

Financial Mathematics

Assignment Guidelines:

This task evaluates the fundamental principles and laws of financial mathematics, focusing on interest, capital substitution, income streams, and loan amortisation in everyday business operations. Students are expected to solve real-world financial problems, perform quantitative calculations using spreadsheets, and interpret computational results to guide sound financial decision-making in the tourism and service sectors.

Submission Format:

- Type: Practical Analytical Report (Financial Analysis Project)
- Font/Spacing: Times New Roman, Size 12, Double Spaced
- Word Count: 1500 – 2500 words (excluding formulas, financial tables, and computational appendices)
- Submission Deadline: To be announced by the respective professors

Assessment Criteria:

- Application of financial mathematics concepts and interest laws – 20%
- Accuracy of quantitative modelling, formula execution, and spreadsheet usage – 25%
- Critical interpretation of financial calculation results in business contexts – 20%
- Strategic financial insight, risk evaluation, and quality of recommendations – 25%
- Structure, technical reporting clarity, presentation, and APA referencing – 10%

Mandatory Sections:

- Title Page
- Table of Contents
- Executive Summary
- Introduction
- Theoretical Framework & Financial Laws
- Financial Calculations & Scenario Analysis
- Discussion & Managerial Implications
- Conclusion & Recommendations
- References
- Appendices (Spreadsheet Output & Amortisation Schedules)

Assignment Task – Choose ONE of the following practical projects:

Option 1: Loan Amortisation and Debt Financing Strategy for Capital Investments

Evaluate different loan amortisation systems and financing options for a major capital investment in a tourism or hospitality business (e.g., hotel renovation or resort expansion). Your paper should:

- Develop and contrast the French, German and American amortisation schedules for the commercial loan case study.
- Evaluate the influence of interest rate variability, inflation, grace periods, and supplementary financing costs on total debt service.

- Examine real-world corporate capital strategies in service sector firms that balance debt vs. equity financing. Give a spreadsheet-based financing suggestion and optimal repayment strategy for the firm.

Option 2: Valuation of Capital Streams, Annuities, and Project Feasibility

Investigate the valuation of multi-period cash flows, annuities, and perpetuity models to determine the financial feasibility of a new tourism development project. Your paper should:

- Calculate Net Present Value (NPV), Internal Rate of Return (IRR), and discounted payback periods for alternative project options.
- Analyse the effect of varying discount rates, risk premiums, and compounding frequencies on project valuation.
- Analyse real-life case studies of tourism destination or related facility investments that succeeded or failed, driven by capital cash flow projections.
- Recommend a capital investment decision framework that can be used to assess long-term business viability.

Option 3: Financial Capital Equivalence and Short-Term Liquidity Management

Analyse short-term financial operations, commercial paper discounting, and capital substitution laws to optimise working capital management in travel businesses. Your paper should:

- Compare simple interest vs. compound interest laws and commercial vs. rational discount methods in short-term transactions.
- Evaluate the applications of the financial equivalence principle in refinancing short-term debt obligations or replacing multi-payment schedules.
- Discuss liquidity management practices of large travel operations (i.e., tour operators or travel agencies) in the face of seasonal demand swings.
- Create a working capital and liquidity management roadmap that informs cash management and debt restructuring strategies.