

國立臺北大學自然資源與環境管理研究所

113 學年度第二學期『資源管理與環境系統分析』

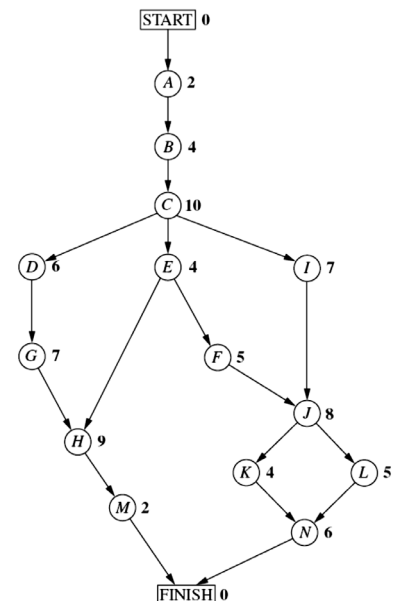
課程講義(09)：專案管理
Introduction to Project Management

● PROJECT MANAGEMENT AND PERT/CPM

- The Elements of Project Management (Taylor III, 2019)
 - ⇒ A project is a collection of tasks that must be completed in minimum **time** or at minimal **cost**.
 - ⇒ Planning, Organizing, (Scheduling), and Controlling of a project.
 - ⇒ Project Planning: Objectives, Scope, Schedules, Resources, Personnel, Control, Risk
 - ⇒ Project Return: Return on Investment (ROI)
 - ⇒ The Project Team: Work Breakdown Structure (WBS), Responsibility Assignment Matrix (RAM)
 - ⇒ Presentations: Gantt Chart, Arrow Diagram (Network)
- Project Control / Constraints for Project Management (Taylor III, 2019)
 - ⇒ Schedule constraints (time limitation): Time Management
 - ⇒ Cost constraints (budget limitation): Cost Management
 - ⇒ Performance constraints (quality limitation): Performance Management => Earned value analysis (EVA)
 - ⇒ Project Crashing and Time–Cost Trade-Off
- [Solution Techniques for Project Management:](#)
 - ⇒ Critical Path Method (CPM)
 - ⇒ Program Evaluation Review Technique (PERT)
 - ⇒ Agile Project Management (Agile Methodology)
 - ⇒ Waterfall Methodology
- Prototype Example: Hillier - Reliable Construction Co.

TABLE 10.1 Activity list for the Reliable Construction Co. project

Activity	Activity Description	Immediate Predecessors	Estimated Duration
A	Excavate	—	2 weeks
B	Lay the foundation	A	4 weeks
C	Put up the rough wall	B	10 weeks
D	Put up the roof	C	6 weeks
E	Install the exterior plumbing	C	4 weeks
F	Install the interior plumbing	E	5 weeks
G	Put up the exterior siding	D	7 weeks
H	Do the exterior painting	E, G	9 weeks
I	Do the electrical work	C	7 weeks
J	Put up the wallboard	F, I	8 weeks
K	Install the flooring	J	4 weeks
L	Do the interior painting	J	5 weeks
M	Install the exterior fixtures	H	2 weeks
N	Install the interior fixtures	K, L	6 weeks



- The Critical Path Method
 - ⇒ Earliest start time (ES); Earliest finish time (EF)
 - EF = ES + (estimated) duration of the activity
 - ⇒ The activities on this critical path are the critical bottleneck activities where any delays in their completion must be avoided to prevent delaying project completion.
- References
 - ⇒ [Hillier IOR 11e Ch022 WebChapter.pdf](#)
 - ⇒ Taylor III, B.W., 2019. "Chapter 8. Project Management", *Introduction to Management Science*, 13th ed., Pearson, Harlow, U.K.