**
32	Canonical and Standard Forms, Digital Logic Gates	**T2**	**1**	**White board, PPT**
33	The Map Method, Product-of-Sums Simplification, Don't-Care Conditions	**T2**	**1**	**White board, PPT**

34	NAND and NOR Implementation	**T2**	**2**	**White board, PPT**
35	Exclusive-OR Function	**T2**	**1**	**White board, PPT**
36	Binary Adder-Subtractor, Decimal Adder	**T2**	**1**	**White board, PPT**
37	Binary Multiplier	**T2**	**1**	**White board, PPT**
38	Magnitude Comparator	**T2**	**1**	**White board, PPT**
39	Decoders, Encoders, Multiplexers	**T2**	**2**	**White board, PPT**
UNIT-V Classes required - 12				
40	**Sequential Logic Circuits:** Sequential Circuits,	**T2**	1	**White board, PPT**
41	Storage Elements: Latches and flip flops	**T2**	2	**White board, PPT**
42	Analysis of Clocked Sequential Circuits	**T2**	1	**White board, PPT**
43	State Reduction and Assignment	**T2**	2	**White board, PPT**
44	Shift Registers	**T2**	2	**White board, PPT**
45	Ripple Counters	**T2**	2	**White board, PPT**
46	Synchronous Counters	**T2**	2	**White board, PPT**

7. SUGGESTED BOOKS (PRESCRIBED AND REFERENCES):

TEXT BOOKS:

1. Integrated Electronics: Analog and Digital Circuits and Systems, 2/e, Jaccob Millman, Christos Halkias and Chethan D. Parikh, Tata McGraw-Hill Education, India, 2010.

2. Digital Design, 5/e, Morris Mano and Michael D. Cilette, Pearson, 2011.

REFERENCE BOOKS:

1. Electronic Devices and Circuits, Jimmy J Cathey, Schaum's outline series, 1988.

2. Digital Principles, 3/e, Roger L. Tokheim, Schaum's outline series, 1994

9. WEBSITES FOR SELF LEARNING:

1. nptel.ac.in/courses/108/102/108102095/
2. nptel.ac.in/courses/108/105/108105132/
3. nptel.ac.in/courses/108/102/108102112/
4. www.geeksforgeeks.org/digital-electronics-logic-design-tutorials/
5. https://www.coursera.org/specializations/semiconductor-devices

10. QUESTION BANKS: (ATTACHED SEPARATELY)

1. **JNTUH Model Papers**

ADE JNTUH QUESTION PAPERS.rar

2. **GATE**

- **NOT APPLICABLE**

11. CASE STUDY

1. **Design and development of sensor-based mini projectsof Electronic Components – a Case Study**

ABSTRACT: This is the circuit diagram of a simple **corrosion free water level indicator** for home and industries. In fact, the level of any conductive non-corrosive liquids can be measured using this circuit. The circuit is based on 5 transistor switches. Each transistor is switched on to drive the corresponding LED when its base is supplied with current through the water through

the electrode probes.

One electrode probe is (F) with 6V AC is placed at the bottom of the tank. Other probes are placed step by step above the bottom probe. When water is rising the base of each transistor gets electrical connection to 6V AC through water and the corresponding probe. This, in turn, makes the transistors conduct to glow LED and indicate the level of water. The ends of probes of the water tank level indicator are connected to corresponding points in the circuit as shown in circuit diagramInsulated Aluminum wires with end insulation removed will do for the probe. Arrange the probes in order on a PVC pipe according to the depth and immerse it in the tank. AC voltage is used to prevent electrolysis at the probes. So this setup will last really long. I guarantee at least a 2 years of maintenance-free operation. That's what I got and is still going.

2. Automatic Emergency LED Light

ABSTRACT: This automatic emergency LED light used in night at emergency time when the power cut or off by some region. This emergency light takes 230V AC and it converts it in 12V DC and charge the battery which is used in this circuit.

The power of the battery is used at that time when the power is cut off or we need to use it .This light is used mostly in villages because there is lack of electricity.

