Proposal to modernise the Methodology of Teaching, Assessment/ Examination

Marine Engineering-STCW III/1 CoC	Name of respondent, organisation, and role:		
Competency/ Module: Electrical Power			
Knowledge, understanding and proficiency	**Recommendation of working group regarding the outcome and objective.**	**Rationale**	**Action required**
Outcome 1: Solve problems on Resistive DC circuits connected in series and parallel	Modernise	It is important to make sure Cadets clearly understand how the outcome relates to work at sea and it is essential to make sure that this context is given with reference to current and future seagoing technologies and practices.	Understand the principle of how calculations are used to solve the problems. However, the focus should be on troubleshooting and practical problem solving.
1.1 DC radial feeders circuits involving no more than three unknowns	Modernise	It is important to make sure Cadets clearly understand how the outcome relates to work at sea and it is essential to make sure that this context is given with reference to current and future seagoing technologies and practices.	Understand the principle of how calculations are used to solve the problems. However, the focus should be on troubleshooting and practical problem solving.
1.2 DC ring mains circuits involving no more than three unknowns	Modernise	It is important to make sure Cadets clearly understand how the outcome relates to work at sea and it is essential to make sure that this context is given with reference to current and future seagoing technologies and practices.	Understand the principle of how calculations are used to solve the problems. However, the focus should be on troubleshooting and practical problem solving.
1.3 DC double-fed systems involving no more than three unknowns	Modernise	It is important to make sure Cadets clearly understand how the outcome relates to work at sea and it is essential to make sure that this context is given with reference to current and future seagoing technologies and practices.	Understand the principle of how calculations are used to solve the problems. However, the focus should be on troubleshooting and practical problem solving.

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Outcome 2: Solve problems on Non-linear DC transient circuits, Resistive/Capacitive and Resistive Inductive circuits	Modernise	It is important to make sure Cadets clearly understand how the outcome relates to work at sea and it is essential to make sure that this context is given with reference to current and future seagoing technologies and practices.	Understand the principle of how calculations are used to solve the problems. However, the focus should be on troubleshooting and practical problem solving, this could be achieved using simulation software.
2.1 RC connected DC circuit transients during charge/discharge	Modernise	It is important to make sure Cadets clearly understand how the outcome relates to work at sea and it is essential to make sure that this context is given with reference to current and future seagoing technologies and practices.	Understand the principle of how calculations are used to solve the problems. However, the focus should be on troubleshooting and practical problem solving, this could be achieved using simulation software.
2.2 RL connected DC circuit transients during switch on and/or switch	Modernise	It is important to make sure Cadets clearly understand how the outcome relates to work at sea and it is essential to make sure that this context is given with reference to current and future seagoing technologies and practices.	Understand the principle of how calculations are used to solve the problems. However, the focus should be on troubleshooting and practical problem solving, this could be achieved using simulation software.
Outcome 3: Evaluate parallel single phase AC circuits comprising resistance, capacitance and inductance	Keep	Relevant	None
3.1 Single phase parallel RLC AC circuits	Keep	Relevant	None
3.2 Phasor diagrams, impedance, resistance, capacitance	Keep	Relevant	None
3.3 Inductance, power factor	Keep	Relevant	None
3.4 Apparent power, true power, reactive power	Keep	Relevant	None
3.5 Power factor correction	Keep	Relevant	None

Outcome 4: Evaluate Electronics in marine applications	Keep	Relevant	None
4.1 Operations of p and n type diode	Keep	Relevant	None
4.2 Rectification of an ac single phase supply	Keep	Relevant	None
4.3 Rectifier circuits using one or two diodes; centre tapped transformer; bridge rectifier	Keep	Relevant	None
4.4 Rectifier voltage calculations	Keep	Relevant	None
4.5 Formation of a pnp and npn junction transistor	Keep	Relevant	None
4.6 Bipolar transistors as switches in marine applications	Keep	Relevant	None
4.7 Operation of small signal bipolar transistor amplifiers in marine applications	Keep	Relevant	None
4.8 Photo-electric effect	Keep	Relevant	None
Proposal submitted by:	**Any other outcomes for this competency, above and beyond STCW which would be needed due to use of modern technology and impact of future fuels onboard:**		
	Objective	**Reason Why**	**Action required**
Cadet Training & Modernisation Working Group	Include Human Element Factors throughout the syllabus	To provide seafarers with a contextualised understanding of the Human Element in the maritime industry, showing how they can put theory into practice in the work they carry out at sea.	Raise awareness throughout the Cadet's training of the areas in which human element factors will have an impact. Recommendations on where this can be included have been noted throughout the entire syllabus. Not every template has Human Element Factor recommendations but please do add any you feel may have been missed.

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Cadet Training & Modernisation Working Group	Include Data Science skills throughout the syllabus	Data Science Skills (Comprehension, Analysis, Presentation, etc...) are already required within much of the syllabus. A further, specific focus on these skills needs to be taught where relevant.	A specific topic will need to be introduced to improve Cadets' Data Science skills. Practical application of data science skills should be highlighted throughout the syllabus. Not every template has Data Science recommendations but please do add any you feel may have been missed.
Cadet Training & Modernisation Working Group	Ensure all outcomes are contextualised to help Cadets understand what they are learning in relation to what they will experience at sea.	While some outcomes are intrinsically linked to work carried out at sea, some need to be contextualised to show how they apply to work on board. Where this is the case, it is important to make sure Cadets clearly understand how the outcome relates to work at sea and it is essential to make sure that this context is given with reference to current and future seagoing technologies and practices.	Where outcomes do not specifically cover a topic which relates to work carried out at sea, more must be done to contextualise the outcome and make it relevant to the maritime industry, giving specific shipping examples of how the outcome may be applied in a modern shipping context. Not every template has contextualisation recommendations but please do add any you feel may have been missed.