ITMD 513 SYLLABUS

ITMD 413 Open-Source Programming

Hours: 3 credit hours / 45 contact hours

Instructor: Sheikh "Sam" Shamsuddin, Ph.D.
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Email: shamsuddin@iit.edu
Office Hours: By appointment, email, or text message. Virtual meeting when necessary.
Classroom, Day & Time: Online Course. Virtual meeting when necessary.
Start Date: Spring 2024, 1/8/24 – 5/4/24.

Textbook: (Required)
Intro to Python for Computer Science and Data Science: Learning to Program with AI, Big Data and The Cloud. By Dietel and Dietel, 1st ed.
ISBN-13: 978-0135404676
ISBN-10: 0135404673

Specific Catalog Description:

a. Catalog Description:
Contemporary open-source programming languages and frameworks are presented. The student considers design and development topics in systems, graphical user interfaces, networks, and web programming. Dynamic scripting languages are covered using object-oriented, concurrent, and functional programming paradigms. Concepts gained throughout the course are reinforced with numerous exercises which will culminate in an open-source programming project.
b. Prerequisites: ITMD 411
c. Required.

Specific goals for the course

a. Course Outcomes:

- Learn how to write computer programming using Python language.
- Learn the Python language, its structure, syntax concepts, libraries, and applications.

- Learn Input/output, functions, data types, control structures, and lists/arrays.
- Demonstrate Object Oriented Programming using Python.
- Become confident in developing and writing Object-Oriented Programs.
- Test, design, and solve problems using the Python Programming Language

b. Course Student Outcomes:

Upon successful completion of the course the student should be able to do the following:

- Write, compile, execute, troubleshoot, and resolve problems using the Python Programming Language and its features.
- Demonstrate Object Oriented Programming methodology in program development.
- Identify important Python ample libraries.
- Outline the fundamentals of Data Science.
- Locate and use Help Resources.
- Demonstrate implementation of a Graphical User Interface (GUI).
- Analyze and evaluate software application and development theory and concepts.

Topics to be covered

a. Class and course introduction.
   i. Downloading and installing Python.
   ii. Compiling and executing simple Python programs.
b. Simple I/O. Decision Structures.
c. Repetition Structures. Functions.
d. Lists and Tuples.
e. File I/O and Exceptions.
f. Creating Graphs with Matplotlib and Strings in Python.
g. Data Analysis with Numpy.
h. Statistical Data Analysis with Pandas.
i. Data Visualization with Python seaborn package.
j. Dictionary, and Sets
k. Classes and Object-Oriented Programming.
l. Object Oriented Programming.
m. Inheritance.
n. Recursions and Graphical User Interface (GUI).

Readings/Videos: Readings for the class will be assigned from the textbook as well as in the form of online reading. Online resources and videos will be linked from or embedded in a Blackboard page. You must do all readings, view the videos, and complete all labs and assignments. These materials are a necessary and integral part of the class and will form the basis for any class discussions on the topic. Specific readings are assigned by the topic above.

Course Notes: The course will make intensive use of Blackboard (http://blackboard.iit.edu/) for communications, assignment submissions, group project coordination, providing online resources, and administering examinations. You should be aware that notetaking is encouraged and should help them understand of the material. All remote students will view the course lectures online via Blackboard, and online readings and other class resources may be found on Blackboard.

Attendance: Students are expected to be responsible for viewing all lectures provided online. Students may contact the instructor if further assistance is needed.

Assignments, Quizzes, Labs, and Exams: This course involves a great deal of hands-on activities and programming assignments. All Assignments, quizzes, and exams must be completed as scheduled. You must complete all tasks on time. Experience has shown that students who were behind on their assignments never caught up. Collaboration and teamwork are encouraged; however, you must submit and do your own work. All tasks mentioned above will be assigned via the class blackboard.

