



Accredited Africa Training Institute for Capacity Development

Unit FO409, Hatfield Plaza · 1122 Burnett St, Hatfield 0028 · Pretoria, Gauteng · South Africa

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COURSE BROCHURE

Financial Modelling with Difference Equations

Physical, Mathematical, Computer and Life Sciences / Mathematical Sciences

Unit Standard 243828 · NQF Level 3 · 5 Credits · 2 Days

COURSE OVERVIEW

This course equips learners with the skills to model growth problems using financial formulae and second order difference equations. Participants will learn to apply these mathematical techniques to real-world financial scenarios, enabling them to forecast trends, evaluate investments, and solve complex financial problems. The course bridges theoretical mathematics with practical financial decision-making.

Category	Physical, Mathematical, Computer and Life Sciences
Subfield	Mathematical Sciences
Unit Standard	243828
Accreditation	SAQA Accredited · NQF Level 3 · 5 Credits
Duration	2 days
Training Method	Online, On-Campus, In-House
Certificate	Issued via AATICD LMS – verifiable online

LEARNING OUTCOMES

- Apply financial formulae to calculate present and future values of annuities, loans, and investments.
- Analyze growth problems using first and second order difference equations.
- Solve second order linear homogeneous and non-homogeneous difference equations with constant coefficients.
- Evaluate financial models by interpreting the stability and behavior of difference equation solutions.
- Design financial models for scenarios such as mortgage repayments, savings plans, and population growth.
- Implement difference equation models to forecast financial outcomes and make informed decisions.

WHO SHOULD ATTEND

- This course is designed for financial analysts, investment advisors, accountants, and business professionals who need to model and solve growth-related financial problems.
- It is also suitable for students and graduates seeking to enhance their quantitative skills in finance.

COURSE OUTLINE

Day 1: Foundations of Difference Equations in Financial Modelling

- Introduction to difference equations: definitions, order, linearity.
- First-order linear difference equations: solution methods (homogeneous and particular).
- Financial applications: compound interest, loan repayment schedules.
- Equilibrium and stability analysis in financial models.
- Second-order difference equations: Fibonacci sequence and applications.
- Modelling inventory and cash flow with difference equations.
- Using spreadsheets to simulate difference equations.
- Case studies: mortgage calculations, annuity funds.

Day 2: Advanced Applications and Practical Integration

- Systems of linear difference equations: matrix methods and eigen decomposition.
- Nonlinear difference equations: logistic map and chaos in financial markets.
- Asset price modelling: random walk and mean-reverting processes.
- Option pricing using binomial trees (a difference equation approach).
- Calibration and parameter estimation from historical data.
- Monte Carlo simulation with difference equations.
- Practical case study: modelling exchange rates.
- Ethical considerations and model limitations.

ASSESSMENT & CERTIFICATION

Delegates are assessed through exercises and a final test. A mark of **50% or above** earns an **AATICD Certificate of Completion**, issued digitally with a unique verification code. This course carries **5 NQF credits** at **NQF Level 3**.

PRICING (PER DELEGATE, EX-VAT)

Delegates	Training Method	Price per Delegate	Total
1	Online	R 15,400.00	R 15,400.00
1	In-House	R 20,000.00	R 20,000.00
1	On-Campus (Pretoria)	R 23,100.00	R 23,100.00

UPCOMING SESSIONS

Start	End	Method	Venue
04 Aug 2026	05 Aug 2026	On-Campus	Pretoria, South Africa
04 Aug 2026	05 Aug 2026	On-Campus	Cape Town, South Africa
04 Aug 2026	05 Aug 2026	On-Campus	Johannesburg, South Africa
06 Aug 2026	07 Aug 2026	On-Campus	Dubai, UAE
06 Aug 2026	07 Aug 2026	On-Campus	Mauritius
06 Aug 2026	07 Aug 2026	On-Campus	Lagos, Nigeria
10 Aug 2026	11 Aug 2026	On-Campus	Mauritius
10 Aug 2026	11 Aug 2026	On-Campus	Dubai, UAE

Contact us if no suitable date is listed – on-demand sessions can be arranged for groups.

HOW TO GET A QUOTE OR APPLY

1. **Get an instant quotation online:** visit www.aaticd.co.za, open the page for this course (Unit Standard 243828) and click **Get A Quote / Apply**. Select your training method and number of delegates – your quotation is generated immediately and emailed to you with the course brochure attached.
2. **Apply by email:** send the course title, your preferred training method (Online, In-House or On-Campus Pretoria), the number of delegates and your preferred dates to apply@aaticd.co.za – our team will reply with a formal quotation.
3. **Apply by phone or WhatsApp:** call +27 12 004 8389 or WhatsApp +27 65 077 6310 and we will prepare your quotation and reserve your seats.
4. **Confirm your booking:** accept the quotation and settle the invoice. As soon as payment is confirmed your delegates are enrolled and receive their AATICD LMS login details by email, along with joining instructions for their chosen training method.

Group discounts apply automatically – the more delegates you enrol, the lower the price per delegate. No payment is required to request a quotation.

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