**PS 643**

Course name: Introduction to AI, Data, and Policy

Tuesdays and Fridays 3:30 pm to 5:00 pm, Venue LH101

Office hours: Fridays 2 pm to 3 pm, Venue: Instructor’s office at ADCPS

**Instructor**

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**Teaching Assistants**

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**Prerequisites**

Must be a final year undergrad, an equivalent dual degree student (final or penultimate year), a Masters, or a PhD student.

**Description**

This new course, “PS 643 Introduction to AI, Data, and Policy” is one of the two courses, one introductory PS643 and one advanced PS 644, the former offered in Fall and the latter in Spring, which replaces the old course PS 626 AI, Data and Policy which ran for four years from 2019-20 to 2022-23 as an institute elective. PS 644 has PS 643 as a prerequisite.

This course is an interdisciplinary introductory course for AI and policy. It will bring the student up to scratch with the landscape of extant policymaking on AI as well as make certain they learn the basic concepts, digital and philosophical, of AI, machine learning, and data, learn to code a small AI artifact, learn about basic AI and data policy and governance structures as they exist in India and worldwide, and the ongoing debates on the same. By the end of the course, the student would have learnt a basic amount of what AI technologies are, how data interacts with them, how they influence and are influenced by the world and its social relations, and how to analyze and design policy around them. Students with a background in technology but wishing to learn the social impact of AI, or conversely with a background in the social sciences wishing to understand the technology of AI, will be benefited from this course. There are no prerequisites to this course but there are expectations the student will learn.  
  
**Meeting instructor**

The instructor will be available in office hours or online on a pre agreed time. You can email them (use: REQUEST TO MEET subject line) to schedule meetings outside of office hours.

**Tutorials**

Outside of the class schedule, there will be make up tutorials led by the TAs to assist students with coding, theory, and project related questions. These will be optional to attend.

**Evaluation**

1. **Class participation is 10%.** This does not mean merely showing up also engaging with the ideas, and taking notes.
2. Over the semester period there would be **four quizzes, one midterm and one final.** These will be worth **50%**
3. The students in groups of five will be asked to develop an AI or AI policy research problem and write **a small 4-page Review Paper, total worth 40%**
   1. This is broken into **a presentation for problem selection/motivation - 10%,**
   2. **A concluding presentation discussing the literature review - 10%**
   3. **and final paper writing worth 20%** During the semester there will be meetings to evaluate progress of this review paper.

The workload will be wide but not harsh. Regularity will ensure the students learn the most.

**Academic integrity**

You can discuss whatever with your peers but there will be absolutely no copying allowed whether from humans or from online sources including automatic text generators. IITB has high academic standards and your code and writeups will reflect that. You may reference other people’s text by quoting them and giving them reference and credits. Plagiarism will not be tolerated and students are expected to treat their work and each other with respect and dignity. Given the relatively large size of the class, students are requested to be on time as entering late disturbs the class. Attendance will be taken by 3:40 pm. If taking a leave for reasons medical or otherwise, email a note to the TAs.

**Weekly schedule (subject to change)**

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## **Week 1** Introduction to the course Theory: AI history & concepts

Student Notes available

Readings

1. Marda, Vidushi. "Artificial intelligence policy in India: a framework for engaging the limits of data-driven decision-making." <https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3240384>

2. Daly et al., Artificial Intelligence, Governance and Ethics: Global Perspectives. <https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3414805>

3. On the Dangers of Stochastic Parrots by Bender et al. <https://dl.acm.org/doi/pdf/10.1145/3442188.3445922>

Moodle Content

R.U.R. (Rossum's Universal Robots)  
<https://www.gutenberg.org/files/59112/59112-h/59112-h.htm>

Darwin Among the Machines - Samuel Butler  
<https://nzetc.victoria.ac.nz/tm/scholarly/tei-ButFir-t1-g1-t1-g1-t4-body.html>

