



ACTUARIAL SOLUTIONS

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APR TRAINING SERVICES



APR TRAINING COURSE OUTLINES

This document provides an outline of some of the IT training courses offered by APR to its actuarial staff and clients – namely Excel for actuarial work, Introductory and Intermediate VBA, Introduction to Access, and Introductory and Intermediate SQL courses. The material has been delivered over a number of years and has been through a number of iterations to arrive at content that is most appropriate to actuarial work and delivered at a pace appropriate for actuarial staff.

In addition to the main objective of arming attendees with further practical skills, the courses should also provide attendees with verifiable CPD or training that may be recorded for the purpose of Work Based Skills (or PPD).

The version of MS Office we currently use in our training is 2016. However attendees can use any version from 2010 onwards.





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APR EXCEL IN ACTUARIAL WORK COURSE

●●●● SUMMARY

Excel is one of the most widely used applications by actuaries, but few actuaries use it as effectively as they could. The purpose of this two-day course is to highlight the key aspects of Excel from an actuarial perspective, and to significantly improve the proficiency of the attendees with this important application. The course is designed to be hands on with lots of exercises for the attendees.

●●●● ADDITIONAL PRE-COURSE KNOWLEDGE

It would be useful (but not essential) if the attendees have previously used Excel and have an understanding of the basics.

●●●● SCHEDULE

The indicative course schedule is as follows.

Session 1: The Basics I

- Course overview
- Terminology
- Types of values
- Formulas
- Referencing
- Copying and pasting
- Naming

Session 2: The Basics II

- Formatting
- Inserting, deleting and hiding
- Shortcuts
- Good practices

Session 3: Formulas I

- Logical
- Mathematical
- Text
- Dates

Session 4: Structured exercises I

- A variety of exercises to build up experience of the functionality previously covered

Session 5: Formulas II / Dealing with data I

- Counting
- Summing
- Actuarial
- Referencing
- Array formulas
- Goal seek
- Add-ins
- Data
- Lookups

Session 6: Dealing with data II

- Autofilter
- Sorting
- Advanced Filter
- Subtotals
- Pivot tables

Session 7: Structured exercises II

- Further exercises to build up experience of the functionality previously covered

Session 8: Miscellaneous functionality

- Links
- Options menu
- Diagrams
- Data validation
- Auditing
- Stochastic modelling
- Recap of key points of course

APR INTRODUCTORY VBA COURSE

●●●● SUMMARY

Use of Excel VBA has one usual aim: automating common, complex or time-consuming tasks in Excel. It is the wide-ranging use of Excel within actuarial departments that makes VBA such a useful skill to hold.

The aim of this two-day course is to maximise the number of useful things you are able to do in VBA in a short period of time. It will not make you an advanced VBA user but in addition to being able to understand and edit existing code, it should allow you to build a wide range of applications from scratch. The exercises make use of typical actuarial data sets and models so that focus is naturally applied to areas most likely to be useful in your day-to-day work.

●●●● ADDITIONAL PRE-COURSE KNOWLEDGE

No previous VBA knowledge is required but a very small amount of programming knowledge is assumed. For example, it is desirable that trainees have some familiarity with concepts such as variables and loops. APR will provide attendees with a brief document prior to training that will ensure all attendees have the necessary background.

A reasonable working knowledge of Excel is also required.

●●●● SCHEDULE

The indicative course schedule is as follows.

Session 1

- Course introduction
- Introduction to macro recorder
- Running macros
- Introduction to the VB Editor
- Getting data from the user into VBA and vice versa
- Getting data from Excel into VBA and vice versa
- Excel's Object model
- Working with Ranges
- Session 1 exercise: Two-way sensitivity analysis

Session 2

- Creating your own custom functions
- Using Excel's and VBA functions
- Variables and Arrays
- Controlling programming flow
- More on the Range object
- Session 2 exercise: Cashflow projection model

Session 3

- Handling errors in your applications
- Debugging your code
- Automatic event procedures
- Customised userforms
- More on userforms
- Miscellaneous tips
- Session 3 exercise: Stochastic maturity guarantee model with userform
- Introductory VBA quiz

APR INTERMEDIATE VBA COURSE

●●●● SUMMARY

The purpose of this one-day course is to build on a basic competency level of Excel VBA. It introduces more advanced functionality you may come across if reviewing code by other VBA developers and allow you to develop faster, more robust and professional applications. Some of the functionality introduced such as different collection types gives the attendee a bridge to more 'heavy-duty' programming languages such as C++.

●●●● ADDITIONAL PRE-COURSE KNOWLEDGE

Consolidated knowledge of VBA equivalent to that gained by an attendee of the APR Introductory VBA course is assumed. APR can provide a number of example exercises prior to this course to calibrate and refresh skills.

●●●● SCHEDULE

The indicative course schedule is as follows.

