**Title:** Programming for Entrepreneurs, Spring 2014

**Time:** 10:00am to 5:00pm (Feb 7, Feb 8, Feb 9)

**Professor:** Sameer Maskey, PhD

**Email:** smaskey@cs.columbia.edu

**Course Code:** B8124 sec. 1

**Location:** URIS 332

**Course Description:**

In this course, you will learn the fundamentals of programming so you can start writing your own web applications. The course will be very hands-on and you are expected to code during the class. The topics will include - fundamentals of computer science, programming basics, data structures, client-server architecture, javascript, application programming interface, LAMP stack and web frameworks. We will also discuss scalability issues and the use of cloud infrastructures for application deployment. As part of the class and homework assignment, you are expected to build a small web application by the end of the class.

No programming background is required.

**Note:**

Please bring your laptops to the class. You will be writing short programs during the class as a part of the class assignment.

**Course Syllabus:**

1. Fundamentals of Computer Science
   - Programming languages
   - Data structures
   - Algorithms

2. Markup Languages
   - HTML vs. XML
   - Webpage structure
   - HTML elements

3. Cascading Style Sheets (CSS)
   - CSS syntax
- Layout and UI design
- CSS styling

4. JavaScript (JS)
- Syntax
- JS objects, document object
- Functions
- jQuery library
- AJAX
- Overview of JS libraries

5. Server side programming
- PHP vs. other languages
- PHP Syntax
- Variables
- Flow control
- Get and Post Methods
- Form handling
- Sessions
- Cookies

6. Databases
- Relational databases
- Non-relational databases
- Writing SQL queries

7. Client-Server Architecture
- Webserver (Apache)
- Database server (MySQL)
- LAMP stack

8. Web Frameworks
- Model View Controller (MVC) frameworks
- PHP frameworks – Zend vs. Cakephp
- Ruby on Rails vs. Django
- Choices and framework decisions

9. Application Deployment Setup
- Life cycle of application development
- Development, Test, Stage and Production servers
- Version Control Systems
- Incremental deployment
- Continuous integration servers

10. Cloud Infrastructures and Deployment
- Deploying web application in the cloud
- Amazon EC2, Rackspace, Heroku and others
- Load balancers
- CDNs
- Application scalability