Academic Honesty: All work you submit in this course must be yours. Plagiarism is a serious violation in an academic institution. Any violation of the IIT policies regarding academic honesty and/or integrity will be referred automatically to the appropriate university authorities for disposition. Please check the appropriate pages on the university website for definitions and regulations. The minimum penalty for cheating will be a zero for all parties involved in that test, assignment, hands-on exercise, or assessment. There is no excuse for not understanding this policy and if you do not understand it please consult with your instructor to discuss the matter until you do.
http://bulletin.iit.edu/graduate/academic-policies-procedures/academic-honesty/

E-mail: Every attempt will be made to answer e-mail daily. When sending an e-mail please indicate clearly the problem or concern you are having, your name, and course enrolled.

Classroom behavior (for an in-class session): During the class session, considerate conduct by all persons is important to a favorable learning environment. Any infringement on the rights of others to get an education willbe dealt with appropriately. Please set all electronic devices such as cell phones, pagers, or other electronic devices to silent mode. No cell phone talks are allowed during the lecturing session. If you must take a call, please continue your conversation outside of the session and make it short so you will not miss your lectures.

General notes: Most students sign up for courses with the best intentions. If you are experiencing course/college-related problems, please feel free to talk to the instructor before a crisis develops so that we can resolve them in a manner beneficial to all parties involved.

Grading: The method of student evaluation is based on the accumulation of points on given Assignments, Quizzes, Labs, Projects, and Exams. The grading distribution is as follows:

The grading criteria will be as follows:

A - *Outstanding work reflecting substantial effort* 90% and up
B - *Adequate work fully meeting the expected of a graduate student* 80% to <90%
C - *Weak but marginally satisfactory work not fully meeting expectations* 70% to <80%
E - *Unsatisfactory work* less than 70%

Withdrawal policy: No longer attending a class does not constitute an automatic withdrawal. You are responsible to withdraw from the course if they have decided not to pursue the course anymore. Please check the university's calendar for the last date to withdraw from the course.

Disabilities: Reasonable accommodations will be made for students with documented disabilities. In order to receive accommodations, students must obtain a letter of accommodation

from the Center for Disability Resources and make an appointment to speak with me as soon as possible.

Website: https://www.iit.edu/cdr
The Center for Disability Resources (CDR) telephone is 312.567.5744 or disabilities@iit.edu.

Illinois Tech's Sexual Harassment and Discrimination Information:
Illinois Tech prohibits all sexual harassment, sexual misconduct, and gender discrimination by any member of our community. This includes harassment among students, staff, or faculty. Sexual harassment of a student by a faculty member or sexual harassment of an employee by a supervisor is particularly serious. Such conduct may easily create an intimidating, hostile, or offensive environment.

Illinois Tech encourages anyone experiencing sexual harassment or sexual misconduct to speak with the Office of Title IX Compliance for information on support options and the resolution process.

You can report sexual harassment electronically at iit.edu/incidentreport, which may be completed anonymously. You may additionally report by contacting the Title IX Coordinator, Virginia Foster at foster@iit.edu or the Deputy Title IX Coordinator, Esther Espeland at eespeland@iit.edu.

For confidential support, you may reach Illinois Tech's Confidential Advisor at (773) 907-1062. You can also contact a licensed practitioner in Illinois Tech's Student Health and Wellness Center atstudent.health@iit.edu or (312)567-7550

For a comprehensive list of resources regarding counseling services, medical assistance, legal assistance and visa and immigration services, you can visit the Office of Title IX Compliance website at https://www.iit.edu/title-ix/resources.

Tentative Course Schedule

Week	Topics	Chapters
1 – 1/8	Class and course introduction. Downloading using and Python. Python I/O. Control Structure.	Notes, chp 1,2,3
2 – 1/15	Functions.	Notes, chp 4
3 – 1/22	List and Tuples. Introduction to Anaconda and Jupyter Notebooks	Notes, chp 5
4 – 1/29	Creating Graphs with Matplotlib. File I/O.	Notes, chp 9
5 – 2/5	Sorting and Searching Algorithms.	Notes, chp 11
6 – 2/12	Strings and Regular Expressions.	Notes, chp 8
7 – 2/19	Data Analysis with Numpy.	Notes, chp 7
8 – 2/26	Statistical Data Analysis with Pandas.	Notes
9 – 3/4	Dictionaries and Sets.	Notes, chp 6, 9
10 – 3/11	------- Spring Break -------	

11 – 3/18	Data Visualization with Python seaborn package.	Notes
12 – 3/25	Object-Oriented Programming.	Notes, chp 10
13 – 4/1	Recursions and Graphical User Interface (GUI).	Notes. Chp 11
14 – 4/8	Natural Language Processing (NLP). Machine Learning.	Notes, chp 12, 15
15 – 4/15	Deep Learning.	Notes, chp 16
16 – 4/22	Big Data: Hadoop, Spark, NoSQL and Internet of Things (IoT).	Notes, chp 17
17 – 4/29	Final Assignment.	

