

## Introduction to Computing using Matlab

CS100M Spring 2008  
(CIS121)

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<http://www.cs.cornell.edu/courses/cs100m/>

## Today's lecture

- Course goals
- What is computer programming?
- Choosing between CS100 M & J
- Course logistics/policies (highlights)
- Example Matlab program

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## Course Goals

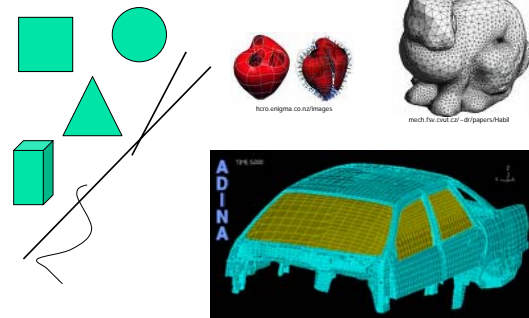
- Develop a practical intuition about computer problem-solving and its role in science and engineering
- Develop a facility with the Matlab programming environment.

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## Geometric sense

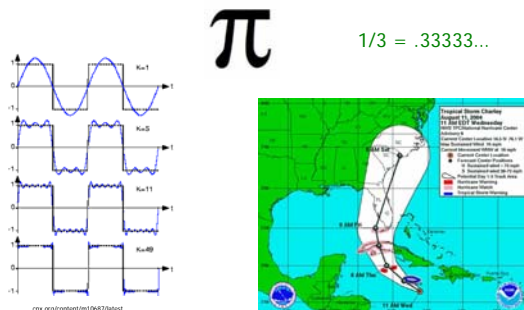


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## A sense for approximation & error



$\pi$

$1/3 = .33333...$

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## Computer problem solving

Key: Algorithmic thinking

**Algorithm:**

A step-by-step procedure that take you from a prescribed set of inputs to a prescribed set of outputs.

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## Computer Programming

- Developing instructions for the computer to execute (in order to solve some problem)
- The steps must be **logical**
- Use a particular language *and follow the rules of the language* (grammar/**syntax**)

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## Example: *Adding songs from the internet to your music library*

- Find a website with MP3 or other audio files
- Register with the music site, if required for music downloading. (Don't steal music.)
- Click on the music file to download it onto your computer
- Drag the file to your library

Reference: iTunes

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## Example: *Adding songs from the internet to your music library*

- Drag the file to your library
- Click on a music file to download it onto your computer
- Find a website with MP3 or other audio files
- Register with the music site, if required for music downloading. (Don't steal music.)

These steps are out of order! Illogical!

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## Example: *Adding songs from the internet to your music library*

- Find a website with MP3 or other audio files
- Register with the music site, if required for music downloading. (Don't steal music.)
- Click [redacted] file to download [redacted]
- file Drag your library to

Bad grammar (syntax)!

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## Computer programming is ...

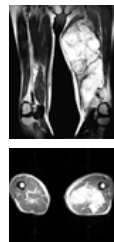
- a **tool** used by computer scientists, engineers, and other professionals
- not computer science

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## Computer science at work for a medical application: MRI



mr.tutor.org

- Imaging (vision)
- Software interface for display & analysis
- Data management
- Security

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## Course highlights

- Develop and implement algorithms for solving problems—build your computational expertise
- Fundamental programming concepts
- Sort and search data
- Visualization of data
- Working with image and sound

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## CS100: M or J?

### M

- No prior programming experience
- One semester of Calculus
- Computational science and engineering
- Matlab

### J

- No prior programming experience
- No Calculus
- More non-numerical problems, focus on object-oriented programming
- Java

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## CS100M Requirements—highlights

- Attend lectures and sections (labs)
- Monitor announcements on website
- Write all exams
- Do homework
- Take a subset of all in-class quizzes, using clickers
- Adhere to the Code of Academic Integrity

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## Grading

- Best 5 of six projects (25%)
- Section/Lab exercises + in-class quizzes (5%). We count best  $x$  of  $y$  items,  $x < y$ .
- Prelim 1 (10%)
- Prelim 2 (20%)
- Prelim 3 (20%)
- Final exam (30%)
- (Weight of worst exam reduced by 10%)

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## Course Materials

- Chapters from *Foundations of Computational Science & Engineering* by Fan & Van Loan will be available on-line through CMS
- *Engineering Computation* by David Smith
- An iClicker clicker
- **MATLAB Student Version R14 optional** because you can use it in the public labs

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## Consulting & Computing

- Consulting in ACCEL Green Rm (Engineering Library). Check course website for hours.
- Some public labs:
  - Upson B-7
  - ACCEL (in Engineering Library, Carpenter Hall)
  - North campus: RPCC, Clara Dickson



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CS100M sections

Sec #	Time	Room
1	T 12:20-1:10p	UP B7 Right & UP 207
2	T 1:25-2:15p	UP B7 Right & OH 216
3	T 2:30-3:20p	UP B7 Right & PH 403
4	T 3:35-4:25p	UP B7 Right & UP 109
5	W 10:10-11:00a	UP B7 Right & HO 320
6	W 11:15a-12:05p	UP B7 Right & UP 207
7	W 12:20-1:10p	UP B7 Right & UP 215
8	W 1:25-2:15p	UP B7 Right & UP 111
9	W 2:30-3:20p	UP B7 Right & PH 307
10	W 3:35-4:25p	UP B7 Right & UP 211
20	W 7:30-8:20p	UP B7 Right & HO 320
21	W 8:35-9:25p	UP B7 Right & HO 320
22	T 12:20-1:10p	PH 318 & HO 306
23	T 1:25-2:15p	PH 318 & HO 401

Sections 11-19 belong to CS100J

## Academic Excellence Workshops

- Small, collaborative classes parallel to course
- Classes begin **week of Jan 28**

CS100M	W 7:30 - 9:25P	UL CL3
	M 2:30 - 4:25P	UL CL3
	M 2:30 - 4:25P	TBD
CS100J	M 7:30 - 9:25P	UL CL3
	F 2:30 - 4:25P	UL CL3

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## What to do now?

- Pick a course (and section)  
(add/drop: lecture **and** section **and** AEW)
- Check course website
- Start reading (see listing on course website)
- Attend **lab** (Upson B-7 or ACCEL Blue Rm) *this week*
- Check course website

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