IIT Roorkee

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IIT Roorkee

IntelliPaat

# ADVANCED CERTIFICATION IN CLOUD COMPUTING AND DEVOPS

Master Cloud Computing and DevOps skills and take your career to the next level!

1.2 Million
Learners

1:1 Personlized
Mentorship

55% Average
Salary Hike

## Advanced Certification in

# Cloud Computing and DevOps

This advanced certification by E&ICT, IIT Roorkee and Intellipaat gives you extensive training in the field of DevOps and Cloud. The training is led by industry experts and IIT Roorkee faculty to make you a master in cloud computing concepts, DevOps tools, AWS, virtualization, cloud security, etc., which will help you build a career in this domain.

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## Hottest **Job of 21st Century**

### 1.1 Million Job Postings
There is a global estimate of 1.1 million job postings for Cloud Computing and DevOps roles by 2022

### Skill Development
Cloud Computing and DevOps professionals are equipped with various relevant skills, fetching lucrative job offers

### Growing Cloud and DevOps Industry
35.5% CAGR in Indian Cloud Computing and DevOps industry

### Future-oriented Career
Cloud Computing and DevOps is a budding field; a head start will prove to be beneficial

### Popular Degree
43% of Cloud Computing and DevOps professionals have a Master's Degree

### High Demand
By 2022, India & US will face a demand supply gap of 460,000 Cloud Computing and DevOps professionals

## Our **Credentials**

**1.2 Million+**
Aspiring Active Students

**1,000+**
Industry-expert Instructors

**400+**
Hiring Partners

**200+**
Corporates Upskilled

**55%**
Average Salary Hike

**155+**
Countries' Learners



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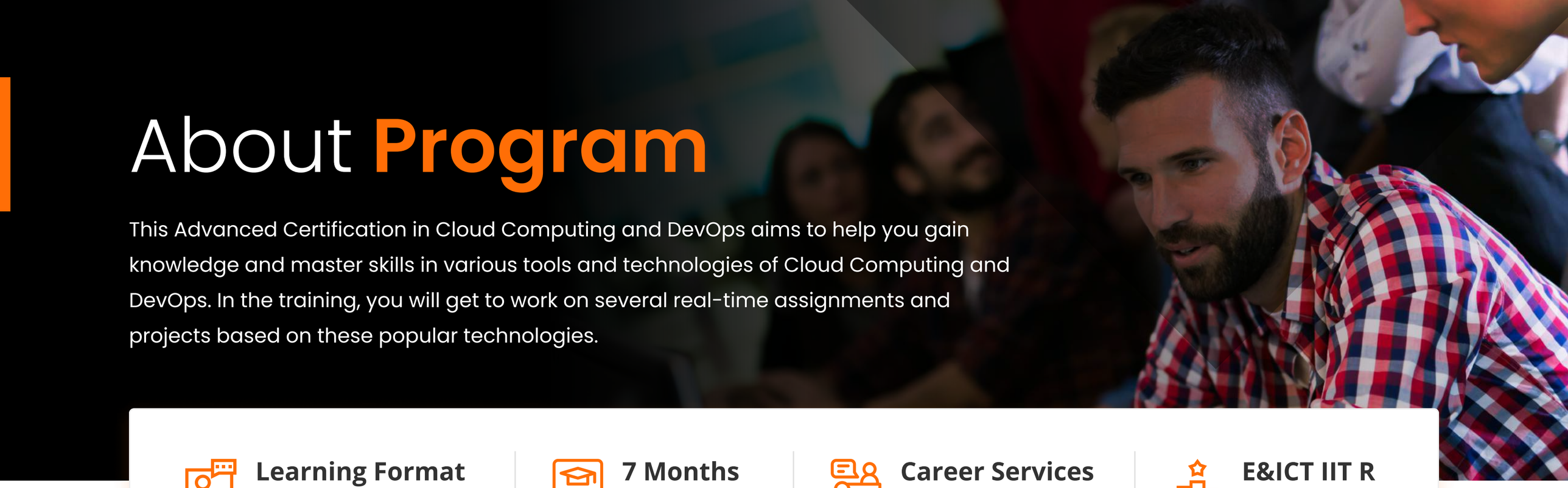
# About **Program**



This Advanced Certification in Cloud Computing and DevOps aims to help you gain knowledge and master skills in various tools and technologies of Cloud Computing and DevOps. In the training, you will get to work on several real-time assignments and projects based on these popular technologies.

