SE1201/GES1017
Building a Dynamic Singapore - Role of Engineers

Mondays, 10 am – 1 pm

UTown SRC Global Learning Room

Welcome!

Prof. CC Hang

A/P Chai Kah Hin

A/P Vladan Babovic

Adjunct A/P Tan Kim Seng

Rhonda Camillie Reyes

Learning outcomes

- Understand the challenges and demands posed on engineering and technology as Singapore moved from a third world country to a first world country.
  - E.g. Jurong Island, the water story, R&D for manufacturing (SIMTech)
- Appreciate the impact and contributions made by engineers to Singapore in various sectors.
  - E.g. infrastructure development (Jurong Island, one-north, Port of Singapore), industry development/competitiveness (offshore jackup rigs, SIMTech)
- Comprehend the complex nature of these engineering problems that demanded technical, social and political considerations.
  - E.g. "The water story".
- Understand the roles and contributions of the various stakeholders (public and private) played in the engineering and technology development of Singapore.
  - E.g. as employers (JTC, PUB, SIMTech) of engineers
  - E.g. as agencies that develop solutions to solve problems faced by Singapore (land reclamation, water, industry competitiveness etc)

Schedule

Week (date/Wed)	Topics	Instructor/Resp.
Week 1 – 10 Aug	Introduction	CC Hang / Chai KH
Week 2 – 17 Aug	Jurong Island	Chai KH
Week 3 – 24 Aug	One-north	Chai KH
Week 4 – 31 Aug	Port of Singapore	Chai KH (guest speaker?)
Week 5 - 7 Sep	Land Transport in Singapore / Solid waste management in Singapore	Chai KH
Week 6 – 14 Sep	The SG Water story	Tan Kim Seng
Recess Week	No Class	
Week 7 - 28 Sep	The Marina Barrage - Engineering	Vladan Babovic
Week 8 – 5 Oct	Visit to Marina Barrage	Tan Kim Seng
Week 9 – 12 Oct	SIMTech	KW Lim Chai KH
Week 10 – 19 Oct	The R&D Story in Singapore	CC Hang
Week 11 – 26 Oct	No Class (to be confirmed)	
Week 12 – 2 Nov	Wrap-up	Chai KH
Week 13 – 9 Nov	Group Presentation	Chai KH Tan Kim Seng

25 Aug
Email group project team to TA

Assessments

Component	Percentage
1. Homework and class participation	20%
2. Group project	40%
3. Final examination (closed book)	40%

1. Homework/class participation

- Homework (answer selected questions from the case studies)
- 3-4 home works
- Class participations (thru attendance, and participation in class discussion).

2. Group Project

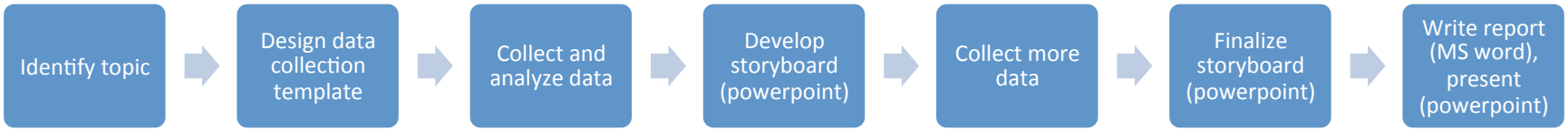
- 6 students in a group
- Conduct a study on a topic relevant to this module, submit report and do a presentation on Week 13.
- You can propose your own topics – but please consult A/P Chai, and also through out the semester. Email group member list to TA by 25 Aug (Tue).
- Possible topics:
  - Analyse and explain the competitiveness of Changi Airport. What are the roles of engineers in the success of Changi Airport?
  - Analyse and explain the success/failures of the electronics (semiconductor and/or hard disk) industry in Singapore. What are the roles of engineers in this?

