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

Generative AI Application Development — RAG and Fine-Tuning

S-10B · 5 days (configurable 1–5 days) · Informatics · AI · Years: 3rd, PG

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OVERVIEW

Vector databases, retrieval-augmented generation, evaluation and a deployed GenAI application.

Generative AI is reshaping software; students who can build retrieval-augmented and fine-tuned applications hold one of the most sought-after current skill sets.

HOURS AND CREDIT POSITION

Contact hours: 40 Guided project: 20 Self-study: 0 Notional total: 60

Credit claim: 2

60 notional hours ÷ 30 hours per credit (NSQF track, UGC Micro-credentials Guidelines §5.3.3) = 2 credits.

COURSE OUTCOMES

CO1. Explain how retrieval-augmented generation grounds an LLM's answers (K2)

CO2. Build a vector database and retrieval step over a document set (K3)

CO3. Implement a retrieval-augmented application with citations (K3)

CO4. Evaluate a generative-AI application for relevance and hallucination (K4)

CO5. Deploy a generative-AI application and justify its design choices (K5)

COURSE CONTENT — MODULES

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

Module 1 — LLM foundations (5h recommended)

Theory: Capabilities, limits, the application landscape

Lab: Probe an LLM's behaviour and limits

Output: Behaviour log

Module 2 — Prompt and context engineering (5h recommended)

Theory: Patterns, structured output, guardrails

Lab: Engineer prompts for reliable output

Output: Prompt library

Module 3 — Embeddings and vector databases (5h recommended)

Theory: Chunking, indexing, similarity search

Lab: Index a corpus in a vector database

Output: Vector index

Module 4 — Retrieval-augmented generation (5h recommended)

Theory: Grounding answers, citations

Lab: Build a RAG pipeline with citations

Output: RAG pipeline

Module 5 — Evaluation (5h recommended)

Theory: Relevance, faithfulness, hallucination

Lab: Evaluate the RAG application

Output: Evaluation report

Module 6 — Fine-tuning (5h recommended)

Theory: When and how to fine-tune, dataset preparation

Lab: Prepare data and fine-tune a model

Output: Fine-tuned model

Module 7 — Orchestration (5h recommended)

Theory: Chaining, tools, agents

Lab: Orchestrate a multi-step flow

Output: Orchestrated flow

Module 8 — Capstone (5h recommended)

Theory: A deployed GenAI application with evaluation

Lab: Ship and evaluate the capstone

Output: Deployed GenAI application

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)

Retrieval grounding is foundational GenAI knowledge.

CO2 !' PO3 (strength 2)

Building retrieval is solution development.

CO3 !' PO3 (strength 2)

A cited RAG app is a developed solution.

CO4 !' PO4 (strength 2)

Evaluating for hallucination is investigation.

CO5 !' PO10 (strength 2)

Justifying design choices is technical communication.

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

13,200 per student, incl. GST

Excludes the optional nasscom assessment where offered. Final pricing on your college's quotation.

DESIGNED BY

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