**Learning Format**
Online

**7 Months**
Live Classes

**Career Services**
By Intellipaat

**E&ICT IIT R**
Certification

## Key **Highlights**

- 7 Months Live Classes
- 45+ Projects & Exercises
- Career Services by Intellipaat
- 1:1 Mentor Support by Intellipaat
- Soft Skills Essential Training
- Learn from IIT R Faculty & Industry Practitioners
- Advanced Certification by E&ICT, IIT Roorkee
- 24*7 Support by Intellipaat
- Designed for Working Professionals and Fresher's
- No-cost EMI

## Program **Pedagogy**

**Instructor-led Training**
Get trained by top industry experts

**Dedicated Learning Managers**
To help you with your learning needs

**Self-paced videos**
Learn at your own pace with world-class content

**Projects and Exercises**
Get real-world experience of projects

**Hackathons**
Get a sense of how real projects are built

**Peer Networking and Group Learning**
Improve your professional network and learn from peers

**Gamified Learning**
Get involved in group activities to solve real-world problems

**1:1 Personalized Learning**
Hands-on exercises, project work, quizzes, and capstone projects



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# Who Can **Apply for the Course?**

- Anyone with a bachelor's degree and an interest in advanced skills in DevOps and cloud
- Professionals who aim to make a career growth in the cloud architecture
- Those with a bachelor's degree in an IT field and want to transition to Cloud Computing
- Product Managers who wish to upskill themselves in DevOps and the cloud
- Developers wanting to learn how to use Cloud Computing applications and build platforms
- Freshers who aspire to build their career in the field of Cloud Computing and Devops

# Application **Process**

The application process consists of three simple steps. Candidates have to submit their application. An offer of admission will be made to the selected candidates, and their application will be accepted upon the payment of the admission fee.

1

**SUBMIT APPLICATION**

Tell us a bit about yourself and why you want to join

2

**ADMISSION TEST & APPLICATION REVIEW**

Clear the admission test and have a personal interview with our interview panel

3

**ADMISSION LETTER**

Shortlisted candidates would be offered the admission letter



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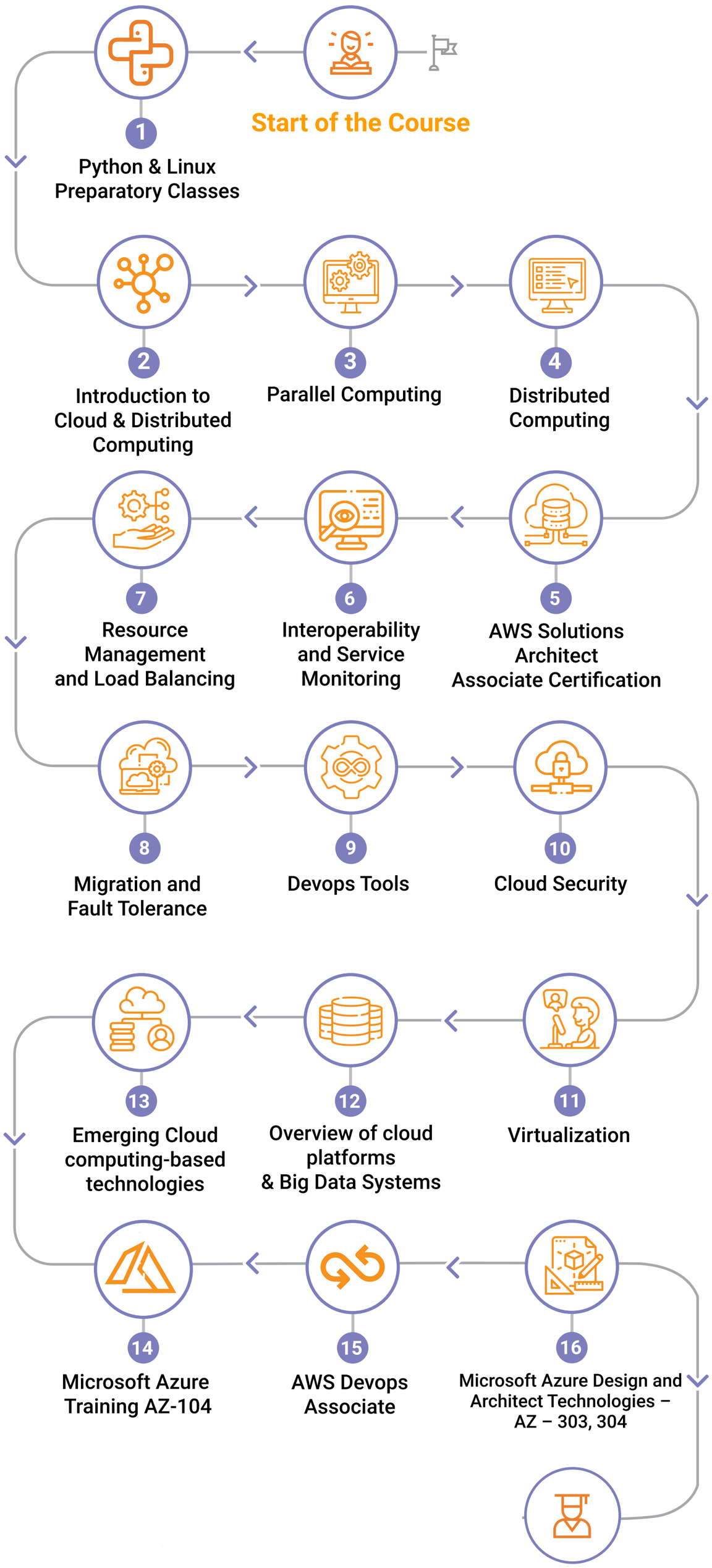
# Learning **Path**

