Heterogeneous Integration System Design

隨著積體電路製程技術的不斷縮小以及應用的多樣化，集合各種功能於單一晶片的整合系統已成為IC產業之最大利基。晶片系統(System-on-chip; SoC)及封裝系統(System-in-package; SIP)的設計將可以把如無線通訊、類比、數位、微機電(MEMS)及感測(sensor)整合應用並實現在單一系統，諸如無線感測及無線生醫電子，因此在市場上之潛力無窮。這些可應用的範圍從smart home, e-Health到ubiquitous國家。許多國家已將此相關產業列為未來科技發展重點如u-Japan和u-Korean。這種的異質電子系統設計(Heterogeneous Electronic System Design)包含不同領域之技術與系統整合，是一個跨學科領域之整合科學。因此如何有效進行電子系統設計會成為未來國家競爭力之關鍵技術。

本門課程以電子系統層級設計(Electronic System-Level, ESL)為內涵的專題課程，結合感測元件、類比電路或微機電元件專題，開發不同領域之間的共同設計的系統方法為專題實驗題材，使修課學生能瞭解各種感測應用系統中其異質介面之間的設計考量，期末完成具異質整合系統之專題設計。

Pre-requisite Courses:
- Digital Design related courses
- Analog Design related courses
- Radio-Frequency Design related courses
- Self-motivation in learning CAD tools

Course Hour Arrangement:
- Lecture & Lab
  Time: Thursday 3:10pm-5:00pm
  Location:
  9/15     EE 92177
  After 9/22 EE 95312 (Chi-Mei Building, SoC Lab)

Materials:
Lecture notes/Lab manuals on course website http://moodle.ncku.edu.tw

NO FOOD AND DRINK IN THE LECTURE HALL
Instructor (in lecturing order):

**Digital**
Name: 邱瀾毅  
TEL: 06-2757575 ext 62447  
email: lihyih@mail.ncku.edu.tw

Name: 郭致宏  
TEL: 06-2757575 ext 6244  
email: chkuo@ee.ncku.edu.tw

**Analog & Mixed Signal**
Name: 張順志  
TEL: 06-2757575 ext 62380  
email: soon@mail.ncku.edu.tw

Name: 蔡建泓  
TEL: 06-2757575 ext 62432  
email: chtsai@mail.ncku.edu.tw

**RF & Sensor**
Name: 黃尊禧  
TEL: 06-2757575 ext 62441  
email: thhuang@mail.ncku.edu.tw

**Homework Assignments**

2 ~ 4 homework assignments will be given for the semester. Due day will be specified in the problem sheet.

- NO late submission will be accepted
- To get credit for your homework assignments, your submissions must be done professionally and seriously. Your official name, course number and homework number must be visibly shown in each assignment.
- All submission will be done electronically through the course website before the specified time. If you fail to do so, your assignment is considered OVERDUE and gets NO credit. An extra paper copy needs to be delivered in class.

**Course Policy**

- Encourage you to discuss assigned problems with peers
- Must complete his/her assignment independently or as specified
- Any person/team who is found to be dishonesty in homework assignments,
examines/quizzes, or the project, the involved person(s) will receive an “0” on the evaluated instrument (*paper, exam, project, homework, etc.*)

Notes:

- All announcements will be put on the course website from time to time.
- All broadcast emails to you will send through *iteach* (course website) and only to your email account in NCKU, i.e., *nxxxxx@mail.ncku.edu.tw*.
- Any other notes will be described during the class session.