Talking to a Turing Machine

ESC101: Fundamentals of Computing

Nisheeth

This Course

- Introduction to computer programming/logic-based computing using the C Programming Language

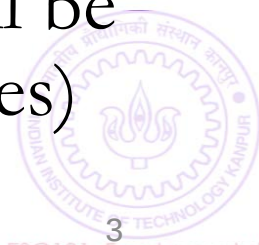
- Course Name: Fundamentals of Computing (ESC101), 14 credits

- Instructor: Nisheeth (CSE Department)
  - Email: nsrivast@cse.iitk.ac.in (don't miss the "cse")
  - For this course, will prefer **all** communication via Piazza
    (Piazza supports private messages to instructors/students)

- Tutors: 16 regular + 3 admin + 1 faculty tutor
- TAs: 80
- Students: 532

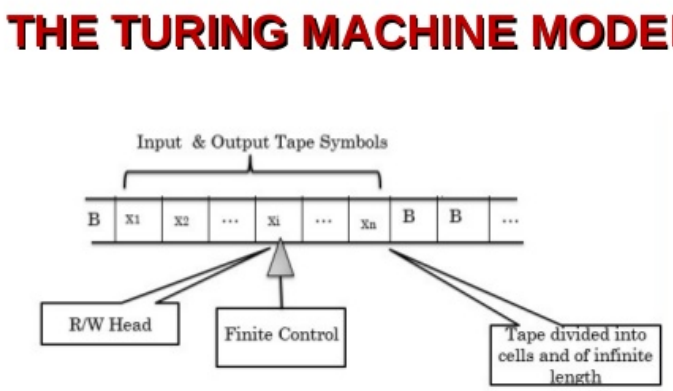
Purpose of This Course

- Learning how to program using C programming language
- Will do it with a mix of theory (lectures) and practical (programming labs)
- Focus primarily on C programming but most concepts we will study apply to programming/logic-based computing in general
- Assumes no prior background/exposure to programming
  - If you already have good proficiency in C programming, there will be an option of switching to Advanced Track (more info in later slides)



Talking to a Turing machine

- How do you talk to a human?
- If both know the same language
  - Talk using the shared language
- If both don't know the same language
  - Talk using shared body language
- If both don't know the same language and can't see each other
  - Can't really communicate



- How do you talk to a Turing machine?
- It has no body
- Have to talk to it in its language
- Need to learn its language
  - Or a language that can be automatically translated to its language

Course Schedule

- Lectures: M, Tu, W 1200-1300 (in L-20)
- Tutorial: Fri 1200-1300 (Tutorial Block rooms). More info in later slides

Doubt-clearance session for the week's lectures + minor quiz

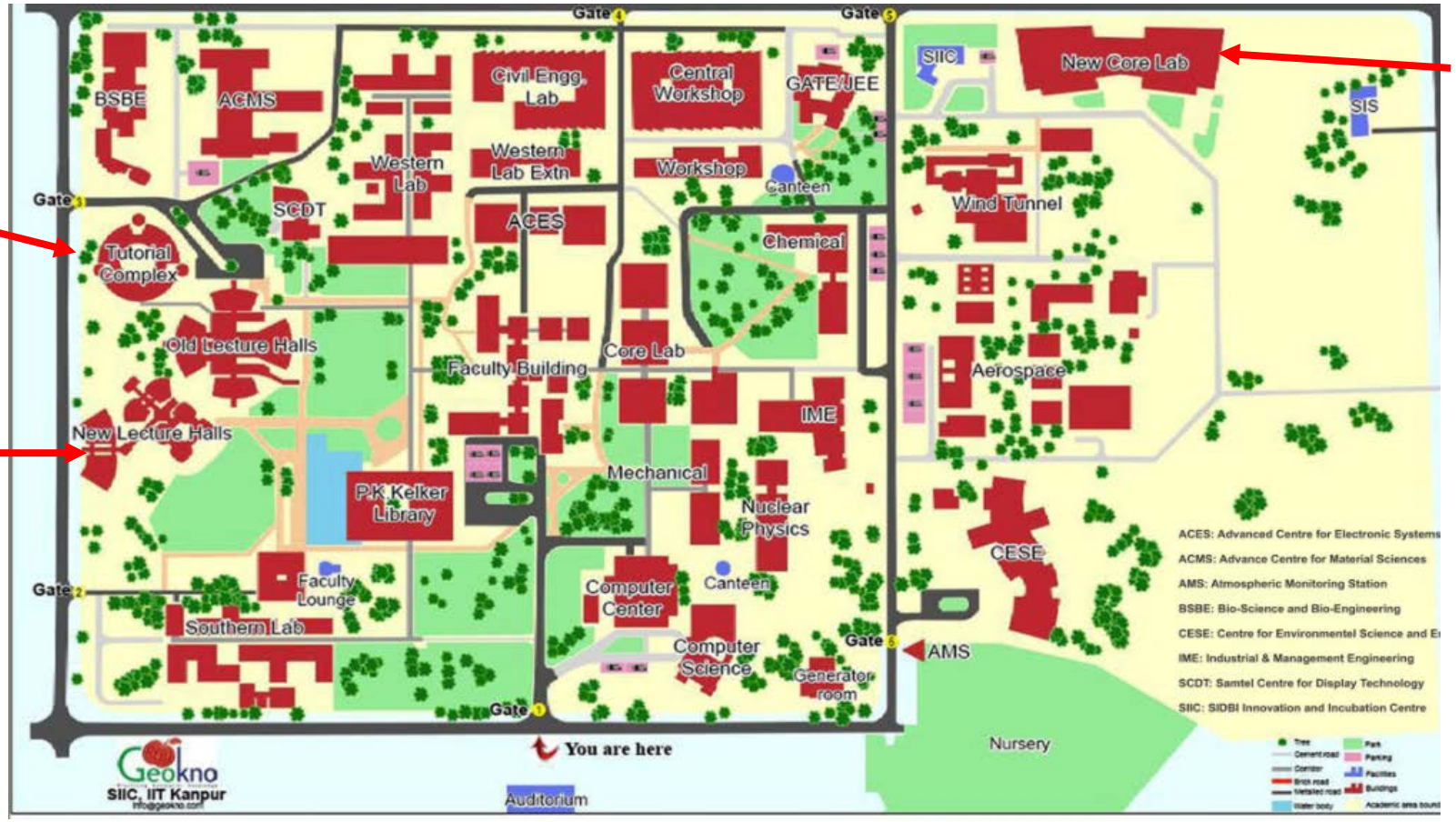
Hands-on practice of what you studied the previous week

