Course Title	**Virtual Systems and Services Lab**
Course Code	**DI-421L**
Credit Hours	1
Category	Domain Core
Prerequisite	CC-112: Programming Fundamentals
Co-Requisite	None
Follow-up	None
Course Description	**Virtualbox/VMware:** Installation and configuration with different flavors of Linux and Microsoft Windows OS on the top of Microsoft Windows. **C Compiler:** Installation and configuration in the virtual machine created using virtual box and execution of C Programs. **Google App Engine:** Installation and configuration. Creation of a "Hello World" app and other simple web applications using python/java. Use of GAE launcher to launch the web applications. CloudSim: Simulation of a cloud scenario and running of a scheduling algorithm that is not present in CloudSim. Transfer of files from one virtual machine to another virtual machine. Launch of a virtual machine using trystack (Online Openstack Demo Version). **Hadoop:** Installation and configuration of Hadoop node cluster and running a simple applications like word count. **Experimentation:** containers and virtual machines enabled cloud computing, DevOps, and cloud-native development. Container technology including concepts such as containers, Docker, and Kubernetes. Service deployment & usage over cloud. Management of cloud resources. Using existing cloud characteristics & service models. Cloud security management and performance evaluation of services over cloud.
Text Book(s)	1. Graham Charters, Sebastian Daschner, Pratik Patel, Steve Poole, Developing Open Cloud Native Microservices: Your Java Code in Action, 1st Edition, 2019. 2. Peter Späth, Beginning Java MVC 1.0: Model View Controller Development to Build Web, Cloud, and Microservices Applications, 1st Edition, 2021. 3. Rekha Kodali, Dr Gopala Krishna Behara, Sankara Narayanan Govindarajulu, Developing Cloud Native Applications in Azure using .NET Core: A Practitioner's Guide to Design, Develop and Deploy App, 2020.
Reference Material	