Subject Description Form

Subject Code	EE553
Subject Title	Railway Electronic Systems
Credit Value	3
Level	5
Pre-requisite/ Co-requisite/ Exclusion	Nil
Objectives	1. To provide overview knowledge of railway electronic systems including main control system, communication system and automatic fare collection system. 2. To acquire working knowledge on the design and maintenance of railway electronic systems. 3. To be aware of the trends in the technological development of railway electronic systems and key players in the industry.
Intended Learning Outcomes	Upon completion of the subject, students will be able to: a) Acquire the operational roles of railway electronic systems including main control system, communication system and automatic fare collection system. b) Understand the operating principles of railway electronic systems, and how they are maintained. c) Acquire the principal design features and interface requirements of railway electronic systems. d) Acquire the technological developments of railway electronic systems and their trends in the railway industry. e) Acquire the key players in the railway electronic systems industry and their business prospects. f) Acquire the future integration of the railway electronic systems as part of the Internet of Things (IoT).
Subject Synopsis/ Indicative Syllabus	1. Operation of railway electronic system in the context of metro lines. 2. Operating principles and principal design features of railway electronic systems. 3. Asset maintenance of railway electronic systems. 4. Design, supply, installation, and testing and commissioning of railway electronic systems. 5. Integration of railway electronic systems with other railway systems. 6. Technological development trends and key players in the railway electronic system industry. 7. Case study – railway electronic systems in the MTR network.

Teaching/Learning Methodology

Subject matter experts in the field of railway electronic systems from MTR and other operators will be invited to share their knowledge with students through lectures and tutorials.

Teaching/Learning Methodology	Learning Outcomes					
	a	b	c	d	e	f
Lectures	✓	✓	✓	✓	✓	✓
Tutorials	✓	✓	✓	✓	✓	✓
Site Visits		✓	✓			

Assessment Methods in Alignment with Intended Learning Outcomes

Specific assessment methods/tasks	% weighting	Intended subject learning outcomes to be assessed					
		a	b	c	d	e	f
1. Examination	60%	✓	✓	✓	✓	✓	✓
2. Assignments	15%	✓	✓	✓	✓	✓	✓
3. Projects	25%	✓	✓	✓	✓	✓	✓
Total	100 %						

Assignments: Students are required to 1) construct an interfacing schematic and explain each of key interfaces relating to the railway electronic systems and 2) suggest one application of IoT which may relate to railway electronic system and provide an outline of the suggested application. These are designed to assess learning outcomes (c) and (f).

Projects: Students demonstrate havig acquired detail and updated knowledge on railway electronic systems through an extensive and intensive literature search exercise, digestion of the relevant information obtained and presenting the results appropriately in the project report. The students' understanding will also be tested through Q&A in a face-to-face session with the lecturer. These are designed to assess learning outcomes (d), (e) and (f)

Examination: Questions are designed to assess learning outcomes (a), (b), (c), (d), and (e). Students are required to answer questions that cover all of the learning outcomes.

Student Study Effort Expected

Class contact:	
▪ Lecture/ Tutorial	36 Hrs.
▪ Site visit	3 Hrs.
Other student study effort:	
▪ Self-study	42 Hrs.
▪ Project/Assignment	24 Hrs.
Total student study effort	105 Hrs.

Reading List and References

Selected publications from technical journals and video clips to be circulated by the lecturers of the subject.