Course details: 3 Credit Hours, Thursday 6-8.40pm
Room IT 270
First Class: January 14th 2016

Instructor: Meeta Pradhan, Ph.D., Assistant Research Professor

Contact: WK 306, 719 Indiana Avenue
Email: mpradhan@iupui.edu
Phone 317-278-0148
Office Hours: Thursday 3:30-5:30pm
Contact policy: Email

Prerequisite: None (Not an extension of any undergraduate or graduate course)

Class Timetable:
6:00-6:20 Attendance, Review
6:20 to 7.15 New Topic
7:15 to 7:30 Break
7:30-8:40 New Topic Continued and In class Assignment

COURSE DESCRIPTION
A data scientist is the person who has the skills to extract knowledge from a data source. This course introduces fundamental skills for understanding data. Students create, access, munge, analyze, and visualize the data to draw inferences. The course uses real datasets from different domains such as business, social sciences, biological sciences and healthcare.

EXPANDED COURSE DESCRIPTION
Massive amount of data is being collected every day. In order to extract meaningful knowledge from this big data requires data analytic skill sets. This course aims at introducing the students to data analytics foundation. This is the fundamental course for the higher data analytic courses taught in the School of Informatics and Computing. The course covers the different topics of data collection, data preparation, data characterization, data presentation, and data analysis. In this course students will use python for data analysis.
INTENDED STUDENTS
This course is intended for all undergraduate students planning to obtain Informatics Major. Most of the students coming to the class will have no previous knowledge with respect to understanding the data. This course is intended as preparatory course for higher level data analytic courses in the School of Informatics.

PURPOSE OF COURSE AND GENERAL INFORMATION
Massive amount of data is being collected every day. Skills are required to analyze these data at massive levels. The purpose of I123 is to prepare you to understand the different methods of understanding the data i.e. preparation, characterization, statistical principles, probabilities, extraction, visualization and inference. Students will write scripts for understanding data using the python. Students will learn basics of statistical principle used for data analysis. Students will get hands-on application with working on data from different disciplines like the healthcare, business, and social science.

COURSE OUTCOMES
Learning objective: Data Fluency is the foundation course for the higher level courses in Informatics. The students will learn skills to understand the different data types by using statistical principles, exploration, visualization, and inference. Students will get hands-on application of working with python scripting for understanding data from different disciplines.

Core Competencies
The core competencies of this course include the following: Analyze the problem; Implement techniques, Evaluate and Refine them to analyze the problem.

COURSE ORGANIZATION AND STRUCTURE
The course is organized into three primary Themes: (A) Understanding the data (B) Extracting the Knowledge from the data (C) Interpreting the knowledge to solve the real world problems. Key themes will be addressed each week and each theme is accompanied by its own set of specific goals and outcomes.

SYLLABUS
The current syllabus for I123 Data Fluency is available on Canvas. Please read the syllabus carefully and if you have any questions, do not hesitate to contact the instructor or teaching assistant. You are responsible for knowing the content of the syllabus and being prepared to be quizzed on it. This syllabus may be modified by the instructor at any time, but a current version will always be available on Canvas.
**COURSE MATERIALS**
All reading materials for the course may be downloaded from the Resources folder on the Canvas. The course textbooks are listed below. Students are encouraged to become familiar with the readings at their earliest convenience to enhance retention.

**COURSE TEXTBOOKS**


**SOFTWARE, TECHNICAL REQUIREMENTS, AND SUPPORT**
Students are responsible for making all necessary provisions for accessing course-related resources, including those that are available in CANVAS.

**In order to access licensed information resources from off-campus computers**, students may be required to Install IU’s VPN client onto your home computer. This allows your computer to access the IUPUI pool of resources by adopting an IUPUI IP address so that IP-restricted resources recognize your computer as an IU-affiliated machine.

Excellent technical assistance is available from the following:

KnowledgeBase Online Q & A:  <http://kb.iu.edu>

ITHelpLive:  <https://ithelplive.iu.edu/>

UITS Phone support:  317-274-4357, 24 hours a day, 7 days a week

Email:  <ithelp@iu.edu>

**IUanyWare** is a client virtualization (CV) service available to Indiana University students, faculty, and staff. With IUanyWare, you can use a web browser or mobile app to run certain IU-licensed software applications without having to install them on your computer or mobile device.