NOTE: All Assignments are available on the class blackboard

Expectations and Rules

1. This course is an online course. You need access to a laptop or at least have access to a computer to complete all your assignments. Access to the Internet is compulsory. Your active participation and engagement are vital if you plan to obtain maximum benefit from the class. Participation requires preparation and completion of assignments, reading, and quizzes by the due dates. Your time management is imperative in this course.
2. All assignments have due dates. Late work is not acceptable. All assignments' due dates are listed on the class Blackboard (Bb).
3. To achieve a full score on your assignment, a complete work must be submitted by following all requirements and specifications. Unless requested by the instructor, no assignments should be sent to the instructor's email address. Any assignments sent to the instructor's email without permission will be disregarded.
4. Discussions and collaborations are permitted. However, you must do your assignments. Dishonest work will be disciplined according to the school's policy. https://www.iit.edu/student-affairs/student-handbook/fine-print/code-academic-honesty
5. All assignments submitted will be checked for plagiarism through the blackboard's SafeGuard Application tool. Any academic dishonesty or violations found will be dealt with as follows: (depending on the work):
    a) You get zero for your current assignment.
    b) You will get one letter grade less in the course. For example, if you get an A, you will get a B grade.
    c) You will be expelled from the university.
6. If you are caught plagiarizing, all of your previous work relating to the course will be re-examined and re-evaluated. All of your future work in the course will be closely scrutinized.
7. You understand the course syllabus and the grading criteria as mentioned above. You understand that the grading distribution is fixed. You understand that there is no grading curve and no percentage round-up to the nearest higher grade.
8. You should not post course materials of any kind on Internet sites such as (but not limited to) Course Hero and Chegg without the consent of the instructor.
9. You should not assist others in the dishonest use of course materials such as student papers, examinations, and reports.
10. You should not provide course materials such as papers, lab data, reports and/or electronic files to be used by another student as that student's own work.
11. You should not copy group assignments individually as one's own independent work.

12. You should not copy or take pictures of course materials such as videos, exams, quizzes, or assignments and post the copied items and/or pictures on the Internet or share these copied items and/or pictures with other students who have not yet completed the assignments.
13. You should not take pictures or copy course materials that are considered confidential by the instructor such as exams or quizzes.
14. You may be dropped from the course if you do not participate in the course activity, or do not submit your required assignments in two or more consecutive weeks.
15. Excuses such as the following are not acceptable:
    I forgot…
    I thought I had already submitted my assignment.
    I am not aware of the due date.
    I am busy with work or other classes.
    I have an exam in my other course.
    I don't understand the assignment.
    I am sick (whenever the assignment is due).
    The instructor never explained or showed examples to me of how to do the assignment.
16. One can be inclined to be bold when communicating through digital media. Please be professional and respectful when interacting or sending emails to someone. Be wary of your communication tone. Rude attitudes and disrespectful email tones will be dismissed and dealt with according to the school policy.
17. An incomplete grade is not allowed.
18. Most students sign up for courses with the best intentions. If you are experiencing course/university-related problems, please feel free to talk to your instructor before a crisis develops so that you and your instructor can resolve them in a manner beneficial to all parties involved.
19. Bad planning on your part is not an emergency on the instructor's part.

The instructor reserves the right to modify, change, or waive any part of the syllabus or the evaluation criteria for this course. The instructor will provide prior notification of any modifications. The class schedule provides a general guideline for planning and preparation purposes only. Actual dates may vary at the instructor's discretion reflecting subject difficulty, length of discussions, addition of supplemental materials, etc.