Instructions:
This quiz is not for marks, but to help us get to know you and to understand your skills and background. You do not need to write your name or your student number if you don’t want to. The knowledge items are NOT required to do well in the course since each will be taught during the term. It's always OK to say “I don't know”, but please do try your best to answer.

Part 1: Questions about your preferences and goals
1) What is your major and which year are you in your undergraduate studies?

2) Which classes are you taking this semester? Please enter approximate titles, not course numbers.

3) What programming languages do you have practical experience with, and to what comfort level? Place a star next to your favorite language.

4) In your opinion (if you have one), what are the most interesting robots (if any) that exist today?

5) Why are you taking this class? What do you hope to learn from it?

6) Are you planning to do your assignments on the Trottier-building machines?

7) What is roughly the CPU model of your laptop/desktop (e.g. i3, i5, i7), or if you don't know it, the age of your machine?

8) Are you comfortable using a Linux distribution (e.g. Ubuntu) on your machine? Note: The Gazebo 3D simulator runs best on an i5 or i7 CPU, particularly if you have a discrete GPU. So, if you do not have access to such a machine, or if you cannot install Ubuntu on it, we'll need to know early on in the semester to find a solution.
Part 2: Background Knowledge
For each of the following concepts, estimate your level of knowledge and comfort in the range 0-5 where: 0 means you have never heard the word before, 5 means you'd be happy to answer a final exam question on it tomorrow and intermediate numbers are linearly scaled between the two.
In particular, use only 1 or 2 if you have seen the concept, but have forgotten, or never really know, how to use it or what it means.

Recall, the purpose of this quiz is for us to get to know better what your background needs are and how to best address them. There are topics list below which I do not expect any student to know about, but you might surprise me.

Core Computer Science:
1) Loops, conditionals, classes, modularity
2) Data structures: lists, queues, stacks, hash maps/dictionaries, trees, graphs
3) Threads
4) Callbacks, remote procedure calls
5) Serialization
6) Breadth-first and depth-first search
7) Algorithm A* (A –star)

Linear Algebra:
1) Dot (scalar) product
2) Cross product
3) Matrix multiplication
4) Matrix inversion
5) Determinant
6) Gaussian elimination
7) QR decomposition
8) Cholesky decomposition
9) Singular Value Decomposition (SVD)
10) Least squares

Probability:
1) Probability density functions in 1D
2) Probability density functions in higher dimensions
3) Cumulative density functions
4) Expected value of a random variable
5) Variance of a random variable
6) Covariance and correlation of two random variables
7) Independence of two random variables
8) Conditional probability
9) Bayes’ rule
10) Maximum likelihood estimation

Calculus/Numerical Optimization:
1) Single-variable derivative
2) Gradient
3) Jacobian matrix
4) Hessian matrix
5) Taylor approximation
6) Finding local minima/maxima
7) Saddle points
8) Gradient descent/ascent

Tools
1) OpenCV
2) numpy
3) ROS (the Robot operating system)