UNIVERSIDADE FEDERAL DE UBERLÂNDIA

FICHA DE COMPONENTE CURRICULAR

CÓDIGO: FEELT39040C	COMPONENTE CURRICULAR: TÓPICOS EM ENGENHARIA DA COMPUTAÇÃO: CLOUD COMPUTING ARCHITECTURE AWS	
UNIDADE ACADÊMICA OFERTANTE: FACULDADE DE ENGENHARIA ELÉTRICA		**SIGLA**: FEELT
CH TOTAL TEÓRICA: 30 horas	**CH TOTAL PRÁTICA:** 15 horas	**CH TOTAL:** 45 horas

OBJETIVOS

The course is designed to teach solutions architects how to optimize the use of the AWS Cloud by understanding AWS services and how these services fit into cloud-based solutions. Because architectural solutions can differ depending on industry, type of applications, and size of business, this course emphasizes best practices for the AWS Cloud, and it recommends various design patterns to help you think through the process of architecting optimal IT solutions on AWS. It also presents case studies throughout the course, which showcase how some AWS customers have designed their infrastructures, and the strategies and services that they implemented. Finally, this course also provides opportunities to build a variety of infrastructures via a guided, hands-on approach.

EMENTA

Cloud Concepts Overview;; AWS Global Infrastructure Overview; AWS Cloud Security; Networking and Content Delivery; Compute Services Overview; Storage; Databases; Cloud Architecture; Auto Scaling and Monitoring; Caching contente; Microservices and Serverless Architecture; Planning for disaster.

PROGRAMA

Module 1 - Introducing Cloud Architecting
● Introducing Cloud Architecting
● The AWS Well Architected Framework
● Best Practices for Building Solutions on AWS
● AWS Global Infrastructure

Module 2 - Adding a Storage Layer
● Adding a Storage Layer
● Using Amazon S3
● Hosting a Static Website
● Storing Data in Amazon S3

- Moving Data to and from Amazon S3
- Amazon S3 Transfer Acceleration
- Choosing Regions for your Architecture

Module 3 - Adding a Compute Layer
- Adding a Compute Layer
- Adding Compute with Amazon EC2
- Choosing an AMI to Launch an EC2 Instance
- Using User Data to Configure an EC2 Instance
- Adding Storage to an Amazon EC2 Instance
- Introducing Amazon Elastic File System (Amazon EFS)
- Amazon EC2 Pricing Options
- Reviewing the Spot Instance History Page
- Amazon EC2 Considerations
- Creating a Dynamic Website for the Cafe

Module 4 - Adding a Database Layer
- Adding a Database Layer
- Amazon RDS
- RDS Automated Backup and Read Replicas
- Amazon DynamoDB
- Database Security Controls
- Database Security Controls
- Migrating Data into AWS Databases
- Migrating a Database to Amazon RDS

Module 5 - Creating a Networking Environment
- Creating a Networking Environment
- Creating an AWS Networking Environment
- Connecting your AWS Networking Environment to the Internet
- Creating a VPC Using the AWS Console
- Creating a VPC Using the AWS CLI
- Securing your AWS Networking Environment
- Creating a Virtual Private Cloud
- Creating a VPC Networking Environment for the Cafe

Module 6 - Connecting Networks
- Connecting Networks
- Connecting to your Remote Network with AWS Site-to-Site VPN
- Connecting to your Remote Network with AWS Direct Connect
- Connecting VPCs in AWS with VPC Peering
- Creating a VPC Peering Connection
- Scaling your VPC Network with AWS Transit Gateway
- Connecting your VPC to Supported AWS Services

Module 7 - Securing User and Application Access
- Securing User and Application Access
- Account Users and IAM
- Federating Users
- Demo EC2 Instance Profile
- Controlling AWS Account Access by Using IAM

Module 8 - Implementing Elasticity, High Availability, and Monitoring
- Implementing Elasticity, High Availability, and Monitoring
- Scaling your Compute Resources

- Creating Scaling Policies for Amazon EC2 Auto Scaling
- Scaling your Databases
- Designing an Environment that's Highly Available
- Creating a Highly Available Web Application
- Amazon Route53
- Creating a Highly Available Environment
- Creating a Scalable and Highly Available Environment for the Café

Module 9 - Automating Your Architecture
- Automating Your Architecture
- Analyzing AWS CloudFormation Template Structure
- Analyzing AWS CloudFormation Template Structure
- Automating Infrastructure Deployment with AWS CloudFormation
- Automating Deployments
- AWS Elastic Beanstalk
- Automating Infrastructure Deployment

Module 10 - Caching Content
- Caching Content
- Edge Caching
- Streaming Dynamic Content using Amazon CloudFront
- Caching Web Sessions
- Caching Databases

Module 11 - Building Decoupled Architectures
- Building Decoupled Architectures
- Decoupling Your Architecture
- Decoupling with Amazon SQS
- Decoupling with Amazon SNS
- Sending Messages Between Cloud Applications and On-Premises with Amazon MQ

Module 12 - Building Microservices and Serverless Architectures
- Building Microservices and Serverless Architectures
- Introducing Microservices
- Building Microservice Applications with AWS Container Services
- Introducing Serverless Architectures
- Building Serverless Architectures with AWS Lambda
- Creating an AWS Lambda Function
- Using AWS Lambda with Amazon S3
- Implementing a Serverless Architecture with AWS Lambda
- Extending Serverless Architectures with Amazon API Gateway
- Orchestrating Microservices with AWS Step Functions
- Implementing a Serverless Architecture for the Cafe

Module 13 - Planning for Disaster
- Planning for Disaster
- Disaster Planning Strategies
- Disaster Recovery Patterns
- Hybrid Storage and Data Migration with AWS Storage Gateway File Gateway

BIBLIOGRAFIA BÁSICA

1. BAUER, Eric. **Reliability and availability of cloud computing**. Hoboken: Wiley-IEEE Press, 2012. 1 ebook.
2. BUYYA, Rajkumar; BROBERG, James; GOSCINSKI; Andrzej (Ed.). **Cloud computing: principles and paradigms**. Hoboken: J. Wiley, c2011.
3. SOSINSKY, Barrie A. **Cloud computing bible**. Indianapolis: J. Wiley, c2011.

BIBLIOGRAFIA COMPLEMENTAR

1. BAUER, Eric. **Service quality of cloud-based applications**. Hoboken: Wiley: IEEE Computer Society, c2014. 1 ebook.
2. ROSENBERG, Jonathan B. **The cloud at your service: the when, how, and why of enterprise cloud computing.** Greenwich: Manning, c2011.
3. **NEW network architectures: the path to the future Internet**. Berlin: Springer, c2010.
4. FOWLER, Susan J. **Microsserviços prontos para a produção**. 1. ed. Editora Novatec.
5. LECHETA, Ricardo R. **AWS para desenvolvedores.** Editora Novatec, 1ª edição. ISBN 978-8575223932. 2014.

APROVAÇÃO

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Carimbo e assinatura do Coordenador do Curso

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Carimbo e assinatura do Diretor da Unidade Acadêmica