GE 1331

PROBLEM SOLVING MADE EASY

What this Course is **NOT** about

- **Programming**

What this Course is about:

- Solving Problem with Computer under the Computational Thinking Framework
- Computing Skill without learning any computer language
- Algorithmic Abstraction for Problem Solving

Objectives

To acquire :

- a solid foundation in computational problem solving,
- the skills in identifying the type of problems,
- understanding the problem structures,
- decomposing and simplifying problems into manageable subtasks
- using abstraction, symmetry, heuristics and divide-and-conquer,
- modeling tasks into algorithmic patterns,
- and transforming them into computational forms that lead to copacetic solutions.

Computation Platform MATLAB

- Computation:
  Perform complicated calculations quickly and with accuracy.
- Visualization:
  Taking data and functions and turning them into meaningful graphs or other visual forms.
- Data Analysis:
  Taking real-world data from experiments, surveys, repositories, etc. and getting usable information from the data using statistical tools.
- Data Processing:
  Extending MATLAB's built-in features by writing functions to automate different kinds of tasks.

Learning Activities

- **Lecture:** Large group activity involving the entire class.
- **Small group learning activities:** Students divided in small groups to conduct brainstorming and discussions.
- **Self-learning Laboratory:** Self-learning activities in the form of laboratory will be conducted individually.
- **Group-learning activities (Presentation):** Students present their findings to the rest of the class.

Required Text

- Stormy Attaway, *A Practical Introduction to Programming and Problem Solving*, Elsevier

  available at CityU Library as ebook

Reference

- Cleve Moler, *Experiments with MATLAB*

http://www.mathworks.com/moler

Assessments

- Laboratory
- Quiz
- Project
- Presentation

Instructor

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