Foundation Trilogy: Isaac Asimov  
[https://www.ycn.com.au/asimovfoundation/images/d.pd](https://www.ycn.com.au/asimovfoundation/images/d.pdf)Dartmouth Conference  
[https://spectrum.ieee.org/dartmouth-ai-workshop#toggle-gdp](https://spectrum.ieee.org/dartmouth-ai-workshop#toggle-gdpr)Alan Turing  
[https://sitn.hms.harvard.edu/flash/2012/turing-biography](https://sitn.hms.harvard.edu/flash/2012/turing-biography/)Video - A Jacquard Loom

<https://youtu.be/OlJns3fPItE>

## **Week 2** Theory: What is AI policy Quiz 1 (5%)

Student Notes available

Quiz 1

* Based on theory taught and Research papers
* 45 mins

Difficulty : Moderate

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## **Week 3** Coding: An introduction to ML An introduction to Python coding

Student Notes available

<https://moodle.iitb.ac.in/pluginfile.php/125074/mod_resource/content/1/introductiontomachinelearningwithpython.pdf>

Basic concepts of Machine Learning

<https://www.ibm.com/topics/machine-learning><https://towardsdatascience.com/machine-learning-basics-part-1-a36d38c7916>Basic Python

<https://realpython.com/learning-paths/python-basics/>

<https://docs.python.org/3/tutorial/index.html>

## **Week 4** Coding: What is NLP Coding with NLTK Quiz 2 (5%)

Student Notes available

Readings

How to do a literature review - <https://moodle.iitb.ac.in/mod/resource/view.php?id=38652>

4. The global landscape of AI ethics guidelines <https://www.nature.com/articles/s42256-019-0088-2>

5. Ethics as an Escape from Regulation by Ben Wagner <https://www.jstor.org/stable/pdf/j.ctvhrd092.18.pdf>

6. Governance with Teeth by Vidushi Marda <https://www.article19.org/wp-content/uploads/2019/04/Governance-with-teeth_A19_April_2019.pdf>

7. How to recognize AI snake oil by Arvind Narayanan <https://www.cs.princeton.edu/~arvindn/talks/MIT-STS-AI-snakeoil.pdf>

Quiz 2

* Based on Coding taught
* 45 mins  
  Difficulty : Easy

## **Week 5** Theory: F/A/T, Ethics, Human Rights Introduction to AI Snake Oil

Student Notes available

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## **Week 6** Coding: Basic NLP tools, topic modelling

Student Notes available

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## Week 7 Presentation (10%)

* Things required in this presentation
* 1. no more than 6 minutes of content, there will prompt at 5 mins be a hard stop at 6 minutes, no question answering. Any one(s) in the team may present. Slide design is up to you but again, keep it brief and sharp.
* 2. Content:
* INTRODUCTION a portion explaining the problem and why it is important to AI and policy. This is the most important part of the presentation.  
    
  SOME LITERATURE/MOTIVATIONAL EXAMPLE (the start of of your literature review) a small, non exhaustive, motivational and interesting bit explaining some existing works, data, idea, etc exists in the problem you have chosen to illustrate
* PROPOSED TIMELINE FOR COMPLETE LITERATURE REVIEW AND WRITING THE REVIEW PAPER a portion explaining a) how will you discover extant literature on the problem b) how will your group organise the discovery work and the writing work, how will you pace it and finally write it, basically a rough timeline
* The presentations are graded on
* 1. Quality and coherence of content presented
* 2. Style/ability to present in an articulate manner, respecting time limit
* 3. Novelty factor of the problem  
    
  The presentation is worth 10% of your final grade.

## **Week 8 Midterm week** Quiz - midterm (15%)

Midterm Quiz

* Reasoning Questions
* No coding questions but conceptual tech qs.

