



**Computer programming**

**Spreadsheet**



**Database**





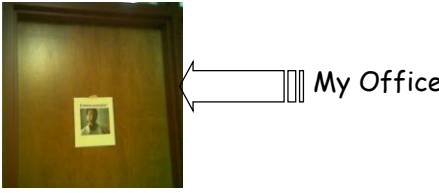
**CPSC 203**

Introduction to practical problem solving  
(James Tam)

Images:  
Colourbox.com

## Administrative (James Tam)

- Contact Information
  - Office: ICT 707 
  - Email: [tam@ucalgary.ca](mailto:tam@ucalgary.ca)
  - Make sure you specify the course name and number in the subject line of the email 'CPSC 203'
- Office hours
  - Office hours:
    - T: 14:00 - 14:50 (If I'm not in my office give me a few minutes or check the lecture room).
    - W & R: 15:00 - 15:30

My Office

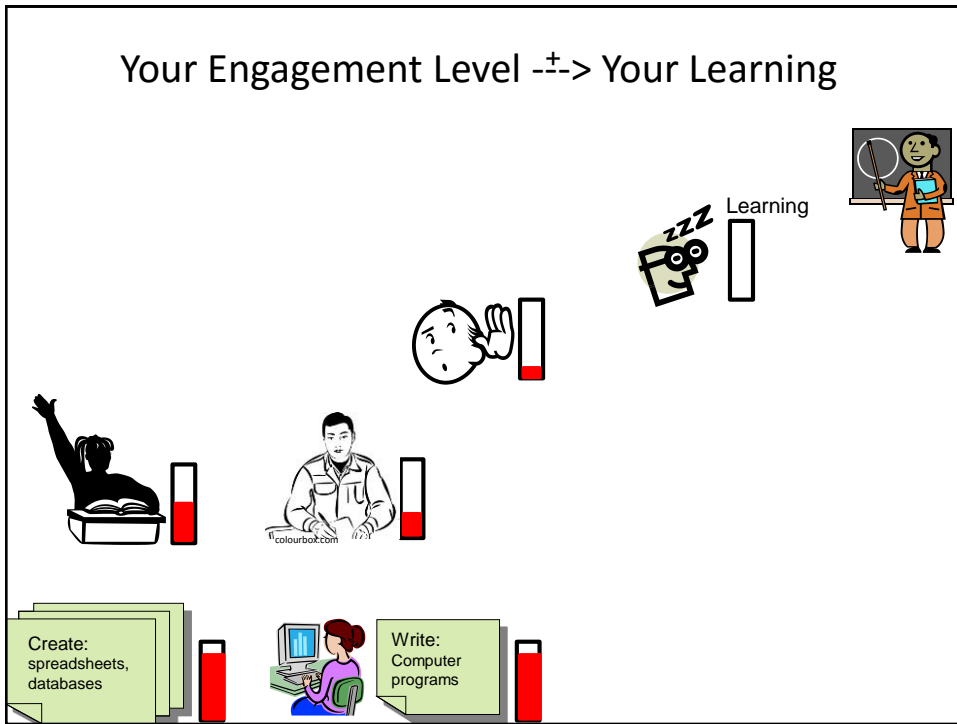
Images: courtesy of James Tam

## Course Resources

- Required resources:
  - Course website: <http://www.cpsc.ucalgary.ca/~tamj/2017/203F> (You must get the slides off the course webpage before lecture so you don't have to copy them down during class)
- Course textbooks (recommended but not a mandatory purchases).
  - #1: For most course topics but especially helpful for the tougher ones (database, VBA program writing)
    - “**Computer Science Chop Suey! Computer & software fundamentals, practical problem solving**” by James Tam (Published by Wiley)
  - #2: Just for the VBA programming part of the course
    - “**Mastering VBA for Microsoft Office 2013**” by Richard Mansfield (Published by Wiley)

## How To Use The Course Resources

- They are provided to support and supplement this class.
  - The notes outline the topics to be covered
  - At a minimum look through the notes to see the important topics.
  - However the notes are just an outline and just looking at them without coming to class isn't sufficient to do well
  - You will get additional details (e.g., explanations) during lecture time
    - Take notes!
    - If you miss a lecture then get a copy of the in-class notes from another student (who takes detailed notes)



## Tam's "House Rules"

- I always endeavor to keep the lecture within the prescribed time boundaries
- You won't pack up and leave before time is up

The illustration shows a lecturer on a podium, pointing upwards, with two black stick figures running away from the podium in opposite directions, one to the left and one to the right, with green arrows indicating their path. This illustrates the 'House Rules' mentioned in the text above.