Session 1

- Dynamic arrays
- Equivalence of arrays and Excel ranges
- Procedures and arguments (including use of ByVal and ByRef, optional arguments, arrays and objects as arguments)
- Make use of in-built Collections in VBA
- Creating User-Defined Collections
- Session 1 exercise: Identifying duplicate policies

Session 2

- Working with other workbooks and files from VBA
- Reading and writing data from text files
- Session 2 exercise: Workbook Risk profiler
- Intermediate VBA quiz

APR INTRODUCTION TO MICROSOFT ACCESS COURSE

●●●● SUMMARY

This one-day course aims to provide an understanding of relational databases and their merits, and to consider what makes a well-designed database. By discussing the key objects and actions available in Access, as well as features such as referential integrity and the use of Access macros to automate repetitive tasks, this course provides you with all the background needed to build or modify simple data manipulation tools and processes within Access.

●●●● ADDITIONAL PRE-COURSE KNOWLEDGE

No previous knowledge of Access is necessary, but it would be useful if the attendees have an understanding of the basics.

●●●● SCHEDULE

The indicative course schedule is as follows. The course also contains several small exercises designed to help reinforce the key ideas covered in the course.

Session 1

- Databases – relational vs flat-file
- Typical uses of Microsoft Access
- Introduction to Microsoft Access and key Access objects
- Creating an Access database
- Creating and using tables
- External data – linking vs importing
- Creating and using relationships
- Referential integrity
- Creating and using queries

Session 2

- More advanced queries
- Action queries
- Other useful tools – calculated fields, wildcards
- Data validation and formatting
- Joins
- Creating macros
- Access database utilities
- Appendix covering forms and reports

APR INTRODUCTION TO SQL IN ACCESS COURSE

●●●● SUMMARY

The aim of this one-day course is to provide an introduction to the use of structured query language (SQL) to retrieve and manipulate data stored in a relational database management system. SQL is one of the fundamental building blocks of database design and as such is a valuable skill for anyone likely to be working with data.

This course concentrates on using SQL in Microsoft Access, and so is aimed at users looking to become strong Access users. It describes the key SQL statements and their syntax, as well as offering a number of exercises for you to practice applying these ideas when coding SQL in Access.

APR can also offer this as part of a two-day course covering both the Introduction to Access and the Introduction to SQL in Access courses.

●●●● ADDITIONAL PRE-COURSE KNOWLEDGE

This is a beginner's course so no prior knowledge of SQL is required. However, this is designed to follow on from the APR Introduction to Access course (detailed above), so knowledge of Microsoft Access equivalent to that gained by an attendee of that course is assumed.

●●●● SCHEDULE

The indicative course schedule is as follows.

Session 1

- What is SQL?
- Why use SQL?
- General points on SQL syntax
- The SELECT statement
- Joins
- Union

Session 2

- Data Definition Queries - creating and altering tables
- Action queries - update, delete, etc.
- Subqueries
- Final Exercises

APR INTRODUCTION TO SQL IN SQL SERVER COURSE

●●●● SUMMARY

As with the APR Introduction to SQL in Access course above, the aim of this one-day course is to provide an introduction to the use of structured query language (SQL) to retrieve and manipulate data stored in a relational database management system. SQL is one of the fundamental building blocks of database design and as such is a valuable skill for anyone likely to be working with data.

The content of this course is very similar to that of the APR Introduction to SQL in Access course. However, this is a standalone one-day course that introduces SQL in Microsoft SQL Server Express rather than in Microsoft Access. As such this course is aimed at the more general SQL user, rather than those specifically looking to become strong Access users.

●●●● ADDITIONAL PRE-COURSE KNOWLEDGE

This is a beginner's course so no prior knowledge of SQL is required. However, a basic level of comfort with computer systems is desirable – be that a basic knowledge of Microsoft Access (or databases in general) or some basic coding experience (such as Excel VBA).

●●●● SCHEDULE

The indicative course schedule is as follows.

Session 1

- What is SQL?
- The relational database model
- Structure of a SQL Server database
- Creating tables and inserting data
- Writing queries (including SELECT and WHERE commands, expressions)

Session 2

- Joins
- Aggregate functions
- More complex queries (including subqueries, NULL values and conditional expressions)
- Other useful tools (temporary tables, Views and importing flat tables)
- Final Exercises

APR INTERMEDIATE SQL IN SQL SERVER COURSE

●●●● SUMMARY

The aim of this course is to consolidate and build on basic SQL skills to help people who have some familiarity with SQL become proficient users. This one-day course is based on the SQL Server dialect of the language and will be particularly useful to anyone using SQL to analyse complex data or perform actuarial calculations. Through a variety of exercises, you will be progressively introduced to important SQL tools and become familiar with their uses and limitations.

●●●● ADDITIONAL PRE-COURSE KNOWLEDGE

This course assumes basic familiarity with SQL and the ability to write simple queries including queries with joins, create tables and insert and update data. This material is all covered in the APR Introduction to SQL in Access and Introduction to SQL in SQL Server courses.

●●●● SCHEDULE

The indicative course schedule is as follows.

Session 1

- Building a database
- Importing data into SQL Server, self-joins
- Suitable types for dates, rates and monetary amounts
- Performing calculations
- Local variables
- Common table expressions including recursive expressions

Session 2

- Stored procedures
- Functions
- Dynamic SQL
- Performance considerations (including indexes and execution plans)