# CBD Robotic Institute

# Python Programming

The course will meet two sessions per week, each session lasts two hours. There will be forty five minutes lecture following an hour and fifteen minutes lab time, students will work on real-world projects under guidance of instructor (students supposed to work on the projects at home, during the lab time, instructor will help students to troubleshoot errors as well as perfect the projects).

**Week 1 (Unit 1 – Basics):**

**Session 1:** cloud9 setup, data types, if/else statement, for/while loop

**Session 2:** functions, returning of function, passing parameters/objects

**Week 2:**

**Session 1:** Data Collections (list, tuple, dictionary), Strings

Project: Bartender

**Session 2:** Object & Class, constructor, initializing data/object, creating instances

**Week 3:**

**Session 1:** inheritance, overriding, multiple inheritance

Project: Bicycle

**Session 2:** continue Bicycle project, finish up unit 1

**Week 4 (Unit 2 - Database):**

**Session 1:** Setup Postgresql database, create table, create rows, query (select, insert, etc.)

**Session 2:** Setup sqlalchemy, create models, create and query data, add relationships

**Week 5:**

**Session 1:** tbay project

**Session 2:** continue tbay project

**Week 6 (Unit 3 - Flask)**

**Session 1:** HTML and CSS

**Session 2:** Setup Flask, deploy Hello world Flask, structure a Flask project, build a blog

**Week 7:**

**Session 1:** Extend the blog, authentication using Flask-Login

Project: Blogful

**Session 2:** migrate database using Flask-Migrate, continue Blogful project

**Week 8:**

**Session 1:** Unit testing, test web applications

Project: testing Blogful

**Session 2:** extend the blog test suite, integration using Travis CI, continue testing Blogful

**Week 9 (Unit 4 – API)**

**Session 1:** build API with Flask, write the end point

**Session 2:** use query strings in an API, send data to an API with POST

Project: use unit test to test API

**Week 10:**

**Session 1:** Create a Song Management API

**Session 2:** Upload files using API

Project: Tuneful

**Week 11 & 12 (Unit 5 – Capstone project)**

These two weeks will dedicate to Capstone project. Each student will propose his/her own project to work on independently under instructor's guidance.