## Tam's "House Rules"

- No recordings/captures without permission during class please



- (Recall that learning tends to increase with additional levels of engagement).



## Tam's "House Rules"

- Quiet whispering is OK...



...but make sure if it is *\*quiet\**. If it's loud enough for me to hear then it's likely that others are being disturbed by the noise as well.



Images from  
colourbox.com

## Windows Operating System: This Section

- Although assignments mostly on MS-Office, this course will teach concepts using a version of MS-Windows.
  - (The MAC-specific lecture is no longer run).
- You might be able to implement your work on a MAC but keep in mind available resources are for Windows.
  - That means if you have an odd technical glitch you might be on your own.
- Generally you can not only work on assignments in the CPSC 203 computer labs but many of the labs on campus.
  - Keep in mind some features of MS-Office may (for some reason) be disabled if you use a computer lab other than the 203 lab e.g. the library computers may have some of the 'citation' features required for A1 disabled.

## Learning Objectives

- Main student outcomes:
  - Look at an expression such as a spreadsheet formula, a database query or a computer program and determine the outcome or results derived.
  - Write an expression in order to solve a problem that you have not encountered previously (although it may although it may be similar).
- Secondary student outcomes:
  - Apply logical and other operators employed by a search engine in order to narrow down search results in order to find the needed information.
  - Understand the computer technical specifications taught in class in order to perform a rudimentary evaluation of a list of specifications that may be included in an actual computer advertisement.
  - Describe common technical concepts so that students can demonstrate a rudimentary level of computer literacy.

## Practical Course Outcomes



- You get to learn 3! Count 'em 3 commonly used software packages!



- But wait-there's more!!!

**SALE!!!**



## Practical Course Outcomes (2)

- Employer XYZ wants to hire an Access © database developer or someone familiar with SQL queries now.
- This is what's hot, hot, hot



- But what's hot today may not look so good tomorrow
- Technology changes: get used to it



## Practical Course Outcomes (3)

- You will not only learn how to use existing technologies (spreadsheet, database, word processor) but also how to problem solve and even create your own new software.
- Problem solving is required in the programming component: writing VBA Word macros
- Some corporations have recognized the relationship between problem solving skills and success in the work world:
  - E.g., “Killer” interview questions
    - Google
      - <http://www.businessinsider.com/15-google-interview-questions-that-will-make-you-feel-stupid-2009-11?op=1>
    - Apple
      - <http://www.businessinsider.com/apple-interview-questions-2011-5#how-do-you-test-the-prototype-of-the-vending-machine-5>

## Evaluation Components

- Assignments
- Examinations

## Assignments (Proportion Of Term Grade 40/100)

- (Partial) A1: Advanced word processing features (Word): *5% proportion of term grade*
- A2: Spreadsheet (Excel): *10% proportion of term grade*
- A3: Database (Access): *10% proportion of term grade*
- A4: Program writing: *10% proportion of term grade*
- (Partial) A5: Creating a webpage using html tags: *5% proportion of term grade*

## Assignments

- Assignments must be individually completed and individually submitted.
  - There is no group work allowed for this class.
  - Students **should not** see the assignment solutions produced by other students.
- Assignments will be marked by the tutorial instructor.
  - Grades will be posted in D2L
  - You can contact him/her for the grade and/or the completed marking sheet.
  - If you still have questions or issues after contacting your TA then feel free to contact your course instructor.



## Submitting Assignments

- **Bottom line: it is each student's responsibility to make sure that the correct version of the program was submitted on time.**
- Late assignments will not be accepted.
- If you are ill then medical documentation is required.
  - Contact your **course instructor** and not your tutorial instructor to get permission for a late submission



I am the  
'course  
instructor'  
person

- (Further details will be available during the term).

