

## FIT1013 Digital futures: IT for Business

### Week 1: Calculating Data with Formulas and Functions

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### **On completion of your study this week, you should aim to:**

- Make workbooks user friendly
- Use/Write Excel functions
- Perform what-if analysis
- Interpret Error Values
- Understand Excel cell references

Reference: Microsoft Excel 2016, New Perspectives Series, Parsons, Oja, Carey, Desjardins Comprehensive Edn., Cengage Learning, Module 3



# FIT1013 Team

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Consultation times will be published on unit's Moodle site.

# Unit Learning Objectives

At the completion of this unit students should:

- Be proficient in use of standard spreadsheet and database software for business applications
- Have a sound basic knowledge of Excel VBA (Visual Basic for Applications)
- Have an understanding of the relational database model with reference to Access
- Be aware of emerging trends in data analytic platforms

Note:

Also, targets and prepares FIT's undergraduate for IBL placements during their degree

# FIT1013: why is it useful?

- Excel knowledge assumed in many BIS core and elective units.
- Expertise in spreadsheet modelling and programming is prescribed by IBL sponsors as essential knowledge for students on placement
- Spreadsheet modelling is the most widely used tool for Business modelling

## **Excel & Access:**

Useful business tools for

- Storing and manipulation of data
- Data analysis and visualization
- Decision Support
- Problem solving
- Presentation/reporting

# Organisation of Unit

Each week:

- Lecture (1 hour)
  - Present weekly objectives, topics, overview and sources of information
- Tutorial (2 hours)
  - Investigate, explore and understand weekly objectives
    - Class activities based on weekly topics
    - Practice and learn weekly topics
- Lab (1 hour)
  - Understanding of weekly objectives
    - Lab Tests and Lab Quizzes
    - Catch up tutorial exercises, Q&A
    - Assignment interview, showcase assessment

**Note:** Students should engage in this unit in the order above. After each tutorial, extra private study is recommended to consolidate knowledge and understanding in preparation of the Lab where students' knowledge and understanding will be assessed.

# Unit Assessment

Assessment Task	Weight	Due Date	Description
Assignment 1: Data analysis and data visualisation	10%	Monday, 30 Aug 2021, 5:00 PM	Data analysis and data visualisation using Excel.
Assignment 2: Creating an application using Excel VBA	20%	Monday, 18 Oct 2021, 5:00 PM	Write procedures using VBA in Microsoft Excel.
Lab Test	10%	Weekly (beginning in Week 3)	Conducted in the scheduled laboratories.
Lab Quiz	10%	Weekly (beginning in Week 3)	Conducted in the scheduled laboratories.
Scheduled Final Assessment	50%	TBA	TBA

<https://lms.monash.edu/course/view.php?id=115922&section=4>

# What YOU NEED TO KNOW

- **Coding and Plagiarism**
  - **Read the Policies!**
- You **can discuss** ideas with any member of the FIT1013 staff or any other student
- You **can search the Web** high and low to get **ideas**
- You **CANNOT cut and paste or manually copy without attribution**
  - **without attribution = PLAGIARISM = DISCIPLINARY OFFENSE**
- If you reuse code and **carefully acknowledge/attribute the source** (e.g. your study group's name, open source coding tutorials etc.) – you must expect a minimal mark for such code.
  - After all you didn't write it
- You **must be able to explain confidently any code you present – else you cannot get marks for it.**

# Special Consideration

- Special consideration – **FORMAL PROCEDURE.**
  - Formal special consideration form  
<https://www.monash.edu/exams/changes/special-consideration>
    - for late hand-ins of lab work etc. with valid reason
- Require supporting documents, e.g. medical cert/statutory declaration etc.
- **Approval is NOT AUTOMATIC.**
- **Please read the policy website for complete details.**



# Attendance at tutorials

- You are expected to attend ALL tutorials and labs...
- The attendance will be taken...
- Lab tests and quizzes will be assessed....
- Part of the Assignment 2 will be assessed in tutorials/labs (Week 9, 10, 11, 12)

# Unit Schedule – subject to changes

Week	Topic/Objectives	Prescribed Textbook Reference	Tutorial	Lab
1	Calculating Data with Formulas and Functions	Excel 2019 Module 3 (Check Modules 1 and 2 by yourself)	Tutorials commence in Week 1	
2	Excel Tables, PivotTables, Pivot Charts	Excel 2019 Module 5		Labs commence in Week 2
3	Advanced Functions	Excel 2019 Module 8		
4	Developing an Excel Application	Excel 2019 Module 7		
5	Fundamentals of Programming	Excel VBA		
6	Numeric Variables and Selection Structures	Excel VBA	Assignment 1 is due	