12. ASSIGNMENT QUESTIONS:

MID-1

SET 1

1. Explain about shunt clippers?
2. what is half wave rectifier? Explain half wave rectifier with capacitor filter?
3. what are the input and output characteristics of CB configuration?
4. Explain about CE configuration?
5. Explain about operating point?

SET 2

1. write a short note on full wave rectifier with capacitor filter?
2. Explain about a)diode operating point, b)tunnel diode?
3. Explain about operating point?
4. Explain bias stabilization of a transistor?

5. explain about CE configuration?

MID-2

SET -1

1. Define logic gates and their truth tables
2. Define gates using DTL and TTL logics
3. Define Canonical and Standard Forms of Boolean equations
4. Convert the following equation to its standard form
   AB+BC+AC'
5. Define RAM and ROM

SET-2

1. Explain difference between combinational and sequential circuits?
2. Explain about flip-flops and latches?
3. Explain about shift registers and ripple counters?
4. Explain about decoders and encoders?
5. Explain about NAND implementation

13. LIST OF STUDENT SEMINARS:

1. Diode rectification
2. Transistor- transistor logic for designing logic gates
3. Logic gates and their implementation using nand and nor gates
4. Design a full adder using two half adders
5. Design 4 –bit parallel in serial out shift register

14. COURSE FILE

(Attached Separately)

15. EXPERT LECTURE:

S.NO	SUBJECT	TOPIC	YEAR	RESOURCE PERSON	DATE

1	ADE – 01	Amplifiers	II-II	Others	31/03/2022
2	ADE - 02	Sequential Circuits	II-II	Others	30/04/2022

ACADEMIC PLANNER

Subject: Business Economics and Financial Analysis

S.NO		CONTENT
(1)	**-**	**Preamble/Introduction**
(2)	**-**	**Prerequisites**
(3)	**-**	**Objectives and Outcomes**
(4)	**-**	**Syllabus** **1. JNTU/R20-CMREC** **2. GATE** **3. IES**
(5)	**-**	**List of Expert Details**(Local/National/International with Contact details/Profile link/Blogs/their research Contribution towards the subject)
(6)	**-**	**Journals with min 5 ref paper for literature study**
(7)	**-**	**Subject -Lesson plan**
(8)	**-**	**Suggested Books (**prescribed and References)
(9)	**-**	**Websites for self learning Resources like** *www.geeksforgeeks.org, www.schools.com, Coursera,edX, Udemy, Khan Academy*, NPTEL etc along Registration procedures*)*
(10)	**-**	**Question Banks** **1. JNTUH/Model papers** **2. GATE**
(11)	**-**	**Two case study presentations with Project / Product/ Model /prototypes/ Industrial applications.**
(12)	**-**	**Assignment Question/Innovative Assignments sets.**
(13)	**-**	**List of topics for students Seminars with Guidelines**
(14)	**-**	**STEP/Course material in softcopy**
(15)	**-**	**Expert Lectures with topics &Schedules (if any)**

(1) OBJECTIVES AND RELEVANCE

- Understand the concepts but apply them in real life by developing problem solving skills.
- Which are directly relevant to the practice of Management and decision making processes within an enterprise.
- There exists a relationship between Business Economics and Accounting and same is deal in the second part of the course.
- The focus here is on picking up the basics of Accounting
- Such as Accounting Data and Financial Statements, which constitute the language of Business?
- The student is exposed and made familiar with generation, interpretation and use of Accounting Data.

Course outcome

CA50510.1	Define the economic techniques andconceptsand Decidean action for business objectives.
CA50510.2	Explain Demandfunction to carry out efficientand productivity to and analysis of demand and supply
CA50510.3	Develop production function to carry out efficient productivity and cost analysis to determine price of commodity.
CA50510.4	Evaluatethe basic accounting functions & make use of accounting principles for financialanalysis
CA50510.5	Interpret the financial statements through ratio analysis fora company.

