

Project Plan: Abdullah's Course Enrollment & Grade Management System

Overall Start Date: May 13, 2025

Estimated Full Completion: September 7, 2025 (17 weeks, 119 days)

PHASE 1 — PLAN FINALIZATION & INITIALIZATION (May 13–16)

Goals:

- Finalize architectural blueprint
- Set up GitHub repo and branch structure
- Establish dev/staging/prod environment separation
- Write `PROJECT_PLAN.pdf`, `GOALS_AND_ROADMAP.md`

Output:

- Branches: `dev`, `staging`, `main`
 - Docs: `docs/dev`, `docs/staging`, `docs/prod`
 - CI stubs for all 3 environments
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PHASE 2 — DEV ENVIRONMENT BUILD (May 17 – June 7)

Tech Stack:

- Java 21
- Spring Boot
- H2 (in-memory) or local PostgreSQL
- Maven or Gradle
- JUnit, Mockito
- React or Vue + Vite
- Axios
- GitHub Actions CI
- Docker (optional: Docker Compose)
- Local shell scripts: `dev.sh`, `reset-db.sh`

Milestones:

- May 17–24: Backend REST API (Spring Boot)
- May 25–30: Frontend integration (React or Vue)
- May 31–June 4: Unit testing + frontend API communication
- June 5–7: Final dev polish, doc update

PHASE 3 — STAGING / QA ENVIRONMENT BUILD (June 8 – July 1)

Tech Stack:

- Dockerized Spring Boot

- Dockerized Frontend
- AWS RDS (PostgreSQL – staging instance)
- GitHub Actions staging CI/CD
- Playwright or Cypress for E2E
- Shell scripts: `startup.sh`, `deploy.sh`
- Terraform for EC2 + DB provisioning
- Vault or GitHub Secrets for config mgmt

Milestones:

- June 8–14: Staging infra setup (Terraform)
- June 15–19: Docker images & CI/CD runs
- June 20–27: E2E scripts and auto-test design
- June 28–July 1: Functional QA testing and validation

PHASE 4 — PRODUCTION ENVIRONMENT BUILD (July 2 – August 1)

Tech Stack:

- Spring Boot container (on EC2)
- React/Vue app (on separate EC2 or S3 + CloudFront)
- Amazon RDS (PostgreSQL – prod)
- Vault or AWS SSM (secrets)
- Terraform

- GitHub Actions CD
- TLS: Certbot + NGINX
- DNS: DuckDNS (or custom domain)
- Optional: K8s (EKS or minikube for local showcase)

Milestones:

- July 2–10: Infrastructure config + EIP + DNS masking
- July 11–18: TLS setup, secrets resolution
- July 19–26: Container deployment + app validation
- July 27–Aug 1: Production walkthrough, doc update

PHASE 5 — DOCUMENTATION & QUALITY PASS (August 2 – August 16)

Outputs:

- `/docs/dev`, `/docs/staging`, `/docs/prod`
 - `ERRORS_AND_LIMITATIONS.md`
 - `EDGE_CASES.md`
 - `SPRINT_LOG.md`, `RETROS.md`
 - `infra-diagram.jpg/png` (hand-drawn and digital)
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PHASE 6 — FINAL AUDIT & DEMO READINESS (August 17 – September 7)

- Conduct internal review of all 3 environments
 - Final deployment dry run (dev → staging → prod)
 - Showcase for resume, GitHub, and LinkedIn
 - Optional: add monitoring, logging (e.g., Prometheus/Grafana, Loki)
 - Wrap-up notes and postmortem
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Overall Timeline Summary

Phase	Date Range	Duration
Plan & Setup	May 13 – May 16	4 days
Dev Env	May 17 – June 7	3 weeks
Staging QA	June 8 – July 1	3 weeks
Production	July 2 – August 1	1 month
Docs & Polishing	August 2 – August 16	2 weeks
Final Audit & Diagram	August 17 – Sept 7	3 weeks
Total Duration	May 13 – Sept 7	17 weeks