

MGT508 Operations Management

CANDIDATES ARE REQUIRED TO READ THESE INSTRUCTIONS

Candidates shall be deemed to have been notified of these instructions when they commence a subject. There are three (3) assessment items: one open book examination and two (2) assignments. To pass the subject, a candidate is required to **obtain at least 50 marks (out of 100) in all assessment items**. The official subject grade is awarded based on total weighted marks out of 100, (see weighting below). The seminars and exam dates and time, assignment word limits and submission date are as follows:

Seminars	Main Seminar: Sat. & Sun., 11 - 12 July 2015	Weekday evening seminars dates of which to be confirmed during the main seminar	
Assessment	Date and Time of Exam/ Assignment Submission Date	Duration/ Word Limit	Weighting
Exam	Sat., 25 July 2015 @ 2:30 p.m.	2.5 hours	20%
Assignment I	Mon., 17 Aug 2015	N/A	30%
Assignment II		4,000	50%
The exam will normally be held at HU Exam Centre, 4 th Floor, Wisma HELP, Jalan Dungun, Damansara Heights. The specific exam room will be posted at ELMGS on the day of the exam.			

SUBJECT ENROLMENT

Enrolment for a subject is based on a candidate's attendance at the exam and fee payment. Candidates who wish to be enrolled but are unable to sit for the scheduled exam must have a valid reason for non-attendance, (usually, **only serious illness -with supporting documentation- will be acceptable**). They shall notify ELM in writing of this either **before** the exam or **latest** by the next working day, failing which, they will not be enrolled. Candidates with approval for non-attendance shall normally sit for the supplementary exam (at a nominal fee) with candidates of the next intake. The official grade shall be released only after the result for this is determined. Once enrolled, cancellation of subject enrolment can only be made in extenuating circumstances and if so, a cancellation fee of RM 1,000 is chargeable.

ASSIGNMENT SUBMISSION

These shall be comb bound with the **STANDARD COVER SHEET** at the front of the assignment and shall be submitted to ELM's office in person, by post or courier or deposited into the ELM Post Box on the 10th Floor by the due date. Submission by fax or e-mail is not acceptable. **One set of Quantitative + Qualitative Assignment Assessment Forms – with subject and student details at the top, duly completed** - shall be inserted beneath the cover sheet of, (not bound together with), EACH assignment. Assignments shall have full citation of references and a selected bibliography. Plagiarism and failure to cite references will attract penalties.

Two days grace is given for assignment submission. Extensions will not be given unless:

1. there is valid reason supported by documentation (only serious illness and compassionate circumstances shall normally be considered but **work pressure alone is not be acceptable**); and
2. the request for extension is made in writing before the scheduled submission date, and ELM approval obtained.

Unless approved, late submissions shall not be assessed and the candidate may be awarded a "Fail" grade for the subject.

ELM Graduate School

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MBA Intake 20
MGT508 Operations Management

ASSIGNMENT 1

Due date : **17 August 2015**
Word limit : **N/A**
Weighting : **30%**
Facilitator : **Mr Derek Poon**
Email : **derek.poon@help.edu.my**

Question 1 (25 marks)

Metropolitan General Hospital is a city-owned and operated public hospital. Its emergency room is the largest and most prominent in the city. Approximately 70% of emergency cases in the city come or are sent to Metro General's emergency room. As a result, the emergency room is often crowded and the staff is overworked, causing concern among hospital administrators and city officials about the quality of service and healthcare the emergency room is able to provide. One of the key quality attributes administrators focus on is patient waiting time – that is, the time between when a patient checks in and registers and when the patient first see an appropriate medical staff member. Hospital administration wants to monitor patient waiting time using statistical process control charts. At different times of the day over a period of several days, patient waiting times were recorded at random with the following results:

Sample	Waiting Times (min)				
	1	2	3	4	5
1	27	18	20	23	19
2	22	25	31	40	17
3	16	15	22	19	23
4	35	27	16	20	24
5	21	33	45	12	22
6	17	15	22	20	30
7	25	21	26	33	19
8	15	38	23	25	31
9	31	26	24	35	32
10	28	23	29	20	27

- a) Develop an x chart to be used in conjunction with an R-chart to patient waiting time and indicate if the process appears to be in control. **(15 marks)**
- b) The city has established a requirement that emergency room patients have a waiting time of 25 minutes +/- 5 minutes. Based on the results in part (a), is the emergency room capable of meeting the requirement with its current process? **(10 marks)**

Question 2 (25 marks)

- a) Professional Image Briefcases is an exclusive producer of handcrafted, stylish cases. The company assembles each case with care and attention to detail. This laborious process requires the completion of the six primary work elements listed here.