(2) SCOPE

As far as Business Economic is concerned it is very wide in scope. It takes into account almost all the problems and areas of manager and the firm. B.E deals with Demand analysis,

Forecasting, Production function, Cost analysis, Inventory Management, Advertising, Pricing System, Resource allocation etc. Following aspects are to be taken into account while knowing the scope of B.E: The scope of accounting as it was in earlier days has undergone lots of changes in recent times. As accounting is a dynamic subject, its scope and area of operation have been always increasing keeping pace with the changes in socio- economic changes. As a result of continuous research in this field the new areas of application of accounting principles and policies are emerged.

National accounting, human resources accounting and social Accounting are examples of the new areas of application of accounting systems

(3) PREREQUISITES

Basic Concepts of Business Economics, Management & Concepts of Financial Accounting

(4.1) *SYLLABUS*

UNIT-I

OBJECTIVES

Define the economic techniques andconceptsand decidean action for business objectives.

SYLLABUS

UNIT-I

Introduction to business and economics

Business: Structure of Business Firm, Theory of Firm, Types of Business Entities, Limited Liability Companies, Sources of Capital for a Company, Non-Conventional Sources of Finance.

Economics: Significance of Economics, Micro and Macro Economic Concepts, Concepts and Importance of National Income, Inflation, Money Supply in Inflation, Business Cycle, Features and Phases of Business Cycle. Nature and Scope of Business Economics, Role of Business Economist, Multidisciplinary nature of Business Economics.

UNIT - II

OBJECTIVES

Explain Demandfunction to carry out efficientand productivity to and analysis of demand and supply

SYLLABUS

DEMAND AND SUPPLY ANALYSIS

Elasticity of Demand: Elasticity, Types of Elasticity, Law of Demand, Measurement and Significance of Elasticity of Demand, Factors affecting Elasticity of Demand, Elasticity of Demand in decision making, Demand Forecasting: Characteristics of Good Demand Forecasting, Steps in Demand Forecasting, Methods of Demand Forecasting.

Supply Analysis: Determinants of Supply, Supply Function & Law of Supply.

UNIT - III

OBJECTIVE

Developproduction function to carry out efficient productivity
And cost analysis to determine price of commodity.

SYLLABUS

PRODUCTION, COST, MARKET STRUCTURES AND PRICING

Production Analysis: Factors of Production, Production Function, Production Function with one variable input, two variable inputs, Returns to Scale, Different Types of Production Functions.

Cost analysis: Types of Costs, Short run and Long run Cost Functions.

Market Structures: Nature of Competition, Features of Perfect competition, Monopoly, Oligopoly, and Monopolistic Competition.

Pricing: Types of Pricing, Product Life Cycle based Pricing, Break Even Analysis, and Cost Volume Profit Analysis.

UNIT - IV

OBJECTIVE

Evaluatethe basic accounting functions & make use of accounting Principles for financialanalysis

SYLLABUS

FINANCIAL ACCOUNTING

Accounting concepts and Conventions, Accounting Equation, Double-Entry system of Accounting, Rules for maintaining Books of Accounts, Journal, Posting to Ledger, Preparation of Trial Balance, Elements of Financial Statements, Preparation of Final Accounts.

UNIT - V

OBJECTIVE

Interpretthe financial statements through ratio analysis fora company

SYLLABUS

FINANCIAL ANALYSIS THROUGH RATIOS

Concept of Ratio Analysis, Liquidity Ratios, Turnover Ratios, Profitability Ratios, Proprietary Ratios, Solvency, Leverage Ratios (simple problems). Introduction to Fund Flow and Cash Flow Analysis (simple problems).

(4.2) SYLLABUS – GATE

NOT APPLICABLE

(4.3) SYLLABUS - IES

NOT APPLICABLE

5. Subject (lesson plan)

BUSINESS ECONOMICS & FINANCIAL ANALYSIS					
S. NO	Topic (JNTU syllabus)	Sub-Topic	NO. OF LECTURES REQUIRED	Suggested Books	Remarks
		UNIT – I			
1	INTRODUCTIONTO BUSINESS AND ECONOMICS	Introduction and definition of Business	L1	T1	
2		Theory of firms.	L2	T1	
3		Types of Business entities and Sources of capital for a company	L3	T1	
4		Introduction of Economics and Significance of Economics	L4	T1	
5		Micro and Macro	L5	T1	

		concepts			
6		National income concepts and Importance.	L6	T1	
7		Inflation and Money Supply in inflation.	L7	T1	
8		Features and Phases of Business Cycle.	L8	T1	
9		Nature and Scope of Business Economics and Role and Multidisciplinary nature	L9,L10	T1	
		UNIT - II			
10	DEMAND AND SUPPLY ANALYSIS	Introduction of Elasticity of Demand	L11,L12	T1	
11		Types of Elasticity and Law of Demand	L13	T1	