## How To Verify Submissions In DropBox

- There is a help link provided with each assignment description.
- Teaching Assistants will cover in conjunction with Assignment zero.
  - Not graded but important practice
- Resource file
  - <http://pages.cpsc.ucalgary.ca/~tamj/resources/Verifying%20D2L%20Submissions.pdf>

## Assignments: Software Version<sup>1</sup>

- It is your responsibility to ensure compatibility
  - A1 – A3 (MS-Office 2016 assignments)
    - TAs will use a Windows machine to mark whatever you submit
    - U of C students should be able to access Office 365 “for free” (while they are current students)
      - Info: <http://www.ucalgary.ca/it/office365/faqs>
      - Accessing (need a UC account):
        - » <http://www.ucalgary.ca/it/services/office-365> (click on the link “Access 0365 online”)
        - » <http://office365.ucalgary.ca/>
        - » If have trouble accessing: contact university UC-IT
        - » A3 (Access) isn’t part of Office 365 but you should be able to run it from most campus labs
  - The program written for A4 must be executable on the lab computers using MS-Word
  - A5 needs to viewable using common web browsers

## Examinations (***Proportion Of Term Grade: 60%***)

- A mix of short answer and multiple choice questions
- Closed book (don’t bring anything into the exam: just yourself and writing implements)
- Midterm examination (***25% of term grade***)
  - Scheduled by your course instructor and will occur during the semester
    - **Feb. 16 from 6:00 until 7:15 pm ST 140** (Outside of normal lecture time)
- Final examination (***35% of term grade***)
  - Cumulative but with a focus on topics covered after the midterm
  - The exam occurs during the regular end of term examination period so it will be scheduled by the Office of the Registrar
- If you are awarded a higher grade on the final exam vs. the midterm exam then
  - Your midterm grade = final exam grade

## Grades For Each Component

- The official grading mechanism for this (and most) universities is a letter grade/grade point e.g. A/4.0, A-/3.7 etc.
- Term grades must be stated as a letter grade.
- Component grades (assignment, exam etc.) can either be a letter grade or a raw score (e.g. percentage)
- For this class each major component will be awarded a grade point (and not a percentage) and this is the value used to determine the term grade.

## Mapping Raw Scores To Grade Points: Assignments

- For simplicity assignment marking keys will specify grade points only
  - Example (purely for illustration purposes): spreadsheet computes average sales = 0.3 grade points, spreadsheet graphs results = 0.1 grade points etc., a macro allows the user to re-run calculations with different data = 1.0 grade points.
  - Sum the grade points for each feature in order to yield the grade point awarded for the assignment e.g.,  $0.3 + 0.1 + 1.0 = 1.4$  GPA earned

## Mapping Raw Scores To Grade Points: Exams

- For examinations the mapping between a raw score and a grade point occurs one way (raw score mapped to grade point)
  - Example (purely for illustration purposes) 65 – 69% = C/2.0, 70 – 74% = C+/2.3
  - But grade points don't correlate back to percentages
    - e.g. I was awarded a 66% on midterm and then I see this is a 2.0 GPA (out of 4.0)
    - Does this mean that my percentage 'went' from a 66% to a 50%!!!!???
    - No.
      - A C/2.0 does not mean that 50% was awarded as a course grade.
      - To put this in perspective a passing grade point in this university is a 1.0/D in a course. If a grade point mapped back to a percentage this would mean that anyone getting a 25% or higher would pass any course here.
  - The mapping of the midterm to grade point will be posted sometime after the midterm grades have been released.
  - The mapping of the final exam to grade point will be posted sometime after the final exam grades have been released.

## Estimating Your Overall Term Grade Point

- To determine your weighted term grade point simply *multiply each grade point* by the weight of each component.
  - **Percentages won't be used to determine the term grade/letter grade**
- Sum the weighted grade points to determine the term grade.
- Simple and short example (not exactly the same as this term but it should be enough to give you an idea of how to do the specific calculations required this semester):
  - Assignments: weight = 30%, example score = A
  - Midterm: weight = 30%, example score = B+
  - Final: weight = 40%, example score = C-

Weighted assignments:  $0.3 * 4.0 = 1.2$   
 Weighted midterm:  $0.3 * 3.3 = 0.99$   
 Weighted final:  $0.4 * 1.7 = 0.68$   
 Total term grade point =  $1.2 + 0.99 + 0.68 = 2.87$   
 (In this case the term letter is B-)

