Course Ranking Algorithm (PoC)

Purpose

This document explains how courses are ranked in the list: which factors contribute, how the score is computed, and how sorting works.

Summary

Ranking is global (non-personalized). Each course receives a **FinalRankScore**, computed from four factors:

- **Q (QualityScore):** confidence-adjusted rating
- **P (PopularityScore):** normalized enrollments
- **F (FreshnessScore):** normalized recency of update
- **E (EditorialBoost):** boosts from Sponsored / Editor's Choice

The list is sorted by **FinalRankScore** by default. Users can choose alternative sorts (price, freshness, etc.), which only change display order and do not change scores.

Factors

1) QualityScore (Q)

- Based on average rating (1–5), normalized to 0–1.
- Adjusted by a **confidence factor** based on rating count.
- Confidence formula: confidence = min(ratingCount / minRatingsForConfidence, 1.0).

2) PopularityScore (P)

- Enrollment count normalized across the dataset to 0–1.

3) FreshnessScore (F)

- Recency of lastUpdatedAt, normalized to 0–1 using a maximum age threshold.

4) EditorialBoost (E)

- Additive boost if a course is **Sponsored** and/or **Editor's Choice**.
- Subject to:

    - **Quality floor**: rating must be >= quality floor to be eligible for promotion.
    - **Promotion cap**: only the top N eligible promoted courses get the boost.

Scoring formula

Base score

Base = (Q × wQ) + (P × wP) + (F × wF)

Final score

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FinalRankScore = Base + (E × wE)
```

Where the weights (wQ, wP, wF, wE) are global and configured in the admin panel.

Promotion logic

A course can receive the editorial boost only if:

1. It is marked **Sponsored** or **Editor's Choice**
2. Its ratingAvg >= quality floor
3. It is within the **promotion cap** (top N eligible promoted courses by Base score)

If any of the above are not met, **E is treated as 0** for that course.

Sorting

Default

- Sorted by **FinalRankScore** (descending)

Alternative user sorts (display only)

- Price (low → high)
- Price (high → low)
- Freshness (recent updates)
- Newest (created date)
- Rating
- Popularity (enrollments)

These alternative sorts do **not** change FinalRankScore; they only change list order.

Inputs and data

- Ratings are considered verified, post-completion (PoC assumption).
- Popularity uses enrollment count.
- Freshness uses lastUpdatedAt.
- Editorial flags are set by admins (Sponsored / Editor's Choice).
- Quality floor and weights are admin-configured.

Notes (PoC scope)

- No personalization
- No category-specific weights
- No ML models
- No revenue-optimized ranking
- No behavioral signals beyond enrollments