You’ll need to do some initial setup, and configure cloud storage if you wish to store files remotely (e.g., on your IU Box or SharePoint My Site account); see:
For information on software currently available through IUanyWhere and in the IUB and IUPUI STCs, see the current software list at:
https://stcweb.stc.indiana.edu/Public/Software/current.cfm

Please note that IUanyWhere resets your account at the end of each school year. If you had an account last spring 2015, it will have been reset for this spring. Details at:
https://kb.iu.edu/d/bdlb

REQUIRED SOFTWARE

Anaconda- a Python distribution for data analytics and scientific computing, which includes the IPython Notebook, NumPy and SciPy.

PRINCIPLES OF UNDERGRADUATE LEARNING (PUL)

Learning outcomes are assessed in the following areas:

1. Knowledge and skills mastery  
   Major emphasis
2. Critical thinking and good judgment  
   Moderate emphasis
3. Effective communication  
   Some emphasis
4. Ethical behavior

LEARNING OUTCOMES

Upon completion of this course the students will be able to understand the following:

PUL

1. Understanding the different data and their types  
   1, 2
2. Statistical principles and probabilities to understand data  
   1, 2
3. Data exploration, visualization and inference  
   1, 2, 3
4. Write programs to perform data analytics on large, complex datasets in python  
   1, 2, 3, 4

ASSIGMENTS

Assignment constitute 30% of the grade. Only assignments submitted through the appropriate assignment sections of CANVAS will be graded. Assignments submitted by emails will not be graded. The file format for uploading assignments is your name followed by your program (e.g., Bio, HCI, HI, MAS), the course number, and the assignment title for example, Pradhan_Bio_I123_Assignment1.pdf.
QUIZZES
Quizzes constitute 20% of your grades. They may/may not be open-book and open-note but timed. The time limit on the quiz is set so that you have at least 90 seconds per quiz point, which for true/false or multiple choice is one question. Standardized tests usually give you about 30 seconds to answer a question, so you should have enough time to answer the question if you know the material thoroughly. However, it is not enough time to look up most of the answers in an “open book” fashion. Therefore, it is important to prepare for the quiz beforehand by underlining key points, taking notes, rereading key points, and taking the practice web quizzes when available.

MIDTERM and FINAL EXAM
Midterm and Final exam constitute total 40% of the grades. Both will not be open-book and open-note.

EXPECTATIONS, GUIDELINES AND POLICIES

ATTENDANCE
- Class attendance is required for classroom-based courses.
- Attendance shall be taken in every class. If you do not sign the attendance sheet while in class, you shall be marked absent.
- Signing the attendance sheet for another student is prohibited.
- The instructor is required to submit to the Registrar a record of student attendance, and action shall be taken if the record conveys a trend of absenteeism.
- Absences must be explained to the satisfaction of the instructor, who will decide whether omitted work may be made up.
- Missing class reduces your grade through the following grade reduction policy:
  - You are allowed ONE excused or unexcused absences.
  - Regardless of the reason, a 2nd absence results in a 5% reduction in your final grade
  - A 3rd absence results in a 10% reduction.
  - Further absences result in an F in the course.
  - Missing class may also reduce your grade by eliminating opportunities for class participation.

CLASS PREPARATION
- You are expected to read the chapters and the material given in the class.
- Research shows that regular attendance, preparation and active class participation have a positive impact on your final grade for a course.
- Ask whatever questions you have pertaining to the course, while we are face to face.
- When not in class, ask on the class forum and ask your questions and receive answers. In this way, the entire class can benefit from your question. There are no silly questions!!!!
LATE ASSIGNMENTS AND SUBMISSION OF ASSIGNMENTS

- All work (unless otherwise noted) should be submitted via an attachment in the Assignments area.
- Class Work will be due by 11:55 PM of the specified day. If your Class Work is late, your respective assignment will be assessed a 25% late penalty. Any assignment that is not turned in by 24 hours after the due date will not be accepted and you will receive a zero (0) for that particular assignment. Also, if I give out a solution and you have not submitted your work, you will not be able to turn in the late work and you will also receive a zero (0) for that particular assignment.

IN CLASS ASSIGNMENT

- In class assignments need to be completed in the class

GRADING

- Attendance 5%
- Assignments 25%
- In class Assignments 10%
- Quiz 20%
- Midterm 20%
- Final Exam 20%

GRADING SCALE

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<td>89.99% - 87%</td>
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## TIMETABLE

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<td>Introduction to data and data types</td>
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<td>Data exploration, munging and cleaning</td>
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<td>Introduction to Statistical Inference</td>
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<td>5/5/2016</td>
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<td>Assignment 4</td>
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## COURSE POLICIES FOR ATTENDANCE, COMMUNICATION, AND ASSIGNMENT/PROJECT DEADLINES

1. **Missing class will affect your grade.** Refer above

2. **Responsible for all materials or content:** All material covered in class or any assignments made during class are the students’ responsibility. In other words, if class is missed, the student is responsible to find out what was covered, whether course content, an assignment, quiz, or a
revision to a due date, time, or place of an assignment. Get to know your classmates so you have one or more people to contact regarding missed material.

