

# CS130 Software Tools

Spring 2015

Professor Shereen Khoja

# Shereen Khoja

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Office: 203 C Strain

Office Hours:

Tue 1:30-2:30pm

Thu 1:00-3:00pm

and by appointment

# Course Website

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- <http://zeus.cs.pacificu.edu/shereen/cs130sp15/>
  - Tentative Schedule
    - handouts
    - Assignments
    - Syllabus

# Final Exam

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Friday, March 13

6-8:30pm

# How to Succeed

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- Don't miss class.
- Take notes        - Get a binder!
- Practice!
- Ask questions
  
- Start assignments early
  - they take longer than you think
- Do as much on your own as possible.

Ask Questions!

# How to Succeed

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- Read the assignments carefully and follow all directions
- See me **as soon as possible** about any questions!
- Don't forget that you are at a small school!  
– and you are paying for it!

# Assignments

Ask Questions!

- A series of problems to work
  - Build an Excel Workbook
  - Build an SPSS file
- Where can I work?
  - Marsh LL 12
  - Marsh LL 15
  - Library

Be sure to test your Excel/SPSS in **this** Lab.

I strongly recommend **against** using Excel on a **Mac** for your assignments!

The Mac and Windows versions of Excel are not 100% compatible.

# How to send an effective email

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To: shereen@pacificu.edu  
From: hall4242@pacificu.edu  
Subject: CS130: Formulas

Hello Prof. Khoja,

I'm working on the volume assignment and I'm not sure how to calculate a cube of a number in Excel. Any hints?

Thanks,  
Lesley



# Homework #0 (5 points)

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- Fill out the survey on the class website:
  - <http://zeus.cs.pacificu.edu/shereen/cs130sp15/>
- Bring a printed copy to class on Wednesday
- Be prepared to discuss your answers!

# Course Overview

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- What is Computer Science?
- Why are you here?
  - What do you expect to get out of the course?

# Course Overview

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- CS130 is a course on the collection of tools and techniques that you will need to help you through your academic career and perhaps even in your own research if you chose that path
- We will cover design, creation, research, data collection, analysis and reporting of data and information for an academic setting

# Key Points

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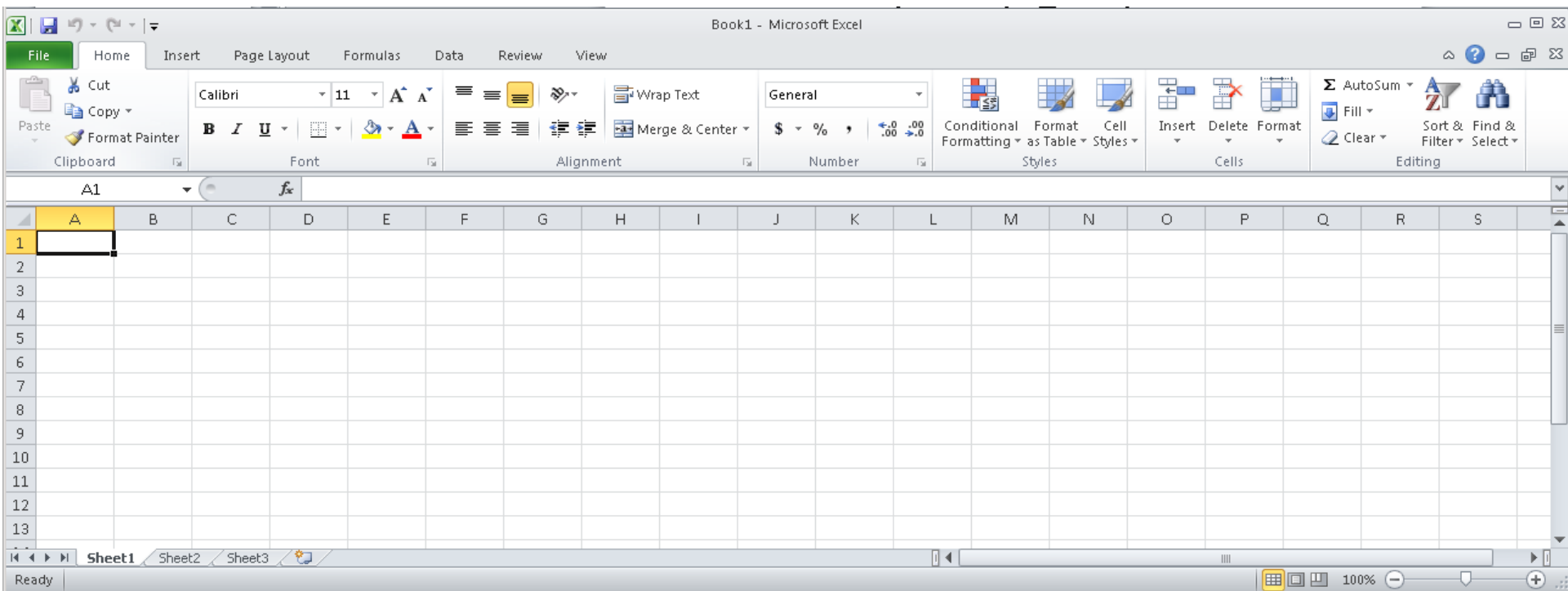
- Understand the task at hand
  - select the appropriate tool
- Understand the tool and its limitations
- Not all tools are created equal and cover all aspects of every problem
- This is true regardless of what the vendor of the tool might tell you

