智慧化企業整合 Intelligent Integration of Enterprise (IIE)
課程大綱 Course Outline

Time：R234 (9:00- Noon)　Place： Eng-I 工一館 827
Instructor：邱銘傳 Prof. Ming-Chuan Chiu mcchiu@ie.nthu.edu.tw, Phone : #42699
Office: 923 (Hour: Wed. 10-12, email appointment preferred)
Assistant：李衍函(Web/SQL)、蔡健得(APP: Android Studio) & 張承硯(Flexsim/AWS) #33949
Office: 913 (Hour: Fri. 9-12 & Mon 9-12, email appointment preferred)

Objective 課程目的

This course introduces the modern integrated enterprises on the managerial and technical aspects of creating and managing modern **IT enabled and integrated enterprises**. It is clear that enterprises have been in rapid transition toward virtual enterprises with value chain integration for high efficiency and efficacy. Well-established management styles and business processes, based on hierarchical command and control structures, have been challenged both within an enterprise and between enterprises of value chains. Information systems are being realigned around business processes. The **implementation of electronic commerce (or "e-business")** has become a key competence. Further, mobile phone applications empower the **development of mobile application (APP)**. Recently, **new Information technologies such as Clouding Computing, AR/VR, Cyber Physical System (CPS)** serve as enabler of **business intelligence** to enhance enterprise competitiveness. This course provides such understanding by focusing on all aspects of managing this complex e-business processes, from strategic planning to the technologies of modern enterprise application integration. The course stresses the importance of hands-on and creative training. Students will be asked to complete a term project report/paper (3000~4000 words, not counting references, footnotes, and appendices) based on IIE concepts, techniques, and tools introduced during the lectures and tutorial trainings for practical applications and case studies.

本課程將介紹現代化企業管理面與科技面的結合，以及如何運用現代資訊科技管理達成虛擬企業整合。企業為了追求更高效率與更高效能的價值鏈而快速地轉變成虛擬企業。以階層命令為主的管理模式與控制結構，不論是企業內部還是企業外部，皆已改變。在企業流程內的資訊系統也開始重新規劃，企業電子商務，或是稱為電子化企業，也已經變成企業生存最基本的要素，手機的興起，讓手機應用程式 APP 成為日常生活最普遍的工具。此外新技術發展如雲端運算、虛擬(擴增)實境與虛實整合系統等變成企業提升競爭力的推動器。這門課將會教導上述內容，並把焦點放在相關議題的探討，從策略規劃到現代化科技應用整合等複雜的智慧化企業整合流程管理。這門課著重在問題解決、分析報告、創新能力和相關資訊技術的訓練。在課程中，學生會被要求完成一個案例分析或是一份與智慧化企業整合技術或工具相關的專題報告(3000~4000 字，不含參考文獻與附錄)。

Reference 參考書籍-*

陳惠貞, 陳俊，PHP7&MySQL 跨裝置網站開發：超威範例集，碁峰出版社第二版
Hugh E.Welli & David Lance，PHP 與 MySQL 應用實務，歐萊禮出版社，第二版
湯秉翰，Android 實作這樣學: 使用 Android 8.1 與 Android Studio 3
秦天保&周向陽，實用系統仿真建模與分析--使用 Flexsim，清華大學出版社

Class Organization 教學方式

Lecture and discussion
Homework and term project in groups
Course material site: iLMS (http://lms.nthu.edu.tw/course/36006)

Evaluation成績考核

Assignments: **25** points
Midterm Exam: **15** points
Group Project 1: **15** points (project report + oral presentation)
Group Project 2: **15** points (project report + oral presentation)
Individual Project 3: **15** points (project report + oral presentation)
Class Participation: **15** points (Note: for homework and attendance, missing class without prior and official absence notification, 3 points will be deducted each time.)

Topics 涵蓋主題

No.	Core Topic
1	Introduction - Modern Integrated Enterprises
2	Architectural Planning, Business Process Modeling
3	Enterprise Resource Planning (ERP) & Manufacturing Execution System (MES)
4	Product Data Management (PDM) & Product Lifecycle Management (PLM)
5	Enterprise Modeling – Examining Various Enterprise Views
6	Enterprise Process Modeling and Simulation Tool – Flexsim
7	Business Process Reengineering Techniques: TOC /VSM/IDEF
8	ER (Data) Model, SQL
9	Web for PC and Mobile(html/ php/chatbot)
10	Mobile APP Design
11	Case Studies (Term Projects)
12	New Topics

Class Policies

Late works, unexcused absences, cheating, plagiarism and non-professional behaviors (e.g., ringing mobile phone and eating in the class room) can result in a failed grade. Please abide by the code of student conduct described in the NTHU student manual.

Tentative Class Schedule

Wk #	Date	EEI Lab (1.5 hr)	Computer Lab (1.5 hr)
1	9/13	Introduction	
2	9/20	Modern Integrated Enterprise (ERP/MES)	Web Design (1): ER model + html
3	9/27	Modern Integrated Enterprise (PDM/PLM)	Web Design (2): MySQL + php
4	10/04	Business Process Reengineering (BPR) I	Web Design (3): chatbot
5	10/11	Business Process Reengineering (BPR) II	Flexsim
6	10/18	Business Process Reengineering (BPR) III	APP Design (1): Android studio
7	**10/25**	**Project #1 presentations**	**Project #1 report due**
8	11/01	Deploy Business models	APP Design (2): App framework & UI
9	**11/08**	**Midterm Exam**	**Individual Research Project Kick off**
10	11/15	New Topics (II): **Omni-Channel, IoT**	APP Design (3): MySQL + php & Debug
11	11/22	New Topics (II): **AR/VR, Cloud Computing**	Amazon Web Services (AWS)
12	**11/29**	**Project #2 presentations**	**Project #2 report due**
13	12/06	AWS EC2	AWS Machine learning (1)
14	11/22	New Topics (II): **AR/VR, Cloud Computing**	AWS Machine learning (2)
15	12/20	New Topics (VI): **Fintech, CPS**	AWS Machine learning (3)
16	12/27	Guest Speaker	Individual Project Counseling
17	**1/03**	**Individual Project Presentation I**	**Design Project #3 report due**
18	**1/10**	**Individual Project Presentation II**	