3. **Class Tardiness and Incompletes:** Because evening classes are so lengthy, coming late to class can also affect your grade. 15 to 60 minutes late will result in a note being recorded. An accumulation of regular tardiness could reduce your grade at the end of the class under the category of class participation, which is a percent of your final grade. Two 60 minutes (or more) late will count as one missed class and will then follow the same policy as above. Incompletes will not be issued except under extreme personal conditions that have been reviewed by the instructor and in some cases in consultation with the Dean’s Office.

4. **Deadlines:** All assignments must be ready to hand in at the designated time as stated on the syllabus.

5. **All assignments must be turned in via CANVAS.** Assignments will not be accepted via email.

6. **All course-related communication will occur via CANVAS** Students are advised to set email from this course to automatically forward to an email address they regularly read. Do not expect the instructor to manually forward all emails to students’ personal email addresses (the reason is that students who do have forwarding turned on will receive two copies of any email sent via CANVAS). Likewise, all course-related email to the instructor should be sent via CANVAS.

**UNIVERSITY POLICIES**

1. There are a number of campus-wide policies governing the conduct of courses at IUPUI. These can be found at [http://registrar.iupui.edu/course_policies.html](http://registrar.iupui.edu/course_policies.html).

2. **University Attendance Policy: Attendance is required.** The University regulations state, “Students are expected to be present for every meeting of the classes in which they are enrolled.” IUPUI faculty are required to submit to the office of the Register a record of student attendance through the semester, on which they will take action if the record conveys a trend of absenteeism. As a result, attendance will be taken in all classes.

3. **Academic Dishonesty, Lack of Integrity, and Plagiarism:** Using another student’s work on a project or assignment, cheating on a test, or any other form of dishonesty or plagiarism will result in a grade of zero on that assignment and possibly an F in the course, and will be referred to the Dean of Students. All students should aspire to high standards of academic honesty. This class encourages cooperation and the exchange of ideas. For further reference, students may see:
   a. [http://www.iupui.edu/~resgrad/grad/academic_misconduct_curriculum_subcommittee.rtf](http://www.iupui.edu/~resgrad/grad/academic_misconduct_curriculum_subcommittee.rtf)
   b. [http://life.iupui.edu/dos/code.htm](http://life.iupui.edu/dos/code.htm)
   [https://www.indiana.edu/~istd/test.html](https://www.indiana.edu/~istd/test.html)
4. **Values and ethics**: Profanity or derogatory comments about or towards the instructor or any member of the class will not be tolerated. Violating this rule will result in a warning and if the offense continues, administrative action will be taken.

5. **Code of Student Rights, Responsibilities and Conduct**: All students are responsible for reading, understanding, and applying the Code of Student Rights, Responsibilities and Conduct of IUPUI. Students may access http://life.iupui.edu/dos/code.htm for further information regarding the above points.

6. **Disabilities Policy**: In compliance with the Americans with Disabilities Act (ADA), all qualified students enrolled in this course are entitled to “reasonable accommodations.” Please notify the instructor during the first week of class of any accommodations needed for the course. Students needing accommodations because of a disability will need to register with Adaptive Educational Services (AES) and complete the appropriate forms issued by AES before accommodations will be given. The AES office is located in Taylor Hall, UC 100. You can also reach the office by calling 274-3241. Visit http://aes.iupui.edu/ for more information.

7. **Administrative Withdrawal**: A basic requirement of this course is that you will participate in all class meetings and conscientiously complete all required course activities and/or assignments. Keep in touch with the instructor if you are unable to attend, participate, or complete an assignment on time. If you miss more than half of the required activities within the first 25% of the course without contacting the instructor, you may be administratively withdrawn from this course. Example: Our course meets once per week; thus if you miss more than two classes in the first four weeks, you may be withdrawn. Administrative withdrawal may have academic, financial, and financial aid implications. Administrative withdrawal will take place after the full refund period, and if you are administratively withdrawn from the course you will not be eligible for a tuition refund. If you have questions about the administrative withdrawal policy at any point during the semester, please contact the instructor.