# Introduction to Excel

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- What is Microsoft Excel?
- What can we do with Excel?
- We will do all of these things through the four major parts of the Excel application:

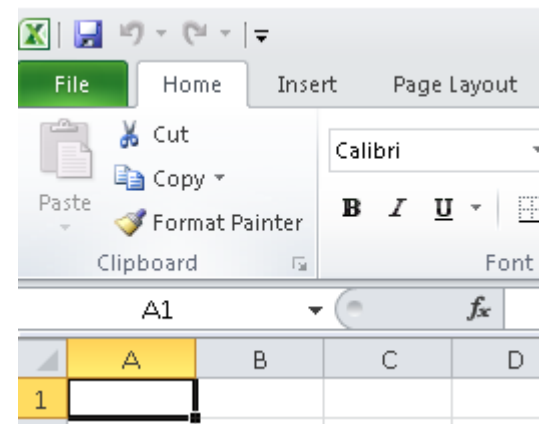
# Launch Excel



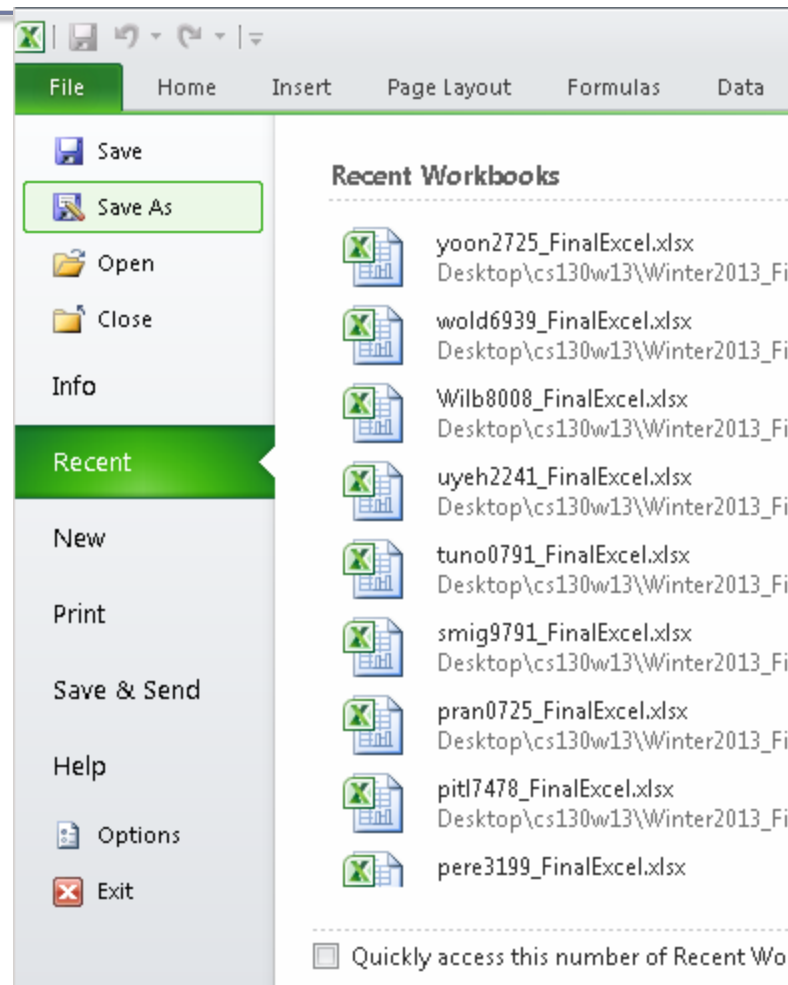
# Excel Functionality

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- As with all Office 2007/2010 applications, Excel's functionality is divided into Ribbons or Tabs
- Select the appropriate Tab to use some Excel functionality



# File Menu



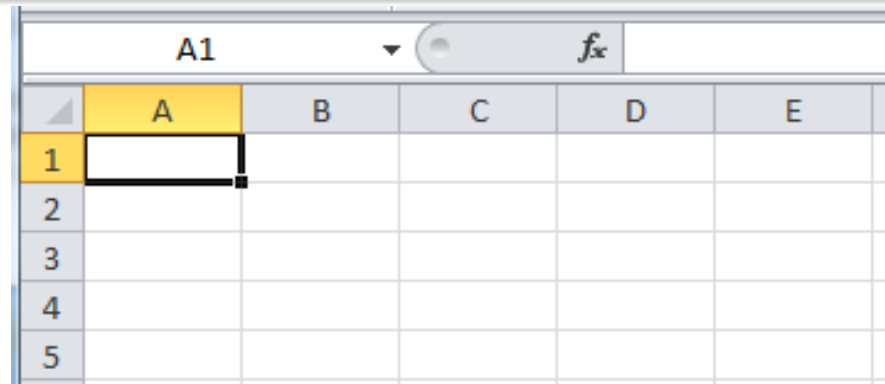


# Data Organization in Excel

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- Workbook
- Worksheets
  - Worksheets can be renamed. How?
  - Worksheets can be added. How?

# Excel Structures



- Worksheets consist of a grid of rows and columns called **cells**.
- A cell is referred to by its unique address or cell reference.
  - for example D13.
- What is an active cell and how do we know which cell is active?

# Excel Structure

What if I .... ?  
I don't know,  
try it out!

- **Cells**
  - Text can be entered by selecting a cell and typing text
  - Numbers can be entered
    - Do not put any spaces in a number or Excel will interpret it as text.
- **Formulas**
  - The work horse of Excel
  - Formulas allow you to perform a calculation in a cell
  - Must begin with an equal sign

If we place the formula  $=3+9/3-1$  into cell A1, what value gets displayed? Why?

# Binary Arithmetic Operators

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- Excel contains several binary arithmetic operators.

What is a binary operator?

What are the five most common binary operators?

# Operator Precedence

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What is operator precedence?

What is the operator precedence for Excel's binary operators?

# Evaluate

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What is the value produced by evaluating each of the following Excel formulas:

- ▶  $=2+4/2$
- ▶  $=4/0$
- ▶  $=0/4$
- ▶  $=2*3+5/2$
- ▶  $=2*/3$
- ▶  $=2*-1$

# Operator Precedence versus Associativity

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- Does anyone know the difference between operator precedence and operator associativity?
- Operator Precedence
- Operator Associativity

# Cell References

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- Not only can numbers be placed in cell formulas, but cell references can be used in cell formulas.
- What does the following formula mean? =A1+2



# Problem 1.1

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1. Place the values 10, -3 and 22 in the cells A1, A2, and A3 respectively.
2. In cell, A4, write the formula to find the average of the values in cells A1 to A3.
3. Change the value in cell A2 to 15, and the value in cell A4 will be modified as soon as you hit return.

Note: Excel always updates the entire worksheet any time a change is made to any worksheet cell.