## Live **Courses**

- Live Courses
- Self-paced



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# Program **Curriculum**

## Module 1

### Python and Linux Preparatory Classes

- Python & Linux Foundation
- Python Environment Setup and Essentials
- Python Language Basic Constructs
- Introduction to Linux and File Management

## Module 2

### Introduction to Cloud & Distributed Computing

- The Long-Term Vision of Cloud Computing
- What is Cloud Computing? Defining a cloud, Essential characteristics, a closer look to Cloud, The cloud computing reference model.
- Cloud Deployment Models, Characteristics and benefits, Challenges Ahead
- Historical developments, 1950s to 2020
- Core Technologies in Cloud Development: Distributed systems (Cluster Computing, Grid Computing and mainframe computing), Virtualization, Web 2.0, Service orientation, Utility computing.

## Module 3

### Parallel Computing

- Motivating Factor: Human Brain, The Need And Feasibility of Parallel Computing
- Moore's Law
- Elements of Parallel Computing: Factors affecting parallel system performance, Parallel Programming Models,
- Computational Power Improvement, Two Eras of Computing, Hardware architectures for parallel processing, Dependency Analysis & Conditions of Parallelism, Levels of Software Parallelism in Program Execution, Software Parallelism Types, Performance of Parallel Algorithms,
- Laws of cautions, The Goal of Parallel Processing, Amdahl's Law, Gustafson's Law, Communication Cost Model Demonstration for parallel application performance and its impacts

## Module 4

### Distributed Computing

- Distributed computing system, Characteristics, Goals, Components of a distributed system
- Architectural styles for distributed computing: Software architectural styles, System architectural styles, Client-server, peer to peer, Parallel vs Distributed Systems, RPC.

## Module 5

### AWS Solutions Architect Associate Certification

- INTRODUCTION TO CLOUD COMPUTING AND AWS
- ELASTIC COMPUTE AND STORAGE VOLUMES
- Load Balancing, Autoscaling and DNS
- Virtual Private Cloud
- Storage - Simple Storage Service (S3)
- Databases and In-Memory DataStores
- Management and Application Services
- Access Management and Monitoring Services
- Automation and Configuration management
- AWS Migration
- Architecting AWS – whitepaper
- DevOps on AWS
- Amazon FSx and Global Accelerator

## Module 6

### Interoperability and Service Monitoring

- Issues with interoperability
- Vendor lock-in
- Interoperability approaches
- SLA Management
- Metering Issues, and Report generation

## Module 7

### Resource Management and Load Balancing

- Distributed Management of Virtual Infrastructures
- Server consolidation
- Dynamic provisioning and resource management
- Resource Optimization, Resource dynamic reconfiguration
- Scheduling Techniques for Advance Reservation
- Capacity Management to meet SLA Requirements, and Load Balancing
- Various load balancing techniques

## Module 8

### Migration and Fault Tolerance

- Broad Aspects of Migration into Cloud
- Migration of virtual Machines and techniques
- Fault Tolerance Mechanisms

