

# MENG 293 – Project Management and Social Responsibility

## Assignment 4

### Question

Custom Metal Products Company is a job shop specialising in a full range of services from design to fabrication. Recently the company accepted an order to design and manufacture the prototype of a new high performance clutch. The activities that must be performed are shown below, along with their normal and crash times (in days) and the costs.

According to the company's contract, the prototype is to be delivered within 28 days, or a penalty of \$1000 per day will be incurred.

- Draw the Gantt Chart for the 'Normal' Project (non-Crashed timelines).
- Develop the Network Diagram for this project and show the normal critical path.  
For each Activity calculate the ES, LS, LS, LF and Slack/Float times. Summarize your calculations in a table, as per the online notes and identify the 'Normal' critical path.
- What should the project duration be if costs are to be minimised?  
Demonstrate how you came to your conclusions by showing the actual activity times that should be followed to complete the job on time.
- What will the actual cost of each activity be and what will be the total cost of the project?
- Does (Do) the crashed critical path(s) differ from the normal critical path? If so, show how.
- 'Level' the cost-rate of this project.  
In other words, re-work the schedule of the project so that the amount of money spent per day is approximately constant over the duration of the project.  
Produce the new crashed GANTT charts.

Activity	Description	Immediate Predecessor	Normal Time (Days)	Normal Cost (\$'s)	Crash Time (Days)	Crash Cost (\$'s)
A	Design Prototype	-	12	3000	8	8000
B	Develop BOM	A	4	1000	2	2000
C	Develop Routing	A	5	2000	3	3500
D	Develop Tooling	A	9	5000	6	9000
E	Obtain Materials	B	10	-	10	-
F	Produce Tooling	D	4	2000	2	3000
G	Make Prototype	C,E,F	5	6000	3	9000