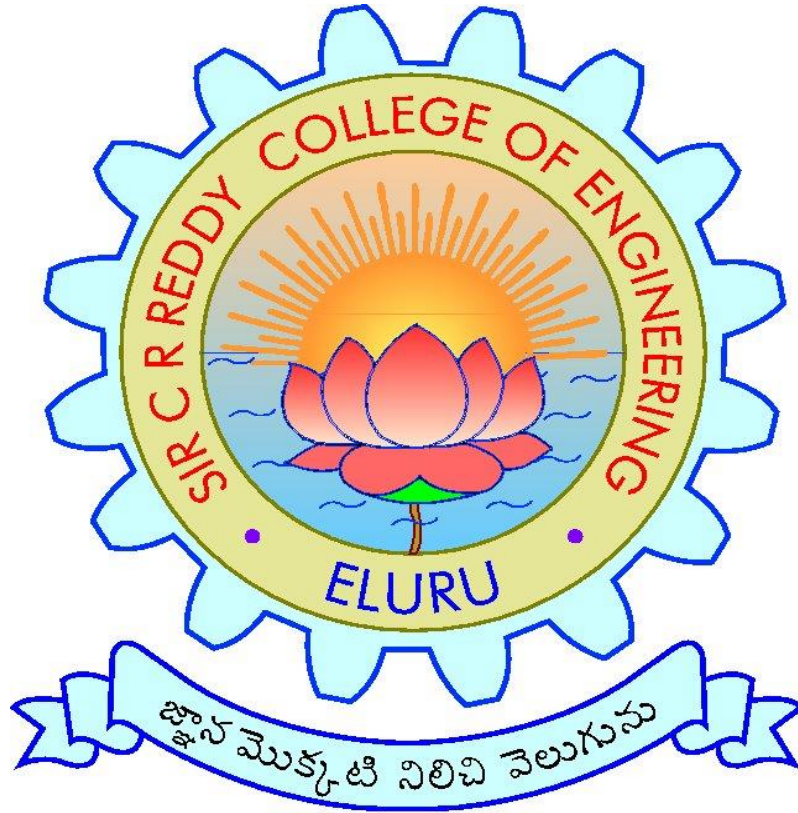# SIR C.R.REDDY COLLEGE OF ENGINEERING, ELURU
DEPARTMENT OF INFORMATION TECHNOLOGY
COURSE HANDOUT

SUBJECT: DevOps (Job Oriented Course)

CLASS: III/IV B.Tech. I SEMESTER, A.Y.2022-23

INSTRUCTOR: SRI V GOPINATH

Course Handout Index

S. No	Description
1	College Vision & Mission
2	Department Vision & Mission
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College Vision & Mission

Vision: To emerge as a premier institution in the field of technical education and research in the state and as a home for holistic development of the students and contribute to the advancement of society and the region.

Mission: To provide high quality technical education through a creative balance of academic and industry oriented learning; to create an inspiring environment of scholarship and research; to instill high levels of academic and professional discipline; and to establish standards that inculcate ethical and moral values that contribute to growth in career and development of society in general.

Department Vision & Mission

Vision: To be a premier department in the region in the field of Information Technology through academic excellence and research that enable graduates to meet the challenges of industry and society.

Mission: To Provide dynamic teaching-learning environment to make the students industry ready and advancement in career; to inculcate professional and leadership quality for better employability and entrepreneurship; to make high quality professional with moral and ethical values suitable for industry and society.

Program Educational Objectives (PEOs)

PEO1: Solve real world problems through effective professional skills in Information Technology industry and academic research.

PEO2: Analyze and develop applications in Information Technology domain and adapt to changing technology trends with continuous learning.

PEO3: Practice the profession in society with ethical and moral values.

Program Outcomes (POs)

PO1: Engineering Knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.

PO2: Problem Analysis: Identify, formulate, research literature, and analyze complex engineering problems reaching substantiated conclusions using the first principles of mathematics, natural sciences, and engineering sciences.