- Labs: M/Tu/W/Th 1400-1700 (New Core Lab). You will attend only **one** of these 4 days depending on your section. More info in later slides

The Locations

Tutorial Block

New Lecture Halls (L20 and others)



New Core Lab

Admin and Faculty Tutors

Hrishikesh Terdalkar
hrishirt@cse.iitk.ac.in

Hindi, Marathi, English
(Admin Tutor)

Shubhangi Agarwal
sagarwal@cse.iitk.ac.in

Hindi, English
(Admin Tutor)

Nitin Kumar Singh
nitinks@cse.iitk.ac.in

Hindi, English
(Admin Tutor)

Dr. Biswabandan Panda
biswap@cse.iitk.ac.in

Hindi, Odia, English
(Faculty Tutor)

Tutorials

- Tutorial (Every Fri 1200-1300): The tutorial room for each section

A1	TB103
A2	TB104
A3	TB105
A4	TB106

A5	TB107
A6	TB108
A7	TB109
A8	TB110

A9	TB111
A10	TB112
A11	TB203
A12	TB204

A13	TB205
A14	TB207

- Tutorial will have doubt clearing session + examples on lecture material

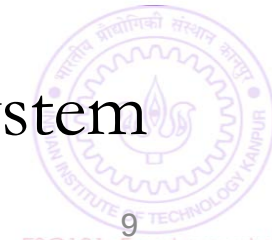
- For some tutorials, last 10-15 minutes may have a surprise minor quiz
  - The minor quizzes will be graded
- First tutorial on Friday this week

Labs

- Lab days for each section will be as follows

Monday	Tuesday	Wednesday	Thursday:
A4, A5, A6, A13	A1, A2, A3	A7, A8, A9	A10, A11, A12, A14

- In each lab, you will solve some programming problems
- You will solve them on Prutor website (developed at IITK)
- Lab will start at 1400. Must finish by 1700. Your solutions will be graded
- First week's lab: Not graded. Just familiarize yourself with Prutor system



Labs

- Must solve lab questions on your own
- Can share ideas for solving problems, but not code
- Practice Set: Released each week to help students prepare for next week's lab problems
- Each lab will have TAs for invigilation/logistical help
- If no lab due to a holiday, will have a make-up lab on weekend (Sat/Sun)

Grading Scheme

- Minor Quizzes (best 8 of total 10): 8%
  - Conducted during tutorial hours
- 2 Major Quizzes (29 Jan, 23 Mar): 10%
  - Conducted during lecture hours
- Mid-sem Theory Exam: 15%
  - Date will be announced by DOAA
- End-sem Theory Exam: 25%
  - Date will be announced by DOAA

Theory: 58%

- Lab Assignments (best 10 of total 13): 10%
- Mid-sem Lab Exam: 15%
  - Date: Feb 15
- End-sem Lab Exam: 17%
  - Date: Apr 18