# Unit Schedule – subject to changes

Week	Topic/Objectives	Prescribed Textbook Reference	Tutorial	Lab
7	Repetition Structures	Excel VBA		
8	Date Variables	Excel VBA		
9	User Forms	Excel 2019 Modules 10,11,12	*** A2 Feature 1 demonstration in lab	
10	Creating a Database and Defining Table Relationships, Connecting to External Data	Access 2019 Modules 1, 2	*** A2 Feature 2 demonstration in lab	
11	Querying a Database and Creating Advanced Queries	Access 2019 Modules 3, 5	*** A2 Feature 3 demonstration in lab	
12	Modularisation and Structure Charts	Access 2019 Module 9	Assignment 2 due  *** A2 Feature 4 demonstration in lab	

# Assessment

## IMPORTANT NOTE:

- To pass a unit which includes an examination as part of the assessment, a student must obtain, unless otherwise approved and published:
  - 45% or more in the unit's examination, and
  - 45% or more in the unit's total non-examination assessment, and
  - an overall unit mark of 50% or more.
- If a student does not achieve 45% or more in the unit examination or the unit non-examination total assessment, and the total mark for the unit is:
  - equal to or greater than 50%, then a mark of 45-N will be recorded for the unit.
  - less than 50% then the actual mark for the unit will be recorded.

# Prescribed Textbooks

You may have your **own copy** of these texts for the semester. There are also copies of these books in the library.

- Shellman, M., & Vodnik, S. (2020). Microsoft Office 365 Access 2019: comprehensive (Student edition). Cengage.
- Carey, P. (2019). New perspectives Microsoft Office 365 & Excel 2019: comprehensive (2019 ed.). Cengage Learning.

# Useful References for VBA

You do not have to buy all of them...

Basic texts:

- Excel VBA for Business, Steven Chapra and Paul Blayney, Prentice Hall
- Excel 2002 VBA Programming, Thompson Learning
- Introduction to Excel VBA Programming with applications in Finance and insurance, Gou Jun Gan, CRC Press, 2017.

Moderate level texts:

- Visual Basic for Applications, Diane Zak, Course Technology, 2001 (previous text, no longer available to purchase, available in Hargrave-Andrews library)
- Advanced Applications using Microsoft Excel 2003, Prentice Hall
- Excel 2003 VBA Programming with XML and ASP, Julitta Korol (earlier version also)
- VBA and Macros for Microsoft Excel, Bill Jelen and Tracy Syrstad, QUE

# FIT1013 Moodle Site

- The first point for you to contact...
- All the necessary information...lectures, tutes etc.
- Address: **<http://moodle.vle.monash.edu/>**

Or just go to your **my.monash portal** and follow the links

- Contents are organised in a weekly manner with pre-class activities (if any) that you are expected to attempt before the lectures.

# Your PC at home...

- Is OK, provided it can run Microsoft Office 2016 or newer
- There are subtle differences in the interface between Macs and PCs
- Assignments should be completed using Microsoft Office 2016 or newer – this is available in all FIT labs.
- This is a MoVE unit, you can access specialist software via [move.monash.edu](http://move.monash.edu). For more information, visit [monash.edu/move](http://monash.edu/move).





# Words of Advice...

- Workload
- Pace
- Lectures, Tutorials, Labs, expectations, etc...
- Getting Information you may require...
- Getting Help...Tutors, Lecturer
- If you are ill and cannot attend, please email your tutor in the first instance.

# DSS: What is a Decision Support System?

- “An information system that allows a user to explore the impact of available options or decisions” (Computing for Business Success, Richardson, Beiers, Bruno, Deng and Henschke)
- Uses data in spreadsheet or database (e.g. Access) and uses some kind of analytical technique to analyse the data and present with the use of a GUI to the user.

# Who uses a DSS?

Managers/ decision makers – at all levels in an organisation. E.g.

- Project managers
- Business analysts
- Consultants
- CEO' s
- Etc...

# Excel 2019 and Access 2019

- Excel – the most widely used DSS software.
- Access/Excel + VBA enables
  - Database
    - from an Excel tables and list/s
    - or from an Access database
    - (other databases....)
  - Data Analysis
    - using pre existing analysis tools – e.g. Scenario Manager, Charts, data tables, pivot tables, Excel functions, Goal seek, Solver
    - Using user defined functions
    - Using VBA
  - Interface and automation
    - built using VBA

# Making Workbooks User-Friendly

On completion of your study this week, you should aim to:

- **Make workbooks user friendly**
  - Use/Write Excel functions
  - Perform what-if analysis
  - Interpret Error Values
  - Understand Excel cell references



