

Preamble The course facilitates the students to master the various concepts of C++ Programming Language and to demonstrate these concepts by implementing the solution for various kinds of real world problems **10**

Unit - I Object Oriented Programming Features

Introduction: Introduction to Object Oriented Programming -Features- Paradigm - Structure of C++ - Operators in C++ - Function Prototyping - Call by Reference - Inline Functions – Default and const Arguments - Function Overloading **10**

Unit - II Classes and Objects

Classes and Objects -Static Members - Array of Objects - Objects and Functions - Friendly Functions - Constructors and Destructors –Operator Overloading- Overloading Unary and Binary Operators **10**

Unit - III Inheritance and I/O streams

Inheritance: Types of Inheritance - Virtual Base class and Abstract class- virtual functions. **Files:** Writing Data- Reading Data into files. **Introduction to Templates and Exception handling**

List of Exercises / Experiments:

1. Programs using arrays and strings
2. Programs to implement the concept of call-by-value, call-by-reference and call-by-address.
3. Programs to implement function overloading
4. Programs to understand classes and objects
5. Programs using constructors and destructors
6. Programs to understand friend function & friend class
7. Programs to demonstrate the various forms of inheritance.
8. Programs using unary operator overloading.
9. Programs using binary operator overloading.
10. Programs to define the function templates and class templates
11. Programs to illustrate virtual function.
12. Programs using abstract class.

Lecture:30 Practical:20, Total: 50

REFERENCES:

1. Herbert Schildt, C++: The Complete Reference, 4th Edition, McGraw Hill, 2017
2. Balagurusamy E., Object Oriented Programming with C++, Seventh Edition, McGraw Hill, 2017.

COURSE OUTCOMES:

On completion of the course, the students will be able to

CO1	relate real world problems to classes and objects
CO2	apply data encapsulation and polymorphism to simple applications
CO3	use inheritance concept for code reusability
CO4	utilize the features of templates, exception and file handling mechanisms in real world problems

**BT Mapped
(Highest Level)**

Applying (K3),
Precision(S3)

Applying (K3),
Precision(S3)

Applying (K3),
Precision(S3)

Applying (K3),
Precision(S3)

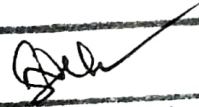
Mapping of COs with POs and PSOs

COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	2	2	2					1			2	2	2
CO2	3	2	2	2					1			2	2	2
CO3	3	2	2	2					1			2	2	2
CO4	3	2	2	2					1			2	2	2

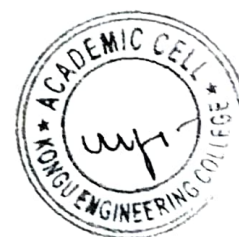
1 – Slight, 2 – Moderate, 3 – Substantial, BT- Bloom's Taxonomy

ASSESSMENT PATTERN

Test / Bloom's Category*	Remembering (K1) %	Understanding (K2) %	Applying (K3) %	Analyzing (K4) %	Evaluating (K5) %	Creating (K6) %	Total %
Written Test (25 Marks)	15	25	60				100
Practical (25 Marks)			100				100
Model Examination (50 Marks)	10	30	60				100


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20VC051 - INTRODUCTION TO DEVOPS TOOLS

L	T	P	Credit
2	0	1	2

Preamble This course explores the Fundamentals of DevOps tools and its development process

10

Unit - I Introduction

Jenkins: Jenkins overview_ Installation_ Jenkins dashboard. **Git plugin:** Git introduction_ Git plugin install_ Integrate Jenkins with GitHub_ **Manage permission:** User management_ Role strategy plugin_ **Jenkins freestyle project:** New project_ Freestyle project_ Jenkins pipeline_ pipeline overview_ Jenkins file_ create and run Jenkins pipeline_ CI / CD Pipeline_ Stages_ Best practices_ CI / CD Pipeline KPI.

10

Unit - II Docker and Kubernetes

Docker overview - Kubernetes overview - Kubernetes API resources - Provisioning Kubernetes through Cloud - Minikube overview - Application containerization using docker - Application deployment via Kubernetes.