12		Measurement and significance of Elasticity of Demand	L14	T1	
13		Factors affecting Elasticity of Demand and good demand in decision making	L15,L16	T1	
14		Demand Forecasting: Characteristics and steps in Demand forecasting	L17	T1	
15		Methods in Demand forecasting	L18,L19	T1	
16		Supply Analysis: Introduction of Supply analysis and Determinants of Supply	L20,L21	T1	
17		Law of Supply and	L22	T1	

		Functions			
		UNIT – III			
18	PRODUCTION,COST, MARKET STRUCTURE AND PRICING	Production Analysis: Factors of production and production function	L23	T1	
19		Production function with one variable input, two variable inputs, Return to scale	L24,L25,L26	T1	
20		Different types of production functions	L27,L28	T1	
21		Cost analysis: Types of cost, short run and long run function	L29,L30	T1	
22		Market structures: Introduction	L31,L32	T1	
23		Nature and competition of	L33	T1	

		market structure			
24		Features of perfect competition, monopoly, oligopoly and monopolistic competition	L34	T1	
25		Pricing: Types of pricing, product life cycle based pricing.	L35,L36	T1	
26		Break even analysis, and cost volume profit analysis	L37	T1	
		UNIT – IV			
27	FINANCIAL ACCOUNTING	Accounting concepts and Conventions	L41	T1,R1	
28		Accounting Equation	L42	T1,R1	

29		Double-Entry Book Keeping.	L43	T1,R1	
30		Rules for maintaining Books of Accounts	L44	T1,R1	
31		Journal, Ledger.	L45,L46	T1,R1	
32		Trial Balance.	L47	T1,R1	
33		Final Accounts	L48	T1,R1	
		UNIT – V			
34	FINANCIAL ANALYSIS THROUGH RATIOS	Concept of Ratio Analysis	L49, L50	T1,R1	
35		Liquidity Ratios	L51 ,L52	T1,R1	
36		Turnover Ratios	L53 ,L54	T1,R1	
37		Profitability Ratios	L55 ,L56	T1,R1	
38		Proprietary Ratios	L57 ,L58	T1,R1	
39		Solvency	L59 ,L60	T1,R1	
40		Leverage Ratios (simple problems)	L61 ,L62	T1,R1	

41		Introductio n to Fund Flow and Cash Flow Analysis (simple problems	L63 ,L64	T1,R 1	

NOTE: 1. Any Subject in a Semester is supposed to be completed in 55 to 65 periods.

2. Each Period is of 50 minutes.

3. Each unit duration & completion should be mentioned in the Remarks Column.

4. List of Suggested books can be marked with Codes like T1, T2, R1, R2 etc.

6. SUGGESTED BOOKS

TEXT BOOKS

T1 D. D. Chaturvedi, S. L. Gupta, Business Economics – Theory and Applications, International Book House Pvt. Ltd. 2013.

T2 Dhanesh K Khatri, Financial Accounting, Tata Mc –Graw Hill, 2011.

T3 Geethika Ghosh, Piyali Gosh, Purba Roy Choudhury, Managerial Economics, 2e, Tata Mc Graw Hill Education Pvt. Ltd. 2012

7. QUESTION BANK

UNIT-1

1. Define Business Economics. Explain its Nature And Scope?
2. Discuss the importance of Business Economics in decision making?
3. What is Business Economics? Explain its focus areas?

