

ASSIGNMENT 1 (25%)

GUIDELINE TO STUDENTS:

Instructions

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You are required to **read, analyse and evaluate** the case study “Southwestern University” and answer the 4 questions

Hand-in-date and Instructions

1. The report must be stapled at the top left hand corner.
2. State your name and student ID number, the lecturer and the date of your submission.
3. You are required to submit your report by **15th November 2024** in the Turnitin submission folder in your LMS.
4. Failure to follow the above instructions may result in your work not being marked.
5. Plagiarism is dealt with seriously. The coursework must be in your own words. Cut and paste work when detected will result in your work not marked, downgrade of marks or whatever actions deem necessary. You are required to submit this assignment via the Turnitin assignment folder. The Turnitin similarity percentage **must not exceed 20%**.

Case: Southwestern University

Southwestern University (SWU) is a large state college in Stephenville, Texas enrolls close to 20,000 students. The school is a dominant force in the small city, with more students during fall and spring than permanent residents.

A long time football powerhouse, SWU is a member of the Big Eleven conference and is usually in the top 20 in college football rankings. To bolster its chances of reaching the elusive and long-desired number-one ranking, in 2009, SWU hired the legendary Phil Flamm as its head coach.

One of Flamm's demands on joining SWU had been a new stadium. With attendance increasing, SWU administrators began to face the issue head-on. After 6 months of study, much political arm wrestling, and some serious financial analysis. Dr Joel Wisner, president of SWU, had reached a decision to expand the capacity at its on-campus stadium.

Adding thousands of seats, including dozens of luxury skyboxes, would not please everyone. The influential Flamm had argued the need for a first-class stadium, one with built-in dormitory rooms for his players and a palatial office appropriate for the coach of a future NCAA champion team. But the decision was made, and everyone, including the coach, would learn to live with it.

The job was now to get construction going immediately after the 2015 season ended. This would allow exactly 270 days until the 2016 season opening game. The contractor, Hill Construction (Bob Hill being an alumnus, of course), signed his contract. Bob Hill looked at the tasks his engineers had outlined and looked President Wisner in the eye, "I guarantee the team will be able to take the field on schedule next year," he said with a sense of confidence. "I sure hope so," replied Wisner. "The contract penalty of \$10,000 per day for running late is nothing compared to what Coach Flamm will do to you if our opening game with Penn State is delayed or cancelled." Hill, sweating slightly, did not need to respond. In football-crazy Texas, Hill Construction would be mud if the 270-day target was missed.

INDIVIDUAL COURSEWORK
BM4402: Operations Management
MBAODL

Table 1: Southwestern University (SWU)

Activity	Description	Predecessor(s)	Time Estimates (Days)			
			Optimistic	Most likely	Pessimistic	Crash cost/day
A	Bonding, insurance, tax structuring	-	20	30	40	\$1,500
B	Foundation, concrete footings for boxes	A	20	65	80	3,500
C	Upgrading skybox stadium seating	A	50	60	100	4,000
D	Upgrading walkways, stairwells, elevators	C	30	50	100	1,900
E	Internal wiring, lathes	B	25	30	35	9,500
F	Inspection approvals	E	0.1	0.1	0.1	0
G	Plumbing	D, F	25	30	35	2,500
H	Painting	G	10	20	30	2,000
I	Hardware/AC/metal workings	H	20	25	60	2,000
J	Tile/carpet/windows	H	8	10	12	6,000
K	Inspection	J	0.1	0.1	0.1	0
L	Final detail work/clean-up	I, K	20	25	60	4,500

Back in his office, Hill again reviewed the data (i.e. the Table 1) and noted that optimistic time estimates can be used as crash times. He then gathered his foremen. “Folks, if we’re not 75% sure we’ll finish this stadium in less than 270 days, I want this project crashed! Give me the cost figures for a target date of 250 days – also for 240 days. I want to be early, not just on time!”

Questions

- Develop a network drawing for Hill Construction.(25 marks)
 - Determine the critical path. (5 marks)
 - How long is the project expected to take? (5 marks)
- Calculate the expected time to complete the project. (14 marks)
 - Calculate the project variance. (14 marks)
 - Calculate the standard deviation expected of the project. (2 marks)
 - Determine the probability of completing the project in 270 days. (5 marks)
 - Determine the probability of completing the project in 250 days. (5 marks)
- If it is necessary to crash to 250 or 240 days, how would Hill do so, and at what costs?
As noted in the case, assume that optimistic time estimates can be used as crash times.
(15 marks)
- Briefly explain the methods/approaches you have used to complete this assignment.
(10 marks)