10

Unit - III Helm Charts

Helm Charts Overview - Chartmuseum - Configuration files - YAML templating - Helm commands - Helm install - Inline Upgrade - Zero down time application deployment - Managing Helm charts in SCM

List of Exercises / Experiments:

1. Installation of Jenkins and Jenkins Dashboard Access
2. Git Plugin installation and Managing Repository using Git and Integration of Jenkins with GitHub
3. Creation of Users and Managing the Roles and Folders using DevOps Tools
4. Create a New project. Create a Free style Project.
5. Installation of Docker and Kubernetes
6. Sample Application development for user creation and deletion
7. Application containerization using Docker
8. Application Deployment via Kubernetes
9. Installation of Helm
10. Helm Deployment

Lecture:30 Practical:20, Total: 50

REFERENCES:

1. John Ferguson smart "Jenkins the Definitive Guide "published by Oreilly Media,2011.
2. Scott Surovich , Marc Boorshtein , "Kubernetes and Docker - An Enterprise Guide: Effectively containerize applications, integrate enterprise systems, and scale applications in your enterprise", 2nd Edition, Packt Publishing, 2021
- 3 <https://helm.sh/>

COURSE OUTCOMES:

On completion of the course, the students will be able to

- CO1 perform Jenkins Installation and configuration
- CO2 describe and apply knowledge on application containerization using Docker and Application deployment via Kubernetes
- CO3 experiment about Management of Helm charts in SCM
- CO4 create a Basic configuration Management & Create a new project and Manage it

**BT Mapped
(Highest Level)**

Applying (K3),
Precision(S3)

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Precision(S3)

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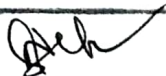
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CO3	3	2	2	2	2								2	2
CO4	3	2	2	2	2								2	2

1 – Slight, 2 – Moderate, 3 – Substantial, BT- Bloom's Taxonomy

ASSESSMENT PATTERN

Test / Bloom's Category*	Remembering (K1) %	Understanding (K2) %	Applying (K3) %	Analyzing (K4) %	Evaluating (K5) %	Creating (K6) %	Total %
Miniproject (50 Marks)			100				100
Model Examination Written Test (50 marks)	15	45	40				100



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S.L.T
(S. SAVITHA)



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Inheritance. Types of Inheritance - Virtual Base class and Abstract class - virtual functions - Files: Writing Data- Reading Data into files - Introduction to Templates and Exception handling

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(Highest Level)

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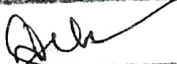
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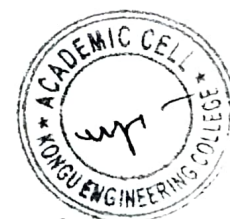
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Written Test (25 Marks)	15	25	60				100
Practical (25 Marks)			100				100
Model Examination (50 Marks)	10	30	60				100


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[Prof. Galavani]



L	T	P	Credit
2	0	1	2

Preamble To provide basic insights into the processing and recognizing images using OpenCV

10

Unit - I Basic Image Operations

Introduction to Computer Vision – Introduction to images – Basic image operations: creating new image – cropping – copying – resizing – masking. Arithmetic and logic operations on image - Accessing camera

10

Unit - II Image Analysis

Image Annotation – Image Enhancement and Filtering: color spaces – color transforms - image filtering – image smoothing – Edge detection - Image gradients

10

Unit - III Image Recognition

Image Features and Image alignment – Image stitching – image classification - Object detection – Face Recognition

List of Exercises / Experiments:

1. Installing OpenCV3 for Python 3 on Windows and reading and displaying images
2. Performing basic image operations
3. Performing arithmetic and logical Operations on Images
4. Drawing geometric shapes and image annotation
5. Displaying multiple Images with Matplotlib
6. Implementing image enhancement techniques
7. Implementing image filtering techniques
8. Demonstrating image features and Image alignment
9. Performing object detection
10. Developing a simple face recognition application

Lecture:30 Practical:20, Total: 50

REFERENCES:

1. Sandipan Dey, "Hands-On Image Processing with Python", 1st Edition, Packt Publishing, 2018
2. Robert Laganlère, "OpenCV 3 Computer Vision Application Programming Cookbook", 3rd Edition, Packt Publishing, 2017

COURSE OUTCOMES:

On completion of the course, the students will be able to

CO1 describe and apply different operations to the image

CO2 perform different annotation over images

CO3 apply different image enhancement and filtering techniques

CO4 develop simple object recognition applications

**BT Mapped
(Highest Level)**

Applying (K3),
Precision(S3)

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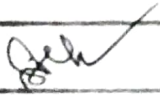
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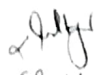
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CO4	3	2	1	1	1								3	1

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Written Test1 (25 marks)	20	40	40				100
Projects (25 marks)			100				100
Model Examination Written Test (50 marks)	10	40	50				100


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(S. Manjya)