4. Point out the importance of Business Economics in decision making?
5. Define Business and Structure of business ?
6. What are the different types of Business organizations?
7. What are the features of Sole trading form of Organization?
8. What are the characteristics of a Business Unit?
9. What are the characteristic features of a sole trader form of organization?
10. What are the salient features Partnership firm?
11. Explain Different kinds of partners?
12. What are the advantages and limitations of partnership firm?
13. What do you mean by Joint Stock Company? What are the salient features?
14. Describe the advantages and disadvantages of Joint Stock Companies?
15. Analyses the Formation of Joint Stock Company?
16. What are the different types of companies?
17. Distinguish between the Joint Stock Company and Partnership?
18. Explain Theory of firms?
19. What are the different types of Business Entities?
20. What are limited liability companies?
21. What are sources of capital for a company?
22. Define Economics and importance of Economics?
23. Micro and macro concepts of Economics?
24. Concepts and Importance of National Income?
25. What is Inflation and types of inflation?
26. What is money supply in inflation and what are the types of money?
27. Features and Phases of Business cycle?
28. Explain law of demand and expectations of law demand with curve?

UNIT-II

1. Define elasticity of demand and measurement types of elasticity of demand?
2. Explain these terms? a) Law of supply b) production function c) fixed cost
3. What is meant by 'Elasticity of Demand'? How do you measure it? (very Imp)
4. What is cross Elasticity of Demand? Explain
5. Explain the various factors influencing elasticity of demand ?
6. Explain the Measurements of elasticity of demand?
7. Elasticity of demand in decision making ?
8. Define 'Demand' and explain the factors that influence the demand of a product?
9. State the 'Law of Demand'. What are the various factors that determine the demand for a Mobile Phone?
10. Explain the concept of Cross Elasticity of Demand. Illustrate your answer with Examples?
11. Why does the Law of Diminishing Returns operate? Explain with the help of assumed data and also represent in a diagram.?
12. What are the needs for Demand Forecasting? Explain the various steps involved in demand forecasting.?
13. What are the possible approaches to forecasting demand for new products? Illustrate all the methods of Demand Forecasting?
14. Define supply and explain Law of supply?
15. Explain supply Function and Determinant?
16. Explain law of demand and expectations of law demand with curve?
17. Explain statistical method in demand forecasting ?
18. Define expect opinion method in demand forecasting?
19. Explain law of supply?
20. Determinates of law of supply?

UNIT-III

1 Define production function with one variable input with example?

2 Define production Function. Discuss in detail the different types of production functions?

3 Explain the following with reference to production function

4 Define 'Cost'. How are costs classified? Explain any five important cost concepts useful for managerial decisions?

5 Discuss the role and importance of cost analysis in managerial decisions?

6 State and explain Break-Even analysis and explain its importance?

7 What are its limitations? Use suitable diagram? .

8 Define Market and explain how markets are classified?

9 Explain these terms ?

10 a) What is perfect competition and its features?

b) What are the important features in Market structure?

11 How is market price determined under conditions of Perfect Market Competition?

12 Explain in detail, the important features of perfect competition?

13 How can a competitor attain equation position under conditions of perfect competition? CO3

14 Explain the features of Monopoly?

15 What are the different market situations in imperfect competition?

16 Define production function with one variable input with example?

17 How can a Monopolist attain equilibrium position under conditions of monopoly?

18 What are the features of Monopolistic Competition? How can a firm attain equilibrium position?

19 Compare and contrast between Perfect competition and Monopoly?

20 Explain pricing and methods of pricing ?

UNIT-IV

1. Give a brief account on the important records of Accounting under Double Entry System and discuss briefly the scope of each?

2. Explain the purpose of preparing the following accounts/statements and also elaborate the various items that appear in each of them. a) Trading Account b) Profit & Loss Account c) Balance Sheet

3. Explain the following concepts and illustrate their treatment with imaginary data. a) Depreciation?

a) Prepaid expenses b) Reserve for bad and Doubtful debts) Income received in advance

4. Explain the following adjustments and illustrate suitably with assumed data?

a) Closing stock b) Outstanding expenses c) Prepaid Income d) Bad debts

5. Define the concepts 'Accounting', Financial Accounting and Accounting System'?

6. Explain the main objectives of Accounting and its important functions.

7. What is three columnar cash book? What is Contra Entry? Illustrate

8. What do you understand by Double Entry Book Keeping? What are its advantages?

9. What is Trial Balance? Why it is prepared?

10. What are the different Concepts and Conventions of Financial Accounting?

11 Mr. Nirmal has the following transactions in the month of April.

Write Journal Entries for the transactions.