## Estimating Your Overall Term Grade Point (2)

- Use the spreadsheet on the course web page to estimate your term letter grade:
  - [http://pages.cpsc.ucalgary.ca/~tamj/2017/203W/grade\\_calculator.xlsx](http://pages.cpsc.ucalgary.ca/~tamj/2017/203W/grade_calculator.xlsx)
- The grade point to letter grade mapping employs the official university cutoffs:
  - <http://www.ucalgary.ca/pubs/calendar/current/f-2.html>
  - (I **may** employ a more lenient set of cutoffs at the end of term but the official cutoffs will provide you with a 'worse case' estimate of your grade).
  - Also an "A+" doesn't have a specified letter grade that is different from an "A" for term letter grades.
    - I'll likely extrapolate the pattern e.g. C+ = 2.3, B+ = 3.3 so an A+ will be higher than a 4.0 and a bit lower than 4.3 (because not all course components allow for an A+ to be awarded)

## Why Grade Points?

- It's the official university grading system
  - Alternatives are possible but require faculty level approval
- Approval of anything other than a grade point system requires predetermined cutoffs at the start of the term e.g.,  $\geq 90\%$  equals 'A' etc.
  - Doesn't allow for consideration that individual components may be more challenging than others (lower cutoffs)
- Grade points are more lenient for grades on the lower-middle end of the scale
  - Grade points: Getting an "A"/4.0 on the assignment component worth 30% of the term grade yields a minimum term grade of 1.2 ( $4.0 * 0.3$ ) which equates to a term grade of 'D' (possibly higher)
  - Percentages: Getting an "A" may roughly work out to 90% or higher (depending on the scale) which works out to a minimum term percent of  $27\% = 90\% \text{ score} * 30\% \text{ weight}$ ...almost certainly an "F" for the term grade.

## How To Succeed In This Course: A Summary

1. Practice things yourself
2. (Programming section): Make sure that you keep up with the material
3. Start assignments early
4. Take good in-class notes, not just what I write but also what I say.

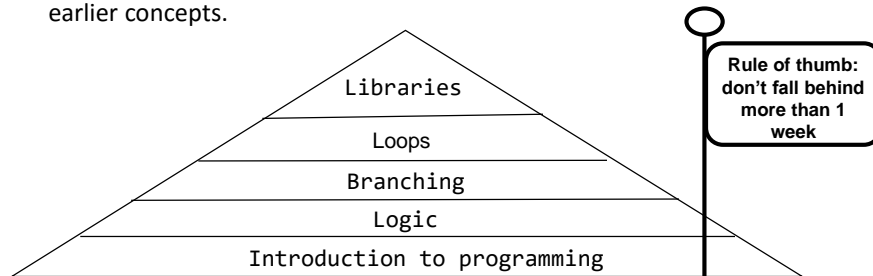
## #1 Practice Things Yourself

- Recall



## #2 (Programming): Keep Up With The Material

- (This applies to all topics but is especially pertinent to the VBA program writing section – A4 material - of the course).
- Concepts are cumulative and progressively more challenging
  - Many of the concepts taught later depend upon your knowledge of earlier concepts.



- Don't let yourself fall behind!
- *At least* attempt the assignment.

## #3 Start Assignments Early

- Don't look at the material just before the due date
  - Studying the concepts as you learn them throughout the term.
  - Programming section (A4) & to a large extent the database section (Assign 3): It's important to work through and understand concepts *\*before\** you start work on the assignment.
  - If you try to learn a new concept *and* work out a solution for the assignment at the same time then you may become overwhelmed.
- Don't start assignments the night (or day!) that they are due, they may take more time than you first thought
  - Assignments start getting much challenging later in the course (A3 & A4)
- Some assignments may require the application of multiple concepts, not all the concepts have to be completely covered before you start working on an assignment.
  - Start working based on what's currently been covered

## #4 Take Good In-Class Notes


- Hierarchy of note taking
  - None: just memorize course slides/notes.
  - Moderate: write notes when the instructor writes things out (“must be important”).
  - Extensive: write notes when the instructor writes things out but also when that person verbally describes things.
- This is essential when complex technical concepts (e.g. A3 & A4 material) are covered.

## How To Succeed In This Course: A Summary

1. Practice things yourself
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## Feedback




What is he talking about???

Wow I am the greatest speaker in the world!

Let me know how things are going in the course:

- Am I covering the material too slowly or too quickly.
- Can you read the slides and my hand writing.
- Can you hear me in the class.
- Etc.



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