Practical: 42%

Useful Links

(please bookmark them)

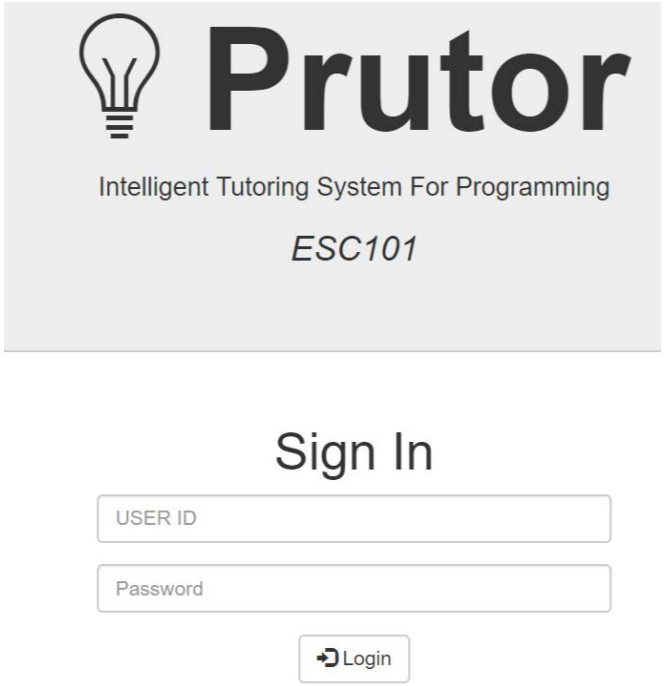
Course Website

- Course website:
  https://www.cse.iitk.ac.in/users/nsrivast/esc101.html

- All course material will be posted here (slides, quiz/exam solutions, etc). Also refer to the webpage for other information (Policy etc)

Lab Website (Prutor)

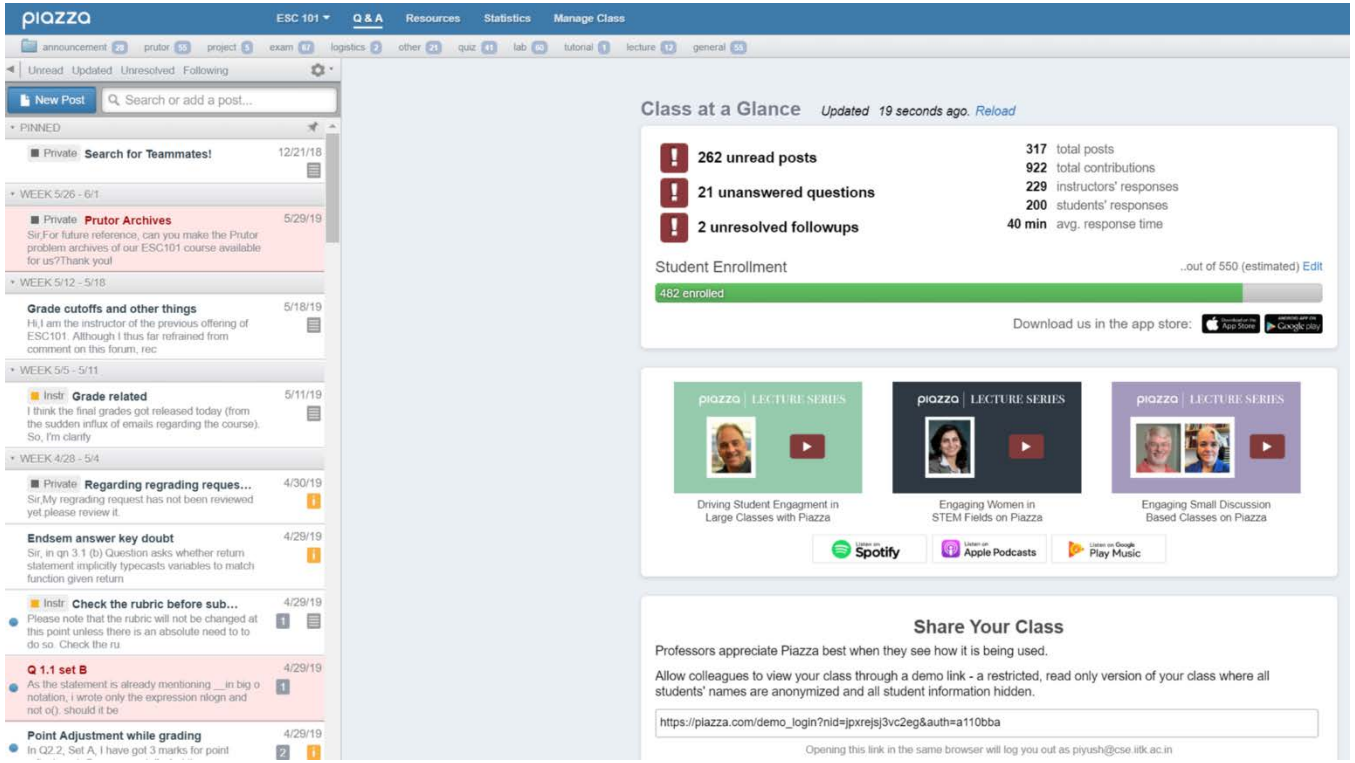
- https://esc101.cse.iitk.ac.in .
- Will be using it for weekly lab exercises, lab exams, lab practice, etc
- Your marks for weekly labs and lab exams will also be shown on Prutor
- Accessible only internally from IITK. For external access, will need proxy