# Program **Curriculum**

## Module 9

### Devops Tools

- INFRASTRUCTURE SETUP – lab setup
- INTRODUCTION TO DEVOPS
- CONTINUOUS TESTING
- CONTINUOUS INTEGRATION USING JENKINS
- SOFTWARE VERSION CONTROL
- CONTINUOUS DEPLOYMENT: CONTAINERIZATION WITH DOCKER
- CONTAINERIZATION WITH DOCKER: ECOSYSTEM AND NETWORKING
- CONFIGURATION MANAGEMENT USING PUPPET
- CONFIGURATION MANAGEMENT USING ANSIBLE
- CONTINUOUS ORCHESTRATION USING KUBERNETES
- CONTINUOUS MONITORING USING NAGIOS
- TERRAFORM MODULES & WORKSPACES

## Module 10

### Cloud Security

- Infrastructure Security: Network level security, Host level security, Application-level security
- Data security and Storage: Data privacy and security Issues, Jurisdictional issues raised by Data location
- Identity & Access Management
- Access Control
- Trust, Reputation, Risk
- Authentication in cloud computing, Client access in cloud, Cloud contracting Model, Commercial and business considerations

## Module 11

### Virtualization

- What is Virtualization?
- Virtualization is not a new concept. Evolution of Virtualization.
- Type of Virtualization
- Server-based Virtualization
- Hypervisor-based Virtualization
- Type 1 v/s Type 2
- Full v/s Para
- Virtual machine lifecycle
- Virtual machine image: Structure, formats
- Virtual machine instance: Public cloud specific instance, allocating resources to virtual machine instance, networking in virtual machine, Amazon Machine Instance
- VM Application
- Container Based Virtualization
- Container lifecycle
- Container image : Structure, formats
- Container instance: Allocating resources to container instance
- Networking in containers
- Unikernels: Structure, formats, allocation, networking in Unikernels
- Difference between VM, Containers and Unikernels
- Network Function Virtualization (NFV) Type

## Module 12

### Overview of cloud platforms & Big Data Systems

- Open stack
- Google App Engine
- MapReduce and its extensions to Cloud Computing, HDFS, and GFS

## Module 13

### Emerging Cloud computing-based technologies

- Grid of Clouds, Green Cloud, Mobile Cloud Computing, Auctioning in cloud
- Fog, Mist computing
- Edge computing
- IoT
- Virtual Network Functions
- Software Defined Network (SDN) Integration Cloud, Fog, IoT SDN etc

## Module 14

### Microsoft Azure Training AZ-104

- Introduction to Microsoft Azure
- Introduction to ARM & Azure Storage
- Introduction to Azure storage
- Azure Virtual Machines
- Azure App and Container services
- Azure Networking - I
- Azure Networking - II
- Authentication and Authorization in Azure using RBAC
- Microsoft Azure Active Directory
- Azure Monitoring



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# Program **Curriculum**

## Module 15

### AWS Devops Associate

- Introduction to Cloud Computing & AWS
- Database services
- Object Storage
- Autoscaling and load balancing
- Virtual Private Cloud
- Application services, AWS Lambda and CLI
- IAM and monitoring
- Configuration management and automation
- Architecting AWS – whitepaper
- AWS Architect Questions
- AWS Migration
- AWS Security
- Infrastructure Setup
- Introduction to Devops
- Software Version Control
- Containerization using Docker - Part I
- Containerization using Docker - Part II
- Configuration Management using Puppet
- Configuration Management using Ansible
- Continuous Testing
- Continuous Integration using Jenkins
- Continuous Orchestration using Kubernetes
- Continuous Monitoring using Nagios
- DevOps on AWS
- Deploying Infrastructure with Terraform
- Terraform Modules & Workspaces

## Module 16

### Microsoft Azure Design and Architect Technologies – AZ – 303, 304

- Introduction to Microsoft Azure
- Introduction to ARM & Azure Storage
- Introduction to Azure storage
- Azure Virtual Machines
- Azure App and Container Services
- Azure Networking
- Azure Networking – II
- Authentication and Authorization in Azure using RBAC
- Microsoft Azure Active Directory
- Azure Monitoring
- Multi Factor Authentication (MFA)
- Migration in Azure
- Azure Data Platform – I
- Azure Data Platform – II