10th April : Commenced business with a capital of 1,00,000

11th April : Purchased goods from Veeru for 20,000

13th April : Purchased Goods for Cash 15,000

14th April : Purchased Goods from Abhiram for cash 9,000

16th April : Bought Goods from Shyam on credit 12,000

17th April : Sold goods worth 15,000 to Tarun

19th April : Sold goods for cash 20,000

20th April : Sold goods to Utsav for cash 6,000

21st April : Sold goods to Pranav on credit 17,000

22nd April : Returned goods to Veeru 3,000

23rd April : Goods returned from Tarun 1,000

25th April : Goods taken by the proprietor for personal use 1,000

26th April : Bought Land for 50,000

27th April : Purchased machinery for cash 45,000

28th April : Bought computer from Intel Computers for 25,000

28th April : Cash sales 15,000

29th April : Cash purchases 22,000

30th April : Bought furniture for proprietor's residence and paid cash 10,000

12) Calculate Trading account, P/L account and balance sheet ?

UNIT-V

1. Explain the meaning of the 'Analysis of Financial Statementco5

2. Discuss briefly the different type of analysis.co5

3. Discuss the importance of Ratio Analysis for inter firm and intra-firm comparison, including circumstances responsible for its limitations, if any.co5

4. How are ratios classified for the purpose of financial analysis? With assumed data, illustrate any two types of ratios under each category?co5

5. Write a brief note on the importance of ratio analysis to different category of users.co5

6. As a financial analyst, what precautions would you take while interpreting ratios meaningfully?co5

7. What are the limitations of Ratio Analysis? Does ratio analysis really measure the financial performance of a company?c05

8. Following is the Profit and Loss account and Balance Sheet of Jai Hind Ltd. Calculate the following ratios:co5

a) Gross Profit Ratio b) Current Ratio c) Quick ratio

8. E-RESOURCES (CMREC REPOSITORIES)

https://economictimes.indiatimes.com/definition/law-of-demand

http://www.economicsdiscussion.net/monopolistic-competition/price-and-output-determination-under-monopoly/4099

http://www.accountingnotes.net/final-accounts/problems-final-accounts/top-5-problems-on-final-accounts-of-the-companies/11284

9. EXPERT DETAILS

The Expert Details which have been mentioned below are only a few of the eminent ones known Internationally, Nationally and Locally. There are a few others known as well.

International

Dr.Rana singh Professor in Management & Associate Dean Centinum Institute

Rakesh Bhalla Vice- chairman ,NRIC of ICWA

National

Dr. D.Ganesh Rao - Prof. & Head, Deptt. of Telecommunication Engg., M.S. Ramayya Instt. of Tech., Bangalore

Prof. S.C. Dutta Roy, Deptt. of Electrical Engg., IIT, Delhi.

Mr. A.Nagoor Kani, 52, Seshachalam Street, Saidapet, Chennai.

Regional

Prof. N.S. Murthy, Dept. of ECE, NIT, Warangal.

Mr. K.V.Srinivasa Rao, HoD, Dept. of ECE, Aurora Engineering College, Bhongir, Nalgonda.

10. ASSIGNMENT QUESTION SETS ON EACH UNIT

- What is Limited Liability Company and types of Limited Liability Company?(CO1)
- Explain wealth, welfare and Robbins Definition of economics and concepts of economics?(CO1)
- Define business economics and nature, features and scope of business economics?(CO1)
- a)Explain law of demand exceptions of law of demand?(CO2)

b) Law of supply and determinates of law of supply?(CO2)

- Define production function and what is law of one variable production with assumed data table and graph?(CO3)

- Define market , types and price output determination under monopoly?(CO3)
- Explain pricing and methods of pricing?(CO3)
- Explain these items?(CO5)
- Write formulas of liquidity ratio
- What is double entry system book keeping and advantages?(CO4)
- Performa of final accounts?(Trading account, profit and loss account, balance sheet)(CO4)
- The balance sheet of Punjab auto limited as on 31-12-2000 was as follows(CO5)

