SYLLABUS FOR BOARD OF STUDIES ADOPTION — generated from the live catalogue record

Cloud-Native Application Architecture

S-11B · 3 days (configurable 1–5 days) · Informatics · Cloud · Years: 2nd, 3rd, PG

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OVERVIEW

Microservices, API gateways, observability and a cloud-native reference implementation.

Cloud-native patterns are how modern systems are built; students who understand microservices and observability design more resilient, scalable software.

HOURS AND CREDIT POSITION

Contact hours: 24 Guided project: 6 Self-study: 0 Notional total: 30

Credit claim: 1
30 notional hours ÷ 30 hours per credit (NSQF track, UGC Micro-credentials Guidelines §5.3.3) = 1 credits.

COURSE OUTCOMES

CO1. Explain the principles of a twelve-factor cloud-native application (K2)
CO2. Decompose a monolith into microservice boundaries (K4)
CO3. Configure an API gateway for routing and rate limiting (K3)
CO4. Apply resilience patterns to a service (K3)
CO5. Instrument a service for observability (K3)

COURSE CONTENT — MODULES

Hours shown are the recommended format; module time scales proportionally when the engagement runs 1–5 days.

Module 1 — Cloud-native foundations (4h recommended)
Theory: The twelve-factor app, cloud-native principles
Lab: Assess an app against twelve-factor
Output: Assessment checklist

Module 2 — Microservices (4h recommended)
Theory: Decomposition, boundaries, communication
Lab: Decompose a monolith into services
Output: Service boundary map

Module 3 — API gateways (4h recommended)
Theory: Routing, rate limiting, edge authentication
Lab: Configure an API gateway
Output: Gateway configuration

Module 4 — Resilience (4h recommended)
Theory: Retries, circuit breakers, graceful degradation
Lab: Add resilience patterns to a service
Output: Resilient service

Module 5 — Observability (4h recommended)
Theory: Logging, metrics, tracing
Lab: Instrument a service for observability
Output: Instrumented service

Module 6 — Reference capstone (4h recommended)
Theory: A cloud-native reference implementation
Lab: Assemble the reference implementation
Output: Reference implementation

ASSESSMENT SCHEME (100 MARKS)

Continuous lab exercises — 40 marks
Capstone project & demonstration — 40 marks
Quiz & viva voce — 20 marks

CO–PO MAPPING

CO1 !' PO1 (strength 2)
Twelve-factor principles are foundational knowledge.

CO2 !’ PO2 (strength 2)
Service decomposition is problem analysis.
CO3 !’ PO5 (strength 2)
The API gateway is a modern tool.
CO4 !’ PO3 (strength 2)
Resilience patterns are solution development.
CO5 !’ PO5 (strength 2)
Observability tooling is modern-tool usage.

EVERY PARTICIPANT RECEIVES

- Certificate of completion
- Course material
- LMS access
- Interview question bank
- Mock interview & viva practice
- Optional nasscom NSQF assessment (priced per candidate on your quotation)

FEE

¹850 per student, incl. GST
Excludes the optional nasscom assessment where offered. Final pricing on your college's quotation.

DESIGNED BY

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