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## **Week 9** Theory: Data governance issues Basics of GDPR

8. Report of Task Force on AI <https://dpiit.gov.in/whats-new/report-task-force-artificial-intelligence>

9. AI For All, Niti aayog <https://www.niti.gov.in/sites/default/files/2021-02/Responsible-AI-22022021.pdf>

10. Srikrishna Committee <https://www.meity.gov.in/writereaddata/files/Data_Protection_Committee_Report.pdf>

11. DPDP Act <https://www.meity.gov.in/writereaddata/files/Digital%20Personal%20Data%20Protection%20Act%202023.pdf>

12. Comments on DPDP <https://indianexpress.com/article/opinion/data-protection-bill-enable-privacy-violation-not-guard-against-8883820/>

## **Week 10** Theory: Indian Data and AI Policy Quiz 3 (5%)

Student Notes available

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## **Week 11** Coding: Basic Supervised and Unsupervised ML

Student Notes available

## **Week 12** Coding: What is Computer Vision? Quiz 4 (5%)

Student Notes available

13. Lying Eyes: The Victorian roots of facial recognition: <https://reallifemag.com/lying-eyes/>

14. Facebook content moderation: <https://www.theverge.com/2019/2/25/18229714/cognizant-facebook-content-moderator-interviews-trauma-working-conditions-arizona>

15. The Global Expansion of AI Surveillance: <https://carnegieendowment.org/2019/09/17/global-expansion-of-ai-surveillance-pub-79847>

## **Week 13** Theory: Automated Surveillance

Student Notes available

## **Week 14** Theory: The Political Economy and People in AI – An Introduction

## **Week 15** **Presentation 2 (10%)**

This is the final project presentation for this course

Things required in this presentation

1. no more than 8 minutes of content, there will prompt at 7 mins be a hard stop at 8 minutes, no question answering. Any one(s) in the team may present. Slide design is up to you but again, keep it brief and sharp.

2. Content:

This presentation is the presentation of your final paper. How you organise the presentation is up to you but the major portion of the 8 mins should be in reviewing the existing literature, what existing works, data, idea, etc exists, what is the discourse in the field, what points do researchers and practitioners agree and disagree on, what are their focus etc. The review is a critical review, so your insights will be graded, what did you learn from this review, what are the research gaps, what problems could be investigated which have not been investigated yet, and what methods are yet to be used.

The presentations are graded on

1. Quality and coherence of content presented

2. Style/ability to present in an articulate manner, respecting time limit

3. Novelty factor of the problem

The presentation is worth 10% of your final grade.

## Week 16 Final exam week Quiz - final (15%)

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This is worth 15% of your grade and compulsory to attend with no remedials as it is the final test of the course. For medical emergencies, send a mail before the quiz.

The syllabus: All theoretical material, no code will be asked, and it is vital you have done the readings. There will be reasoning questions.  
Format: open notes/books/laptops, but any AI tool like chatGPT is prohibited  
This will be a handwritten quiz, bring pens to write

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## **Week 17** Final Review Paper

* This must be submitted on time with no extensions as the grading needs to be finished and grades uploaded.  
    
  Template: [NAACL 2021 template](https://2021.naacl.org/calls/style-and-formatting/) will be used, both a WORD and a LaTeX template has been provided in the link, use either. You can also use an overleaf template here: <https://www.overleaf.com/latex/templates/naacl-hlt-2021-latex-template/kvjhhyjsvmxf>
* The submission is a 4 (+ references/appendices etc) page review paper on your project, submitted as a PDF file. These 4 pages do not cover extra figures and tables in appendices, or references which can be as many. Please use as much of the template as possible and follow the pattern.  
    
  Only one member of the team submit. If the names are written correctly all members will get the grade.  
    
  A good review paper generally has  
  1. a title which conveys the topic under discussion  
  2. an introduction/motivation on why the topic under discussion in interesting, important, and should be reviewed,  
  3. a section for literature review, this doesn't need to be called "literature review", but you must explore the existing literature, this is the central contribution of the paper which explores at the literature being reviewed in breadth and depth  
  4. a section on analysis of the review, or insights on what commonalities, contradictions, research gaps, whatever the review indicates. Section 3 and 4 are sometimes combined.  
  5. sometimes a conclusion and sometimes what future work can be done  
  6. references
* you will be graded for
* 1. explaining well why the problem is important to research  
  2. rigor of the review and any insights from it  
  3. ease of readability, coherence in the story, fluency, and absence of egregious editing issues

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