Syllabus for Introduction to Engineering Analysis

Purpose

Course Content:

Part One: Computational Thinking and Computer (Week 3-10)

Part Two: Matlab (Week 11-18)

Basing on characteristics and professional requirements of science and engineering students, the course is aimed at guiding students to comprehend and build computational thinking. Then, it is focused on train students to use computational thinking consciously and actively, and analyze data by Matlab skillfully.

Part One: Computational Thinking and Computer (Week 3-10)

- Instructor: Xia Xin(xiaxin@scu.edu.cn), Ge Long(gelong@scu.edu.cn)

- Lecture: 16:45-18:25, Tuesday, Week 3-10

- Lab: 16:45-18:25, Thursday, Week 4-10 (Bi-weekly)

- Five Modules of the Course:
  (1) Combination between computational thinking and science and engineering
  (2) Indication of information in computer
  (3) Constitution of systems in computer
  (4) Basis and algorithms of program design
  (5) Application of data analysis and common functions in Excel

- Contents of Lab:
  (1) Handware experiment in micro-computer
  (2) Application of data analysis and common functions in Excel
  (3) Experiments of algorithms and program design
  (4) Network application
  (5) Advanced application in Office (self-learning)

- Contents of Lecture:
  (1) Computational Thinking and Computer(2 classes）：Definitions of computational thinking, computer science, and the combination
  (2) The expression of information(4 classes): Operation basis, positional number system, system transformation; expression of information, numeric data, character type, audio information, image information, as

well as video information

(3) Computer System(4 classes): Constitution and structure of computer system, hardware and software, and frequently-used fault defect

(4) Basis and Algorithm of Program Design(4 classes): Program and program design, steps and common programming language, basic approaches of program design.

(5) Data analysis in Excel(2 classes): Common functions, such as Sum, Sumif, Averarge, Averageif, Count, Countif, Max, Min, If, Vlookup

■ Main Contents of Lab(8 classes):

(1) Hardware of micro-computeer(2 classes)

(2) Algorithms and program design(2 classes)

(3) Network Application(2 classes)

(4) Application of Excel(2 classes)

■ Evaluation Mode: Computer test in lab(Week 10, by random questions)