Course: System Simulation -13 Lectures (2015.09.16-2015.12.23)
Instructor: Wheyming Song 桑慧敏

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  Course Design: Lecture for each class includes: (1) Theory and (2) Implementing theory via computer (課程編排: 每節課皆有理論, 與落實理論之電腦實作).

- 此課程編排與一般書本的編排不同之處:

  - 一般書本的編排是同類的的放在一起。如: Chapter 1: Input Analysis, Chapter 2: Output Analysis。也就是教完 Input Analysis, 再教 Output Analysis。

  - 而此課程編排: 爲了「每節課理論與實作」並行, 理論部分由淺入深, 交錯的編排。如從 Lectures 7-9: Output Analysis (I), Input Analysis (I), Output Analysis (II), Input Analysis (II). 而不是教完 Input Analysis, 再教 Output Analysis.
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- **Lecture 1 (09.16). System Thinking.**

  - Begin with the End: 理論 = 無限個實例, 讓理論課口好消化

- **Lecture 2 (09.23). Global View of Simulation (I)**

  - Basic tasks: Input Analysis, Modeling, Output Analysis
  - 醍醐統計學: 桑慧敏著. " 機率 ", "隨機變數", "機率模型": 三輪車調

- **Lecture 3 (09.30). Analytical vs. Simulation (I) via MM1 and CLT**

  - 再談 醍醐統計學: 桑慧敏著. Review Probability (I)
  - Quiz 2 and discussion.
  - Flexsim: Queueing Models include MM1, MM2, $G/G/k$, ...
  - Discuss and Prove Central Limit Theorem (CLT)

- **Lecture 4 (10.07). Analytical vs. Simulation (II)**

  - Quiz 3 and discussion.
  - Reviw Probability (II)
  - Flexsim Case 1: LCD-1.

- **Lecture 5 (10.14). Flexsim Functions (I), Students' Presentation: Comparing Ways to Present CLT**

  - Quiz 4 and discussion.
  - Mindmap of Simulation: Design, Basic Tasks, Meta Model
  - Mindmap for Flexsim 4 basic objects, Experimenter, Dashboard
  - Flexsim Functions (I): getnodenum, getlabelnum, gettablenum,...

- **Lecture 6 (10.21). Flexsim Functions (II)**

  - Transient vs. Steady-state. MM1 Model
  - Global Table and Experimenter in Flexsim

- **Lecture 7 (10.28). Simu. Output Analysis (I), Flexsim Case 2**

    – Misleading Your Boss via Meaningless: A Sin to Avoid

    – Simulation Output Analysis (I): Check Flexsim Output

    – Flexsim Case 2, LCD-II: More Flexsim Functions

- **Midterm (11.04) (No Video tape)**

- **Lecture 8 (11.11). Input Analysis (I), Flexsim Case 3**

    – Input Analysis (I): Fit Distribution via R: χ^2 test and K-S Test

    – Flexsim Case 3: Physical Examination (PE) model

    – Discuss Midterm.

- **Lecture 9 (11.25). Input Ana. (II), Output Analysis (II), CRN, Flexsim Functions (III)**

    – Input Analysis (II): K-S Test

    – Output Analysis (II): Criteria of Good Estimators

    – Common Random Numbers (CRN)

- **Lecture 10 (12.02). Meta-Models in Simu., Flexsim Functions (IV)**

    – DOE, "Block" Concept

    – Graphical User Interface (GUI)

    – Flexsim Function: byprobability

- **Lecture 11 (12.09). Flexsim Functions (V)**

    – Macro and Micro Replications (In Flexsim: Reset)

    – Efficiency vs. Effectiveness (In Flexsim: MTBF)

    – Export and Import Data: MSAccess

    – Treenode Functions in Flexsim

- **Lecture 12 (12.16). Thank Note, Flexsim Functions (VI)**

    – ODBC (資料庫系統連結)

    – Flexsim Case 4: Emergence Department (ED)

    – Flexsim Case 5: Optimum Dispatching Rule in Solar Ingot-Wafer Manufacturing System-Integration of Machines and manpower Allocation

- **Lecture 13 (12.23). Final Lecture and Students' Presentation**

    – 在學校應學什麼?
        * 專業
        * 自學
        * 想的大 (Think Big)

    – Students' Presentation

- **Students' final Project (12.30) (No Video tape)**