Proposal to modernise the Methodology of Teaching, Assessment/ Examination

Marine Engineering - STCW III/ 1 CoC	Name of respondent, organisation and role:		
Competency/ Module: Marine Engineering: Process Control			
Knowledge, understanding and proficiency	**Recommendation of working group regarding the outcome and objective.**	**Rationale**	**Action required**
Outcome 1: Read a pipe and instrument diagram	Keep	Relevant	None
1.1 Identify and explain symbols to BS1553 and BS1646	Modernise	Contextualise these symbols to teach candidates in the way they would encounter them on board.	Use actual technical drawings from ships if possible (or an example ship) - Paper and/ or Electronic
Outcome 2: Select a control valve and be able to size the valve to a particular operation.	Keep	Relevant	None
2.1 Select the appropriate trim for a given application	Keep	Relevant	None
2.2 Select the appropriate size of valve for a given application	Keep	Relevant	None
2.3 Select the appropriate valve body material for a given application	Keep	Relevant	None
2.4 Select the appropriate fail-safe condition for the valve	Keep	Relevant	None
Outcome 3: Explain and classify controllers	Keep	Relevant	None
3.1 Gain/Proportional band, integral action time, derivative action time	Keep	Relevant	None

3.2 Analogue controllers, time constant, generation of control modes/actions	Keep	Relevant	None
Outcome 4: Set-up or stimulate a process control system and tune the system for optimum safe operation	Keep	Relevant	None
4.1 Feedback control systems, response to set point/load changes, offset/steady state a paper composed of an appropriate balance of short answer, restricted response and structured questions, errors, overshoot, initial rate of change, setting time	Modernise	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.	Include an appreciation for the Human Machine Interface of these systems, this is especially applicable to autonomous operation. Include an awareness of Power Management Systems & Planned Maintenance Systems in relation to this outcome.
4.2 Effects of P, I and D variables and their constants on system response	Keep	Relevant	None
4.3 Tuning of closed loop systems using open/closed loop methods	Keep	Relevant	None
4.4 Use of process analysers for tuning	Keep	Relevant	None
4.5 Process Characteristics: distance velocity lags, transfer lags, time constant, process interactions	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**

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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.
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.