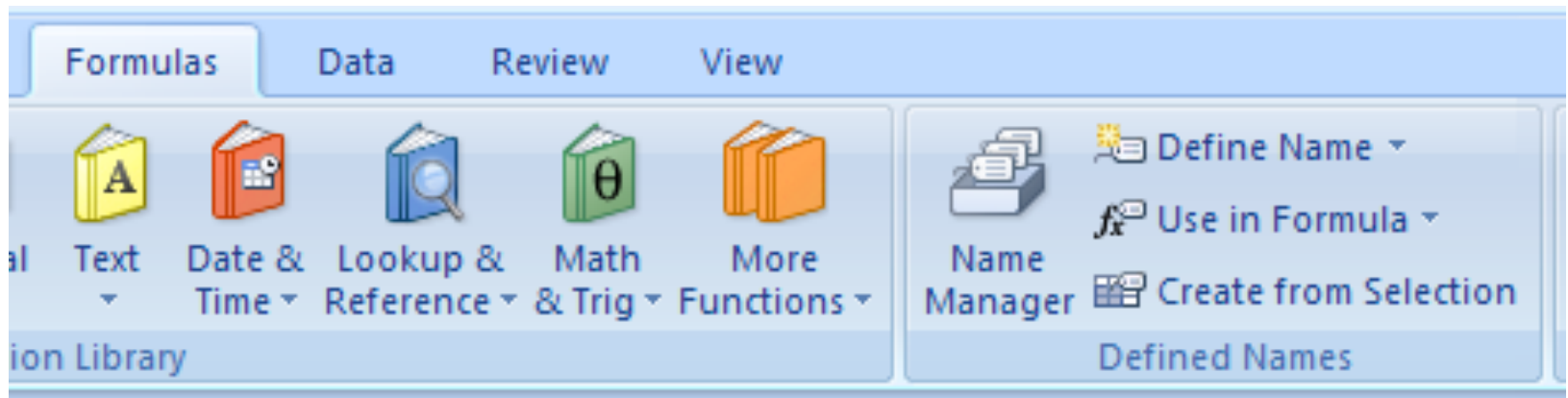
# Saving Workbook & Worksheets

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- For each Problem in this class, you are to create a new worksheet with the Problem name (e.g. Problem 1.1)
  - One file with all of your class work
- Save the Workbook as PUNetIDProblems
  - Backup on to Grace, Vault, or USB stick
  - <https://vault.pacificu.edu>
- Occasionally, I will have you drop your Workbook in the CS130 Drop folder on Grace

# Named Cells

- You can name a cell rather than reference it through its address. This allows us to give meaningful names to values for use in formulas.



## Problem 1.2

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1. Place your age in cell A1. Using the **Formulas** Tab, **Define Name** of cell A1 to ***MyAge***.
2. In cell A2, write the number of years left you have in college, name that cell ***YearsLeft***.
3. In cell A3 write a formula to determine your age when you graduate college. Use the cell names in your formula.

# Making the Data “Pretty” and Functional

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- Formatting
  - Excel provides some advanced formatting capabilities to make your spreadsheet look more professional.
  - Cell formatting
    - Right-click on the cell, Format Cells, Number Tab
    - How many ways can we format numeric data?
    - There are also formatting buttons on the **Home tab**
- Any numbers that you have in your worksheet must be formatted appropriately.

# Excel Error Message and Codes

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Excel has several error messages that you should be aware of and the main ones are:

- # - A ##### error value occurs when the cell contains a number, date, or time that is wider than the cell or when the cell contains a date and/or time formula that produces a negative result.
- #DIV/0! - The #DIV/0! error value occurs when a formula divides by 0 (zero).

# Excel Error Message and Codes

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- #na - No information is available for the calculation you want to perform.
- #NAME? - The #NAME? error value occurs when Microsoft Excel doesn't recognize text in a formula.
- #NULL! - The #NULL! error value occurs when you specify an intersection of two areas that do not intersect.
- #REF! - The #REF! error value occurs when a cell reference is not valid.
- #VALUE! - The #VALUE! error value occurs when the wrong type of argument or operand is used, or if the Formula AutoCorrect feature cannot correct the formula.

# Problem 1.3

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	A	B	C	D	E	F	G	H	I
1	<b>Grocery Calculator</b>								
2									
3	Item	<b>Eggs</b>	<b>Milk</b>	<b>Bread</b>	<b>OJ</b>	<b>Apples</b>	<b>Carrots</b>		
4	Cost	\$2.79	\$3.49	\$2.50	\$2.35	\$1.79	\$0.99		<b>Total Cost</b>
5	Count	1	0	2	2	3	1		\$18.85