



# Excel Modeller Course Overview

---

# Modules: Design & Development

## Modelling basics

- What is a model and why do we model?
- Examples of financial, operational and strategic models, and their use.
- Why best practice techniques are needed in modelling.

## Development

- The Model Development Framework.
- Why a framework is needed.

## Design

- Top 10 fundamental principles of best practice modelling.
- Techniques to design a model before build.
- Scope and/or Specification of the model.
- Excel Dependency Trees and Calculation Chains.
- Comparison of approaches to model design.
- Overview of most useful functions in modelling.

## Must knows

- Recap of essential functions - INDEX, MATCH, TRUE, FALSE, IF, AND, OR.
- Navigation using keyboard shortcuts.
- Other keyboard shortcuts useful for rapid modelling.
- Useful tools to aid modelling.

---

# Modules: Building the Model

## Timeline & Flags

- Why the Timeline is fundamental to the model and design.
- How to create and use the Timeline.
- What are flags and how do they help?

## Outputs

- Designing outputs first.
- Time period summaries and flow of data.
- Using dummy figures in output construction.

## Calculations

- Calculation blocks.
- Formula construction and dos & don'ts.
- Corkscrew calculations.
- Helper Cells – their benefits and when to use them.

## Inputs

- How and where to structure your inputs.
- Using dummy inputs in model development.

## Checks

- Why checks are needed.
- Incorporating checks into a worksheet.
- Creating a Check Sheet and linking checks throughout the model.

---

# Modules: Review & Use

## Review & Testing

- Tools to help test your model.
- Overview of techniques to test or review your model.
- Common modelling errors and how to identify them.

## Using the Model

- Documenting a model.
- Version Control in modelling.
- Discounted Cash Flow (DCF) Analysis and Investment Appraisal – NPV, IRR, Payback.
- Goal Seeking an input.
- Data tables – how and when to use, and when to avoid.
- Building scenarios into a model.

## What isn't covered

- VBA and Macros.
- Pivot tables.
- Graphs and graphical representations.
- Creation of specific types of models i.e. Project Finance models, M&A models, 3-way integrated models (i.e. Balance Sheet and Cash Flow integrated) etc. This course is general modelling theory that can be applied to all models, as opposed to a detailed guide of how to build one specific type of model.

---

# Course objectives & format

## Course objectives

- Understand what a model is.
- Understand the key best practice modelling rules and principles.
- Follow a structured approach to model specification, design and build.
- Build and then link up components of a long range planning model from start to finish.
- Extend knowledge of Excel functionality relevant to modelling.
- Learn ways to increase the efficiency of your modelling.
- Increase speed with which you work in Excel and with models.
- Adopt techniques to identify, and avoid, errors in your models.

## Format

- Theory is taught through a very comprehensive series of short video lectures, followed by video demos of the theory applied or explained within Excel.
- Whilst the Design & Development modules are predominantly theory-based, the Building the Model and Review & Use modules are a mix of theory and a large practical element.
- All model build and any standalone exercises are accompanied by a downloadable solution file.
- Regular quizzes are provided throughout the course to help test your knowledge.

## This is for...

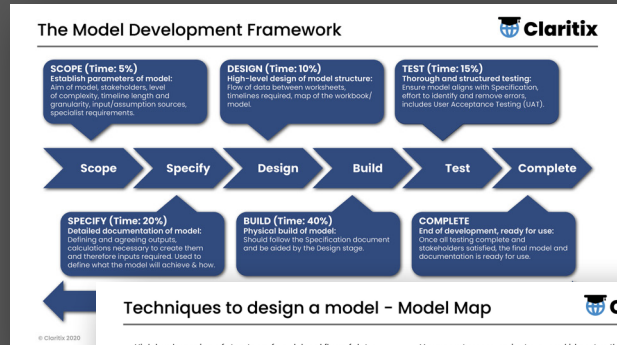
- Intermediate and advanced users of Excel with some experience of building formulae and creating sets of calculations.
- Modellers, Analysts, Accounting & Finance professionals, Consultants, Strategists and Others with a modelling requirement, aiming to learn or improve their knowledge of best practice techniques.
- Those looking to produce spreadsheets that span multiple worksheets.
- Those with a very basic appreciation of a P&L structure i.e. revenue, costs, profit etc. Participants do not need to be accountants or have had any accounting training.

# Content Examples

## Theory Based

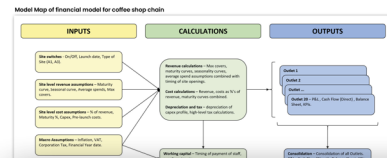
Theory is explained by way of video slides. These include thorough, descriptive explanation, and graphical examples.

Videos slides are accompanied by further explanation or demonstration in Excel of how the theory is applied in modelling.



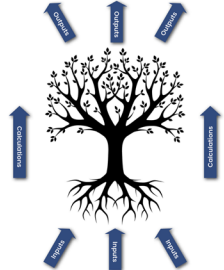
### Techniques to design a model - Model Map

- High level overview of structure of model and flow of data.
- Very easy to communicate general ideas to other stakeholders.
- May include brief summary of what each section contains - e.g. type of inputs or outputs.
- May lack detail / rigour to properly tackle more complex problems.