## Skills to Master

- Python
- Linux
- DevOps Tools
- AWS Cloud
- Azure Administration
- Azure Design & Architect Technologies
- Parallel Computing
- Distributed Computing
- Cloud Security
- Open stack
- Virtualization
- Load Balancing
- Fault Tolerance
- AWS DevOps

## Tools to Master



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# Course **Projects**

Projects cover the following industries:

Retail | Social Media | Supply Chain | Entrepreneurship | E-commerce | Banking | Healthcare | Insurance

Beginner

## Deploying a Multi-Tier Website on AWS

Use AWS services like EC2, ELB, Autoscaling, VPC. to create a reliable architecture to host a PHP website. Use SNS for sending mails for the website operations. Deploy the app in a Pvt. subnet and prevent the website from crashing.

Beginner

## Deploying a Website for High Availability

Design a highly available architecture that should automatically scale its servers up and down based on workload. Balance the load using ELB and the architecture should be decoupled to connect an RDS database with an EBE.

Beginner

## Sending Push Notifications to Patients

Design an architecture to send notifications to patients based on their doctor's feedback. Use SNS for sending messages and integrate EC2 with the SNS topic for message storing. Secure the EC2 instances using subnets

Intermediate

## Selenium for Creating Automated Test Cases

The learners are required to create automated test cases with Selenium. As an important part, the learners will also be required to create runnable jar files along with running headless tests in Chrome using Non-GUI Linux.

Intermediate

## Installing WordPress on CentOS

Create an account on WordPress as a part of the project, using Flush Privileges to flush its database. Also, learn to successfully install a PHP module. Learners can get the package from the default repositories of CentOS directly.

Intermediate

## Analyzing Customer Churn Dataset

The project provides real-time experience in one of the scenarios of the Telecom industry. Use Data Science and data visualization to perform real-time analysis on the reliability of the employees of the Telecom industry.

Advance

## Autoscaling Compute Capacity in AWS

Autoscale (Scaling up and down automatically) and load balance among multiple EC2 instances within AWS based on varied/defined metrics for autoscaling instances. Also, the project deals with routing custom domains to AWS resources.

Advance

## Creating Custom VPCs in AWS

In the project, the candidates will create a custom VPC in AWS with the help of subnets having both private as well as public access. The route tables are also configured to subnets using the internet and NAT Gateways.

Advance

## Using AWS S3 for Lifecycle Access Management

The project deals with moving artifacts from on-premise to S3 in the most cost-efficient manner. It also deals with the creation of Lifecycle rules for events in S3 objects, hosting a static website, and experimenting with route 53

Advance

## Analyze Naming Trends

This project involves the analysis of naming trends using Python. Also, use the Python programming language to understand the applications of data manipulation, extract files with data, and concepts of data visualization.



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# Course **Advisors / Faculty**

## Dr. Neetesh Kumar

**Assistant Professor, IIT Roorkee**

Currently designated as an Associate Professor at IIT Roorkee since 2015, Dr. Neetesh carries extensive expertise and research interests in High performance computing, Cloud computing, soft and parallel computing and more.

## Dr. Devki Nandan Jha

**Post- Doctoral Research Associate, Oxford University**

Dr.Devki carries extensive experience in Cloud computing. He has a proven record in designing and developing multiple IOT simulators. His research interests include Cloud platforms, IOT, Optimization techniques and more.

## Dr. Sanjeev Manhas

**Professor- ECE Department, IIT Roorkee**

Dr.Manhas is a professor in the ECE dept. of IIT Roorkee and has been associated with it since 2008. His areas of research interest include Machine Learning and in-memory computing, semiconductor memories, IoT, sensors and more.

## Birendra Kumar Sahu

**Head of Data Engineering and Science at Razorpay**

In his 15+ years of IT experience, he has achieved excellence and was appointed as the CTO & VP-Engineering for a Big Data patent pending product. He has contributed to 85 intellectual disclosure reports, 4 USA patents, 4 orange books, articles & papers.

## Suman Mukhopadhyay

**Senior Director & Head of Technology Infrastructure / Cloud at EdgeVerve**

He has 23 yrs of experience in IT. Suman worked at top MNCs like Wipro, AT&T, Yahoo, Walmart etc. Skilled in Leadership, IT Budget Ownership, Incident management, Hadoop Solution and Design and managing teams across various geographies.