2. Group Project

Sample topics:

- Study the transformation of Seletar into Seletar Aeropsace Park. Explain the vision of EDB and the significance of the range of engineering-related activities being hosted at this park. What are the roles of engineers in creating this world-class facility ?
- Study and describe the background and development of the Biopolis. how does it become the Singapore's biomedical research hub and helps to turn biomedical sector into a powerhouse for Singapore. How did it diversify from its initial supporting role into fast-growth areas ? What are the roles of engineers in the development of this sector and fast-growth areas?
- As Singapore innovates to a greener future, what are the programs and infrastructure established to develop the cleantech industry ? Why and how does Singapore position herself as a Living Lab for Cleantech sector ? Describe the key milestones of the cleantech industry and how have engineers contributed to the development ?

2. Group Project Process ("manage the process to manage the quality")



Devise collection templates
Collect data from public sources (news articles, youtubes, NLB, Singapore Heritage Board etc), interviews,

To fill in the gaps or strengthen your storyline

These would be your presentation slides

Week 13
Report due,
Presentation
Also, submit peer evaluation

	1970-1980	1980-1990	1990-1994	2010-14	Future?
Notable Events	Founded				
Challenges					
Response: Technical Organizational, etc					

Some pointers

- What is your project about? Which course learning outcome(s) are you trying to achieve? Note: you can address a few, or choose to focus only one but in great depth.
  - Understand the challenges and demands posed on engineering and technology as Singapore moved from a third world country to a first world country.
  - Appreciate the impact and contributions made by engineers to Singapore in various sectors.
  - Comprehend the complex nature of these engineering problems that demanded technical, social and political considerations.
  - Understand the roles and contributions of the various stakeholders (public and private) played in the engineering and technology development of Singapore.
- Where will you find your data? Websites? Other reports? Interviews with experts/people concerned? (this may take time so good to start early)
- If there's not much data available, you may want to change your topic.
- How will your team divide the work? Agree early, write a few lines, or use a table below to show how the work will be divided.

Team member	Section A	Section B	Section C…		
A	XX				
B		XX			
C			XX		
D				XX	
E					
F					

Team member	Data collection Part I	Data collection Part II			Presentation
A	XXX				
B		XXX			
C			XX		
D	X			XX	
E					
F		X			XX

E.g. Organize your data chronologically

	1970-1980	1980-1990	1990- 1994	1995- 2000	2001-2004	2005-2009	2010-14	Future?
Notable Events	Founded			New CEO XXX				
Challenges								
Response: Technical Organizational, etc								

Map your project to the learning outcomes of the modules closely

Learning outcomes	Section 1 & 2 (list of challenges)	Section 3 (creative solutions by the engineers and others)	Section 4
Understand the challenges and demands posed on engineering and technology as Singapore moved from a third world country to a first world country.	✓ ✓		
Appreciate the impact and contributions made by engineers to Singapore in various sectors.		✓	
Comprehend the complex nature of these engineering problems that demanded technical, social and political considerations.		✓	
Understand the roles and contributions of the various stakeholders (public and private) played in the engineering and technology development of Singapore.			✓

Grading Criteria

- Meeting learning outcomes 40%
- Creativity (topic, analysis, etc) 40%
- Presentation 20%

Peer evaluation will be taken into consideration.

3. Final exam

- 25 Nov, 2.30 -4.30 pm (please double-check)
- Style of questions similar to homework
- May have MCQs.
- Won't test your memory (e.g. when was NSTB created, how much did Jurong Island cost), but…
- Need to know the roles (and evolutions) of various agencies (NSTB/ ASTAR is for R&D, JTC is for industrial infrastructure etc)
- Some specifics related to individual case studies (e.g. work-live-play-learn concept as a way to better use of land/space, the success factors of Port of Singapore at different times, etc)
- Relate the case studies (e.g. changing roles of JTC – from Jurong Island to one-north) and other development (e.g. change of name in 5-year R&D plans) in tandem with economic development

Let’s begin the journey