PO3: Design/Development of Solutions: Design solutions for complex engineering problems and system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, society, and environmental considerations.

PO4: 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.

PO5: 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.

PO6: 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.

PO7: Environment and Sustainability: Understand the impact of the professional engineering solutions in society and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

PO8: Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

PO9: Individual and Team Work: Function effectively as an individual, and as a member or leader in diverse teams, and in multi-disciplinary settings.

PO10: 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.

PO11: Project Management and Finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multi-disciplinary environments.

PO12: 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: Design Skill: Design and develop softwares in the area of relevance under realistic constraints.

PSO2: New Technology: Adapt new and fast emerging technologies in the field of Information Technology.

JNTUK Academic Calendar

Directorate of Academic Planning
JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY KAKINADA
KAKINADA-533003, Andhra Pradesh, INDIA
(Established by AP Government Act No. 30 of 2008)

Lr. No. DAP/AC/III Year /B. Tech/B. Pharmacy/2022   *Date 14.07.2022*

Dr. KVSG Murali Krishna,
M.E. Ph.D.,
Director, Academic Planning
JNTUK, Kakinada

To
All the Principals of Affiliated Colleges,
JNTUK, Kakinada.

Academic Calendar for III Year - B. Tech/B. Pharmacy for the AY 2022-23
(2020-21 Admitted Batch)

I SEMESTER			
Description	From	To	Weeks
Community Service Project	15.07.2022	30.07.2022	2W
I Unit of Instruction	01.08.2022	24.09.2022	8W
I Mid Examinations	26.09.2022	01.10.2022	1W
II Unit of Instructions	03.10.2022	26.11.2022	8W
II Mid Examinations	28.11.2022	03.12.2022	1W
Preparation & Practicals	05.12.2022	10.12.2022	1W
End Examinations	12.12.2022	25.12.2022	2W

* As per the APSCHE Guidelines Out of the Total 180 hours of Community Service Project leading to 4 Credits, two weeks will be offline and remaining project work can be done during the III-I semester weekends and holidays.

Director,
Academics & Planning, JNTUK

14.7.22

Director
Academic Planning
JNTUK Kakinada

Copy to the Secretary to the Hon'ble Vice Chancellor, JNTUK
Copy to Rector, Registrar, JNTUK
Copy to Director Academic Audit, JNTUK
Copy to Director of Evaluation, JNTUK

Department Academic Calendar
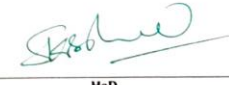

Department of Information Technology
III/IV B.Tech Academic Calendar for 2022-23

2022-23	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M
Jul 22						1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	
Aug 22	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31						
Sep 22				1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30				
Oct 22							1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
Nov 22		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30						
Dec 22		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31					
Jan 23	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31						
Feb 23				1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28						
Mar 23				1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31			
Apr 23					1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30			
May 23		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31					
Jun 23				1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30				

List of Holidays

July 10: Bakrid	Oct 9: Maulud Nabi	Mar 22 : Ugadhi
Aug 9:Moharum	Oct 24 : Diwali	Mar 30: Srirama navami
Aug 15:Independence day	Dec 25 :Christmas	Apr 5: Babu Jagjivan Ram Jayanti
Aug 31:Ganesh Chaturdi	Jan 14-16: sankranti	Apr 7: Good friday
Oct 2: Gandhi jayanthi	Jan 26:Republic Day	Apr 14:Ambetkar Jayanthi
Oct 5: Vijayadasami	Feb 18 :Sivaratri	Jun 29: Bakrid
	Mar 8 : holi	

Legend:
- Mid exams
- End Examinations
- Commencement of Class work
- Workshops
- Department fest/Elite

HoD
Department of IT

Course Description

This DevOps course helps to become familiar in all DevOps Concepts form the Basics. This course gives the basic foundational principles of DevOps with a particular focus on various devops tools. We will know how Devops help improve collaboration between developers and operations team members. We'll learn about strategies to manage work, monitor it, keep it organized, and maintain a high level of quality by following key DevOps principles. DevOps course helps in becoming master with various aspects of the principles of continuous development and deployment, software development operations, continuous integration, automation of configuration management and learn the various tools like Git, Docker, Jenkins, Ansible, sonar cube and Kubernetes etc.