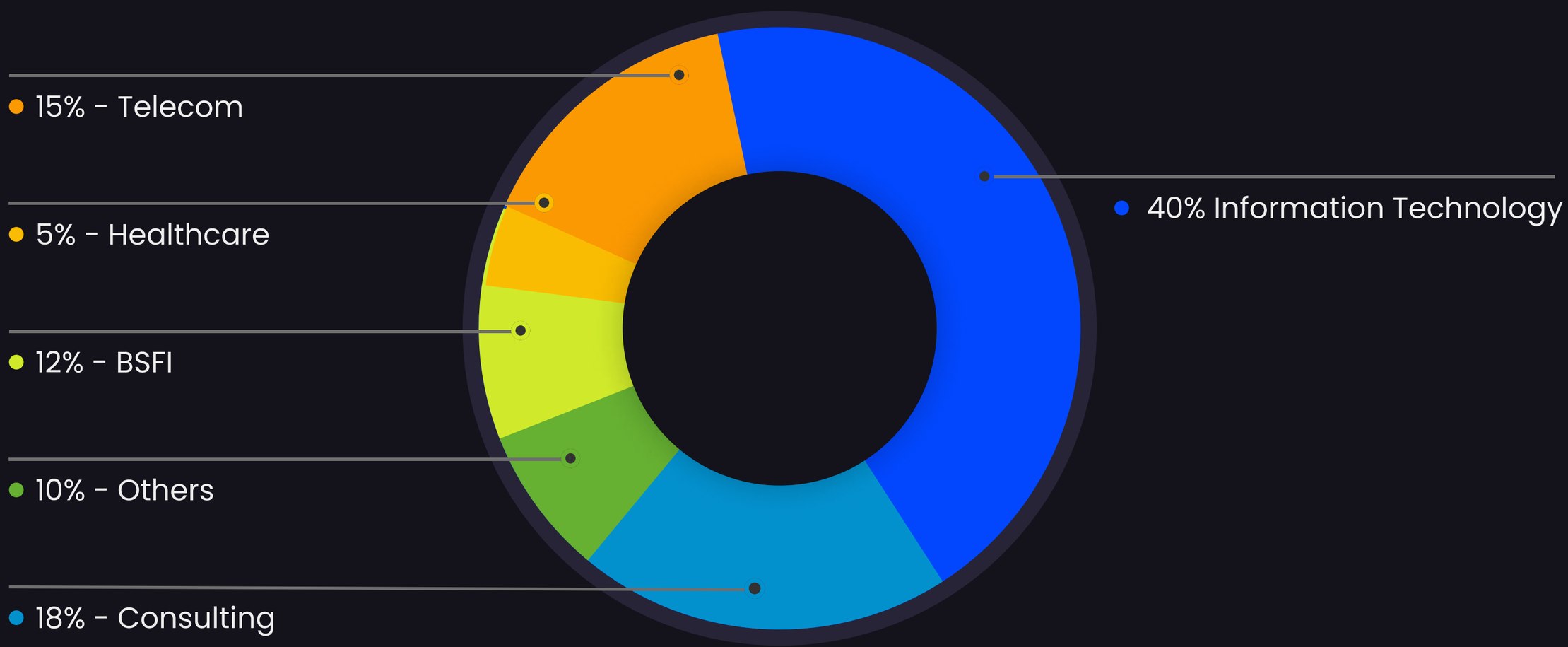
## Muthusamy Manigandan

**Head Engineering, Amazon India**

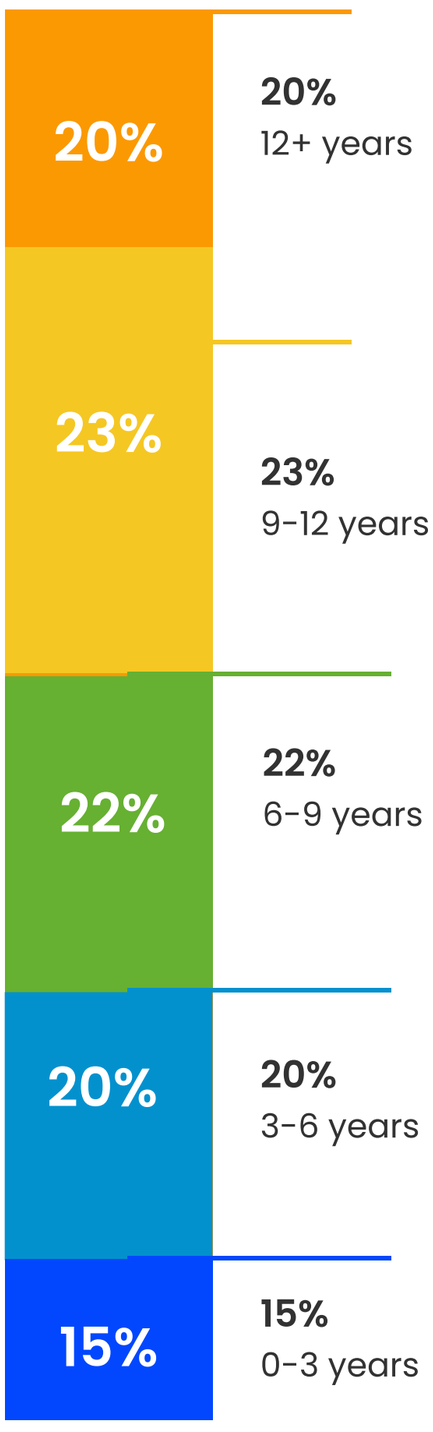
Manigandan has 16+ years of experience in cloud projects for Fortune 500 companies. He comes with a strong background in architecture and implementation of AWS, Azure, GCP, along with a hands-on experience in DevOps tools.

# Meet the **Batch**

## Industries Our Learners Come From




# Work **Experience**




Some of their current employers include

amazon | citi | Capgemini | BOSCH | pwc | EY | accenture | Adobe | TATA CONSULTANCY SERVICES | vmware | Abbott | DELL