Particulars	Rs	Particulars	Rs
Equity share capital	40000	Plant and machinery	24000
capital reserve	8000	Land and building	40000
8 % loan on mortgage	32000	Furniture and fixtures	16000
Creditors	16000	Stock	12000
Bank overdraft	4000	Debtors	12000
Taxation	4000	investment (short	4000

		term)	
Current	4000	cash in hand	12000
Future	4000		
profit and loss account	12000		
Toatal	1,20,000		1,20,000

From the above, compute

- The current ratio
- Quick ratio
- Debt equity ratio
- Proprietary ratio

11. IMPORTANT QUESTION SETS ON EACH UNIT

UNIT-I

SET-1

1. Define Business Economics.
2. Explain its Nature of Business economics
3. Discuss the importance of Business Economics in decision making.
4. Write scope of BE
5. Explain wealth, welfare and Robbins Definition of economics and concepts of economics?

SET-2

1. What is Limited Liability Company and types of Limited Liability Company?
2. Explain wealth, welfare and Robbins Definition of economics and concepts of economics?
3. Explain the role of a Business Economist in a Business Firm.
4. Define Business cycle and phases

SET-3

1. Explain about micro and macro economics
2. Write in brief about sources of capital for a company
3. Write about non conventional sources of finance
4. Explain concepts and importance national income

SET-4

1. Write in brief about structure of business firm
2. Write about multidisciplinary nature of business economics
3. Explain theory of firm and write about types of business entities
4. Define inflation and write about money supply in inflation

UNIT-II

SET-1

1. Define elasticity of demand and measurement types of elasticity of demand?
2. Explain the terms? a) Law of supply b) production function c) fixed cost
3. What is meant by 'Elasticity of Demand'? How do you measure it?
4. What is cross Elasticity of Demand? Explain.

SET-2

1. Explain the various factors influencing elasticity of demand
2. Explain the Measurements of elasticity of demand?
3. Elasticity of demand in decision making?
4. Define 'Demand' and explain the factors that influence the demand of a product?

SET-3

1. State the 'Law of Demand'. What are the various factors that determine the demand for a Mobile Phone?

2. Explain the concept of Cross Elasticity of Demand. Illustrate your answer with Examples.

3. Why does the Law of Diminishing Returns operate? Explain with the help of assumed data and also represent in a diagram.

4. What are the needs for Demand Forecasting? Explain the various steps involved in demand forecasting?

SET-4

1. What are the possible approaches to forecasting demand for new products? Illustrate all the methods of Demand Forecasting.

2. Define supply and explain Law of supply?

3. Explain supply Function and Determinant?

4. Explain law of demand and expectations of law demand with curve?

UNIT-III

SET-1

1. Define production function with one variable input with example?

2. Define production Function. Discuss in detail the different types of production functions.

3. Explain the following with reference to production function

4. Define 'Cost'. How are costs classified? Explain any five important cost concepts useful for managerial decisions?

SET-2

1. Discuss the role and importance of cost analysis in managerial decisions

2. State and explain Break-Even analysis and explain its importance

3. What are its limitations? Use suitable diagrams?

4. Define Market and explain how markets are classified?

5. What are the important features in Market structure? a) What is perfect competition? What are its features?

SET-3

1. How is market price determined under conditions of Perfect Market Competition?

2. Explain in detail, the important features of perfect competition?

3. How can a competitor attain equation position under conditions of perfect competition?

4. Explain the features of Monopoly?

5. What are the different market situations in imperfect competition?

SET-4

1. Define production function with one variable input with example?
2. How can a Monopolist attain equilibrium position under conditions of monopoly?
3. What are the features of Monopolistic Competition? How can a firm attain equilibrium position?
4. Compare and contrast between Perfect competition and Monopoly?

UNIT –IV

SET-1

1. Give a brief account on the important records of Accounting under Double Entry System and discuss briefly the scope of each?

