# DevOps Course Content

**INTRODUCTION TO DEVOPS**
- What is DevOps?
- History of DevOps
- Dev and Ops
- DevOps definitions
- DevOps and Software Development Life Cycle
- DevOps main objectives
- Infrastructure As A Code

**IaaS Overview**
**Paas Overview**
- DevOps on the Cloud
- Prerequisites for DevOps
- Introduction to Linux

- **Basics of UNIX and Linux Operating Systems**
- **Linux System administration introduction**
  - Tools (Jenkins, Chef, Docker, Vagrant and so on.)
  - Continuous Testing and Integration
  - Continuous Release and Deployment
  - Continuous Application Monitoring

**CLOUD COMPUTING and VIRTUALIZATION**
- History and evolution of cloud
- Cloud computing concepts
- Grid Computing vs. Cloud Computing
- Characteristics and Benefits of Cloud
- Cloud service models (NIST)
- IaaS, PaaS and SaaS
- Cloud service model implementations
- Cloud Deployment Models (NIST)
- Virtualization
- Virtual Machines
- Virtual bootable OS Images
- Cloud Storage
- SOA and Cloud
- Virtual Private Cloud (VPC)
- Risk in Cloud and DevOps security concerns
- Introduction to AWS and AZURE

**DEVOPS ADOPTION**
- **CRITERIA**
- Things to Look For and Avoid
- IT Assets Ownership
- Viewing Applications As Products, not Projects
- DevOps in the Enterprise
- IT Governance
- Governance and Risk Mitigation
- DevOps Adoption Steps
- Select DevOps Techniques and Practices
- Service Quality Metrics
  - **TOOLS**
- The Choice of Cloud Platform
- IaaS for DevOps
- PaaS for DevOps
- Containerization Tools
- System Configuration Automation and Management
- Continuous Integration (CI) Systems
- Build and Dependency Management Systems
- Select DevOps Tools
- Collaborative Lifecycle Management Solutions from IBM
- Rational Team Concert (RTC)
- Rational Quality Manager (RQM)
- Rational DOORS Next Generation (DNG)

**DEVOPS TOOLS: CHEF**
- Overview of Chef
- Common Chef Terminology (Server, Workstation, Client, Repository etc.)
- Servers and Nodes
- Chef Configuration Concepts
  - Workstation Setup
- How to configure knife
- Execute some commands to test connection between knife and workstation
  - Organization Setup
- Create organization
- Add yourself and node to organization
  - Test Node Setup
- Create a server and add to organization
- Check node details using knife
  - Databags
- How to create Databags
- Add Databags to organization
  - Node Objects and Search
- How to Add Run list to Node

- Check node Details
  - Environments
- How to create Environments
- Add servers to environments
  - Roles
- Create roles
- Add Roles to organization
  - Advanced Chef
- What is foodcritic and TestKichen
- Improve and expand on the existing recipes
- One-click system launching

**DEVOPS TOOLS: PUPPET**
- Introduction to Puppet
- Installation and Configuration of Master server and agents
- Managing Manifests
- Creating and Managing modules
- Version control with Puppet

**DEVOPS TOOLS: VAGRANT**
- Introduction
- What is Vagrant
- Uses of Vagrant in an environment
  - Installation and Configuration
- How to install Vagrant in Windows and Linux
- Configure Vagrant
  - Provisioning with Vagrant
- How to use Vagrant to create small virtual
- Add required Images to Vagrant
  - Using Vagrant
- Using Vagrant in Chef for Testing

**DEVOPS: SOURCE CODE MANAGEMENT**
- **GIT REPOSITORY**
- What is a version control system?
- What is a distributed version control system?
- Installation
- Different levels of Git configuration
- The process of staging and committing
- The details of the commit objects

**NEXUS**
- Nexus prerequisites
- Installing and Running Nexus
- Using the Nexus User Interface
**CONTINUOUS INTEGRATION**

**INTRODUCTION TO JENKINS-CI**
- Continuous Integration with Jenkins Overview
- Installation
- Configure Jenkins as stand-alone application
- Configure Jenkins on an Application Server
- Jenkins management
- Support for the Git version control systems
- Different types of Jenkins Jobs
- Setting up a Jenkins job
- Scheduling build Jobs
- Maven Build Scripts
- Securing Jenkins
  - Authentication
  - Authorization
  - Confidentiality
  - Creating users
- Jenkins Plugin
  - Installing Jenkins Plugins
  - SCM plugin
  - Build and test
  - Analyzers
- Distributed builds with Jenkins
- Best Practices for Jenkins

**DEVOPS: MONITORING**
- **NAGIOS**
- How to monitor the Servers in Nagios
- Trigger Alerts in Nagios
- How to apply blackouts and remove blackouts

**ZENOSS**
- How to monitor the Servers in Zenoss
- Trigger Alerts in Zenoss
- How to apply blackouts and remove blackouts
- How to check events; CPU, Memory and RAM Graphs for servers

**DEVOPS: APPLICATION ARCHITECTURE**
- Web Forms
- User Controls
- Shared UI Code
- Business Logic

**CONFIGURATION MANAGEMENT**
- Configuration Management Activity
- Configuration Control

- Incident Management
- Change Management
- Problem Management

**GENERAL ENVIRONMENT SETUP STEPS IN AWS and NTTA**
- Creating Servers and Networks in Cloud
- Setting up rules and Application
- Difficult Scenarios in environments.
- Scaling
- Environment testing
- Monitoring logs

**MISCELLANEOUS**
- Other Tools used in DevOps.
- Docker