Course Objectives

This Course Objectives are as follows:

- Revisit the concepts SDLC and Identify the values and principles of agile software development
- Understand the fundamentals of DevOps
- Enumerate the adoption of DevOps in real time projects
- Make familiar the concept of CI/CD mechanisms and tools.
- Identify the DevOps Maturity model to design the projects.

Course Outcomes

Students are able to

CO No's	Cos	Level
CO1	Understand the various phases of SDLC and agile software development.	L2
CO2	Understand the fundamentals of DevOps ,adoption in projects ,CI/CD and DevOps maturity models.	L2
CO3	Use the DevOps Tool stack in software development process.	L3
CO4	Analyse various aspects in DevOps like DevOps adoption, CI/CD practices and DevOps Maturity models	L4

Lesson Plan

S. No	Unit	Topic	Teaching Aids	CO
1	I	Phases of Software Development Life Cycle,	BB	CO1
2		Software process models	BB	CO1
3		Agile process	BB	CO1
4		Values of agile software development.	BB	CO1
5		principles of agile software development.	BB	CO1
11	II	Fundamentals of DevOps	BB	CO2
12		Architecture	BB/PPT	CO2

13		Deployments	BB/PPT	CO2
14		Orchestration	BB/PPT	CO2
15		Need	BB	CO2
16		Instance of applications	BB	CO2
17		DevOps delivery pipeline	BB	CO4
18		DevOps eco system	BB	CO3
21	III	DevOps adoption in projects:	BB	CO2
22		Technology aspects,	BB	CO4
23		Agiling capabilities	BB/PPT	CO4
24		Tool stack implementation	BB	CO3
25		People aspect	BB/PPT	CO4
26		processes	BB/PPT	CO2
32	IV	CI/CD	BB	CO2
33		Introduction to Continuous Integration, Continuous Delivery and Deployment	BB	CO2
34		Benefits of CI/CD	BB/PPT	CO4
35		Metrics to track CICD practices	BB	CO4
38	V	Devops Maturity Model:	BB	CO2
39		Key factors of DevOps maturity model,	BB	CO2
40		stages of Devops maturity model,	BB/PPT	CO4
41		DevOps maturity Assessment	BB	CO4

Evaluation Pattern

S. No	Components	Internal	External	Total
1	Theory	30	70	100
2	Engineering Graphics/Design/Drawing	30	70	100
3	Practical	15	35	50
4	Mini Project/Internship/Industrial Training/ Skill Development programmes/Research Project	–	50	50
5	Project Work	60	140	200

Marks Range Theory (Max – 100)	Marks Range Lab (Max – 50)	Level	Letter Grade	Grade Point
≥ 90	≥ 45	Outstanding	A+	10
≥80 to <89	≥40 to <44	Excellent	A	9
≥70 to <79	≥35 to <39	Very Good	B	8
≥60 to <69	≥30 to <34	Good	C	7
≥50 to <59	≥25 to <29	Fair	D	6
≥40 to <49	≥20 to <24	Satisfactory	E	5
<40	<20	Fail	F	0
-		Absent	AB	0

Timetable

SIR CRREDDY COLLEGE OF ENGINEERING, ELURU
DEPARTMENT OF INFORMATION TECHNOLOGY
III/IV B.Tech I.T - I SEMESTER A.Y 2022-2023