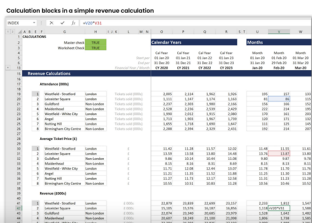
### Excel Dependency Trees & Calculation Chains

- When a cell is updated, assuming it has other cells 'downstream' that are dependent on it, Excel knows that some cells will need to be recalculated to ensure correct answers everywhere.
- Excel could update every calculation in the workbook. This would be inefficient. Additionally, it wouldn't address the fact calculations need to be performed in the correct order.
- As a model is developed, Excel maintains a record of which cells impact which cells, which impact which cells, and so on... This is known as a **'dependency tree'**.
- Cells with no precedents are input cells. They flow into Calculations. These are summarised in cells with no dependents - Output cells. The defined pathway data flows along is known as a **'calculation chain'**.
- When an input is updated Excel marks every cell along it's calculation chain as a **'dirty cell'** - these dirty cells must be recalculated.
- Slow model performance is often a result of a **'bottleneck calculation'** somewhere in this Dependency Tree that slows the whole calculation process down. These should be identified and replaced with an alternative calculation.
- Use of **'volatile functions'** - functions that recalculate every time any cell is updated - should also be avoided particularly near the base of the Dependency tree, to cut down on unnecessary recalculations.



### Calculation blocks

- A calculation block is two or more adjacent cells that share the same Unique Formula (UF) i.e. a calculation that can be dragged across cells.
- Often spans several rows and columns and may comprise hundreds or thousands of cells.
- Responsible for a single step in the model's calculation process. For example, one block may calculate price by month for several products, another the quantity sold of each product and a third the revenue i.e. the first two blocks multiplied together.
- Generally outputs look-up results from calculation blocks.
- Calculation blocks should be structured consistently and appropriately to make their workings transparent and the look-up of information from them easy.
- Consistent applied to rows and to indicate



### Formula construction dos & don'ts

Do	Why
✓ Keep formula as simple as possible.	Makes model more transparent, understandable and editable.
✓ Test formula as soon as written.	Ensure functioning as intended and reduces errors being missed.
✓ Use helper cells where possible and appropriate.	Breaks down, and reduces number of, calculations. Can increase speed.
✓ Write formula so that it is copyable.	As often formula reused and edited elsewhere.
✓ Include explanation of complex or conceptually difficult formula.	Makes calculations more transparent and acts as reminder or explanation to current or future users.

Don't	Why not
✗ Hardcode in formula.	Hides the assumption from users and so decreases transparency.
✗ Hardcode over formula.	Can make other formulas incorrect and can go forgotten.
✗ Over-anchor components of formula.	Reduces copyability of formula, slowing model build and editing.
✗ Use volatile	
✗ Have dirty marked	

### Creating a Check Sheet & linking through the model

- The Check Sheet should link to each worksheet to show the status of each Worksheet Check.
- The status of all Worksheet Checks is then summarised in the Master Check, if any Worksheet Check shows an error, the Master Check will show an error.
- The Master Check is then linked back to each worksheet, if an error arises anywhere in the model the user will be alerted to it by the Master Check displayed on all worksheets.
- Typically checks are displayed as TRUE or FALSE. Conditional formatting is used to change the colour of the check cells to either green (TRUE) or red (FALSE) to create a more visual alert.
- Alternatively, checks can be numerical, displaying the number of errors in the model.
- Additionally, checks may be divided into Errors and Warnings. Errors are issues that must be addressed as incorrect results are currently present. Warnings are more to the user's discretion as they simply alert to potential issues, for instance extreme assumptions.



## Practical Based

Participants will put the theory into practice by constructing a long range planning model, with the various stages of development following the relevant modules. This is supported by solution files.

Quizzes throughout the course further test your knowledge and ensure you are following the learning.

# FINANCIAL MODELLING

## *EXPERTS*

All Claritix courses are created by Dan Stockdale, a former PwC modeller and trainer who taught best practice modelling and Excel courses within the Firm. Dan also has a background in Finance teams across several industries, having worked in Commercial Analysis and Management Accounting. He qualified with the Chartered Institute of Management Accountants (CIMA) in 2010 and holds the ACMA and CGMA designations.

Our training courses are transformative. They have not been diluted down to go only halfway. They are broad and intensive, and expose participants to a wide range of Excel skills, as well as commercial knowledge, thinking and approach.

Practical experience in Finance, Analyst, Consulting and Strategy roles has been drawn upon to tailor content to include the most useful, powerful and relevant best practice modelling advice, to empower the widest range of modellers in any task they undertake.

Participants can expect to leave the course with a step-change in their Excel modelling knowledge and ability. This aims to improve technique, boost productivity, reduce risk in deliverables, and empower staff using the World's most prevalent and powerful business tool to add value in their work.