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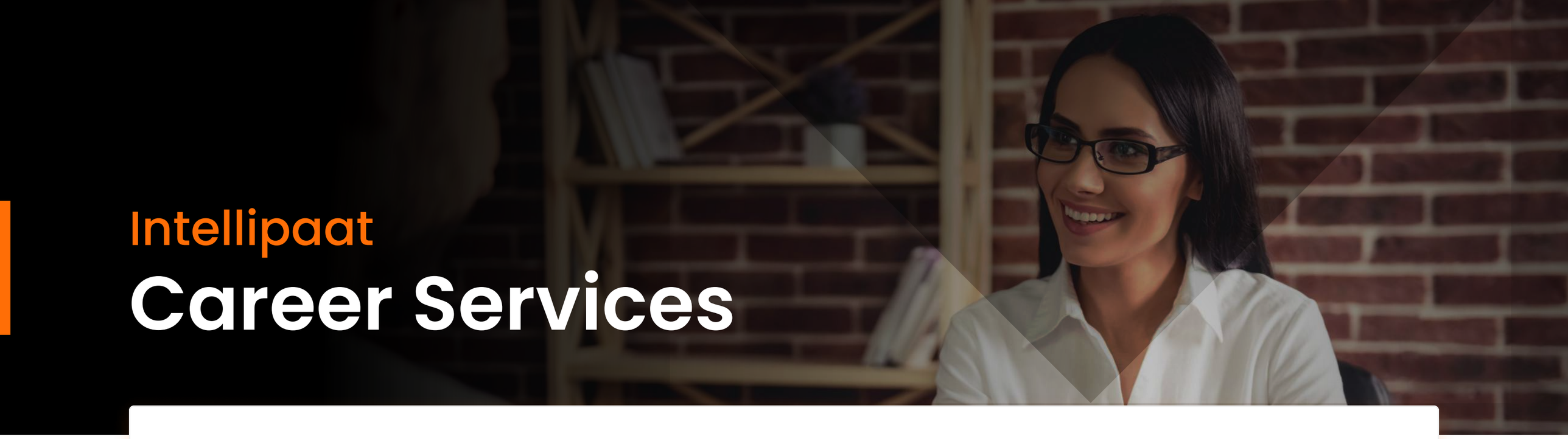

Intellipaat

# Career Services

**500+** Webinars

**600+** Job Shares

**400+** Hiring Partners

**55%** Avg. Salary Hike

## What Makes Us **Tick**

### Career-oriented Sessions

Attend 25+ career-oriented sessions by industry mentors and prepare your career trajectory

### Minimum 3 guaranteed interviews

Get job interviews with 400+ hiring partners including promising startups and top MNCs

### Profile Building

Craft a Cloud Computing and DevOps resume and LinkedIn profile to make an impression on top employers

