Intro to Self-Driving Cars Nanodegree Weekly Outline

Week #	Material to Cover
First Day	● Welcome ● Join Slack and Forums ● Support services available
Week 1	● Orientation ● Bayesian Thinking: Introduction ● **Project 0: Joy Ride**
Week 2	● Bayesian Thinking: ○ Probability ○ Conditional Probability ○ Programming Probability in Python ○ Bayes' Rule ○ Programming Probability Distributions
Week 3	● Bayesian Thinking: ○ Gaussian Distribution ○ Robot Localization ○ Histogram Filter in Python ● **Optional (and highly encouraged) Project: Histogram Filter in Python**
Week 4	● Working with Matrices: ○ Section Overview ○ Introduction to Kalman Filters ○ State and Object Oriented Programming
Week 5	● Working with Matrices: ○ Matrices and Transformation of State
Week 6	● Working with Matrices: ○ Implement Matrix Class ● **Project 1: Implement Matrix Class** ● C++ Basics: ○ C++ Getting Started ○ C++ Vectors ○ Practical C++
Week 7	● C++ Basics ○ C++ Object Oriented Programming ○ Python and C++ Speed ○ Translate Python to C++ ● **Project 2: Translate Python to C++**

Week 8	● Performance Programming in C++: ○ C++ Intro to Optimization ○ C++ Optimization Practice
Week 9	● Performance Programming in C++: ○ Optimize Histogram Filter ● **Optional project: Optimize Histogram Filter** ● Navigating Data Structures: ○ How to Solve Problems
Week 10	● Navigating Data Structures: ○ Data Structures ○ The Search Problem
Week 11	● Navigating Data Structures: ○ Implement Route Planner ● **Project 3: Implement Route Planner** ● Vehicle Motion and Control: ○ Odometers ○ Speedometers and Derivatives
Week 12	● Vehicle Motion and Control: ○ Accelerometers, Rate Gyros and Integrals ○ Two Dimensional Robot Motion and Trigonometry
Week 13	● Vehicle Motion and Control: ○ Reconstructing Trajectories from Sensor Data ● **Optional Project: Reconstructing Trajectories from Sensor Data**
Week 14	● Computer Vision and Machine Learning: ○ Computer Vision and Classification
Week 15	● **Project 4: Traffic Light Classifier**
Week 16	● Graduation: ○ Congratulations! You've Finished! ○ Guaranteed Admission into your next Nanodegree
End of Term	