Presidential Initiative for Artificial Intelligence and Computing (PIAIC)

https://www.piaic.org

Artificial Intelligence Specialist Program

Course Syllabus

Quarter I: AI-101 AI for Everyone and Fundamentals of Programming using Python

First Quarter 2019 in Islamabad (12 Weeks)

Teaching Team: Muhammad Qasim, Rauf ur Rahim, Faizan Amin, Tahir Bhatti, Adan Abid, and Arslan

Class Sections:

Bahria University Auditorium:
Sunday -- 09:00 AM to 12:00 PM
Sunday -- 12:15 PM to 03:15 PM
Sunday -- 03:30 PM to 06:30 PM
Sunday -- 06:45 PM to 09:45 PM

Course Description: In this course, you'll learn about basic programming concepts using Python, such as lists, dictionaries, classes, functions and loops, and practice writing clean and readable code with exercises for each topic. You'll also learn how to make your programs interactive and how to test your code safely before adding it to a project. It is a fast-paced, thorough introduction to programming with Python 3.7 that will have you writing programs, solving problems, and making things that work in no time. In this quarter we will also learn Git, the distributed version control system. We will also review Git based GitHub services.

Please bring a Laptop with you for the Classes (Required, but not mandatory)

Preparation for International Microsoft Python Certification:
Exam 98-381: Introduction to Programming Using Python by Microsoft

Textbooks:
1. A Smarter Way to Learn Python: Learn it faster. Remember it longer by Mark Myers
2. Learn Version Control with Git: A step-by-step course for the complete beginner by Tobias Günther

Homework Exercises:
http://www.asmarterwaytolearn.com/python/index-of-exercises.html

Reference books:
1. Python Crash Course: A Hands-On, Project-Based Introduction to Programming by Eric Matthes
2. Git Essentials by Ferdinando Santacroce

Certification Exam Learning Material:
https://sites.google.com/a/nu.edu.pk/noman-islam/exam-98-381-introduction-to-programming-using-python

PIAIC Announcements Facebook Group: https://www.facebook.com/groups/piaic/
Course Facebook Group: https://www.facebook.com/groups/deep.learning.edu/

Portal for online and onsite students:
https://portal.piaic.org/

Grading:
Students will be graded based on Percentile
https://en.wikipedia.org/wiki/Percentile
https://en.wikipedia.org/wiki/Percentile_rank

A-Grade: 78 - 99 Percentile
B-Grade: 41 - 77 Percentile
C-Grade: 23 - 40 Percentile
D-Grade: 1 - 22 Percentile
F-Grade: Anyone who doesn't appear in two or more exams

Note: Anyone who receives a F-Grade will be removed from the program. Students who receive a D-Grade will be put on probation, and be required to earn a grade of C or above in the next quarter, to remain in the program. Anyone absent from an exam will be deemed to have received a score of zero.

Course Outline:

1. **Introduction to Machine Learning, Data Science and AI** (Week 1, 2 and 3)
   AI for Everyone
   https://www.coursera.org/learn/ai-for-everyone
   Note: All optional sections in AI for Everyone course are required sections in this course.
   Homework: Please watch the above videos at least three times at home
   Additional Homework Viewing:
   https://aischool.microsoft.com/en-us/business/learning-paths/introduction-to-ai-technology-for-business-leaders/explore-state-of-the-art-ai-technology/introduction-to-ai-technology

   AI for Everyone Quiz in Week 3
   Total Questions: 60, Total Time: 75 minutes

2. **Additional and Supplementary Material: Fundamentals of Version Control with Git**
   (Videos and reading material available on Student Portal to help students learn Git, this material will not be covered in class to save class time)
   Chapters 1, 2, 3, and 4 Learn Version Control with Git: A step-by-step course for the complete beginner by Tobias Günther

   We will also covers these readings:
   https://help.github.com/articles/markdown-basics/
   http://stackoverflow.com/questions/5009600/difference-between-fork-and-branch-on-github
   http://stackoverflow.com/questions/3329943/git-branch-fork-fetch-merge-rebase-and-clone-what-are-the-differences
   https://git-scm.com/book/en/v2/Git-Branching-Rebasing
   http://git-scm.com/book/en/v2/Git-Branching-Remote-Branches#Tracking-Branches

   For practice: https://try.github.io/levels/1/challenges/1

   Homework:
   https://www.datacamp.com/courses/introduction-to-git-for-data-science

   Git Quiz in Week 1 of Quarter 2
   Total Questions: 60, Total Time: 75 minutes
   Note: Git study material and videos are being made available in the first quarter so that students are able to use Git immediately. The Git Quiz will be conducted in the first week of the next quarter i.e. second quarter and not in this first quarter.

3. **Python Programming Part 1** <u>(Weeks 4B, 5 and 6)</u>
   Chapters 1-20 of A Smarter Way to Learn Python: Learn it faster. Remember it longer by Mark Myers

   Homework:
   http://www.asmarterwaytolearn.com/python/1.html

   Programming Assignments will also be given.

   Python Quiz 1 in Week 6

4. **Python Programming Part 2** <u>(Weeks 7 and 8)</u>
   Chapters 21-40 of A Smarter Way to Learn Python: Learn it faster. Remember it longer by Mark Myers

   Homework:
   http://www.asmarterwaytolearn.com/python/21.html

   Programming Assignments will also be given.

   Python Quiz 2 in Week 8

5. **Python Programming Part 3** <u>(Weeks 9-12)</u>
   Chapters 41-77 of A Smarter Way to Learn Python: Learn it faster. Remember it longer by Mark Myers

   Homework:
   http://www.asmarterwaytolearn.com/python/41.html

   Programming Assignments will also be given.

   Python Quiz 3 in Week 12