2. Explain the purpose of preparing the following accounts/statements and also elaborate the various items that appear in each of them. a) Trading Account b) Profit & Loss Account c) Balance Sheet

3. Explain the following concepts and illustrate their treatment with imaginary data. a) Depreciation b) Prepaid expenses c) Reserve for bad and Doubtful debts d) Income received in advance?

4. Explain the following adjustments and illustrate suitably with assumed data.

Closing stock b) Outstanding expenses c) Prepaid Income d) Bad debts?

SET-2

1. Define the concepts ‘Accounting’, Financial Accounting and Accounting System’.
2. Explain the main objectives of Accounting and its important functions.
3. What is three columnar cash book? What is Contra Entry? Illustrate
4. What do you understand by Double Entry Book Keeping? What are its advantages?
5. What is Trial Balance? Why it is prepared?

SET-3

1. Explain the following concepts and illustrate their treatment with imaginary data. a) Depreciation

B) Prepaid expenses c) Reserve for bad and Doubtful debts) Income received in advance?

2. What do you understand by Double Entry Book Keeping? What are its advantages?
3. Define accounting and write concepts and conventions of accounting?
4. Write in brief about rules of accounting?

SET-4

1. Write about double entry system?
2. Distinguish between trail balance and financial statement
3. Write about rules for maintaining books of accounts
4. Write about journal, ledger, trail balance and final account

UNIT-V

SET-1

1. Explain the meaning of the 'Analysis of Financial Statement?
2. Discuss briefly the different type of analysis
3. Discuss the importance of Ratio Analysis for inter firm and intra-firm comparison, including circumstances responsible for its limitations, if any.
4. How are ratios classified for the purpose of financial analysis? With assumed data, illustrate any two types of ratios under each category?

SET-2

1. Write a brief note on the importance of ratio analysis to different category of users.
2. As a financial analyst, what precautions would you take while interpreting ratios meaningfully?
3. What are the limitations of Ratio Analysis? Does ratio analysis really measure the financial performance of a company?
4. following is the Profit and Loss account and Balance Sheet of Jai Hind Ltd. Calculate the following ratios:

   a) Gross Profit Ratio b) Current Ratio c) Quick ratio

SET-3

1. Discuss briefly the different type of analysis.
2. Discuss the importance of Ratio Analysis for inter firm and intra-firm comparison, including circumstances responsible for its limitations, if any.
3. As a financial analyst, what precautions would you take while interpreting ratios meaningfully?
4. What are the limitations of Ratio Analysis? Does ratio analysis really measure the financial performance of a company?

SET-4

1. Following is the Profit and Loss account and Balance Sheet of Jai Hind Ltd. Calculate the following ratios:

A) Gross Profit Ratio b) Current Ratio c) Quick ratio

2. Explain the meaning of the 'Analysis of Financial Statement?

3. What are the limitations of Ratio Analysis? Does ratio analysis really measure the financial performance of a company?

4. Distinguish between funds flow and cash flow?

12. TOPICS FOR STUDENT'S SEMINARS

- Economics
- Business economics and managerial economics
- Firm, industry, organization
- Demand and supply
- National income
- Inflation, law of demand
- Elasticity of demand
- Production function
- Types of production
- Short run and long run cost functions
- Product life cycle based on pricing
- Break even analysis
- Cost volume profit analysis
- Demand forecasting
- Measurement and significance of elasticity of demand

- Perfect competition, monopoly, oligopoly, monopolistic competition
- Accounting concepts and conversations
- Accounting equation
- Double entry system of accounting
- Rules of books of accounts
- ledger, trail balance and final account
- Ratio analysis
- Liquidity ratio
- Turnover ratio
- Profitability ratio
- Proprietary ratio
- Solvency ratio

ENGINEERING COLLEGE

EXPLORE TO INVENT

CMR ENGINEERING COLLEGE

Accredited by NBA & NAAC | Approved by AICTE, New Delhi & JNTU, Hyderabad

Kandlakoya, Medchal Road, Hyderabad - 501401
Ph: 92487 27229, 92487 27231
Email: principal@cmrec.ac.in

www.cmrec.ac.in

/cmrengineerngcollege