

1 Review for DATA 301 Midterm 2

This is what the midterm looks like last year. I am not bound to the exact percentages, but they should give you a rough idea on how to study.

1.1 Proposed Format

Time limit: 80 minutes

Total marks: 30

- ~ 15 multiple choice (MC) questions (30 minutes total – 15 marks)
- ~ 3 of 4 small programming questions (30 minutes total— 15 marks)

1.2 Topic Breakdown

- 100% - Python

2 List of Topics

Table 1: Key

***	Extremely important
**	Assignment question or major topic
*	Important topic which probably should be tested
-	(no stars) topic covered but of minor importance
strikethrough	Important but not testable for this midterm

07Python (part I and II)

- Jupyter Notebook
- * Explain what is Python and note the difference between Python 2 and 3
- * Python data types (see using `type` function)
- * Define: algorithm, program, language, programming
- ** Follow Python basic syntax rules including indentation/comments
- *** Define and use variables and assignment
- * Apply Python variable naming rules
- * Perform math expressions and understand operator precedence

- *** Use strings, character indexing, string functions
 - ** String functions: split, substr, concatenation
 - ** Importing Python modules
 - * Use Python datetime and clock functions
- *** Read input from standard input (keyboard)
- *** Create comparisons and use them for decisions with if
- *** Combine conditions with and, or, not
- *** Use if/elif/else syntax
- *** Looping with for and while (eg. with **range** or with Python lists, strings., etc.)
- *** Create and use lists and list functions/methods
 - ** Differences between functions and methods
 - Advanced: list comprehensions, list slicing
- *** Create and use dictionaries
 - * Create and use tuples and sets
 - * Differences between lists, tuples, sets and dictionaries
- *** Print formatting
- *** Create and use Python functions
 - Difference between Python functions and procedures
 - * Use built-in functions in math library
 - * Create random numbers
 - Advanced: passing functions, lambda functions

07Python (part I)

- *** Open, read, write, append
 - ** Closing files (either in a **with** clause or using **fileobj.close()**)
- *** Process CSV files
 - * Using the csv module (you can use this module if you like but you don't have too)

- ** Define: exception, exception handling
- *** Use try-except statement to handle exceptions and understand how each of try, except, else, finally blocks are used
 - Define: IPv4/IPv6 address, domain, domain name, URL
- * Read URLs using urllib.request.