Unit 1 Algorithms, Graphics, and Graphical User Interfaces Days for Lesson Total Days

Lesson 1.1 Algorithms and Agile Development 15 days 15 days

Activity 1.1.1 Principles (2 days)

Activity 1.1.2 Light-Bot: Input, Output, State (1 day)

Activity 1.1.3 Branching and Iteration (2 days)

Activity 1.1.4 Objects and Methods (1 day)

Activity 1.1.5 Variable Roles Part I (1 day)

Activity 1.1.6 Variable Roles Part II (2 days)

Problem 1.1.7 Scratch Game or Story (6 days)

Lesson 1.2 Mobile App Design 15 days 30 days

Activity 1.2.1 Bits and Bytes (1 day)

Activity 1.2.2 Introducing App Inventor (2 days)

Activity 1.2.3 Creating Mobile Apps (2 days)

Activity 1.2.4 Analyzing A Program (2 days)

Project 1.2.5 Modifying A Program (2 days)

Problem 1.2.6 Designing an App (6 days)

Lesson 1.3 Algorithms in Python 20 days 50 days

Activity 1.3.1 Programs are Data (1 day)

Activity 1.3.2 Python Variables and Functions (2 days) Breadboard here????????

Activity 1.3.3 Branching and Output (2 days)

Activity 1.3.4 Nested Branching and Input (2 days)

Activity 1.3.5 Strings (2 days)

Activity 1.3.6 Tuples and Lists (3 days)

Activity 1.3.7 For Loops (3 days)

Activity 1.3.8 While Loops (2 days)

Project 1.3.9 Tools for Collaboration (3 days)

Lesson 1.4 Images and Object-Oriented Libraries 17 days 67 days

Activity 1.4.1 Procedural Abstraction (1 day)

Activity 1.4.2 Objects and Methods (2 days)

Activity 1.4.3 Images and Arrays (2 days)

Activity 1.4.4 Python Imaging Library API (2 days)

Project 1.4.5 Image Algorithms (3 days)

Activity 1.4.6 Digital Property and Forensics (2 days)

Problem 1.4.7 Image Artist (5 days)

Lesson 1.5 GUIs in Python 10 days 77 days

Activity 1.5.1 Human-Computer Interaction (1 day)

Activity 1.5.2 The API for the Tkinter Canvas (2 days)

Activity 1.5.3 The MVC Pattern with Tkinter (2 days)

Problem 1.5.4 Design a Python GUI (5 days)

Unit 2 The Internet Days for Lesson Total Days

Lesson 2.1 The Internet and the Web 8 days 85 days

Activity 2.1.1 The Rise of the Internet (2 days)

Activity 2.1.2 Your Favorite Web Page (1 day)

Activity 2.1.3 Protocols and Bandwidth (2 days)

Activity 2.1.4 HTML and CSS (2 days)

Activity 2.1.5 Secure Protocols (1 day)

Lesson 2.2 Shopping and Social on the Web 14 days 99 days

Activity 2.2.1 HTML5 and JavaScript (3 days)

Activity 2.2.2 Introducing PHP (3 days)

Activity 2.2.3 Databases and SQL (2 days)

Project 2.2.4 Dynamic Data-Driven Design (5 days)

Activity 2.2.5 Career Fields of CS and IT (1 day)

Lesson 2.3 Security and Cryptography 8 days 107 days

Activity 2.3.1 The Vulnerable User (2 days)

Activity 2.3.2 Security by Encryption (1 day)

Activity 2.3.3 Security and Liberty (2 days)

Project 2.3.4 The Heist (3 days)

Unit 3 Raining Reigning Data

Lesson 3.1 Visualizing Data 14 days 121 days

A3.1.1 Time Series and Trends (3 days)

A3.1.2 Issues with Data (2 days)

A3.1.3 Big Data and Parallel Processing (2 days)

A3.1.4 Pie Charts and Bar Graphs (3 days)

A3.1.5 Histograms and Distributions (4 days)

Lesson 3.2 Discovering Knowledge from Data 16 days 137 days

Activity 3.2.1 Inferential Statistics (2 days)

Activity 3.2.2 Image Data (1 day)

Activity 3.2.3 Linked Data (1 day)

Activity 3.2.4 Geographic Data (2 days) TRY???

Activity 3.2.5 Considering Gattaca (1 day)

Project 3.2.6 Genomic Data (optional, 3 days)

Problem 3.2.7 Investigating with Data (6 days)

Unit 4 Intelligent Behavior Days for Lesson Total Days

Lesson 4.1 Moore’s Law and Modeling 12 days 149 days

Activity 4.1.1 Computing Impacts All Fields (2 days)

Activity 4.1.2 Basic Control Circuits (3 days) Might be better Unit 1.3

Activity 4.1.3 Introducing Simulations (3 days)

Activity 4.1.4 Varying Parameters (2 days)

Activity 4.1.5 Assumptions, Abstractions, and Ethics (2 days)

Lesson 4.2 Intelligent Agents 22 days 171 days

Activity 4.2.1 Emergent Behavior (2 days)

Activity 4.2.2 Neural Networks (3 days)

Project 4.2.3 Modifying a Simulation's Assumptions (5 days)

Activity 4.2.4 Beauty in Chaos and Fractals (2 days)

Project 4.2.5 Computer Science Principles (10 day)