

**Dr. Ambedkar Institute of Technology**  
**Bengaluru – 56**  
**Department of Computer Science and Engineering**  
**Scheme and Syllabus – NEP – 2023 – 2024**

Course Title	Foundations of Devops						
Course Code	22CST306D						
Category	Engineering Science Course (ESC)						
Scheme and Credits	No. of Hours/Week					Total Teaching hours	Credits
	L	T	P	SS	Total		
	03	00	00	00	03	42	03
CIE Marks: 50	SEE Marks: 50	Total Max. marks=100			Duration of SEE: 03 Hours		

**COURSE OBJECTIVES:**

1. Apply fundamental principles to DevOps environment and applications to be developed and deployed.
2. Examine continuous feedback practices across DevOps pipeline.
3. Choose collaboration and affinity to improve organizational structure.
4. Determine the devops tools for scaling the team and organization.

<b>UNIT I</b>
<b>The Big Picture, A Snapshot of Devops Culture</b> , The Evolution of Culture, The Value of the Story, Katherine’s Story, Jennifer’s Story, Illustrating Devops with Stories, <b>What Is Devops?</b> A Prescription for Culture, The Devops Equation, <b>A History of Devops</b> , Developer as Operator, The Advent of Software Engineering, The Advent of Proprietary Software and Standardization, The Age of the Network, The Beginnings of a Global Community, The Age of Applications and the Web, The Growth of Software Development Methodologies, Open Source Software, Proprietary Services, Agile Infrastructure, The Beginning of devops days, The Current State of Devops.
<b>UNIT II</b>
<b>Foundational Terminology and Concepts</b> , Software Development Methodologies, Operations Methodologies, Systems Methodologies, Development, Release, and Deployment Concepts, Infrastructure Concepts, Cultural Concepts, <b>Devops Misconceptions and Anti-Patterns</b> , Common Devops Misconceptions, Devops Anti-Patterns, <b>The Four Pillars of Effective Devops</b> , Collaboration, Affinity, Tools, Scaling.
<b>UNIT III</b>
<b>Collaboration: Individuals Working Together</b> , Sparkle Corp Weekly Planning Meeting, Defining Collaboration, Individual Differences and Backgrounds, Opportunities for Competitive Advantage, Mentorship, Introducing Mindsets, Mindsets and Learning Organizations, The Role of Feedback, Reviews and Rankings, Communication and Conflict Resolution Styles, Empathy and Trust, Humane Staffing and Resources, Effective Collaboration with Sparkle Corp.

<b>UNIT IV</b>
<b>Affinity: From Individuals to Teams</b> , Sparkle Corp Development Demo Day, People Networks, What Makes a Team? Teams and Organizational Structure, Finding Common Ground Between Teams, Case Study: United States Patent and Trademark Office, Benefits of Improved Affinity, Requirements for Affinity, Measuring Affinity, Sparkle Corp Dev and Ops Affinity.
<b>UNIT V</b>
<b>Tools: Ecosystem Overview</b> , Software Development, Automation, Monitoring, Evolution of the Ecosystem, <b>Scaling: Inflection Points</b> , Understanding Scaling, Considering Enterprise Devops, Organizational Structure, Team Flexibility, Organizational Lifecycle, Complexity and Change, Scaling for Teams.
<b>TEACHING LEARNING PROCESS:</b> Chalk and Talk, power point presentation, animations, videos.

**COURSE OUTCOMES:** On completion of the course, student should be able to:

- CO1:** Establish a strong foundation for effective devops and clarify common misconceptions about devops.
- CO2:** Examine the collaboration process of building specific outcomes through the interactions, input, and support of multiple people.
- CO3:** Interpret and critically evaluate the relationship strength between individuals, teams, business units, and even companies.  
Determine appropriate tools for the process of programming, documenting, testing,
- CO4:** and fixing bugs in applications and services. Also, to evolve a landscape that can help to scale for future endeavors.

### TEXT BOOKS

1. Jennifer Davis and Katherine Daniels, **“Effective DevOps”**, 1<sup>st</sup> Edition, Shroff / O’Reilly Publications, 2021. (ISBN-13: 978-9352133765)

### REFERENCE BOOKS

1. Gene Kim, Jez Humble, Patrick Debois, John Willis, Nicole Forsgren, **“The Devops Handbook”**, 2<sup>nd</sup> Edition, It Revolution Press, 2021. (ISBN-13: 978-1950508402)

### ONLINE RESOURCES

1. Building the culture and collaboration layer for DevOps  
<https://www.youtube.com/watch?v=j0SMcK2Aouo>
2. Introduction to Affinity for Venture Capital  
<https://www.youtube.com/watch?v=n8SDv-w17Gc>
3. DevOps Pipeline  
<https://www.youtube.com/watch?v=DLIF9Gnyum4>
4. Starting and Scaling DevOps  
<https://www.youtube.com/watch?v=2iPfnIVNUCU>

**MAPPING of COs with POs**

	<b>PO1</b>	<b>PO2</b>	<b>PO3</b>	<b>PO4</b>	<b>PO5</b>	<b>PO6</b>	<b>PO7</b>	<b>PO8</b>	<b>PO9</b>	<b>PO10</b>	<b>PO11</b>	<b>PO12</b>
<b>CO1</b>	<b>3</b>	<b>1</b>	<b>2</b>	<b>1</b>	<b>3</b>	-	-	-	-	-	-	-
<b>CO2</b>	<b>3</b>	<b>3</b>	<b>3</b>	<b>2</b>	<b>3</b>	-	-	-	-	-	-	-
<b>CO3</b>	<b>3</b>	<b>3</b>	<b>3</b>	<b>2</b>	<b>3</b>	-	-	-	-	-	-	-
<b>CO4</b>	<b>3</b>	<b>3</b>	<b>3</b>	<b>3</b>	<b>3</b>							
<b>Strength of correlation:</b> Low-1, Medium- 2, High-3												

**Faculty In-Charge**

Dr. Gowrishankar S.