TIME TABLE
A– Section

With effect from: 01/08/2022   *Class Teachers: Sri.PRK / Dr. GCH*   LH-48

	1	2	3	4		5	6	7	8
DAY	09:00 To 09:50	09:50 to 10:40	11:00 To 11:50	11:50 To 12:40	L	1:40 To 2:30	02:30 to 03:20	03:20 To 04:10	04:10 To 5:00
MON	DAA	AI	CN	DMT	U	DevOPS	CN(T)	COUNSLING	-----
TUE	AI	DevOPS	DMT	CN	N	CN LAB			-----
WED	DevOPS	DMT LAB			C	AI	DAA(T)	ES-II	-----
THU	CN	DAA	AI	DMT(T)		DAA	DevOPS (T)	ES-II	-----
FRI	DevOPS	CN	DMT	DAA	H	SI	AI(T)	LIBRARY	-----
SAT	DMT	SOC –III LAB				------------------------------			

*T – Tutorial

THOERY:

Computer Networks	: Smt. B.Lalitha Bhavani
Design and Analysis of Algorithms	: Smt. J.Malathi
Data Mining Techniques	: Sri. P.Rajendra Kumar
Job oriented course DevOPS (OE-I)	: Sri. V. Gopinath
Artificial Intelligence (PE- I)	: Dr. G.Chamundeswari

LAB:

Data Mining Techniques With R Lab	: Dr. G.Chamundeswari/ Sri. P.Rajendra Kumar
Computer Networks Lab	: Smt. B.Lalitha Bhavani /Sri. V. Gopinath
Skill Oriented Course -III	: Sri. B.Ramesh Babu / Smt. J.Malathi
Employability Skills –II	: Dr. G.Chamundeswari
Summer Internship	: Sri. V.Gopinath

G. Krishnaveri

Dept. Time Table In charge

HOD,
Dept. of. I.T
HEAD OF THE DEPARTMENT
Information Technology
Sir C.R.R. College of Engg.
ELURU-534 007.

PRINCIPAL
Principal
SIR C.R.R. COLLEGE OF ENGINEERING
ELURU -534 007

TIME TABLE
B – Section

With effect from: 01-08-2022

Class Teachers: Smt. JM/ Sri.VGN

LH-47

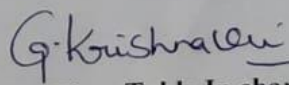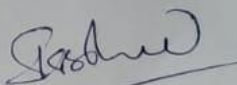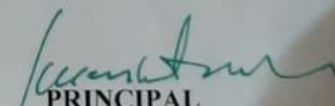| DAY	1 09:00 To 09:50	2 09:50 To 10:40	3 11:00 to 11:50	4 11:50 To 12:40	L U N C H	5 1:40 to 2:30	6 02:30 to 03:20	7 03:20 To 04:10	8 04:10 To 5:00
MON	CN	DMT	AI	DAA		DMT LAB			----
TUE	DMT	CN	AI	DevOPs		DAA(T)	ES-I	LIBRARY	---
WED	DAA	AI	DevOPs	CN		DMT	CN(T)	SI	---
THU	DevOPs		CN LAB			ES-I	DMT(T)	COUNSLING	---
FRI	AI	DAA	DevOPs(T)	CN		SOC-III LAB			---
SAT	DAA	AI(T)	DevOPs	DMT		---			

*T – Tutorial

THOERY:

Computer Networks	: Smt. B.Lalitha Bhavani
Design and Analysis of Algorithms	: Smt. J.Malathi
Data Mining Techniques	: Sri. P.Rajendra Kumar
Job oriented course DevOPS (OE-I)	: Sri. V. Gopinath
Artificial Intelligence (PE- I)	: Dr. S.Krishna Rao

LAB:

Data Mining Techniques With R Lab	: Sri. P.Rajendra Kumar / Dr. G.Chamundeswari
Computer Networks Lab	: Sri. V. Gopinath/ Smt. B.Lalitha Bhavani
Skill Oriented Course -III (Animation Design)	: Smt. J.Malathi / Sri. B.Ramesh Babu
Employability Skills –I	: Dr. G.Chamundeswari
Summer Internship	: Sri. Ch. Yallamanda

G. Krishnaveni

Dept. Time Table In charge

HOD,
Dept. of. I.T

HEAD OF THE DEPARTMENT
Information Technology
Sir C.R.R. College of Engg.
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ELURU -534 007