### Dedicated Job Portal Access

Get exclusive access to 200 job postings per month on Intellipaat's job portal

### Mock Interview Preparation

Prepare with mock interviews including most asked questions by top employers

### Job Fairs

Job fairs are conducted regularly to introduce learners to major organizations

### 1:1 Mentoring Sessions

Get 1:1 guidance at every step in your career transition to Cloud Computing and DevOps

### Hackathons

Work in teams and get exclusive access to hackathons

## Learner **Reviews**

**Asheesh Kumar**
Cloud Engineer at To The New

Intellipaat provided a vision to secure my future with emerging technology. Now, I can proudly say that I have transitioned my career from an Analyst to Cloud Operations Engineer with a 200% salary hike.

**Abhishek Chaudhary**
DevOps Engineer at Highlands

I have made my career transition from Technical Associate to DevOps Engineer with a 100% salary hike within just 3 months of the training. This was possible only because of Intellipaat's trainers and support.

**Abhinav Ghai**
DevOps Engineer at PC Plus Technology

Intellipaat course is structured in such a way that it covers from basics to advanced level and includes PPTs, assignments, projects, etc which gives you in-depth knowledge. I absolutely loved it.

Glimpse of our

# Successful Transitions

Trustpilot 4.6

sitejabber 4.5

MOUTHSHUT.com 4.38

## Career **Transitions**

**Nikhil YN**
Cloud Engineer

From **Junior GCP Engineer**

To **Senior Cloud Engineer**

ciber

**Nitin Goyal**
DevOps Engineer (MCMS-MSCP)

From **System Engineer**

To **DevOps Engineer (MCMS-MSCP)**

IBM

**Anil Sharma**
Cloud Architect Associate

From **Customer Service Associate**

To **Cloud Architect Associate**

LOCUZ

**Krishnamohan**
Consultant Engineer

From **Software Engineer**

To **Consultant Engineer**

**Herin Wilson**
AWS Solution Architect

From **Process Associate**

To **Information Technology Associate**

LOCUZ

**Mohit Khas**
Azure Technical Lead

From **Consultant**

To **Azure Technical Lead**

**Somika Simlote**
Senior Software Engineering Lead

From **Technology Project Lead**

To **Senior Software Engineering Lead**

**Devendra Joshi**
Sr. DevOps Engineer

From **Sr. System Administrator Linux & AWS**

To **Sr. DevOps Engineer and AWS Lead**

# Program **Partners**

## About **Intellipaat**

**Intellipaat** is one of the leading online training providers with more than 1.2 million learners in over 155 countries. We are on a mission to democratize education as we believe that everyone has the right to quality education.

We create courses in collaboration with top universities and MNCs for employability like IIT Madras, University of Essex, University of Liverpool, IIT Roorkee, IIT Guwahati, SPJIMR, IBM, Microsoft, etc.

Our courses are delivered by SMEs & our pedagogy enables quick learning of difficult topics. 24/7 technical support & career services help learners to jump-start their careers.

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## About **E&ICT, IIT Roorkee**

This Advanced Certification in Cloud Computing and DevOps by E&ICT IIT Roorkee is an online course which is taught by faculty from IIT Roorkee who have expert knowledge of the curriculum and the industry demands. They aim to provide quality learning to professionals who wish to build a career in this field.

### Achievements – IIT Roorkee:

- 6th in the NIRF Rankings' Engineering Category in 2020
- 9th in the NIRF Rankings' Overall Category in 2020
- 1st among the IITs in QS World University Rankings 2021, under the parameter 'Citations per Faculty
- 3rd best university in India as per the Higher Education World University Rankings 2019 by the Times

### Upon the completion of this program, you will:

- Receive certificate from E&ICT, IIT Roorkee

**1.2 Million** Learners & 200+ Corporates across 155+ countries upskilling on Intellipaat Platform

# Contact Us


**INDIA**

AMR Tech Park 3, Ground Floor, Tower B, Hongasandra Village,
Bommanahalli, Hosur Road, Bangalore, Karnataka 560068, India
Phone No: +91-7022374614

**UK**

Flat 16 Bluepoint Court, 203 Station Road, Harrow,
Middlesex HA1 2TS, UK

**USA**

1219 E. Hillsdale Blvd. Suite 205, Foster City, CA 94404
Phone No: 1-800-216-8930

sales@intellipaat.com

www.intellipaat.com