User ID: your IITK login
Password: your CC password

Online Discussion Webpage (Piazza)

- Accessible from anywhere (also has a mobile app)
- Can set message notifications to real-time or digest mode



Have already added you (using your IITK email id). Please choose a password and start using Piazza

Course Mailing List

- esc101a@iitk.ac.in

- You must already be signed up for this list (with your IITK email)

- All course-related announcements will be sent on this (and on Piazza)

- Only instructors can post messages on this mailing list (you can only receive messages)

Textbooks

- Several nice books on C. You may pick one of these
  - Schaum's Outline of Programming with C by Byron Gottfried, McGraw-Hill India.
  - The C Programming Language by Kernighan and Ritchie, PH India.
  - Refer to course website for some other references

- Advice: Pick one reference book and stick to it throughout

Advanced Track (AT)

- For students who already have good proficiency in C programming
- Can replace minor quiz and labs with a project (18% course weightage)
- Candidates for this track are being selected with a C programming based screening test.
- Even if selected for AT, can re-join regular track by Mar 25th , 2020
  - With satisfactory project evaluation: 100% score on missed quizzes/labs
  - With unsatisfactory project evaluation: Average class score on all missed assignments

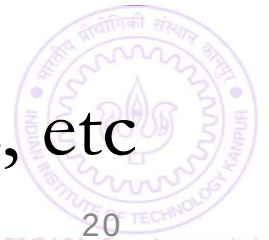
Some Course-related Policies

(please follow them carefully)

(more info on course website)

Policy on Conduct of Labs/Quizzes/Exams

- Quizzes/exams will be open handwritten notes. You may bring your notebook (must use your own notes)
- No printed/photocopied material or electronic material will be allowed in quizzes/exams
- During lab hours, only students sitting inside NCL labs will be able to access Prutor
- But outside of lab hours, Prutor is available at CC/NCL/Halls, etc



Copying

- Please be sincere and honest. Please do not copy.
  - .. in any component (lab/quiz/exams/lab exams)
- If you are caught, you get penalized on grade (most likely F/D grade).
  - Will not be allowed to drop the course
  - Case reported to DoAA/SSAC
  - No warning or second chance
  - All parties involved in copying will be held equally responsible. Copying from internet is penalized equally.
  - Policy may change on need basis

Copying: How to Avoid?

- Read-protect your directories so that others cannot copy from your directory
- Do not share your CC password with friends
- Do not leave printouts, notes etc. containing your code unattended
- Never hard code inputs in your program (more on this later in the semester)
- Use of electronic devices such as mobile phones, tablets, smart watches, etc is not allowed during labs/quizzes/exams and will count as cheating
- Refer to the course webpage for more information

Absentee Policy

- Absence from a quiz/lab/exam, requires approval from SUGC/Instructor
- Minor quizzes: **No makeup**. Best 8 out of 10 quizzes to be counted.
- Major quizzes: **Prorated** from the nearest future mid-sem or end-sem exam
- Labs: **No makeup**. Best 10 out of 13 quizzes to be counted.
- Mid term lab exam: **Prorated** by final lab exam
- Final lab exam: Prorated by End sem exam
- Mid-sem: **Prorated** by End-sem.
- End-sem: **Makeup**, as per DoAA's schedule

Course Drop Policy

- Must get course drop applications approved by the instructor by Mar 20, 2020 after giving proper reason for said drop.
- Drop applications must be filled out on the standard SUGC drop form
- Mar 20, 2020 is a senate deadline. Can't drop after this deadline
- Instructor can't ensure approval of a drop by DUGC convenors or SUGC

Acknowledgement

- Previous instructors of ESC101
  - **Piyush Rai**, Purushottam Kar, Swaprava Nath, Indranil Saha, Amey Karkare, and others
- Amey Karkare and his students (especially Umair Ahmed) for Prutor and autograding features of Prutor