



University of Ruhuna
Faculty of Engineering

Final

End - Semester 7 Examination in Engineering – March 2022
TIMETABLE

DATE	TIME	MODULE NO.	COUNT	VENUE	MODULE NAME
07.03.2022	9.00 a.m. – 12.00 noon	✓ ME7303 ✓	72	AUD	Production and Operations Management(C-18)
		✗ EE7217	53		Telecommunication Networks(C-18)
		✓ CE7304 ✓	80	DO1	Geotechnical Engineering Design(C-18)
		✓ CE7305 ✓	02		Geotechnical Engineering Design(N/C)
08.03.2022	9.00 a.m. – 12.00 noon	✓ EE7210 ✓	17	DO1	Object Oriented Design Patterns and Principles(C-18)
09.03.2022	9.00 a.m. – 12.00 noon	✗ ME7212	25	DO1	Naval Architecture and Hull Design(C-18)
		✗ CE7254	12		Water Reclamation and Reuse(C-18)
10.03.2022	9.00 a.m. – 12.00 noon	✓ EE7211 ✓	08	DO1	Optical Fiber Communication(C-18)
		✓ EE7211 ✓	01		Optical Fiber Communication(N/C)
		✓ CE7251 ✓	29	DO2	Coastal and Port Engineering Design(C-18)
		✓ CE7251 ✓	01		Coastal Engineering-Application and Management(N/C)
	1.30 p.m. – 4.30 p.m.	✗ ME7218	07	DO1	Industrial Automation (C-18)(TE)
11.03.2022	9.00 a.m. – 12.00 noon	✗ IS5303	72	DO1	Industrial Management (C-18)
		✓ CE7255 ✓	11		Irrigation Engineering (C-18)
12.03.2022	9.00 a.m. – 12.00 noon	✗ ME7216	09	DO1	Mobile Robot Design (C-18)
		✗ EE7213	12		Power Electronic Applications(C-18)
14.03.2022	9.00 a.m. – 12.00 noon	✗ ME7302	72	AUD	Heat and Mass Transfer (C-18)
		✓ EE7203 ✓	38		Advanced Data Communication(C-18)
		✓ CE7202 ✓	80	DO1	Computer Analysis of Structures(C-18)
		✓ CE7203 ✓	02		Computer Analysis of Structures(N/C)
15.03.2022	9.00 a.m. – 12.00 noon	✓ EE7204 ✓	26	DO2	Computer Vision & Image Processing (C-18)
	1.30 p.m. – 4.30 p.m.	✗ IS7101	01	AUD	Engineering Ethics(N/C)
16.03.2022	9.00 a.m. – 12.00 noon	✓ ME7217 ✓	08	DO1	Aerospace Engineering (C-18)
		✓ EE7205 ✓	18		Digital Signal Processing (C-18)
		✓ EE7215 ✓	18		Power System Protection (C-18)
		✓ ME7303 ✓	01	DO2	Solid Mechanics(N/C)
		✓ CE7253 ✓	43		Ground Improvement Techniques (C-18)
		✓ CE7252 ✓	01		Ground Improvement Techniques (N/C)
18.03.2022	9.00 a.m. – 12.00 noon	✓ ME7211 ✓	44	DO1	Energy Technology (C-18)
		✓ EE7207 ✓	42		Electrical Installations I (C-18)
		✓ CE7253 ✓	01		Highway Maintenance and Management(N/C)
19.03.2022	9.00 a.m. – 12.00 noon	✗ IS5302	02	AUD	Financial Management(C-18)
	1.30 p.m. – 4.30 p.m.	✓ CE7303 ✓	80	DO2	Construction Environmental Management (C-18)
		✓ CE7304 ✓	02	DO2	Environmental Management(N/C)
		✓ EE7209 ✓	27	DO1	Machine Learning (C-18)



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Module Number: ME7303 Module Name: Production and Operations Management
[Three Hours]

[Answer all questions, each question carries twelve marks]

- Q1. a) Briefly describe the importance of implementing “Service Planning and Operational Management” principles for the current health care sector.
[4.0 Marks]
- b) Discuss the role of a “Production and Operational Manager” towards the key production and operational management decisions in “Apparel Sector of Sri Lanka”, specially within the current COVID 19 created situation.
[4.0 Marks]
- c) Briefly describe the importance of manufacturing strategies for automobile manufacturing companies to maintain its competitiveness in the future global market.
[4.0 Marks]
- Q2. a) Briefly describe, what is quality?
[2.0 Marks]
- b) Briefly describe eight dimensions of the quality?
[4.0 Marks]
- c) Discuss, why “Cost and value as a function of designed quality” is important consideration in product design and manufacturing process selection.
[3.0 Marks]
- d) Explain how FEMA (Failure Modes & Effects Analysis) could be used to reduce manufacturing defects.
[3.0 Marks]

- Q3. a) Explain how virtual prototyping can be used to improve the concurrent engineering practice by providing an example.
[3.0 Marks]
- b) Explain how 3D printing can be used to improve the concurrent engineering practice by providing an example.
[3.0 Marks]
- c) What are the factors of uncertainty that affects during introducing a new product to the market?
[3.0 Marks]
- d) Explain how "effective project management" can reduce the risk of project failure by considering several factors such as budget, time, knowledge, scope, human resources, etc.
[3.0 Marks]
- Q4. a) Describe how you could apply "Method Study" for improving the productivity by providing an example.
[3.0 Marks]
- b) Define and explain the role of "Work Study" in improving productivity.
[3.0 Marks]
- c) Explain, why "Ergonomics" is importance for product design by providing an example.
[3.0 Marks]
- d) "Efficient building layout will be benefited for improving the productivity of service sector organizations like banks, hospitals, etc". Explain your view on this statement.
[3.0 Marks]

- Q5. a) Briefly explain, why circular economy principles are aided for improving the resource utilization of a country.

[4.0 Marks]

- b) Table Q5-1 shows the activity list for construction of a garage.

Table Q5-1 : X and Y Manufacture and Assembly

Job	Description	Immediate Predecessors	Time [days]
A	Prepare Foundation		7
B	Make and position the door frame		2
C	Lay drains, floor base and screed		15
D	Instal the service and fittings	E	8
E	Erect walls	A, B	10
F	Plaster ceiling	D, G	2
G	Erect roof	E	5
H	Install door and windows	G	8
I	Fit gutters and pipes	C, F	2
J	Paint outside	I	3

- i) Draw the network diagram.

[3.0 Marks]

- ii) Find the critical path of the project?

[3.0 Marks]

- iii) How long can non-critical activities be delayed before they cause a delay in the project's completion time.

[2.0 Marks]