

(Part One)

**NATIONAL CHENGCHI UNIVERSITY
COLLEGE OF COMMERCE
DEPARTMENT OF
MANAGEMENT INFORMATION SYSTEMS
Regular BS & MS PROGRAM**

Special Topics in Petri Nets

2010/Fall

- A. Instructor: Chao, D.Y.**
Office: Research: Room 261247, 12th Fl., College of Commerce Bldg.
E-mail: yaw@mis.nccu.edu.tw
Phone/Fax: Office: 81037 (Phone)
Class Hours: Wednesday: 14:00 - 17:00
Office Hours: Tuesday: 9:00 - 12:00
Thursday: 9:00 - 12:00
And by appointment

B. Books

No textbooks, but a selected set of papers

C. Course Objectives

1. To understand basics of Petri nets and some of my new research results on Petri nets.
2. To write
 - a. an introductory paper about Petri Nets, aimed to people with little computing backgrounds, or
 - b. a report on the application of my research results to workflow

D. Grading Policy

1. Midterm Examination, -----	0 %
Final Report -----	100 %
Total	<u>100%</u>

E. Important Notes and Policies

CLASS SCHEDULE

No.	Week	Subjects and Assignments
1.		Introduction to Petri nets
2.		Basic Properties
3.		Modelling
4.		Analysis
5.		Synthesis
6.		Deadlocks in FMS
7.		Deadlock Prevention
8.		readings of papers
9.		readings of papers
10.		readings of papers
11.		readings of papers
12.		readings of papers
13.		readings of papers
14.		readings of papers
15.		readings of papers
16.		readings of papers
17.		readings of papers

Books or papers or ppt files

1. Daniel Yuh Chao, "Computation of Elementary Siphons in Petri Nets For Deadlock Control," *Comp. J.*, (British Computer Society), vol. 49, no. 4, 2006.
2. D. Y. Chao, "Maximal Class of Weakly Live Nets with Nonempty Siphons," to appear in *IEEE Transactions on System, Man, and Cybernetics—PART B: Cybernetics*.
3. D. Y. Chao, "Searching Strict Minimal Siphons for SNC-Based Resource Allocation Systems," to appear in *Journal of Information Science and Engineering*.
4. D. Y. Chao, "An incremental approach to Extract Minimal Bad Siphons," to appear in *Journal of Information Science and Engineering*.
5. D. Y. Chao, "Knitting technique with TP-PT generations for petri net synthesis," to appear in *Journal of Information Science and Engineering*.
6. D. Y. Chao, "Virtual First-Order Structures," accepted to appear in *J. Inform. Sci. and Eng.*, 2005. SCI.
7. D. Y. Chao, "Reachability of Nonsynchronized Choice Petri Nets and Its Applications," *IEEE Transactions on System, Man, and Cybernetics—PART B: Cybernetics*, Vol. 35, No.6, pp.1013-1023, 2005. SCI, EI
8. D. Y. Chao, "Reachability and Firing Sequences of Homogeneous Synchronized Choice Petri Nets," *J. Inform. Sci. and Eng.*, vol. 21, pp. 129–152, 2005. SCI.
9. D. Y. Chao, "Extended Synchronized Choice Ordinary Petri Nets," *Comp. J.*, (British Computer Society), 46(5), pp. 505-523, 2003. SCI, EI
10. D.Y. Chao and Jose A. Nicdao, "Liveness for Synchronized Choice Petri Nets," *Computer Journal* (British Computer Society), Vol. 44, No. 1, 2001, pp. 124-136.
11. "Graphical Representation of Asynchronous Systems", PNINTRO(1).PPT
12. Wil M. P. van der Aalst: The Application of Petri Nets to Workflow Management.

Journal of Circuits, Systems, and Computers 8(1): 21-66 (1998)

13. Wil M. P. van der Aalst: Workflow Verification: Finding Control-Flow Errors Using Petri-Net-Based Techniques. Business Process Management 2000: 161-183.
14. K. Barkaoui et L.P., **Structural Analysis of workflow Nets with Shared Ressources** . In of *Int. Workshop on Workflow and Petri Nets.*, 1998.