Work Element		Precedence	Time (min)
A	Tan Leather	-	30
B	Dye Leather	A	15
C	Shape Case	B	10
D	Mold hinges and fixtures	-	5
E	Install hinges and fixtures	C,D	10
F	Assemble case	E	10

- i) Construct a precedence diagram for the manufacturing of briefcases. Compute the flow time required for assembling one briefcase and the cycle time necessary to assemble 50 cases in a 40-hour week. Balance and compute the line efficiency. **(10 marks)**
- ii) How would you change the line to produce 80 cases per week? What is the line efficiency? **(10 marks)**
- b) Distinguish between a process layout and product layout. Give an example of each. **(5 marks)**

Question 3 (25 marks)

Allegheny Mountain Power and Light is an electric utility company with a large fleet of vehicles including automobiles, light trucks, and construction equipment. The company is evaluating four alternative strategies for maintaining its vehicles at the lowest cost: (1) take no preventive maintenance at all and repair vehicle components when they fail; (2) take oil samples at regular intervals and perform whatever preventive maintenance is indicated by the oil analysis; (3) change the vehicle oil on a regular basis and perform repairs when needed; and (4) change the oil at regular intervals and take oil samples regularly, performing maintenance repairs as indicated by the sample analysis.

For autos and light trucks, strategy 1 (no preventive maintenance) cost nothing to implement and results in two possible outcomes: There is a 0.08 probability that a defective component will occur, requiring emergency maintenance at a cost of \$1,600, or there is 0.92 probability that no defects will occur and no maintenance will be necessary.

Strategy 2 (take oil samples) cost \$40 to implement (i.e. take a sample), and there is a 0.08 probability that there will be a defective part and 0.92 probability that there will not be a defect. If there is actually a defective part, there is a 0.7 probability the sample will correctly identify it, resulting in preventive maintenance at a cost of \$500. However, there is a 0.3 probability that the sample will not identify the defect and indicate everything is okay, resulting in emergency maintenance later at a cost of \$1,600. On the other hand, if there are actually no defects, there is a 0.2 probability that the sample will erroneously indicate that there is a defect, resulting in unnecessary maintenance at a cost of \$230. There is a 0.8 probability that the sample will correctly indicate there are no defects, resulting in no maintenance and no costs.

Strategy 3 (changing the oil regularly) cost \$34.80 to implement and has two outcomes: a 0.04 probability of a defective component, which will require emergency maintenance at a cost of \$1,600, and a 0.96 probability that no defects will occur, resulting in no maintenance and no cost.

Strategy 4 (changing the oil and sampling) cost \$54.80 to implement and results in the same probability of defects and no defects as in strategy 3. If there is a defective component, there is a 0.7 probability that the sample will detect it and \$500 in preventive maintenance cost will be incurred. Alternatively, there is a 0.3 probability that the sample will not detect the defect, resulting in emergency maintenance at a cost of \$1,600. If there is no defect, there is a 0.2 probability the sample will indicate there is a defect, resulting in an unnecessary maintenance cost of \$250, and a 0.8 probability that the sample will correctly indicate no defects, resulting in no cost.

- a) Develop a decision strategy for Allegheny Mountain Power and Light and indicate the expected value of this strategy. **(10 marks)**

For heavy construction equipment, emergency maintenance is much more expensive and cost \$15,000. Required maintenance cost \$2,000 and unnecessary maintenance cost \$1,200. The cost of an oil change is \$200 and the cost of taking an oil sample and analyzing it is \$50. All the probabilities remain the same as for the autos and light trucks.

- b) Determine the strategy the company should use for its heavy equipment. **(10 marks)**
- b) From the example above, discuss why the strategy for heavy construction equipment is similar/different to that of autos and light trucks. **(5 marks)**

Question 4 (25 marks)

Quasar Enterprise use overtime, inventory, and subcontracting to absorb fluctuations in demand, An annual production plan is devised and updated quarterly. Expected demand over the next four quarters is 600, 800, 1600 and 1900 units, respectively. The capacity for regular production is 1000 units per quarter with an overtime capacity of 100 units per quarter. Subcontracting is limited to 500 units a quarter. Regular production costs \$20 per unit, overtime \$25 per unit, and subcontracting \$30 per unit. Inventory holding costs are assessed at \$3 per unit per period. There is no beginning inventory. Design a production plan that will satisfy demand at minimum costs. What is the minimum cost?

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ASSIGNMENT 2

Due date	:	17 August 2015
Word limit	:	4,000
Weighting	:	50%
Facilitator	:	Mr Derek Poon
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Question (100 marks)

You are a Consultant specializing in Quality and Operations Management. A client in a business that you are familiar with is working to implement the ISO9001:2008 Quality Management System. As part of the process, you have been tasked with helping them to develop their Quality Manual which will document their quality management processes. If their existing quality management processes are not in compliance with the ISO9001:2008 requirements, make the changes necessary in their processes to ensure compliance and prepare the **Quality Manual** that they require. You need not go down to the level of procedures and work instruction but you do need to highlight that they have all the required documents.

In this assignment, students should **demonstrate** their understanding of:

1. The requirements of the ISO9001:2008 Quality Management System
2. The core processes of the client's operations and their linkages
3. The quality management processes that have to be in place in the client's core operations in order to meet the ISO9001:2008 standard requirements.
4. The approaches to adapt, as necessary, the client's core operations to meet the Quality objectives of the company and comply with ISO9001:2008 standard

Students would be assessed on the content as well as the quality of their presentation and marks would be given for referencing, style and originality as per the standard assignment assessment form. The content should fulfil the requirements of the Quality Manual in the ISO9001:2008 standard. Students should also provide a clear process diagram of the client's core processes and their linkages.

Note: Due to word limitations, references can be in the appendix of the manual.

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