

Week 2–3 — Measure Definitions

Student Performance & Engagement Analytics (OULAD) — Star Schema Measures

| Measure | Business definition | DAX (Power BI) |
|------------------------------------|--|---|
| Avg Score (Weighted) | Average weighted score (0–100) per student-course. | Avg Score = AVERAGE('fact_student_course'[weighted_avg_score]) |
| Average GPA (4.0) | Simple GPA conversion from Avg Score. | Average GPA = DIVIDE([Avg Score], 25) |
| Pass Rate (%) | Share of student-course records with pass_flag = TRUE. | Pass Rate % = DIVIDE(CALCULATE(COUNTROWS('fact_student_course'), 'fact_student_course'[pass_flag] = TRUE()), COUNTROWS('fact_student_course')) |
| Failure Rate (%) | Share of student-course records that did not pass. | Failure Rate % = 1 - [Pass Rate %] |
| Engagement Score (Avg) | Average engagement_score (clicks + activity intensity). | Avg Engagement = AVERAGE('fact_student_course'[engagement_score]) |
| At-Risk Student (%) | Share of student-course records flagged at_risk_flag = TRUE. | At-Risk % = DIVIDE(CALCULATE(COUNTROWS('fact_student_course'), 'fact_student_course'[at_risk_flag] = TRUE()), COUNTROWS('fact_student_course')) |
| Attendance Rate (%) — Proxy | Proxy attendance based on LMS active days vs course length. | Attendance % (Proxy) = DIVIDE(AVERAGE('fact_student_course'[active_days]), AVERAGE('dim_courses'[module_presentation_length])) |
| MoM Δ Avg Score | Month-over-month change in Avg Score using dim_time[month_index_approx]. | MoM Δ Avg Score = VAR CurrM = MAX('dim_time'[month_index_approx]) VAR PrevM = CurrM - 1 VAR PrevVal = CALCULATE([Avg Score], FILTER(ALL('dim_time'), 'dim_time'[month_index_approx] = PrevM)) RETURN [Avg Score] - PrevVal |
| YoY Δ Avg Score | Year-over-year change using year extracted from dim_courses[presentation] (e.g., 2014J). | YoY Δ Avg Score = VAR CurrY = MAX(VALUE(LEFT('dim_courses'[presentation], 4))) VAR PrevY = CurrY - 1 VAR PrevVal = CALCULATE([Avg Score], FILTER(ALL('dim_courses'), VALUE(LEFT('dim_courses'[presentation], 4)) = PrevY)) RETURN [Avg Score] - PrevVal |