**Overview**
This course builds on the basics learnt in Revit Architecture Essentials, from parametric design, the creation of families and the use thereof in a project as well as the best BIM practices for family creation. Delegates delve deeper into the intricacies of the concepts of Building Information Modelling and the tools for parametric building design and documentation. This course has however been created as a replacement for the Revit Architecture Intermediate Course in our 3 regions, CPT, DBN & PE. This course has been aligned to provide an intermediate foundation more in line with the current industry philosophy.

**Objective of Course**
Delegates will learn:
- how to use families in a project
- learn the concepts of parametric design and family creation
- learn the best practices to use when creating your own families
- learn the best BIM practices for family creation

**Who Should Attend?**
This guide is intended for the beginner, intermediate, and advanced Revit Architecture family user. Although any sketching and 2D or 3D modelling experience is helpful to understand how to work with families, before you begin to work with this guide, you should have a basic understanding of Revit Architecture.

While the UK protocol may not be the best suited protocol for the South African industry, the workflows are very similar to other leading BIM standards from around the globe. Therefore, the delegate will be equipped to recognise similarities to other BIM standards and adjust thereto with little effort.

**Prerequisites**
Delegates should have a basic understanding of Revit Architecture, such as completing the Revit Essentials training course. It is recommended that delegates are Microsoft Windows proficient.

**Software**
- Revit 2020

**What’s Included?**
- Course Notes & Stationery
- Computer and software for the duration of course
- Coffee, Tea & Delicious Lunch
- WiFi Access
- Autodesk Certified Instructor

* Pertains to in-class training only
** In-class training typically occurs over a 2 day period, customised training may differ
SESSION 1 – INTRODUCTION TO FAMILIES
What are Families
• Definition of Category – lay person’s language
• Definition of Family – lay person’s language
• Category vs Family vs Family Type – demonstrate hierarchy
  - Why choosing the correct category
  - Example of Autodesk Revit Category list
What are Parameters
• Definition of parameters – lay person’s language
• Instance vs Type parameters
Families are the DNA of a Revit model – role of families in your model
Different kinds of Families
• System Families – definition and examples
• Component (loadable) Families – definition and examples
• In-place Families – definition and examples

SESSION 2 - CREATING A LOADABLE FAMILY
Understanding the Family Editor – family editor is not a separate application
Workflow of creating a loadable family:
• Planning a Loadable Family
• Choosing a Family Template
• Creating Family Subcategories
• Creating family skeleton or framework
  - Defining the origin
  - Lay out Reference Planes and Reference Lines
  - Naming reference planes
  - Ranking reference planes – Is Reference
  - Dimensioning Reference Planes
  - Labelling Reference Planes to create dimensioned parameters
• Creating Family Types
• Creating Family Geometry
• Flexing the Family
• Repeat previous steps until the family geometry is complete
• Managing the family Visibility and detail level
• Test the family in a project

Advanced Loadable Family Techniques
• Nesting and Sharing Component Families
• Linking Family Parameters
• Loading Generic Annotations into Model Families
• Creating Work Plane-based and Face-based Families
• Creating Vertical Families
• Deleting Unused Families and Types
Revit Architecture Families Tutorials

SESSION 3 – WORKING WITH SYSTEM FAMILIES
• Creating custom wall materials
• Creating a custom wall type
• Creating custom stacked wall type
• Transferring system families between projects

SESSION 4 – CREATING DETAIL COMPONENT FAMILIES
• Creating windowsill detail component family from a DWG
• Creating a full window detail component family
• Adding the full window detail component to a window family

SESSION 5 – CREATING A DOOR FAMILY
• Drawing the door plan view components
• Creating the door panel solid geometry
• Assigning materials to the door components
• Defining new door types
SESSION 6 – CREATING A BOOKCASE (FURNITURE) FAMILY
• Creating the New Bookcase Family
• Creating the Family Skeleton
• Creating Family Parameters and Types
• Creating Panels
• Creating the Base Plate
• Adding a Top Shelf
• Changing the Shape of the Side Panels
• Creating and Assigning Subcategories
• Adding Shelves
• Adding an Enclosure Panel
• Adding a Door
• Managing Visibility
• Adding a Masking Region
• Creating and Assigning Materials
• Creating a Material Parameter
• Controlling the Door Visibility

SESSION 7 – CREATING A COMPLEX WINDOW FAMILY
Creating a complex Wall Opening
Creating the Window Geometry
Nesting Sill Families into the Window Family

SESSION 8 – IN-PLACE FAMILY
When to use in-place families
Unique or unusual geometry
Custom component that you do not plan to re-use
Use in-place void families to cut complex systems families like roofs etc.
• Apply massing shapes with in-place family components
Disadvantages of using in-place families:
• No parameters to control size, visibility, materials etc.
• Cannot be loaded into multiple projects
• When duplicates are required
Although the in-place family may be correctly categorised, they do not appear in schedules

SESSION 9 – BIM CONSIDERATIONS
Level of Development (LOD)
• Model to the intended purpose
• Do not over model – the meta-data is more important than high detailed geometry
• Rule of thumb – less than an ich is a waste
• Follow the guidelines of the project specific BIM Execution Plan (BEP) which will provide guidance on the LOD required for the project
BIM Managers Control
• Reconcile project specific families and prepare it for future use (Families Library)
• Naming Conventions according to the Corporate BIM Protocol
• Modelling Standards – enforce the Best BIM Practice modelling standards as recorded in the Corporate BIM Protocol
• Managing the –
  - Central Resource folder
  - Project Library
  - Revit Template file
  - keynote file
  - shared parameters file
• Cleaning, adapting and purging downloaded families

Note: In-place families are not considered as part of the BIM process since it does not schedule nor host parameters and can therefore not be relied upon when digital quantification (5D BIM) is applied to the model or when Facilities Management software requires its meta-data.
Course Registration Form

Please complete, sign and return together with proof of payment to mgfxsales@mgfx.co.za or fax 086 694 9404

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| Micrographics SA (Pty) Ltd |
| Bank Details             |
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Terms & Conditions:

1. Above Pricing Excludes VAT.
2. Students are to be at the training venue by 08h00 in preparation for a 08h30 start time.
3. Bookings can only be considered confirmation on receipt of payment.
4. Bookings may be changed up to three weeks in advance of the course. A fee of 20% will be levied to cover charges.
5. For full day courses, we will supply you with the relevant training material. A desktop computer to use for the training (where applicable) tea/coffee and a full lunch for full day InClass training hosted at the training center only.
6. Catering is not included for OnSite training and laptop is available for hire at an additional cost if required.
7. Cancellation or rescheduling requests must be in writing and reach us at least 5 (five) working days prior to the course commencement date. Full course fees may be retained for no shows or requests within 5 working days prior to commencement.
8. Although we go to great lengths to ensure that all training proceeds as scheduled, we reserve the right to cancel or postpone dates if we require to do so and undertake to inform clients in writing and telephonically of these changes.
9. We suggest clients wait until a week prior to course commencement that a course has been confirmed to go ahead as scheduled before booking flight and accommodation. We are NOT responsible for cost associated with cancellation of classes such as flight and accommodation for clients.
10. Full training fees will apply if the above condition is not complied with.

Signed & Accepted

Name

Location

Autodesk Gold Partner

Autodesk Authorized Training Center