# Making Workbooks User-Friendly

- Many users may use the workbook, so it is important they understand the contents
- An explanatory worksheet can be added explaining concepts including:
  - Industry jargon (industry-specific terms, or technical terms) or unusual terms
  - What is being calculated and why
  - How the equations make those calculations

# Making Workbooks User-Friendly

	A	B	C	D	E	F
1	<i>Wingait Farm</i>					
2	<b>Corn Yield Calculator</b>					
3						
4	Total Corn Crop (acres)	137				
5						
6	<b>Sample Plot</b>			<b>Agricultural Constants</b>		
7	Number of Rows	6		Square Feet in an Acre	43,560	
8	Row Width (ft.)	2.5		Standard Corn Moisture Content	15.50%	
9	Row Length (ft.)	294		Pounds of Corn in a Bushel	56	
10	Sample Area (acres)			Market Price per Bushel	\$3.85	
11						
12	<b>Corn Weight</b>					
13	Sample Weight (lbs.)					
14	Moisture Content					
15	Dry Weight (lbs.)					
16	Market Weight (lbs.)					
17						

Documentation **Yield** Yield History Growth Explanation of Formulas

Ready

Ex 134

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# Activity

What are the benefits of documenting contents of a workbook?

## True/False:

- Every workbook should be accessible to its intended users.
- You should never use jargon or unusual terms in a workbook



# Using Excel Functions

On completion of your study this week, you should aim to:

- ~~Make workbooks user friendly~~
- **Use/Write Excel functions**
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- Quick way to calculate summary data
- Every function follows a set of rules (syntax) that specifies how the function should be written
- General syntax of all Excel functions:
  - *FUNCTION(argument 1, argument2, ...)*
- Square brackets indicate optional arguments:
  - *FUNCTION(argument1, [argument2=value2, ...])*
- An argument can be any type of value including text, numbers, cell references, or even other formulas or functions
- Functions can be placed inside another function, or **nested**; nested functions must include all parentheses

# Some Excel Functions

Function	Description
AVERAGE( <i>number1</i> [, <i>number2</i> ,...])	Calculates the average of a collection of numbers, where <i>number1</i> , <i>number2</i> , and so forth are numbers or cell references
COUNT( <i>value1</i> [, <i>value2</i> ,...])	Counts how many cells in a range contain numbers, where <i>value1</i> , <i>value2</i> , and so forth are either numbers or cell references
COUNTA( <i>value1</i> [, <i>value2</i> ,...])	Counts how many cells are not empty in ranges <i>value1</i> , <i>value2</i> , and so forth including both numbers and text entries
INT( <i>number</i> )	Displays the integer portion of <i>number</i>
MAX( <i>number1</i> [, <i>number2</i> ,...])	Calculates the maximum value of a collection of numbers, where <i>number1</i> , <i>number2</i> , and so forth are either numbers or cell references
MEDIAN( <i>number1</i> [, <i>number2</i> ,...])	Calculates the median, or middle, value of a collection of numbers, where <i>number1</i> , <i>number2</i> , and so forth are either numbers or cell references
MIN( <i>number1</i> [, <i>number2</i> ,...])	Calculates the minimum value of a collection of numbers, where <i>number1</i> , <i>number2</i> , and so forth are either numbers or cell references
RAND()	Returns a random number between 0 and 1
ROUND( <i>number</i> , <i>num_digits</i> )	Rounds <i>number</i> to the number of digits specified by <i>num_digits</i>
SUM( <i>number1</i> [, <i>number2</i> ,...])	Adds a collection of numbers, where <i>number1</i> , <i>number2</i> , and so forth are either numbers or cell references

<https://support.office.com/en-us/article/Excel-functions-by-category-5f91f4e9-7b42-46d2-9bd1-63f26a86c0eb>

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- ~~Make workbooks user friendly~~
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## Activities:

- Explore application help on Functions (i.e. F1, Help tab, Insert Function)
- Working with DATE functions
- Working with COUNT functions (i.e. COUNTIF vs SUMIF)
- Working with logical functions (i.e. IF)
- Working with lookup functions (i.e. VLOOKUP)
- Working with financial functions (i.e. PMT)
  
- Refer to Week 1 Resources for details

# Week 1 Resources

On completion of your study this week, you should aim to:

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## Additional Topics

- Performing What-If Analysis
  - Interpreting Error Values
  - Understand Excel Cell References
- 
- See Week 1 Resource for details

# Tutorial and Lab Preparation

- Understand functions:
  - PMT() function
  - IF() function
  - Min(), max(), average(), sum(),.....etc
  - Date functions: NOW(), TODAY(), .....etc
- Work through Excel Modules 1, 2 and 3 of textbook